

A Literature Review of Heart Failure Transitional Care Interventions

CLARINDA GUTIERREZ GARCIA, DNP-FNP-BC, NP-C, RN, CNL, PCCN

ABSTRACT

OBJECTIVES: Heart failure (HF) is a major public health problem associated with high morbidity and mortality. It results in adverse outcomes, the most costly being hospital readmissions. Current HF management clinical guidelines and evidence highlight the importance and role of transitional care interventions in preventing HF readmissions. The objective of this study was to evaluate current literature and assess the effectiveness of transitional care interventions in reducing hospital readmissions.

STUDY DESIGN: Literature review.

METHODS: A literature search was conducted on studies involving HF transitional care interventions between 2009 and 2016 using the Cumulative Index to Nursing and Allied Health Literature, PubMed, and Cochrane Library databases.

RESULTS: Six articles were reviewed and analyzed. These articles included systematic reviews and randomized controlled trials. One study showed that the combination of a multidisciplinary HF outpatient clinic, in-person home visits, and systematic telephone follow-up, bundled together, decreased all-cause readmissions within 3 to 6 months after an initial hospitalization. Another study analyzed the mode of delivery and communication used in implementing transitional care interventions, and showed that in-person communication achieved a significant reduction in readmissions compared with routine care programs in which patients used telephonic communication. Five studies highlighted the use of an advanced practice nurse (APN) as the manager and leader of the HF program, which, combined with other interventions, demonstrated positive effects in reducing hospital readmissions through at least 30 days after discharge.

CONCLUSIONS: Based on reviewed evidence, a multicomponent transitional care program should include an APN, structured telephone support, and home visiting programs delivered through in-person (face-to-face) communication. These interventions should be given highest priority by organizations when designing HF transitional care programs.

The American Journal of Accountable Care. 2017;5(3)21:25

Heart failure (HF) is a complex, clinical syndrome of signs and symptoms that are caused by defects in cardiac structure, function, or both, resulting in impairment of peripheral circulation and organ oxygenation.¹ More than 6 million people in the United States older than 20 years have HF; approximately 800,000 new cases are diagnosed each year.¹ HF prevalence is increasing, with estimates indicating that more than 8 million people in the United States may have HF by 2030.²

HF is a major public health problem associated with high morbidity and mortality among individuals 65 years and older.³ It is the most common principal discharge diagnosis among Medicare beneficiaries and the third highest for hospital reimbursements.⁴ In the single year of 2007, there were 1.4 million hospitalizations, more than 11 million office visits, and \$17 billion in total spending attributable to HF alone.⁵ The progressive and complicated nature of this disease, coupled with multiple comorbidities, often results in negative outcomes, the most costly being hospital readmissions. Approximately 25% of patients admitted due to HF are readmitted within 30 days, and 34% are readmitted within 90 days of discharge.⁶ Recent CMS data showed that unplanned HF 30-day readmission rates showed a slight downward trend from 2009 to 2012.⁷ However, postdischarge emergency department (ED) and observation unit visits increased.⁷

HF hospital readmissions, including ED visits, are considered preventable. The majority of HF patients are often discharged early in the recovery period with inadequate self-care instructions, poor management of the underlying problems, and poor multidisciplinary coordination.⁸ To address the adverse effects on quality of care and healthcare costs of HF readmissions (as well as other

readmissions), CMS implemented the Hospital Readmission Reduction Program, which reduced Medicare base reimbursements to underperforming hospitals by 1% in 2013, 2% in 2014, and 3% in 2015.⁹ This affects the inpatient services provided for all diagnosis-related group readmissions within 30 days of an HF admission.⁹ The aging population of the United States, combined with increasing chronic comorbidities, justifies the need for strategies and innovations to address the major gaps in transitions of care across healthcare settings.¹⁰

A transition in care is defined as the time when a patient transfers from a hospital to home or community. Transition points are considered vulnerable times that contribute to high healthcare costs as well as gaps in quality and safety of care; they are associated with hospital readmissions.¹¹ The American Geriatrics Society defines a transition of care plan as a group of multidisciplinary actions designed to ensure coordination and continuity of care when patients are transferred between different levels of care or locations.^{12,13} Ideally, a thoughtful transition of care should begin during admission and continue through the patient's return home. It should contain the element of communication between providers to ensure continuity of care.¹⁴

Innovative interventions stand out in improving the continuity of care for patients with HF across episodes of care. Called HF transitional care interventions or programs, they are designed to prevent hospital readmissions and include a substantial number of time-limited interventions that help establish continuity of care, avoid preventable poor outcomes, and ensure the safe and timely transfer of patients with complex chronic conditions from one level of care to another or from one type of setting to another.¹³

The transitional care model (TCM) was designed by Mary Naylor, PhD, MSN, and a multidisciplinary team of colleagues at the University of Pennsylvania in Philadelphia. It addresses the detrimental effects associated with the usual breakdowns in care when older adults with complex needs transition from an acute hospital setting to their home or community. This model has been tested and refined for the past 20 years.¹³ TCM has essential core elements that complement one another, establishing a strong foundation critical to the successful implementation of TCM programs. Two of the core elements of TCM are the utilization of a transitional care nurse with advanced education, skills, and knowledge in coordinating the care of high-risk older adults in different healthcare settings by using a multidisciplinary approach, as well as strong collaboration between patient, family/caregivers, and members of the healthcare team.¹³

An array of HF transitional care interventions is being utilized to improve the quality of care and outcomes, and, eventually, reduce healthcare costs. Transitional care interventions that have proven success in reducing hospital readmissions are important components of

healthcare reform. There is a critical need to replicate successful programs that build strong connections between current evidence-based practices and approaches to care.¹¹

The objective of this literature review was to evaluate the effectiveness of different transitional care interventions used in inpatient and outpatient settings that attempt to reduce hospital readmissions.

METHODS

A review of literature was conducted utilizing the Cumulative Index to Nursing and Allied Health Literature, PubMed, and Cochrane Library databases. Subject headings and Medical Subject Heading terms, as well as different combinations of basic search terms, were used to search each of these databases. Four search terms or keywords were used: "heart failure," "readmissions," "rehospitalization," and "transitional care interventions." In addition, limitations were set to include articles in the English language, systematic reviews, randomized controlled trials (RCTs), and publication date no earlier than 2009. Studies met inclusion criteria if one of the outcome measures used was reducing HF readmissions after implementing a single or multiple transitional care interventions. Articles were excluded if the only intervention used was the standard "usual" HF discharge patient education. Systematic reviews and RCTs were favored due to a high level of evidence. A total of 6 articles were selected that met the inclusion and exclusion criteria.

Critical Appraisal of Evidence

The John Hopkins Nursing Evidence-Based Practice Research Evidence Appraisal Tool was primarily used to appraise and rate the strength and quality of the 4 systematic reviews and 2 RCTs used in this review of evidence.^{3,6,11,15-17} This tool was selected because it is a quality assessment instrument with specific scales and criteria in rating the level and quality of evidence. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses checklist was utilized as a secondary tool in evaluating the strengths and weaknesses of the 4 systematic reviews.

RESULTS

An increased interest in the utilization of transitional care interventions to address HF readmission requires a detailed evaluation of existing evidence before developing a transitional care program.¹⁸ Multiple studies have been done in the United States and in other developed countries to evaluate the efficacy and effectiveness of transitional care interventions in reducing readmission rates versus usual care. Studies included in this review of evidence defined usual care as the traditional "standard" discharge instructions given to a patient prior to leaving the acute setting.

Transitional Care Interventions

In a systematic review conducted by Feltner et al, 47 RCTs were compared and assessed on the effectiveness and efficacy of HF transitional care interventions in reducing readmission and mortality rates among hospitalized elderly patients with HF.⁶ Each of the studies implemented at least 1 HF transitional care intervention or a combination of different transitional care interventions and compared it with usual care. The transitional care interventions used included patient and caregiver HF education provided before and after discharge, scheduled outpatient clinic visits within a week after discharge with the primary care provider (PCP) or HF multidisciplinary clinic, in-person home visits, systematic telephone support (STS) and follow-up, use of transition coach or case manager, and telemonitoring. This study showed that home visits and STS interventions both reduced the risk for HF-specific readmissions. A multidisciplinary HF outpatient clinic, in-person home visiting, and systematic telephone follow-up decreased all-cause readmissions within 3 to 6 months after an initial hospitalization. Telemonitoring did not reduce the risk of HF-specific readmissions.

A limitation of this study was that the RCTs did not report effects of interventions on 30-day readmission rates. Feltner et al recommended that in order to evaluate the true effectiveness of interventions, future studies should directly compare one intervention with another and evaluate whether interventions that reduce readmission rates over 3 to 6 months will also reduce 30-day readmission rates.⁶ The study design and the use of appropriate data analysis, such as the use of calculated risk ratios and number needed to treat for readmission and mortality rates and outcomes, contributed to the strength of this study.

Delivery Mode of Transitional Care Interventions

When it comes to mode of delivery and communication used in implementing transitional care interventions, Sochalski et al³ evaluated data from 10 RCTs of HF care management programs conducted from 1990 through 2004 in the United States, Australia, the Netherlands, and the United Kingdom. Regression analyses using linear mixed models were used to capture the fixed effects of delivery method elements. Random effects of the 10 parent trials were used to evaluate the effects of delivery method of communication on hospital readmissions and readmission days. Results showed that HF programs with in-person (face-to-face) communication achieved a significant reduction in readmissions and readmission days compared with routine care of patients and with programs using telephonic communication. Programs using only single HF experts were less effective in reducing hospital readmissions compared with those using multidisciplinary teams, regardless of the mode of communication used. The most significant finding of this study was that patients in the transitional care program that offered the

combination of a multidisciplinary team approach and in-person communication had significantly fewer hospital readmissions (3%) and readmission days (6%) per month than routine-care patients. The design, appropriate use of data analysis, and large sample size added to the strength of evidence.

Advanced Practice Nurse–Led HF Programs

Naylor et al conducted a systematic review of 21 RCTs.¹¹ Most of the interventions shared 1 similar component, which was designating an advanced practice nurse as the leader and manager of the entire HF program. This specific element of the HF program was combined with other groups of interventions, such as comprehensive discharge planning and follow-up with or without home visits, coaching, patient education, peer support, telehealth facilitation, mobile crisis, and postdischarge follow-up with the PCP. These interventions demonstrated positive effects in reducing hospital readmissions through at least 30 days after discharge.

Inpatient HF Program

The reengineered hospital discharge (RED) program, a program at the core of an RCT conducted by Jack et al,¹⁷ is currently being utilized by most hospitals in their HF programs. This program has a proven track record in successfully decreasing hospital readmissions overall. The 3 essential elements of the initial project RED included a nurse discharge advocate (DA), an after-hospital care plan (AHCP), and a follow-up phone call by the pharmacist. DAs carried out all of the different facets of the hospital interventions, including the RED interventions. Moreover, the DAs designed the AHCP, coordinated and disseminated the discharge plan with the hospital team, and provided HF education to the patient and family/caregiver before and during discharge from the hospital. The clinical pharmacist used the AHCP and hospital visit summary and telephoned the patients 2 to 4 days after the initial discharge to reiterate the patient-specific home discharge plan. Any medication-related issues were communicated to the DA or patient PCP.

Findings from this study showed that the RED intervention decreased hospital utilization within 30 days of discharge by about 30% (utilization was calculated based on combined ED visits and hospital readmissions). Furthermore, patients reported seeing their PCP for follow-up within 30 days and reported a higher level of preparedness for discharge. No other significant studies have investigated these 3 interventions bundled together. Therefore, additional future research should be conducted upon programs that implement these 3 interventions bundled together. The only significant limitation of the study is that the patient population was not exclusively those with HF.

Linden and Butterworth conducted an RCT in 2 independent, nonprofit hospitals.¹⁵ A comprehensive inpatient transitional care

program to reduce readmission for patients with congestive heart failure and chronic obstructive pulmonary disease was examined. A total of 257 patients with congestive heart failure participated in this study. The HF transitional care program included 3 sets of comprehensive components commonly found in the transitional care model. Predischarge components included patient education, discharge planning, medication reconciliation, and follow-up appointment schedules. Postdischarge components were a timely follow-up telephone call and the availability of a patient hotline. Bridging components included a transition/health coach providing patient-centered discharge instructions. In addition to these components, 2 postdischarge interventions were added. These included motivational interviewing-based health coaching and symptom monitoring using interactive voice response. Due to limited staff resources and funding limitations, home visits and provider continuity of care, which are elements often included in TCMs, were not included.

Results of this study showed that there were no statistical differences in either 30-day or 90-day readmission incidence rates. The 30-day readmission rates were 0.23 per person for the intervention group and 0.19 per person for the usual care group (difference = 0.04; 95% CI, -0.05 to 0.13; $P = .36$). The 90-day readmission rates were 0.51 and 0.48 per person for the intervention and usual care groups, respectively (difference = 0.04; 95% CI, 0.12-0.19; $P = .66$). Despite the comprehensiveness of the interventions used and high number of participants, this study failed to reduce 30- to 60-day HF readmission rates among patients hospitalized for HF. This could be due to the exclusion of the aforementioned components, home visits and timely follow-up care, in this transitional care program.

Outpatient HF Program

Wakefield et al analyzed different HF interventions that were used in multicomponent outpatient HF programs, examining frequency of the interventions' use, content of the interventions, and effects on patient outcomes.¹⁶ This systematic review included 35 RCTs. The outpatient interventions included face-to-face visits of patients with providers and nurses. Nursing staff services included home visits, remote monitoring of vital signs, remote videophone and messaging, and telephone calls. The majority of these interventions had teaching components, which covered such topics as early recognition and management of HF signs and symptoms, home medication review, and self-monitoring. Findings of this study showed a significant reduction in readmission rates ($P < .001$), better quality of life ($P < .007$), and lower healthcare cost ($P = .008$) among the treatment group compared with the control group. Aside from the design of the study as 1 of its strengths, this study provided the most detailed analysis to date of the individual components of multicomponent outpatient HF programs.

DISCUSSION

The available evidence suggests that a well-designed, multicomponent transitional care program—initiated upon admission to an acute setting, and continued during and after discharge—can reduce readmission rates among HF patients. The transitional care program should include a transitional care nurse with advanced skills and education to manage the multidisciplinary HF program; STS; and home visiting programs with in-person, face-to-face communication. The evidence suggests that these interventions most strongly decrease all-cause readmissions and mortality up to 6 months after an initial hospitalization for persons with HF. They represent the essential core elements of the TCM and should be given the highest priority by hospitals or organizations when designing and implementing HF transitional care programs. This review of evidence lends strength to the concept that a well-structured, multicomponent HF transitional care program will reduce readmission rates.

CONCLUSIONS

Huge disparities in care during critical care transitions can result in adverse outcomes such as high preventable readmission rates and poor patient satisfaction due to unmet needs. Nurses play crucial roles in making sure that smooth transitions of care occurs. These transitions can be accomplished successfully, given timely collaboration with providers, case managers, social workers, patients, and caregivers. Transitional care interventions are meant to complement—not to replace—primary care, disease management, discharge planning, and case management. The hallmark of transitional care is the time-limited nature of the program, the focus on fragile patients with chronic illness, and the strong emphasis on teaching patients and caregivers how to prevent avoidable hospital readmissions by focusing on the underlying causes of poor outcomes.¹¹ The development and implementation of structured, multicomponent HF transitional care programs, led by APNs with advanced nursing skills in HF care management, provide a key to reducing 30-day HF readmission rates.

Author Affiliations: University of San Francisco (CG), San Francisco, CA.

Source of Funding: None.

Author Disclosures: The author reports no relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

Authorship Information: Concept and design (CG); acquisition of data (CG); analysis and interpretation of data (CG); drafting of the manuscript (CG).

Send Correspondence to: Clarinda Gutierrez Garcia, DNP-FNP-BC, NP-C, RN, CNL, PCCN, 433 Willow Glen Way, San Jose, CA 95125. E-mail: cggarcia@usfca.edu.

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