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High complexity chronic heart failure management programmes: Programme characteristics and 12 month patient outcomes

Elizabeth Oldland, RN, GDipAdvNsg(CritCare), GCertHigherEd, MNursPrac*, Andrea Driscoll, BN, MN, MEd, PhD, Judy Currey, RN, PhD, MACN

School of Nursing and Midwifery, Deakin University, Burwood, Victoria, Australia

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Summary Chronic heart failure management programmes (CHF-MPs) have been developed to improve, clinical outcomes in response to the high burden of disease from chronic heart failure (CHF). Programmes vary in model, duration, complexity of interventions and incorporation of evidence-based guidelines for programme delivery. Few studies have explored patient outcomes at 12 months from enrolment in a CHF. The aim of the current study was to explore the characteristics and clinical outcomes of patients enrolled in four high complexity CHF-MPs at 12 months after initial enrolment. A secondary aim was to explore the adoption of key evidence-based CHF management strategies in these programmes. After ethics approval, a multisite mixed methods design was implemented incorporating survey and chart audit. Programme characteristics and interventions used in four CHF-MPs were surveyed in Stage 1. Stage 2 involved a chart audit of patients enrolled in the programmes ($N = 135$) on or after the 1/1/07. Primary endpoints were all-cause hospitalisation and/or mortality at 12 months. Data were analysed using descriptive and inferential statistics. All programmes implemented a high complexity of evidence-based interventions consistent with national guidelines. However, documentation of New York Heart Association functional class was rare; limiting quantifiable evaluation of response to therapy throughout programme enrolment. The majority of patients (73%) had severe systolic heart failure with high co-morbidities reflected in a mean Charlson's total co-morbidity score of 3 (±2.1). The high rate of baseline evidence-based, pharmacotherapy (beta-blocker: 86%, $n = 112$ and ACE inhibitor: 76%, $n = 103$) was maintained at 12 months (71% and 84% respectively). At 12 months all cause hospitalisation and/or mortality was 57%

* Corresponding author at: School of Nursing and Midwifery, Deakin University, 221 Burwood Hwy Burwood, Victoria, Australia. Tel.: +61 03 9244 6608; fax: +61 03 9244 6159.
E-mail address: elizabeth.oldland@deakin.edu.au (E. Oldland).

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($n = 77$). The CHF-MPs in this study implemented complex evidence-based interventions resulting in high rates of key medication prescription. However, despite the implementation of several evidence-based interventions, over a period of 12 months, more than half of the patients were rehospitalised or died.

Introduction

Chronic heart failure (CHF) is a debilitating (Juenger et al., 2002) and complex syndrome with a poor prognosis (Blackledge, Tomlinson, & Squire, 2003; Ko et al., 2008; Roger et al., 2011) and a high rate of hospital readmissions (Najafi, Dobson, & Jamrozik, 2007). Chronic heart failure management programmes (CHF-MPs) have been developed to support patients to manage their symptoms in order to improve quality of life and survival, and reduce hospital admissions. Several systematic reviews and meta-analyses have established the efficacy of these programmes (Gonseth, Guallar-Castillon, Banegas, & Rodriguez-Artalejo, 2004; McAlister, Lawson, Teo, & Armstrong, 2001; Wakefield, Boren, Groves, & Conn, 2013; Whellan, Hasselblad, Peterson, O'Connor, & Schulman, 2005). Such programmes are now considered standard care and incorporated into best practice guidelines (Hunt et al., 2009; Krum, Jelinek, Stewart, Sindone, & Atherton, 2011; McMurray et al., 2012). These programmes are often led by nurses who coordinate a multidisciplinary team to provide evidence-based interventions that improve clinical outcomes. Clinical outcomes are improved when the CHF-MP includes a high complexity of evidence-based interventions (Phillips, Singa, Rubin, & Jaarsma, 2005). There is no definitive model of best practice care for CHF; however, current evidence supports a set of broad principles to achieve the best possible clinical outcomes for patients. Broad elements common to the most effective programmes are outlined in Table 1 (Dickstein et al., 2008; Hauptman et al., 2008; Holland et al., 2005; McAlister, Stewart, Ferrua, & McMurray, 2004; NHF, 2010; Phillips et al., 2005; Roccaforte, Demers, Baldassarre, Teo, & Yusuf, 2005; Sochalski et al., 2009; Windham, Bennett, & Gottlieb, 2003; Yu, Thompson, & Lee, 2006).

Driscoll, Tonkin, et al. (2011) identified 27 management strategy interventions used by CHF-MP coordinators to improve patient outcomes. Each intervention was given a weighted score, the Heart Failure Intervention Score (HF-IS), to reflect the level of evidence in the literature to support its effectiveness in managing heart failure. The level of evidence used for the interventions was consistent with accepted levels in national and international CHF management guidelines (Dickstein et al., 2008; Hunt et al., 2009; Krum et al., 2006). Using this scoring system, it was possible to categorise programmes as optimal or sub-optimal. In a further study, the authors found that programmes applying more evidence-based interventions are associated with less morbid and fatal events within 6 months (Driscoll et al., 2013) The HF-IS is a measure of the complexity of interventions incorporated into a CHF-MP. The score is a strategy to reduce the evidence practice gap and will contribute to the provision of evidence-based guidelines for programmes.

To date, most studies of CHF-MPs explore the characteristics and outcomes of patients enrolled in programmes for 3—6 months. We have little understanding about these factors at 12 months after enrolment. It is also difficult to determine all of the evidence-based interventions implemented within published studies. Further, there is a paucity of research exploring the translation of evidence into practice in CHF-MPs.

The aim of the current study was to explore the characteristics and clinical outcomes of patients enrolled in four high complexity CHF-MPs over a 12 month period. A secondary aim was to explore the adoption of key evidence-based CHF management strategies in the four programmes.

Table 1 Elements of most effective programmes.

- Include multidisciplinary care delivery across healthcare sectors
- Optimised evidence-based management guidelines through medication titration and symptom monitoring to enable early identification and/or deterioration
- The use of protocols for symptom management
- The inclusion of patients and carers in negotiating the aims and goals of care
- Promotion of and support for self-care
- The use of behavioural strategies to support patients in modifying risk factors
- Continuity of care across healthcare services and continuous quality improvement through monitoring programme outcomes and systems

Methods

This multi-method observational study comprised of two stages. To address the research aims, it was necessary to identify programme characteristics to confirm their high complexity status (Stage 1), and examine the characteristics of patients at baseline and 12 months (Stage 2). Patient outcomes included medication usage and all-cause hospitalisation and mortality. Stage 1 examined the characteristics of four heart failure programmes. Stage 2 involved the recruitment and follow-up of all patients in each of the programmes who met the eligibility criteria ($N = 135$). Ethics approval was obtained from the University and Hospital Human Research Ethics Committees.

For Stage 1, a 10-item questionnaire based on of the validated 32-item version developed for the BENCH study (Driscoll, Worrall-Carter, & Stewart, 2006) was completed by coordinators of four Victorian hospital CHF-MPs. These programmes were selected based on the likelihood that they delivered high complexity evidence-based interventions. The questionnaire addressed: