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## Increasing self-knowledge: Utilizing tele-coaching for patients with congestive heart failure

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### ABSTRACT

The objective was to assess self-care knowledge changes with dually eligible Medicare and Medicaid patients diagnosed with congestive heart failure (CHF), who received a telecoaching protocol integrating symptom monitoring with face-to-face video chat with a social worker. We recruited 45 patients with CHF from a regional managed care organization. Sessions via a Health Insurance Portability and Accountability Act-compliant tablet-based platform focused on educational information designed to improve patient self-care. Social workers administered the 13-item Member Confidence Measure (MCM) at baseline and at a 30-day follow-up period. Scores were recorded to measure differences in patients' understanding of CHF and related symptoms, their knowledge of the disease, and the behaviors necessary to prevent their symptoms from getting worse. Over the 30-day period, scores significantly ( $p < .01$ ) increased on the total scale score and specific confidence measure subscales (symptom recognition, medication adherence, medical attention, healthy choices, and safety). Gender, race, and age were unrelated to these improvements. In addition, effect sizes for the sub-scales ranged from .54 to 1.08; the effect size of the intervention as expressed by the total scale score was 1.12. Overall, patients increased knowledge over a 30-day period. Tele-coaching by social workers holds promise as a feasible model for health education for high-risk populations.

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The Patient Protection and Affordable Care Act of 2010 (ACA) (P.L. 111-148) has specific aspects that focus on reducing the rate of unnecessary readmissions for patients with chronic health conditions. Social workers are often on the front-lines of working with patient populations and play a crucial role in providing services to people with chronic health conditions with the goal of enhancing their quality of life and reducing hospital readmissions. Social workers are involved in many aspects of care such as discharge planning, patient education, care coordination, as well as other activities. They may employ motivational interviewing or health

coaching as methods to assist people with chronic health conditions (Lipani, Holster, & Bussey, 2015; Smith et al., 2012). Further, educational and support efforts provided by social workers can reduce health care costs (Krumholz et al., 2002).

One such chronic condition, congestive heart failure (CHF), is the most common cause of hospitalizations and is responsible for the majority of the \$39 billion dollars spent each year for heart failure in the United States (Pang, Komajda, & Gheorghide, 2010). CHF is one of the major causes of dually eligible Medicare and Medicaid hospitalizations in the United States (Walsh et al., 2012). Often, patients with CHF have other comorbid health and mental health problems such as diabetes or depression, and have challenges such as low literacy and issues related to poverty that complicate care management (Triposkiadis & Skoularigis, 2012). Among patients discharged from the hospital, nearly 30% are readmitted within 60–90 days of discharge (Gheorghide, Vaduganathan, Fonarow, & Bonow, 2013), and it is estimated that 75% of these re-admissions are preventable (Desai & Stevenson, 2012). Factors related to avoidable readmission include non-compliance with medication, failure to follow a low-sodium diet, inadequate discharge planning, and an insufficient social support system (Vinson, Rich, Sperry, Shah, & McNamara, 1990).

Lack of patient knowledge on monitoring and addressing the symptoms of the disease is often cited as key contributors to avoidable readmissions for CHF (Annema, Luttk, & Jaarsma, 2009). Concomitantly, many patient education efforts launched to date have had difficulty in sustaining the effort needed to address the myriad of challenges faced by this vulnerable and at-risk population (Casimir, Williams, Liang, Pitakmongkolkul, & Slyer, 2013). From a social work perspective, there is a need to increase an individual's knowledge while addressing environmental and contextual factors within which a person will act on his or her knowledge.

Health coaching encourages the self-management of chronic conditions by creating open and ongoing communication between health professionals and patients (Jonk et al., 2015; Lawson et al., 2013). Health coaching increases patients' self-efficacy and engagement in preventative behaviors toward their diseases (Hibbard & Greene, 2013; Lawson et al., 2013). Several studies of patients with CHF have found that when patients are involved in their care and medical decisions, they are more likely to adhere to medication instructions and dietary restrictions, monitor their symptoms, seek help when a health issue arises, and report a higher quality of life (Carlson, Riegel, & Moser, 2001; Gellis, Kenaley, & Have, 2014; Mosen et al., 2007; Weerahandi et al., 2015). Other research has shown that care coordination provided by social workers can be an effective method for reducing avoidable readmissions for high-risk patients (Bronstein, Gould, Berkowitz, James, & Marks, 2015). However,

these programs have been hindered by their ability to scale their interventions while continuing to provide effective, personalized interactions with a patient population.

Tele-coaching, initially developed to be delivered via telephone, have demonstrated some ability to improve patient outcomes for individuals with CHF. For example, a systematic review revealed that telephone tele-coaching improved the prognoses for patients with chronic heart failure in terms of reduced hospitalizations and mortality (Inglis et al., 2010). Previous initiatives have been limited in their ability to engage patients and establish meaningful connections. While there has been an increase in the use of technology as a means for health professionals to monitor more patients, these interventions have often been restricted by cost and complex challenges of utilizing the technology (Frosch, Rincon, Ochoa, & Mangione, 2010; Jonk et al., 2015; Lawson et al., 2013). However, advances in face-to-face communication, via a tablet platform, offer the opportunity to enhance the patient-provider interaction through visual observations of health (labored breathing, fatigue, etc.) and mental health (mood and affect) indicators as well as to provide education and support.

This pilot study describes a health tele-coaching approach, implemented by social workers, utilizing face-to-face video chat and daily symptom monitoring with patient education to support primarily low-income patients with CHF. The tele-coaching intervention utilizes a video platform to engage patients and personalize their health education goals. Given that models of health behavior change point to knowledge acquisition as a first step to attitude and behavior changes (Fishbein & Ajzen, 1975; Janz, Champion, & Stretcher, 2002), this study evaluates whether this approach improves participants' knowledge and understanding of the most effective methods to manage symptoms of their chronic disease.

## Methods

The study relies on administrative data obtained from a care-management company that employed social workers to interact with patients and conduct the intervention via a tablet platform. The de-identified data were presented to university researchers for analysis and the study was deemed a Quality Improvement study by the university Institutional Review Board. Using these data, we were able to construct a one-group pretest-posttest design to evaluate changes in knowledge related to patients managing their congestive heart failure symptoms. Participants were interviewed at baseline and re-interviewed at 30 days after starting the intervention.

## **Study population**

This study focuses on consumers of a care-management company; this company has implemented an integrated health-coaching/telecommunication intervention for people with a diagnosis of CHF. Potential participants in the intervention were recruited from a managed care organization's Medicaid and Medicare members with a diagnosis of CHF. Members were identified through historical claims and current authorization information. Inclusion criteria included living in the county of the managed care organization that included the major urban center in the region, a CHF diagnosis, age 30 or older, and having been hospitalized within the last 6 months. Those members who had end stage renal disease or kidney failure and/or were currently in hospice were excluded.

Eligible members identified from claims data, resulted in a combined list of 358 members for outreach by the company for recruitment into the pilot. The sample goal for the pilot was to recruit 50 members from the eligible list. Over a 5-month period, different batches of members were contacted through the mail with a follow-up phone call to gauge interest in participation. Recruitment was staggered in order to control the number of members in need of an intake visit to start the intervention. Ultimately, 50 members were recruited for the intervention: Three people decided not to participate after intake due to personal reasons and two individuals became ineligible after starting in the study (moving out of catchment area and hospice). Therefore, we report the results for the 45 individuals who completed the 30 days of the intervention.

## **Assessment**

The Member Confidence Measure (MCM) was developed to assess members' understanding of CHF and related symptoms, their knowledge of the disease, and the behaviors necessary to prevent their symptoms from getting worse. Content areas were taken from literature about CHF and aging safely in place. Staff, including two trained social workers and a board certified behavior analyst, developed a series of questions that were tested and revised with a pre-pilot of five members.

The MCM has 13 items and generates an overall score with five subscales: CHF symptoms (three items), medications (two items), seeking medical attention (three items), making healthier choices (four items), and safety (one item). The social workers asked members specific questions regarding each domain, and then asked the patients to provide examples for the different items. The social workers scored the members' ability in each question using a 4-point scale ranging from no knowledge (1) to complete knowledge (4). The overall scores and five subscale scores were calculated by summing items. We report the

average score for each scale by dividing the total score by the number of questions with responses for that domain; there were no missing responses.

Social workers were trained to use the tool before conducting in-home patient assessments. The training encompassed reading about the measure and educational background on the different aspects of CHF, watching an experienced social worker use the MCM measure, and then practicing and role-playing. The ratings assigned by the social worker are based on patient's responses to specific knowledge questions. These ratings are reviewed by the clinical supervisor to ensure accuracy.

### **Intervention**

Social workers were trained extensively in the type of self-care that patients would need in order to remain living at home with the ability to manage their CHF symptoms. Topics in this training focused on the relationship between CHF symptoms and medication adherence, diet and lifestyle requirements, mental health, and barriers to interacting with the health care system. Central to this protocol was an understanding that patients faced certain obstacles in their ability to be successful in managing their CHF and related symptoms. Social workers focused on addressing these hurdles (i.e., fresh vegetables are often more expensive than higher sodium canned vegetables), while also teaching patients how to be partners in their own health care.

An initial intake visit was conducted to train patients in the use of the iPad, facetime video calling feature, and accompanying software specifically designed for a medically illiterate population. The in-home assessment included the MCM to be used by social work staff as a guide for developing a personalized education and goal plan with the patient.

A weekly video chat call was scheduled by the social workers to review educational materials focused on topics related to CHF symptom management (low sodium diet, fluid restriction, etc.). Video facetime calls, constructed to last about 10 minutes, followed a pre-established protocol that focused on education, behavior change, and goal setting. Daily self-reports on symptoms through the software on the iPad allowed for social workers to monitor a patient's progress. At the thirtieth day of the intervention, the social workers re-administered the MCM over a video facetime call to assess changes in patients' knowledge from baseline to 30 days.

### **Results**

Overall, the sample was two-thirds female (30) and a little more than half was Caucasian (55.6%; 25). The average age of the sample was 60 and ranged

from ages 43 to 86. Two-thirds was dually eligible for Medicare and Medicaid, with the remaining one third on Medicare only.

The baseline social worker ratings are presented in Table 1. Social workers rated participants as a group below three in three subscales: knowing and recognizing symptoms, feeling safe, and knowing how to make healthy choices. Social workers rated participants above three on two subscales: Confidence about medications and when and where to turn for medical attention.

The extent to which social workers' scores changed from baseline to 30-day follow-up is summarized in Table 2. There is a statistically significant improvement ( $p < .01$ ) for the total scale and each of the subscales. The total scale score and all of the subscale scores except for symptom recognition were rated above three by the 30-day follow-up. In addition, effect sizes for the subscales ranged from .285 to .514; the effect size of the intervention as expressed by the total scale score was .544.

## Discussion

Tele-coaching, implemented by social workers, offers a potentially useful approach for chronic disease management. The overall change in knowledge from baseline to 30 days, detailed in this pilot study, suggests that social workers can play a key role in helping to address the problem of avoidable readmissions for many high-risk patients. The overall effect size of the intervention points to the potential magnitude that a large-scale intervention based on this pilot work could achieve. Patient education has been identified

**Table 1.** Average baseline MCM scale scores.

Variable	Baseline	
	<i>M</i>	<i>SD</i>
Total	2.84	.42
Symptoms	2.28	.68
Medications	3.06	.82
Medical attention	3.30	.47
Healthy choices	2.83	.59
Safety	2.71	1.04

**Table 2.** Changes in MCM median scores.

Subscale	Baseline	30-day score	<i>Z</i>	<i>p</i>	Effect size <i>r</i>
	Median	Median			
Total	2.85	3.46	5.17	.000	.544
Symptoms	2.33	3.33	4.88	.000	.514
Medication management	3.00	3.50	2.70	.007	.285
Medical attention	3.33	3.67	3.18	.001	.335
Healthy behaviors	2.75	3.50	4.73	.000	.498
Safety	3.00	4.00	3.04	.002	.320

as a key precursor for changes in health behavior but efforts have been hindered by ineffective modes of communication that do not take into account the patients' level of education and ability to adequately address the barriers that exist to implementing appropriate self-care health management. The use of social workers, as part of an integrated health team, would help to ensure that a complete understanding of the patient is incorporated into the transition from hospital to home.

Efforts to increase support for at-risk patients post-hospitalization have included interventions designed to bring health professionals into the home. While often effective, these programs are constrained by the costs of having a health professional travel to the home and the limits on the number of patients one health professional can see during a given time period. The approach of social workers utilizing an iPad platform for gathering health information, along with facetime video chat, described in the present study offers an approach that addresses both these cost and scaling issues related to broad scale interventions to address readmissions.

The approach of the intervention detailed in this study addresses many of the challenges that have been faced by previous attempts to reduce unnecessary readmissions among high-risk populations. The ability for more frequent, briefer interactions via a video chat platform with the patient population allows social workers to address barriers to health behavior change in a more real-time fashion. In addition, social workers can focus on attainable health education goals and address appropriate support systems available to the patient.

The findings presented in this study have implications for social work education and practice. The ability to function in an integrated health care setting with an understanding of chronic disease management will be a necessary skill for social workers to obtain. While focusing on patient education and positive health behavior change for high-risk populations are within the social work domain, the ability to communicate and work with other health professions will enhance the overall efficacy of interventions to reduce avoidable readmissions. From a clinical perspective, the ability to provide social work interventions via a video chat platform may become more of a necessity as the social work profession searches for enhanced ways to work with hard to reach populations.

While this is a pilot study with a relatively small number of participants ( $N = 45$ ), it is important to note that there are several additional limitations of this study. The avoidable readmission problem is complex and multifaceted and extends beyond improvements in knowledge. Therefore, future studies should address the myriad of psycho-social, health, and mental health challenges that could prevent a patient from returning to the hospital. As a pilot study focused on feasibility, there is no

presumption that other methods would be less effective. Finally, in this study we do not examine clinically significant outcomes including readmissions.

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