

## ORIGINAL RESEARCH &amp; CONTRIBUTIONS

## Special Report

## Complex Case Conferences Associated with Reduced Hospital Admissions for High-Risk Patients with Multiple Comorbidities

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*Editor's note: For more information on Kaiser Permanente's commitment to Total Health, please see the editorial on page 90.*

### Abstract

**Objectives:** Reducing avoidable hospital readmissions presents an opportunity to improve health care quality and reduce avoidable costs. We studied the effect person-focused care may have on reducing avoidable admissions to the hospital.

**Methods:** Among patients with heart failure discharged from the hospital, we evaluated the effect on 30-day readmissions of transitions-in-care interventions: home health visits, follow-up phone calls, and physician office visits. We also used a standardized diagnostic tool to interview readmitted patients to identify social reasons that may have contributed to the readmission. Finally, we used the learnings from both interventions to develop a new intervention: a single complex disease case conference that included the entire health care team. We measured hospital admissions for 21 patients during the 6 months before and after their complex case conferences.

**Results:** Observed-over-expected hospital readmission rates were lowest for patients receiving a postdischarge visit with a home health nurse and a follow-up visit with their physician (0.54), compared with solely a physician visit (0.81), home health visit (1.2), or phone call (1.55). Various social issues may contribute to hospital readmissions, including caregiver knowledge, ability to care for oneself at home, and issues related to medications (adherence, ability to pay, and knowledge about potential side effects). Substantially fewer hospital admissions occurred after complex case conferences.

**Conclusions:** Complex case conferences with disease-focused and person-focused interventions may be associated with reduced hospital admissions for patients with heart failure and multiple comorbidities.

### Introduction

It is estimated that health care costs Americans almost \$2 trillion per year and that more than 20% of the dollars spent on health care are wasteful.<sup>1</sup> Examples of waste include overtreatment, failures of care coordination, failures in execution-of-care processes, administrative complexity, pricing failures, and fraud and abuse.<sup>1</sup> For this reason, the US Centers for Medicare and Medicaid Services have begun a

process to eliminate waste in health care. Each year billions of dollars are spent on hospital care. One area of potential waste in hospital care is avoidable readmission to the hospital.

Dharmarajan et al<sup>2</sup> reported hospital readmission rates among Medicare beneficiaries for heart failure, myocardial infarction, and pneumonia of 24.8%, 19.9%, and 18.3%, respectively. Approximately one-third of readmissions occurred within

7 days of discharge, and the proportion of patients readmitted with the same diagnosis as the index admission for these 3 conditions was 35.2%, 10.0%, and 22.4%, respectively.<sup>2</sup> Many patients who are readmitted to the hospital have multiple hospital admissions during a 1-year period.<sup>3</sup>

Two key reasons for multiple readmissions are complex underlying medical conditions and complex social issues. Annema and Jaarsma<sup>4</sup> reported that about one-third of readmissions to the hospital could have been prevented if patient adherence to treatment were higher, if patients had requested help earlier, and if patients and caregivers had available access to adequate multidisciplinary health care teams. Hansen et al<sup>5</sup> reviewed 43 studies of interventions to reduce readmissions that included pre-discharge interventions, postdischarge interventions, and bridging interventions. The authors deduced that no single intervention implemented alone was regularly associated with reduced risk of 30-day rehospitalization.<sup>5</sup>

These findings underscore the complex nature of readmissions to the hospital and that no single solution is likely to address the multiple issues contributing to rehospitalization. Over the past five years, numerous programs have emerged to reduce hospital readmissions. However, disease-focused programs have not significantly reduced readmission rates.<sup>5</sup> Efforts moving forward should involve implementation of broad, person-focused

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approaches that engage all members of a care team and take into consideration psychosocial factors that may contribute to recurrent hospital admissions.

The purpose of this report is to share knowledge from the Kaiser Permanente Southern California (KPSC) readmission reduction program on the effect that person-focused care might have on reducing avoidable readmissions to the hospital.

### Heart Failure Transitional Care Program

Approximately 40,000 KPSC members have heart failure. In 2007, KPSC developed the Heart Failure Transitional Care Program, an evidence-based program designed to improve quality of care and reduce avoidable hospital readmissions. Implementation at each of the 13 KPSC Medical Center areas required local sponsorship support by the executive leadership team and local heart failure physician and administrative champions; development of an operational partnership between the hospital and Departments of Home Health, Population Care Management, and Cardiology; and deployment of existing heart failure staff and/or redefinition of roles to address local resource disparities. The program was designed around a heart failure “bundle” that includes inpatient heart failure education and 3 outpatient care elements: 1) a home health visit within 48 hours of discharge, 2) a follow-up appointment with a physician within 7 days of discharge, and 3) a follow-up phone call from a heart failure care manager within 7 days of discharge.

Although the literature suggests that multidisciplinary interventions reduce hospital readmissions for heart failure, the evidence is less clear on the impact of

specific interventions used to reduce readmissions.<sup>5</sup> To understand the effect of the Heart Failure Transitional Care Program’s outpatient bundled care on heart failure readmissions, we compared readmission rates of patients who received a home health visit, a physician visit, and a follow-up phone call within 7 days, or any combination of these 3 elements. We included KPSC members with a primary diagnosis of heart failure who were discharged between October 2010 and February 2011; 2076 all-cause readmissions within 30 days occurred during this period. We compared observed-over-expected readmission rates, calculating expected readmission rates according to Healthcare Employer Data and Information Set specifications<sup>6</sup> and stratifying patients into 8 groups on the basis of the outpatient bundle elements they received from the Heart Failure Transitional Care Program.

Table 1 summarizes the results. No single intervention alone was associated with reduced readmission rates. However, patients receiving the bundle of all 3 interventions had a lower observed-over-expected readmission ratio (0.78,  $p = 0.03$ ). A very small number of patients who did not receive any interventions also had a low observed-over-expected readmission ratio; however, this finding was not statistically significant. Members who received only a postdischarge phone call had the highest observed-over-expected readmission ratio (1.55,  $p = 0.01$ ).

The data in Table 1 suggest that disease-focused care provided by a postdischarge visit with a physician, home health visit, and phone call significantly reduced readmissions among patients with heart failure. However, there appeared to be other factors leading to readmissions that were

not addressed by the bundle elements. To better understand whether there were other opportunities to improve observed-over-expected ratios, we decided to develop a program designed to understand reasons for readmission from the perspectives of both the patient and physician.

### Readmission Diagnostic Tool

To understand barriers to preventing readmissions, we adapted the Institute for Healthcare Improvement readmission worksheet.<sup>7</sup> The readmission diagnostic tool, which includes a patient interview, provides common reasons for readmission and helps identify key areas for improvement. KPSC heart failure case managers completed a diagnostic tool for 244 readmitted patients with heart failure. The tabulated results indicated multifactorial reasons for readmission (Table 2): clinical issues (present in 212 instances [87%]), social issues (142, 58%), failures associated with patient assessment (118, 48%), failures following discharge (116, 47%), and failures in handover communication (70, 29%). Social issues, including caregiver support and nonadherence to treatment, were clearly important factors in readmissions.

The findings from the readmission diagnostic tool supported our assumption that no single intervention would improve heart failure readmission rates. Consequently, we aimed to improve care across the continuum, focusing on social issues related to adherence to medication, the self-care plan, and caregiver support.

### Complex Case Conference

To improve transitional care for patients with heart failure, we used the learnings from the readmission diagnostic tool survey to gain more insight about frequently

Bundle elements (< 7 days after hospital discharge)	Number of readmissions	Number of index admissions	Expected (E) readmissions (%)	Observed (O) readmissions (%)	O/E ratio	p value
Physician office visit	4	24	20.6	16.7	0.81	0.73
Home health visit	23	108	17.7	21.3	1.20	0.50
Phone call	73	259	18.2	28.2	1.55	0.01
Office visit + home health visit	8	77	19.1	10.4	0.54	0.13
Office visit + phone call	42	201	19.5	20.9	1.07	0.73
Home health visit + phone call	123	660	19.4	18.6	0.96	0.71
Office visit + home health visit + phone call	104	693	19.3	15	0.78	0.03
None	8	54	20.2	14.8	0.73	0.46

Diagnostic tool category	Number (%) of 244 responses
Clinical issues (patient nonadherent to medications and diet)	212 (87)
Social issues (caregiver lack of knowledge on how to care for patient at home)	142 (58)
Patient assessment (patient unable to care for self at home)	118 (48)
Failure following discharge (patient unable to pay for medications)	116 (47)
Education (patient lacks knowledge about potential side effects of medications)	113 (46)
Handover communication (functional status not assessed before and after hospital discharge)	70 (29)

admitted patients, seeking to understand factors outside the Heart Failure Transitional Care Program's bundled interventions that might contribute to readmissions. In 2011, KPSC Medical Centers started monthly complex disease case conferences. A multidisciplinary care team conducted an in-depth chart review of members with heart failure, chronic kidney disease, and multiple readmissions. These individuals were often managed by more than one health care team and may have received conflicting information. For instance, a patient with a low ejection fraction and congestive heart failure may experience acute kidney injury after aggressive diuretic management. When this occurs, care management becomes complicated or even contradictory; the renal team may recommend hydration, whereas the cardiology team may recommend continued diuretic therapy.

The results from these conferences were informative. A key finding was that many physicians across different teams that cared for high-risk patients never met in person, although they might have talked on the phone. Another key finding was the observed benefit of having all team members agree on a unified treatment plan for the patients. Adherence would theoretically be easier if patients were not receiving conflicting or confusing messages from different physicians. Other learnings included: 1) standardized patient care plan documentation in the electronic health record helps to ensure every physician at every patient touch point has access to the plan of care, and 2) multidisciplinary teams (eg, hospitalist, subspecialist, primary care physician,

social medicine, and continuing care) are needed to develop collaborative care plans to avoid readmission secondary to psychosocial factors. Another observation was that earlier palliative care consultation referrals are needed to prevent readmissions for patients who may benefit from end-of-life care. Many patients with heart failure reviewed in complex care conferences had high mortality risk but had not been referred to the inpatient palliative care team for evaluation. As a result, they often returned to the hospital to seek care, even though no further intervention would improve their quality of life or life expectancy. KPSC's experience is not unique; a recent study reported that 64.2% of Medicare patients with heart failure were admitted to a hospital in the last 30 days of life; one-third died in the hospital, and only 39% participated in a hospice program.<sup>8</sup>

Consequently, rather than relying on "gut" feelings to refer patients to inpatient palliative care teams, hospital care teams began referring heart failure members with a Walter Prognostic Index score of 6+ to the inpatient palliative care team.<sup>9</sup> Of patients who received a consultation, 50% transferred to an end-of-life plan (ie, home-based palliative care, hospice, skilled nursing facilities for end-of-life care, or expired in hospital).

Complete hospitalization data for 6 months before and 6 months after the complex case management conference was available for 21 patients. In the preconference period, 81 admissions occurred; in the postconference period, 22 admissions occurred, a reduction of 68% (Figure 1).

## Discussion

Patients with heart failure and multiple comorbidities are at high risk of readmission. The findings from our assessment of the Heart Failure Transitional Care Program's bundle elements confirm published evidence that no single intervention alone reduces heart failure all-cause readmission.<sup>10,11</sup> Our findings suggest that follow-up with a physician combined with a home health visit may reduce readmission rates. Potential mechanisms for this observation include that home health visits may help improve adherence to medications and the treatment plan and that physician office visits may help assess and treat conditions that could result in a readmission. The highest rates for readmission were observed in patients who received only a postdischarge phone call. The mechanism underlying this finding is unclear; perhaps patients who accepted only the phone call (which does not require any travel or coordination) are less adherent or sicker. Further work is needed to confirm and understand this observation.

The findings from the readmission diagnostic tool analysis and complex case management conferences confirmed the contribution of social issues to readmissions. The diagnostic tool analysis revealed that multiple causes were associated with the readmissions. The outcomes from the complex case conference strongly suggest that communication between physicians

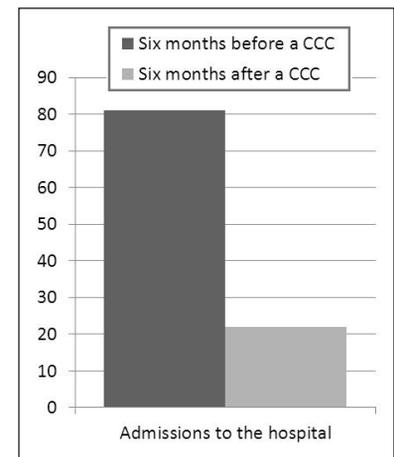


Figure 1. Number of hospital admissions among 21 patients with heart failure before and after complex case management conferences.

CCC = complex case management conference.

and patients is a key ingredient to reducing readmissions for individuals with heart failure. These findings may extend to patients with other complex diseases such as chronic kidney disease, cancer, chronic obstructive pulmonary disease, pneumonia, and myocardial infarction; further investigation is required to confirm this.

Our findings suggest the opportunity for additional studies to investigate the importance of changing the predominant paradigm from a disease focus to care that is disease- and person-focused. One strategy might be to apply our learnings upstream during the index admission to the hospital to evaluate whether addressing disease and social issues together reduces readmissions.

A hundred years ago, physicians took care of most of a patient's medical issues, providing person-focused care. Person-focused care refers to interrelations over time and considers episodes of care as part of a life course of disease alternating with health.<sup>12</sup> In contrast, disease-focused care is usually episodic, focused on one disease at a time, and exemplified by the current care system that focuses on a specific disease during an office or hospital visit. Most primary care physicians do not see their patients when they are admitted to the hospital; similarly, hospitalists do not see patients outside the hospital. One specialist may see a patient in the hospital, whereas his or her partner may see the patient in the clinic for follow-up care after an index hospital visit. Specialists such as cardiologists will see a patient with heart failure but are reluctant to advise

therapy for another disease like chronic kidney disease or chronic obstructive pulmonary disease.

Both disease-focused care and person-focused care require adequate recognition of health problems as they are experienced by patients. Care may be improved if we recognize a person with a disease instead of a disease that happens to be affecting a particular person. Person-focused care implies a time focus rather than a visit focus. It extends beyond communication and includes the concept that a person does not care how much you know until they know how much you care. Readmissions may occur because the paradigm of care is fragmented and no one takes ownership of the care for the person with the disease. As shown by our complex case conference, improved coordination and communication between health care team members reduced readmissions in patients with multiple comorbidities.

In a 2008 article, Donald Berwick<sup>13</sup> outlined a paradigm of care that allows us to understand the benefit of treating both a disease and a person, referencing the work of Pawson and Tilley. Pawson and Tilley argued that quality-improvement efforts in health care that involve complex social issues (such as those to reduce re-admission rates) will not succeed if they try to improve outcomes by introducing a single intervention. They write, "Programs work (have successful 'outcomes') only insofar as they introduce the appropriate ideas and opportunities ('mechanisms') to groups in the appropriate social and cultural conditions ('contexts')." Therefore, to

reduce avoidable hospital readmissions, we should identify and share best practices on both mechanisms (disease-focused care) and contexts (person-focused care). As physicians, we should focus on "What is everyone learning?" in addition to "What are the results of the most recent randomized control trial?" Asking the right questions will help us develop the quality-improvement models of care required to reduce waste in health care systems.

However, the real waste in health care is not related to readmissions alone.<sup>1</sup> The real waste is in avoidable index admissions.<sup>1</sup> Systems that reduce readmissions are a subset of the work being done to reduce avoidable admissions. Therefore, the knowledge we gain from successfully reducing heart failure readmission may be applied to upstream efforts to reduce index admissions. Reducing both index hospital admissions and readmissions will reduce health care waste and increase the capacity of the health care system to care for unavoidable admission without the need to build more hospitals.

## Conclusion

Reducing readmission rates will not be easy. To improve outcomes, we must change our paradigm from one that focuses on a single intervention to one that includes both a mechanism (bundle of elements that focus on improving care transitions from the hospital) and context

**... communication between physicians and patients is a key ingredient to reducing readmissions for individuals with heart failure.**

Disease-focused care	Person-focused care	Disease- and person-focused care
Refers to episodic relationships	Refers to relationships that occur over time	Refers to relationships that are episodic and occur over time
Single comorbidity focus	Multiple comorbidity focus	Focus on acute comorbidity but takes into consideration all comorbidities
Specialty focus	Primary care focus	Specialty and primary care focus
Focus on hospital care	Focus on outpatient care	Focus on hospital care, outpatient care, and transition from hospital care to outpatient care
Focus on acute care	Focus on chronic care	Focus on acute care and chronic care
Focus on disease treatment	Focus on social issues that may be an obstacle to disease treatment	Focus on both disease treatment and social obstacles to disease treatment
Focus on the production systems (bundle elements)	Focus on culture of physicians and person receiving care	Focus on doing what is right for the individual receiving care so s/he gets appropriate care, taking into consideration unique social issues that may prevent him/her from getting appropriate care
Disease-centric care	Experience-centric care	Disease- and experience-centric care
Focus on mechanism	Focus on context	Focus on successful outcomes

(bundle of elements that take into account the unique needs of the individual). Over the years, we have become very good at taking care of disease. In the future, we will need to become very good at taking care of the individual person with a disease (Table 3). The person-focused model of the Heart Failure Transitional Care Program can reduce readmission rates by addressing the needs of patients while remaining rooted in a bundle of interventions that can be expanded to all types of hospitalizations.<sup>14</sup> ❖

#### Disclosure Statement

*The author(s) have no conflicts of interest to disclose.*

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## Stream of Life

A hospital is a living organism, made up of many different parts having different functions, but all these must be in due proportion and relation to each other, and to the environment, to produce the desired general results. The stream of life which runs through it is incessantly changing; patients and nurses and doctors come and go, today it has to do with the results of an epidemic, tomorrow with those of an explosion or a fire, the reputation of its physicians or surgeons attracts those suffering from a particular form of disease, and as the one changes so do the others. Its work is never done; its equipment is never complete; it is always in need of new means of diagnosis, of new instruments and medicines; it is to try all things and hold fast to that which is good.

—John Shaw Billings, 1838-1913, American librarian and surgeon, first director of the New York City Library