

Evaluation of the transitional care model in chronic heart failure

Grace Williams, Karen Akroyd, Linda Burke

Abstract

Background: Chronic heart failure (CHF) prevalence is on the increase in the UK, with readmissions to hospital and length of stay remaining a significant problem both for patients and the NHS. The role of the clinical nurse specialist in the management of CHF patients has yielded positive results in a number of previous studies. **Aim:** To evaluate the effectiveness of a transitional care service on readmissions and length of stay in hospital for patients with CHF. **Design:** A quasi-experimental design was used over a period of 18 weeks. The historical group ($n=50$) and the transitional care group ($n=47$) were compared. **Method:** The study was carried out in an acute hospital trust. A patient questionnaire was used as a post-intervention measure. **Results:** The number of readmissions was higher in the control group (14%; $n=7$) compared with the transitional care group (8.5%; $n=4$; $P=0.526$). Difference in length of stay for both groups almost achieved statistical significance ($P=0.06$). Patients gave positive feedback about the service. **Conclusions:** The results indicate that the introduction of the transitional care service did not reduce the number of readmissions. The length of stay, if anything, appeared to increase in the historical group when compared with the transitional group. Although it was clear that the two groups were different in important ways, causal effect cannot be attributed to the transitional care group as a result of these other differences. Results from the patient satisfaction questionnaires used in the transitional group did illustrate satisfaction with the discharge process and care received.

Key words: Chronic heart failure ■ Nurse-led intervention ■ Transitional care

Chronic heart failure (CHF) encompasses a spectrum of clinical syndromes that present as a consequence of cardiac disease (Palmer et al, 2003). According to McMurray et al (1998), CHF is a hard disease to live with, impairing quality of life more than

any other chronic medical problem. CHF occurs as the result of end-stage of cardiac disease caused by coronary artery disease, hypertension, valve disease, alcohol misuse or viral infection (Cowie et al, 1999).

CHF places a burden on healthcare resources, with much of the cost attributed to prolonged and repeated hospital admissions. The transitional care approach is an intervention that can help reduce such costs, and is known widely in the US but not in the UK. It is a care package introduced by a clinical nurse specialist (CNS) that consists of early discharge planning, a structured patient education programme, support of patients to develop self-management skills and follow-up post-discharge (Naylor et al, 2004; Brooten and Naylor, 1999; Naylor et al, 2004). To reduce readmissions and length of stay in hospital,

nurses need to focus on improving the discharge process and to take the lead, as part of the multidisciplinary team, in safely discharging patients from hospital.

This article describes a study undertaken in an acute hospital trust to evaluate the effectiveness of a transitional care service on readmissions and length of stay in hospital for patients with CHF.

Background

CHF affects 1–3% of the general population and approximately 10% of the very elderly (McMurray et al, 1998), and its prevalence is growing with an ageing population. CHF remains a significant burden on healthcare resources (Department of Health (DH), 2003). The greatest contributor to this cost is prolonged and repeated hospital admissions, and readmissions are particularly high during the first 90 days following a hospital admission (Hardman, 2002). The *National Service Framework for Older People* places emphasis on developing intermediate care services to prevent patients from being lost to follow-up between two services, or staying in hospital longer than is required when they could be at home (DH, 2001).

The role of the CNS was developed in the UK in the 1980s and has developed further in recent years. The potential role of the heart failure CNS in being able to modify and develop strategies for managing CHF is a feature in a number of healthcare systems (Rich et al, 1995; Palmer et al, 2003; Strömberg et al, 2003).

The concept of introducing nurse-led outpatient care or home-based interventions to reduce hospitalization has been evaluated in a number of countries (Blue et al, 2001; Thompson et al, 2005). Nurse-led discharge has come into focus in recent years because of previous government strategies aimed at reducing delayed discharges and breaking down the barriers to joint working within multidisciplinary teams (DH, 2002). Studies have addressed the

Grace Williams is Heart Failure Clinical Nurse Specialist, Department of Cardiology, Mayday University Hospital, Croydon; Karen Akroyd is Freelance Research Assistant, Brighton; and Linda Burke is Head of Nursing/Associate Dean for Practice Education, Faculty of Health and Social Care Sciences, Kingston Hill Campus, Kingston University and St George's, University of London, London.

Accepted for publication: November 2010



Readmissions to hospital and length of stay remain a significant problem both for patients and the NHS

role of discharge planning and nurse-led discharge (Happ et al, 1997; Blue et al, 2001; Harrison et al, 2002; Naylor et al, 2004; Kwok et al, 2009; Zhao and Wong, 2009). Others have explored the effects of outpatient management on patients with heart failure (Paul, 2000; Hershberger et al, 2001; Strömberg et al, 2003; Thompson et al, 2005).

Documents such as *Achieving a Timely 'Simple' Discharge from Hospital* (DH, 2004) are part of a recommended toolkit to empower members of the multidisciplinary team to achieve effective and timely discharge for patients classified as simple discharges. Six core discharge planning competencies are outlined in this toolkit for implementation, which recommends that senior nurses should facilitate the discharge of patients in collaboration with the multidisciplinary team.

Aims and objectives

The primary objective of this study was to evaluate the effectiveness of introducing a transitional care service on readmissions for patients with CHF. A secondary objective was to assess the impact of this service on length of stay in hospital, and also to assess the patient experience of the transitional, nurse-led service.

Methods

The study was carried out in an acute hospital trust between January and May 2007. The hospital serves a large and diverse population, many of whom are transient, relatively young and with a high level of ethnic diversity.

Based on ongoing audit within the trust, which the author was involved in over a period 6 months, the length of stay for patients with CHF at the time of the research was approximately 13.5 days compared with a national average of 9.5 days (DH, 2003). Readmission rates were also higher than the national average, with 10% being readmitted within 90 days of discharge. There were no particular local circumstances, such as local demographic variation, to account for this.

Design

A quasi-experimental approach—the non-equivalent control group design (LoBiondo-Wood and Haber, 2002)—was used due to its efficacy in answering questions about prediction.

Two groups were included in the study: the transitional care group and the control (historical) group. Inclusion criteria for groups comprised patients admitted to hospital with a primary diagnosis of heart

failure, and also included patients who consented to participate in the study who had had a recent echocardiogram confirming left ventricular systolic dysfunction. The control group was based on historical data obtained from the local trust and included 121 patients with CHF for the period January–May 2005. This group was matched as closely as possible to the transitional care group in terms of demographics (age, gender, marital status and employment status).

Thirty-three patients were excluded from the control group for a variety of clinical reasons. An identical number of patients who had died were included to match the transitional care group. Following discussion with the course statistician, it was estimated that a sample size of at least 50 admissions in each of the historical and study periods would have 80% power at a 5% significance level to detect a reduction rate from 14% to 2%.

The transitional care intervention required the CNS to identify and recruit patients within 24–48 hours of admission according to the inclusion criteria. Once patient consent had been obtained, an initial assessment took place followed by the introduction of the transitional care package. The heart failure CNS visited this group of patients regularly on the wards throughout their admission, during which time they received information on their heart condition in preparation for discharge. The conversation was nurse-led, but was an interactive discussion between the patient and the nurse.

The development of the intervention was based on facilitating the transition of the CHF patient from hospital to home. Therefore, follow-up arrangements either involved attendance at the nurse-led clinic or, where appropriate, home visits by the community heart failure nurse. Based on the health belief model (Strecher and Rosenstock, 1997), this approach supported these patients and increased their self-efficacy, thereby developing their confidence to make decisions about their health.

Ethical and clinical governance considerations

Informed consent was obtained from all participants and confidentiality was maintained at all times. The Local Research Ethics Committee (LREC) suggested a change in the primary objective of the study from assessing the length of stay in hospital to monitoring of hospital



readmissions because frequent hospital readmissions are costly and pose a problem for the NHS. The suggestion was accepted, but it was acknowledged that the duration of the study would not be sufficient to collect significant data.

Data collection

Forty-seven patients in the transitional care group received postal questionnaires following their appointment in the nurse-led clinic or review by the community heart failure nurses. These were followed-up with reminders. The questionnaire consisted of mostly closed-ended questions in which patients were asked about their experiences of being treated in hospital and whether they felt they had been provided with sufficient information before they left the clinic.

Respondents had a time limit of 10 days to complete and return the questionnaires, and stamped addressed envelopes were provided to help increase the response rate. Demographic details, information on readmission rates and length of stay were obtained from the patient administration system and health information records (Table 1).

Analysis

Data were analysed using SPSS (version 15). Chi-squared was used for categorical data such as hospital readmission with heart failure within 28 days of recent discharge from hospital. For each t-test the *P*-value was calculated to provide some evidence that there was a significant factor influencing readmissions. However, as the sample size was small and the analysis of the variables with the t-test may be skewed, the Fisher's exact test was also used.

The Mann-Whitney test and the independent samples t-test were used to analyse LoS between the two groups. To compare the associations of the confidence to self-monitor for worsening symptoms of heart failure in those who lived alone, the independent samples statistical t-test was used.

Results

Thirty-six completed questionnaires were returned from a total of 47 (response rate 76.6%). The total number of patients included for this study was 47 patients from the transitional care group and 50 from the control group.

There was a significant difference in the mean age between the groups ($P=0.006 < 0.05$), with the transitional care group

Table 1. Demographic data for intervention and control group

	Control group	Transitional group	P-value for subsection
Number of patients	50	47	n/a
Mean age (years)	78.28	71.02	0.006
Gender			
Male	26 (52%)	26 (52%)	0.837
Female	24 (48%)	21 (44.7%)	
Marital status			
Widowed/widower	12 (25.5%)	20 (42.6%)	0.157
Married	27 (54%)	12 (25.5%)	
Single	4 (8%)	2 (4.3%)	
Divorced	4 (8%)	12 (24%)	
Lives with partner	3 (6%)	1 (2.1%)	
Live alone			
Yes	19 (38%)	30 (63.8%)	0.15
No	31 (62%)	17 (36.2%)	
Employment status			
Employed	3 (3.1%)	7 (7.2%)	0.008
Part time		1 (1.0%)	
Retired	47 (48.5)	36 (37.1%)	
Looking for employment		1 (1.0%)	

being younger. No significant difference was observed in the gender make-up ($P=0.837$), marital status ($P=0.157$), or number of those who lived alone ($P=0.15$) between the two groups. Difference in employment status between the two groups, however, was statistically significant ($P=0.008$) (Table 1).

Aetiology of heart failure was not significant. Disease conditions in addition to heart failure that formed the comorbidities were not significant. The ejection fractions in both groups were also not significant ($P=0.06$). The severity of heart failure using the New York Heart Association (NYHA) classification was not significant ($P=0.60$).

Readmission

At 30 days prior to completion of the study, readmission rates were 14% (7/50) of patients

in the control group and 8.5% (4/47) in the transitional care group ($P=0.526$). At follow-up, one patient (2.1%) had been readmitted via the nurse-led clinic and four readmissions (8.5%) had been prevented via the nurse-led clinic.

Three patients from the transitional care group who had to be discharged from hospital asked to be seen before the agreed appointment date to report worsening symptoms, which include increased breathlessness and development of leg oedema. The strict readmission criteria agreed by the LREC and lead cardiologist were used as a measure to decide whether patients required readmissions. This resulted in one patient being admitted to hospital for intravenous therapy; the other four had their medication changed (this was discussed with

Table 2. Length of stay for control group and intervention group

	Control group (n=50)	Transitional group (n=47)	P-value	95% confidence interval
Mean length of stay (days)	9.58	10.68	0.05	8.64–11.58
Range (days)	0–30	1–40	–	–
Standard deviation	7.03	7.61	–	–
Total number of bed days	479	502	–	–

the cardiologist) and were asked to come back in 2 weeks to the nurse-led clinic.

Length of stay

Length of stay refers to the number of bed days during the initial admission to hospital for CHF during the period of the study for both groups. *Table 2* outlines the data on length of stay for both groups.

Length of stay was significantly higher in the transitional care group ($P=0.5$) by an average of 1 day. More patients in the control group spent fewer days in hospital compared with the other patients within the control group who had a longer stay in hospital. However, more patients in the transitional group spent fewer days in hospital compared with fewer patients within the transitional group who had a longer stay in hospital.

Patient satisfaction

Patients were asked whether they had been given the opportunity to ask questions of the doctor or CNS. Twenty-nine respondents (80.6%) had been given the opportunity to ask the heart failure nurse questions, four (11%) had this opportunity 'to some extent' and two (6%) were given no such opportunity. The proportion of responses were similar with regard to opportunities for asking doctors about treatment.

In terms of carer involvement, five 14.2% (5/35) felt they were not given the opportunity to involve a significant other in the management of their hospital care. Some 28.5% (10/35) of those who answered did not have any carer or family member available, while 20 (57%) felt that they had the opportunity to involve a family, carer or partner.

With regard to information received from health professionals, 24 (66.7%) reported being given written information about their heart condition, five (13.9%) were not sure if they received such information, and six (16.7%) did not receive this information. Of those who had received written information, 20 (55.6%) found it easy to understand, five (13.9%) found it easy to some extent, and five did not answer the question.

Discussion

There were some limitations which may have had an impact on the study. Owing to a delay in obtaining ethical approval, the sample size was smaller than hoped, causing problems with the ability to generalize from the sample.

Timing was paramount as the aim was to begin the study in the winter period when admissions for heart failure are at their highest. The timescale allocated for this study did not allow further recruitment of patients to the study. Direct comparisons between the readmission rate and length of stay were limited. For intra-observer reliability, this study required more than one CNS to assess patient data and compare results. This was open to subjective decision-making and the matching of patients was not achieved in all cases. This variation in the patient demographic and clinical characteristics between the two groups may have limited the outcomes.

Findings relating to the comparison of readmission rates between the two groups were as expected, and this suggests that follow-up and close monitoring of symptoms is beneficial for the patient and family, and at the same time reduces costs for the hospital trust. With regard to length of stay in hospital, these data indicate that this was not reduced in the transitional care group compared with the control group. This could have been influenced by variables such as the NYHA heart failure class III and IV, and the severity of heart failure with poor ejection fractions, which were more prevalent in the transitional care group. Other factors could be the extent of social support patients received and issues surrounding compliance, factors which were not explored in this study.

Furthermore, the results show that the experience of the discharge process and follow-up care provided was valued by patients in the transitional care group. Similar findings are reflected in a study on nurse-led discharge for patients with cancer (Lewis et al, 2001). The majority of patients were positive about their opportunities to ask questions regarding their treatment. It is argued that the support of family and friends is an important factor in helping prevent readmission (Happ et al, 1997), although some patients prefer to remain independent.

In their study of discharge planning of stroke patients, Almborg et al (2009) found that relatives wanted to be more involved in goal-setting and in identifying patient need. Studies suggest that even when discharge teaching has been provided, patients may be too anxious to absorb the information or the quantity of information may be too overwhelming to absorb at one time. It is therefore important to see patients regularly until they are discharged.

Conclusions

This study is based on strong empirical data and is of importance because it explores the transitional care approach in the UK context, adding to the existing knowledge in this area. This is apposite, given that nurse-led discharge has come into focus as part of government policy in recent years.

To reduce readmissions and length of stay in hospital, nurses need to take an increased lead within the multidisciplinary team in helping to safely discharge patients from hospital. In the UK, transitional care is relatively new and further research is required to help promote its use and address the issue of patient outcomes. This type of initiative is being used in other clinical areas so this evaluation is an important addition to the literature.

The hospital trust has benefited from the intervention, with the reduction of readmission rates. Average length of stay within the trust compares favourably with national data, but other initiatives such as weekend discharges and standardization of multidisciplinary meetings could help reduce length of stay further. In addition, agreed diagnostic criteria and treatment guidelines for heart failure between secondary and primary care would help to ensure optimum treatment, potentially leading to a reduction in delayed discharges and fewer hospital readmissions within the trust. BJN

Conflict of interest: none declared

- Almborg A, Ulander K, Thulin A, Berg S (2009) Discharge planning of stroke patients: the relatives' perceptions of participation. *J Clin Nurs* **18**(6): 857–65
- Blue L, Lang E, McMurray JJV et al (2001) Randomised controlled trial of specialist nurse intervention in heart failure. *BMJ* **323**: 715–18
- Brooten DA, Naylor MD (1999) *Transitional Environments*. Sage Publications, California
- Cowie MR, Wood DA, Coats AJ et al (1999) Incidence and aetiology of heart failure: a population-based study *Eur Heart J* **20**(6): 421–8
- Department of Health (2001) *National Service Framework for Older People*. DH, London
- Department of Health (2002) *Discharge from Hospital: A Good Practice Checklist*. Health and Social Care Joint Unit and Change Agent Team. DH, London
- Department of Health (2003) *Developing Services for Heart Failure*. DH, London
- Department of Health (2004) *Achieving Timely 'Simple' Discharge from Hospital: A Toolkit for the Multi-disciplinary Team*. DH, London
- Happ MB, Naylor MD, Roe-Prior P (1997) Factors contributing to rehospitalization of elderly patients with heart failure. *J Cardiovasc Nurs* **11**(4): 75–84
- Hardman SM (2002) Heart failure: across the interface and beyond. *Heart* **88**(Suppl 2): ii28–32



- Harrison MB, Browne GB, Roberts J, Tugwell P, Gafni A, Graham ID (2002) Quality of life of individuals with heart failure: a randomized trial of the effectiveness of two models of hospital-to-home transition. *Med Care* **40**(4): 271–82
- Hershberger RE, Ni H, Nauman DJ et al (2001) Prospective evaluation of an outpatient heart failure management program. *J Cardiac Fail* **7**(1): 64–74
- Kwok T, Lee J, Woo J, Lee DT, Griffith S (2009) A randomized controlled trial of a community nurse-supported hospital discharge programme in older patients with chronic heart failure. *J Clin Nurs* **17**(1): 109–17
- Lewis EF, Johnson PA, Johnson W, Collins C, Griffin L, Stevenson LW (2001) Preferences for quality of life or survival expressed by patients with heart failure. *J Heart Lung Transplant* **20**: 1016–24
- LoBiondo-Wood G, Haber J (2002) *Nursing Research: Methods, Critical Appraisal, and Utilization*. 5th edn. Mosby, Missouri
- McMurray JJ, Petrie MC, Murdoch DR, Davie AP (1998) Clinical epidemiology of heart failure: public and private health burden. *Eur Heart J* **19**(Suppl P): P9–16
- Naylor M, Brooten D, Jones R, Lavizzo-Mourey R, Mezey M, Pauly M (1994) Comprehensive discharge planning for the hospitalized elderly. A randomized clinical trial. *Ann Intern Med* **120**(12): 999–1006
- Naylor MD, Brooten DA, Campbell RL, Maislin G, McCauley KM, Schwartz JS (2004) Transitional care of older adults hospitalized with heart failure: a randomized, controlled trial. *J Am Geriatr Soc* **52**(5): 675–84
- Palmer ND, Appleton B, Rodrigues EA (2003) Specialist nurse-led intervention in outpatients with congestive heart failure: impact on clinical and economic outcomes. *Disease Management & Health Outcomes* **11**(11): 693–8
- Paul S (2000) Impact of a nurse-managed heart failure clinic: a pilot study. *Am J Crit Care* **9**(2): 140–6

KEY POINTS

- Chronic heart failure (CHF) places a burden on healthcare resources, with much of the cost attributed to prolonged and repeated hospital admissions
- This study has attempted to evaluate the introduction of a transitional care service by a clinical nurse specialist in people with CHF
- In the UK, transitional care is relatively new and requires further research to promote its use on how it can improve patient outcomes
- Evidence shows that patients who have low satisfaction with care may not have received adequate information about their health condition and will perhaps lack the confidence to manage their condition at home, which can lead to frequent readmissions
- Results from the patient satisfaction questionnaires used in the transitional group illustrated satisfaction with the discharge process and care received

- Rich MW, Beckham V, Wittenberg C et al (1995) A multidisciplinary intervention to prevent the readmission of elderly patients with congestive heart failure. *N Engl J Med* **333**(2): 1190–5
- Strecher VJ, Rosenstock IM (1997) The Health Belief Model. In: Baum A, Newman S, Weinman J, West R, McManus C, eds, *Cambridge Handbook of Psychology, Health and Medicine*. Cambridge University Press, Cambridge
- Strömberg A, Mårtensson J, Fridlund B, Levin LA, Karlsson JE, Dahlström U (2003) Nurse-led heart failure clinics improve survival and self-care

- behaviour in patients with heart failure: results from a prospective, randomised trial. *Eur Heart J* **24**(11): 1014–23
- Thompson DR, Roebuck A, Stewart S (2005) Effects of a nurse-led, clinic and home-based intervention on recurrent hospital use in chronic heart failure. *Eur J Heart Fail* **7**(3): 377–84
- Zhao Y, Wong F (2009) Effects of a postdischarge transitional care programme for patients with coronary heart disease in China: a randomised controlled trial. *J Clin Nurs* **18**(17): 2444–55

Copyright of British Journal of Nursing (BJN) is the property of Mark Allen Publishing Ltd and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.