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Barriers to Transition of Care for Heart Failure Patients

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Walden University
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Abstract

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MSN/ED, University of Phoenix, 2006

BSN, Saginaw Valley State University, 1987

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Heart failure (HF) is an escalating chronic disorder that impacts patients, families, and society. HF necessitates efficient transition of care and complex self-care knowledge in a population often burdened with low health literacy and high readmission rates. The purpose of this project was to improve transition of discharged HF patients from a Level 1 trauma system in a mostly rural area of South Carolina to its affiliated nurse-led HF clinic. The no-show rate for initial visits to the health care system's outpatient HF clinic by postdischarge patients was 59%. Using Henderson's need theory and Stevens's knowledge transformation model for theoretical guidance, a quality improvement project was conducted to identify factors related to no-show behavior in initial HF clinic visits using a retrospective chart audit of the first 50 no-show patients in a 90-day period. Data were collected from the electronic medical record and analyzed through descriptive statistics. Frequently noted factors were lack of literacy screening, use of assistive devices, and access issues related to distance to travel and transportation to the HF clinic. Recommendations included mandatory literacy level screening on admission, integration of an evidence-based health literacy screening tool into the electronic record, use of satellite HF clinic services, and consideration of a mobile HF clinic on wheels to better serve the rural population. Social change is expected to occur in this vulnerable population through these efforts to address health literacy issues and increase access to clinic care after hospital discharge.

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Section 1: Nature of the Project

Heart failure (HF) is a pervasive chronic health disorder that requires lifelong

self-care management skills (Rasmusson, Flattery, & Baas, 2015). In the United States,

almost six million people are burdened with this chronic illness (Stamp, Machado, &

Allen, 2014). Exacerbations, hospital readmissions, and poor quality of life (QOL) are

among the many issues the HF population encounters on a day-to-day basis (Stamp et al.,

2014). Vijayakrishnan et al. (2014) indicated that management of HF is a priority for

health care payers, providers, and systems globally.

Baptiste, Mark, Groff-Paris, and Taylor (2013) noted HF accounts for most of the

acute care readmissions in the United States. HF is also the number one discharge

diagnosis in patients over 65 (Shan, Finder, Dichoso, & Lewis, 2014). The financial

impact of HF in the United States is estimated to be over 33 billion dollars (Stamp et al.,

2014). This consequence is predicted to escalate dramatically as the post World War II

generation ages (Rasmusson et al., 2015). Effective transition of care for the HF

population is now a major initiative in health systems nationwide (Feltner et al., 2014).

The principal goal of transition of care for any chronic illness population is to

prevent complications and improve QOL. A key strategy to accomplish this objective is

to empower the population with self-efficacy through self-care education (Bandura,

2004). This educational approach requires that the targeted population have an adequate

level of health literacy (Dennison et al., 2011). According to the Centers for Disease

Control and Prevention (2014), proficient health literacy rates in the U.S. population are

at 12%. Nurses are the largest group of health care professionals in the United States and, therefore, could be the primary facilitators of health literacy.

Quality improvement projects aimed at empowering a chronic disease population with self-management skills must address individual patient health literacy issues (Alspach, 2015). Self-management of HF is more complex than other conditions (Riegel & Moser, 2015). Most bedside nurses lack the time, education level, and expertise needed to assess a patient's health literacy, and then effectively implement necessary education strategies to empower the low health literacy patient (Alspach, 2015). I asserted this evidence-based gap in the transition of care for HF patients would be best filled with an acute care HF nurse educator/navigator at the level of doctor of nursing practice (DNP).

Problem Statement

The initial practice issue was the lack of a dedicated HF health literacy nurse educator/navigator for the acute care setting of a Level 1 trauma health care system that serves 11 primarily rural counties in North and South Carolina, and strives to be a health industry leader regionally and nationally. The director of the cardiovascular inpatient and outpatient services and the medical director of the outpatient nurse practitioner-led HF center had advocated for an inpatient nurse navigator to the chief nursing officer (CNO). The CNO had requested a business plan from the cardiovascular services director, who wrote the plan with a nurse practitioner in the position.

I was a DNP student at the health care system and planned to be leader of the navigator DNP project. The HF navigator/educator would round on all new HF-related admissions. The initial visit would include a health literacy screening. Evidence-based

HF education materials would be dispersed to the patient and significant others based on the results of a health literacy screening evaluation. The HF nurse/educator would keep a log of initial visits and subsequent referrals in the HF center at discharge. I would track the discharges referred to the HF center for first visit adherence and 30-day readmission rates.

During development of the HF nurse navigator project, the health care system changed its electronic health system. Corporate personnel and finances became dedicated to training and implementation of the new records system, which resulted in funding being tabled for a HF nurse navigator position. The director of CV services then recommended I change my DNP project to a quality improvement focus to address the 59% initial no-show rate to the HF clinic of newly discharged HF patients from the affiliated hospital. Therefore, the DNP project problem became the low adherence rate in the initial HF clinic visit.

Purpose Statement

The original purpose of the DNP project was to evaluate the outcomes of an implemented trial to incorporate use of a health literacy assessment and a dedicated, master's prepared or higher, nurse educator/navigator for HF patients in an acute care setting. Program objectives included development of the role and job description of the educator/navigator nurse, selection of the best evidence-based HF health literacy education and teaching methods, and implementation of the educator/navigator nurse role in the acute care setting. The specific measurable objectives were adherence to scheduled follow-up visits at the affiliated outpatient HF clinic and a decrease in the most recently

published preprogram implementation 30-day HF readmission rate of 18.8% (Becker's Healthcare, 2015). The purpose of the DNP project was refocused to identification of barriers to patient adherence to the initial post-discharge clinic visit.

Health care systems in South Carolina should prepare for a doubling of the aging inhabitants by 2030 (South Carolina Radio Network, 2015). The aging of the state's population, along with governmental and accreditation mandates for HF patient education, will be a challenge for a hospital system that does not have a dedicated inpatient HF nurse educator. Vidic, Chibnall, and Hauptman (2015) found HF to be the number one cause of readmission penalties in 2014, compared to acute myocardial infarction and pneumonia. For cost effective impact, organizational change should be directed at HF readmission prevention projects (Vidic et al., 2015). The project hypotheses were that the dedicated educator/navigator nurse would improve adherence to follow-up visits and reduce readmission rates.

Low health literacy impacts any chronic disease population. Cajita, Cajita, and Han (2015) concluded low health literacy affects almost 40% of the HF population. Impaired literacy in the hospitalized HF population is associated with increased mortality rates postdischarge (McNaughton et al., 2015). Moser et al. (2015) noted this risk is significant in HF patients from rural areas.

Harkness, Spaling, Currie, Strachan, and Clark (2015) stated that although most HF patients want to participate in self-care activities, they need directed guidance. The implementation of a screening tool on HF admission by the nurse educator navigator would address the needs of the individual patient/family by choosing the most

appropriate evidence-based practice (EBP) self-care education resources/tools from the American Association of Heart Failure Nurses (Rasmusson et al., 2015). According to Cajita et al. (2015), the Test of Functional Health Literacy in Adults-Short Form (S-TOFHLA) was the most commonly used health literacy screening tool in HF studies.

Thomason and Mayo (2015) verified the reliability of the S-TOFHLA instrument. Sand-Jecklin, Daniels, and Lucke-Wold (2016) evaluated the Expanded Brief Health Literacy Screen (EBHLS), which magnified the S-TOFHLA to include evaluation of verbal comprehension and retention after each education session. Sand-Jecklin et al. (2016) reported the practicability of incorporating the EBHLS (see Appendix A) into an electronic health record.

Nature of the Project

First question (original in PICOT format):

- P = discharged HF patients

- I = implementation of a dedicated inpatient HF nurse educator and health literacy assessment

- C = current adherence to HF clinic follow-up visits compared to adherence after the intervention

- O = adherence to HF clinic follow-up visits will increase by 25%

- T = 6 months of implementation of a dedicated inpatient HF nurse educator

Second question (original in PICOT format):

- P = discharged HF patients

- I = implementation of a dedicated inpatient HF nurse educator and health literacy assessment

- C = current 30-day HF readmission rates compared to rates after intervention

- O = readmission rate of HF patients will decrease by 25%

- T = 6 months of implementation of a dedicated inpatient HF nurse educator

Final project question:

What are the factors that relate to no-show behavior in initial visits to an outpatient HF clinic by postdischarge patients from a Level 1 health care system in upstate South Carolina?

Significance

The 2013 HF management guidelines noted HF patients need comprehensive self-management education and stated the quality of evidence for this guideline as Class 1/Level of Evidence B (Yancy et al., 2013). EBP guidelines include an hour of education before discharge for HF patients (Bowers, 2013). Health literacy screening for the most appropriate HF self-care teaching strategies is time-consuming and requires educational expertise.

Additionally, low health literacy HF patients require more time to teach and reevaluate prior to discharge. The amount of time and academic preparation needed for a bedside nurse to teach HF patients in self-care is an unrealistic expectation for a nursing staff that is primarily composed of undergraduate nurses. The implementation of a

dedicated inpatient HF educator/navigator nurse would decrease the bedside nurses'

workload and increase quantity and quality of HF patient education.

Empowering the HF population with health literacy to enhance self-care has

significant social implications. Byrd, Steinhubl, Sun, Ebadollahi, and Stewart (2014)

emphasized the astounding societal burden of this chronic illness. One-fifth of the U.S.

population over 40 is expected to develop HF in their lifetime (Byrd et al., 2014).

Financial costs of this chronic illness are estimated to rise over 200% in the next decade

and a half (Vijayakrishnan et al., 2014). There is a social imperative to improve health

literacy in the HF population. According to the Robert Wood Johnson Foundation (2014),

the primary responsibility of removing the barrier of low health literacy in chronic

disease management belongs to health care providers and systems, not the patient or

family.

During my final DNP quarter, I became a member of the health care system's task

force to standardize HF inpatient education across the organization. A collaborative

leadership team created this task force. The directors of inpatient and outpatient

cardiovascular services had done a survey of nursing units regarding HF discharge

education. These organizational leaders found resource gaps, workflow and process

problems, and discontinuity in the information given to HF patients during hospitalization

and at discharge. In task force meetings, I noted there were no organizational policies for

inpatient health literacy assessment or evaluation of patient teaching.

A patient's ability to live with a chronic condition successfully requires adequate

knowledge of the disease or disorder. Unsubstantial health knowledge of HF management

in the HF patient population results in poor patient outcomes (Yehle, 2015). As

mentioned previously, adequate health literacy rates in the general patient population are

12%. This rate in the HF population, along with a chronic condition on the rise, impacts

patients/families, providers, organizations, communities, and the nation (Yehle, 2015).

Definitions of Terms

Health literacy: "The degree to which individuals have the capacity…to obtain,

process and understand basic health information and services needed to make appropriate

health decisions" (Robert Wood Johnson Foundation, 2014, para. 3).

Self-care: "A naturalistic decision-making process that includes self-care

maintenance, those behaviors performed to maintain physiological stability (e.g.,

treatment adherence, symptom monitoring), and self-care management, which is the

response to HF symptoms when they occur" (Dickson et al., 2014, p. 188).

Assumptions and Limitations

The first assumption related to the project was that a dedicated HF

educator/navigator in the acute care setting would increase health knowledge and thereby

improve self-care behavior in the discharged HF population. The next assumption was

that this self-care behavior would include timely follow-up visits to the HF clinic. The

final assumption was the implementation of the dedicated HF educator/navigator would

decrease 30-day readmission rates. The primary limitation of the project was that the

position and funding for a master's prepared or higher inpatient HF nurse educator would

need to be approved by the then Magnet health care system. Generalizability of results

would have limits due to the singularity, size, and geographic location of the health care system.

Summary

Cajita et al. (2015) concluded that chronic disease populations, who bear the burden of complex self-management strategies, are primarily impacted by the barrier of low health literacy. The DNP project addressed low health literacy in the HF population served by the health care system. The DNP project goal was to improve both quantity and quality of self-care education provided in the transition of care for HF patients served by a Level 1 trauma health care system in South Carolina. Planned deliverables for the project were a job description for the HF nurse navigator/educator, an evaluation plan for the role, and a report of the findings of the pre- and postimplementation data for the health literacy assessment and the HF nurse navigator role.

Section 2: Background and Context

The purpose of the DNP project was to evaluate the outcomes of a trial to implement an admission health literacy assessment and an inpatient HF nurse navigator/educator role. This section of the project includes a review of recent research literature on HF patient education, readmission, and nursing interventions. The escalating impact of HF has generated prolific research on care transition.

Central to the topic of heart failure transition is self-care management, which requires a holistic approach to patient instruction (Cowie et al., 2015). A review of the literature for the project was limited to articles published between 2012 and 2015 due to the large numbers of HF-focused articles published in the last 3 years. Databases used for the search included CINAHL & Medline Simultaneous Search, Cochrane Database of Systematic Reviews, Joanna Briggs Institute EBP Database, Ovid, PubMed, and Thoreau. I also used the Google Scholar search engine. The issues of 30-day HF readmission rates and self-care management were dominant themes in the articles reviewed.

The key words searched for in the specific literature topic were *health literacy*, *heart failure*, and *nurse (educator or navigator)*. Thirty articles were found. Twelve articles were selected for review and rating of evidence; articles addressed the impact of nurse navigators or health literacy issues in hospitalized HF patient self-care education.

Specific Literature

Sanders (2014) noted the nurse navigator is a new role that has emerged in response to the aging populace living with chronic illnesses. According to Pruitt and Sportsman (2013), nurse navigators focus on a specific population with a goal of the best

transition of care for individual patients/families. In the case of HF acute care, one of the services is providing patient education before discharge from an acute care setting to improve the transition of care and patient outcomes (Johantgen & Newhouse, 2013).

Nurse navigators are prepared to engage HF patients in self-care starting at admission (Harris, Fenner, Gulati, & Cuomo, 2012; Schell, 2014). Additionally, the navigator acts as an advocate, collaborator, and coordinator for the patient and family (Albert et al., 2015; Schell, 2014). Navigator/educator is a multidimensional role requiring advanced academic preparation, making this an ideal fit for a DNP-prepared nurse (Albert et al., 2015; Schell, 2014).

Manderson, Mcmurray, Piraino, and Stolee (2012) in a systematic review of evidence for navigation in the older chronic illness population found a dearth of studies on the topic, which indicated a gap in EBP research. A systematic review is considered Level C by the American Association of Critical Nurses (AACN) evidence rating system (Armola et al., 2009). In an AACN Level C study done in North Carolina, Harris et al. (2012) found a HF inpatient nurse navigator decreased postdischarge follow-up visits.

Schell (2014) published a literature review on the effect of discharge navigation on 30-day HF readmission rates and recommended all populations be evaluated for educational needs and receive consistent discharge information throughout the care continuum. Monza, Harris, and Shaw (2015) broadened the scope of the Harris et al. (2012) study. Monza et al. (2015) found that HF nurse navigator implementation reduced all-cause hospital readmissions and improved self-management and follow-up visit adherence.

Recent publications related to the complexity of health literacy in HF and the need for individualized patient education by a health care expert were numerous, so the articles chosen to review for this proposal were limited to 2015. Two articles were at AACN Level E (Alspach, 2015; Yehle, 2015). Three were at AACN Level D (Albert et al., 2015; Cowie et al, 2015; Rasmusson et al., 2015). One systematic review was at AACN Level C (Cajita et al., 2015). Four studies were at AACN Level B (McNaughton et al., 2015; Monza et al., 2015; Moser et al., 2015; Westlake, & Sethares, 2015).

Alspach (2015) and Yehle (2015) discussed the effects of low health literacy on the heart failure population and the urgent need for early bedside health literacy screening. Position statements, evidence-based guidelines, and recommendations from specialty health care organizations regarding nursing's essential role in HF patient education were stated by Albert et al. (2015), Cowie et al. (2015), and Rasmusson et al. (2015). Cajita et al. (2015) concluded nurses must recognize the impact of low health literacy and be able to implement strategies to reduce that impact. Two studies indicated increased mortality rates in HF patients with low health literacy (McNaughton et al., 2015; Moser et al., 2015). Westlake and Sethares (2015) found low health literacy patients preferred a variety of educational techniques. Monza et al. (2015) evaluated the implementation of HF nurse navigation in the acute care setting and noted decreased 30-day readmission rates, improved self-management skills, and better adherence to the transition treatment plan.

General Literature

Heart failure, discharge, and education were the key words used to search the general literature. Evidence-based components of HF education given prior to and reinforced at discharge included diet, medications, weight monitoring, assessment of exacerbation signs/symptoms, and what actions to take (Prasun, 2014). As noted earlier, poor health literacy, poor QOL, disease exacerbations, and increased hospital readmissions plague populations with chronic illnesses (Westlake, Sethares, & Davidson, 2013). Current studies involving HF patient education in the acute care setting reinforced these concerns, and many common themes emerged in the reviewed articles.

Multiple researchers recommended assessment of health literacy in the acute care setting on admission and again at discharge (Baptiste et al., 2014; Peter et al., 2015; Rasmussan et al., 2015). The principal educators of the hospitalized HF population are bedside nurses (Albert et al., 2014; Albert et al., 2015; Peter et al., 2015). However, most bedside nurses are strained to provide the evidence-based hour of HF education by discharge (Baas et al., 2014; Baptiste et al., 2014Gilmour, Strong, Chan, Hanna, & Huntington, 2014; Rasmussan et al., 2015; Schell, 2014).

Moreover, many bedside nurses have an incomplete knowledge of HF discharge education and educational methods (Gilmour et al., 2014; Peter et al., 2015; Rasmussan et al., 2015; Vesterlund, Granger, Thompson, Coggin, & Oermann, 2015). Current HF health literacy researchers have studied and endorsed the teach-back method, which requires additional time for patient education evaluation (Albert et al., 2015; Hung & Leidig, 2014; Huntington et al., 2013; Peter et al., 2015; Rasmussan et al., 2015; Schell,

2014; Thompson, 2014; Vesterlund et al., 2015). A dedicated acute care HF nurse educator/navigator who has a graduate nursing degree would provide quality HF patient health literacy assessment, education, and evaluation of self-care knowledge (Albert et al., 2015).

Conceptual Models

The academic center for evidence-based practice (ACE) star model of knowledge transformation supports research project efforts and outcomes (Schaffer, Sandau, & Diedrick, 2013). The steps of the ACE star model include implementation and evaluation of change (Schaffer et al., 2013). According to Stevens (2012), this model stresses the translation of knowledge and best practices while incorporating clinician experience and patient needs. The model has recently been renamed the Stevens Star Model of Knowledge Transformation.

Stevens Star Model of Knowledge Transformation   © 2015 Used with expressed permission

Figure 1. Stevens Star Model of Knowledge Transformation. The University of Texas
   Health Science Center at San Antonio – School of Nursing (2015). Retrieved
   from http://www.acestar.uthscsa.edu/acestar-model.asp

The Stevens Star Model of Knowledge Transformation includes five phases of

knowledge (discovery, summary, translation, integration, and evaluation) on a continuum

(McAfee, 2012). As noted by McAfee (2012), the Stevens Star model is a suitable

framework for quality improvement and implementation of EBP in health care systems.

The model has been applied to research in academia and inpatient and outpatient settings

(Schaffer et al., 2013).

The discovery/research stage of the model involves creation of knowledge

through scientific inquiry to construct clinical actions (University of Texas Health

Science Center at San Antonio [UTHSCA], 2015). The next stage, evidence summary,

involves synthesis of research through meta-analysis, which can also generate new

knowledge (UTHSCA, 2015). Translation to guidelines, the third stage of the model, includes recommended EBP guidelines for bedside use by clinicians, such as pathways and standards (UTHSCA, 2015). In the fourth stage of practice integration, EBP guidelines are adopted and implemented (UTHSCA, 2015). The Stevens model continuum connects at Stage 5, process and outcome evaluation, in which EBP knowledge is transformed into quality improvement (UTHSCA, 2015).

Henderson's need theory supports the role of nurse navigator (Burggraf, 2012). Henderson's classic approach includes assessment of needs and delivery of education to empower the patient with self-management skills to enhance independence (Burggraf, 2012). Hountras (2015) noted the theory focuses on the concept of accountability by the patient. The process of self-management implicates patient responsibility. The HF educator/navigator role encompasses both assessment expertise and teaching proficiency.

Summary

The DNP project was an evaluation of the transition of care impact of a dedicated advanced practice nurse (APN) educator/navigator for HF patients in an acute care setting. As the project leader, I planned to review the medical records of discharged HF patients who have transitioned from a hospital system to an affiliated outpatient HF clinic led by nurse practitioners (NPs). The record review was conducted to assess barriers to HF self-management and was used along with the literature review to determine methods and tools for measuring self-efficacy and self-management to improve project outcomes. The two criteria measured were adherence to HF clinic follow-up visits and 30-day HF readmission rates.

Section 3: Collection and Analysis of Evidence

The purpose of the project was to improve outcomes in HF patients discharged from a Level 1 trauma health care system that serves 11 counties in upstate South Carolina. Due to a system-wide rollout of a new electronic health care system, the financial cost of a FTE for a HF nurse navigator would not be approved in the foreseeable future. The director of inpatient and outpatient cardiovascular services for the health care system reported current no-show rates of recently discharged HF patients to the outpatient HF clinic at 59%, and indicated that this problem needed attention. I then changed my DNP project focus to a QI project at the recommendation of my chair. Due to high risk for readmission in this transition population, a needs assessment of the no-show patients was warranted to determine which no-show interventions were applicable. This project still addressed improved outcomes in transitioning HF patients.

Practice-Focused Question

What are the factors that relate to no-show behavior in initial visits to an outpatient HF clinic by postdischarge patients from a Level 1 health care system in upstate South Carolina?

Sources of Evidence

The project involved retrospective chart audits of the HF clinic initial visit no-show population to the HF clinic. Many factors affect HF self-care adherence, including timely transition of care after discharge (McNaughton et al., 2015; Moser et al., 2015; Westlake et al., 2013). Nonadherence, which can be related to low health literacy,

increases readmission and mortality rates (McNaughton et al., 2015; Moser et al., 2015).

Each of the selected charts were reviewed for the following:

- age,

- gender,

- physical limitations,

- native language,

- literacy level,

- health literacy screening results (if done),

- distance to travel from home to outpatient HF center,

- transportation method,

- work obligations, and

- family obligations.

The study population consisted of 50 patients who were discharged from the affiliated hospital system and did not appear for the initial visit to the HF clinic. The affiliated hospital system discharges a minimum of 30 adult HF patients monthly. The first 50 no-show charts from a recent 3-month period provided the sample.

The HF clinic tracks initial visit no-shows on appointment software. Patient information is accessible on the newly implemented electronic records system. I developed and employed a data abstraction form (Excel spreadsheet) containing the aforementioned criteria cells. A letter of permission to access the patient data from the organization, IRB approval by Walden University (02-13-17-0473305), and the project

site was obtained before the data were accessed. The site's IRB process also involved the presentation of my project to the nursing research council.

Analysis and Synthesis

I planned to enlist the help of a statistician in the health care system to input the data and run the analysis. Based on the analysis, I recommended appropriate EBP interventions to address the barriers to timely follow-up and adherence to appointments. Depending on the findings, I recommended the use of a health literacy screening tool in all HF inpatients. The literature supported the Expanded Brief Health Literacy Screen (EBHLS) as the best practice tool for this purpose.

Summary

Evidence indicates effective transition of care and self-care empowerment are priorities in HF (Albert et al., 2015; Stamp et al., 2014; Yancy et al, 2013). Current no-show rates of 59% to the outpatient HF clinic at the health care system project site impede self-care empowerment. A retrospective chart audit to identify factors in this population established the need for an inpatient HF nurse educator/navigator and implementation of an evidence-based tool to improve HF patient outcomes in upstate South Carolina. The project deliverables included (a) a summary of the chart audit needs assessment findings, (b) recommendations to address the identified barriers to self-care, (c) tools to measure self-care needs, and (d) a plan for implementing the recommendations and tools to improve patient outcomes.

Section 4: Findings and Recommendations

The initial no-show rate for discharged HF patients to an outpatient HF center in upstate South Carolina was 59%. This gap in transition of care put these patients at risk for increased morbidity and mortality, in addition to readmission costs for the associated inpatient health care facility. The DNP quality improvement (QI) project addressed characteristics of no-show initial visit HF patients in a retrospective chart audit to identify addressable barrier/behavioral factors. I was principal investigator and statistician for the project, and the lead HF center NP served as coinvestigator to satisfy the site's IRB requirements for chart access. IRB notified us that internal statisticians would no longer be available for QI projects due to heavy demands from the medical residents program.

Fifty no-show charts from a 90-day period (December 2016 to March 2017) were data mined for the following:

- age,

- gender,

- use of assistive devices (yes or no),

- native language,

- literacy level (years of education),

- health literacy screening done (yes or no),

- distance from home to HF center based on home zip code,

- personal transportation vehicle (yes or no),

- work obligations (yes or no), and

- family obligations (yes or no).

The above data fields were available in the integrated electronic record system from demographic, case management, and physical/occupational documentation. The health care organization had rolled out the new electronic system in 2016, with outpatient centers as the final phase in October. I processed the extracted data on SPSS Version 21 using descriptive statistics and means analysis for the total study population and gender-specific subpopulations.

Findings and Implications

The study sample ($n = 50$) was evenly divided by gender. The sample age ranged from 39 to 92. The age range for men was 39 to 89 (mean 65.32), and the age range for women was 51 to 92 (mean 69.68). Assistive devices were used more often in the female group with a mean of .64 ($SD = .490$) compared to the male group with a mean of .40 ($SD = .500$).

All participants had English listed as their native language. Work and family obligations were insignificant factors for both genders. Female work and family obligation means were both .04. The male work obligation mean was .08 (full-time employment during the day) with no family obligations noted.

The health care organization did not include a health literacy screening tool in the electronic healthcare record (EHR) or have a data entry field concerning this assessment. However, there was a data field for literacy level (years of education). This field was empty for the entire sample. To verify the missing data were not located elsewhere in the newly rolled-out EHR, the project coinvestigator communicated with the system's IT department, who acknowledged literacy level was not being captured in the inpatient

setting because it was not a required field for the admission nurse. Literacy level was a required field during admission assessment in the previous EHR software. The IT department representative also confirmed there was no nursing informatics specialist on staff in the IT department. For further clarification, I spoke to an acute care clinical unit educator (CUE) from a unit that discharges most HF patients. The CUE explained the new electronic admission assessment template is driven by green checked fields (required documentation) and admitting nurses were skipping fields that were not flagged, such as the years of education.

The two most significant statistical factors for the sample were access (distance to travel to the HF center from home) and lack of a personal vehicle. Travel distance ranged from 1 to 56.7 miles (mean 19.82) for men and 1 to 36.1 miles (mean 16.43) for women. Thirty-three percent of the sample lived within 11 miles of the HF center, and 67% lived in outlying rural communities of South and North Carolina. One third of rural dwellers lived near the health care system's two satellite facilities. The chart audit did not indicate whether the patients with a personal vehicle (34.0%) were also able to drive themselves, but based on use of assistive devices in the study population, there was a strong probability that patients using assistive devices needed a driver to transport them. Availability of a suitable driver for HF center visits would be considered an additional barrier.

The biggest gap in evidence to practice was the unpopulated years of education in all of the audited charts. Fundamental basic nursing care includes a literacy level assessment to tailor individual patient education during hospitalization and at discharge.

As stated in Sections 1 and 2, chronic disease self-care management requires health literacy assessment for positive outcomes, especially in the HF population. The EBHLS tool (Appendix A) can be integrated into electronic record systems as an optional flowsheet/template for screening chronic disease patients who require complex self-management skills (Sand-Jecklin et al., 2016).

The DNP project findings and implications mirrored the first three steps of the Stevens Star Model of Knowledge Transformation: discovery, summary, and translation (McAfee, 2012). The QI project discovered potential barriers for no-show patients. Through statistical analysis of data collected and summarization of findings, I translated evidence-based recommendations to address gaps in transition of care.

The access needs of discharged HF patients should be addressed more effectively by a health care organization that serves a predominantly rural population scattered across several counties. Although the organization provides a transport service in some areas, patients must accommodate long transport times and waits for pickup. HF therapies include diuretics and other medications that may be barriers to lengthy transport.

The organization has two satellite health care facilities in outlying service areas that would improve access and decrease travel time for many patients who need HF transition care if it were made available at those rural locations. Implementation of interventions to address these findings could lead to social change through increased access to necessary medical care. This relates to the next steps in the Stevens' model continuum (integration and evaluation) and may generate new inquiries into improved HF transition of care.

Recommendations

The DNP project team identified four recommendations to reduce initial visit no-show rates at the HF center and improve transition of care for the discharged HF population based on findings of the QI project:

1. make years of education on the acute care admission template a required field,

2. incorporate a health literacy assessment tool (see Appendix A) into the EHR,

3. implement HF center services at the two satellite healthcare campuses, and

4. consider a mobile HF center to better serve the rural population.

The first two recommendations are inpatient focused, while the last two would be implemented in the outpatient setting. These are also listed in ascending order of organizational cost to implement. For example, the first recommendation needs no monetary investment, and the third requires funding for at least a part-time NP to float between the satellite campuses. The fourth recommendation, a staffed mobile HF center vehicle targeting access and transportation factors/barriers, would have the largest initial investment cost. However, decreased HF readmission rate charges for the health care system and improved QOL for HF patients could offset the cost of a mobile service line. According to Johnson et al. (2016), HF readmission costs per patient are in excess of $14,000.

Strengths and Limitations of the Project

The major strength of the project was balanced gender representation. In addition, we were able identify a gap in bedside practice during data collection regarding lack of literacy level screening on admission to acute care. Literacy screening on admission

should improve educational outcomes for all system patients. The organizational CUEs

have started to address this issue during unit staff meetings. Missing data on literacy

levels of the no-show patients was a significant limitation for the project. The use of a

convenience sample also limited generalizability of findings. Data collection did not

include use of supplemental oxygen, which could be a barrier for patients without

personal vehicles or those who travel long distances to the HF center.

Section 5: Dissemination Plan

The project results will be disseminated at a NRC meeting later in 2017. The HF center staff and I plan to continue QI projects aimed at improving patient outcomes after I complete my DNP. This study is easily reproducible. Once the health care system has improved literacy screening documentation and/or has implemented the EBHLS tool for admissions, a repeat study could produce more pertinent findings and recommendations. Future QI projects may address the impact of system-wide use of the EBHLS on all cause readmissions, QOL, and patient satisfaction surveys.

Analysis of Self

As a cardiovascular nurse with 45 years of experience, I was overjoyed at the prospect of managing a DNP project that would target low health literacy in the HF population. On my journey, I learned a DNP candidate must address relevant problems for providers and patients/communities. When my initial project idea of an HF navigator was not economically feasible, I refocused to a more applicable problem that urgently needed a QI project: a 59% no-show rate to the HF center. For my DNP practice to be beneficial, assessment of EBP gaps needed to start with listening to the real needs of the stakeholders involved and implementing suitable evidence-based interventions.

The DNP project process gave me the opportunity to grow as a practitioner and scholar, and enabled me to be a developer and manager of a much needed QI project. I now feel confident in appraising pertinent literature, and in selecting and applying an appropriate nursing theory or model for a project. I was able to analyze barriers to delivery of EBP to a specific patient population, and recommend cost-effective strategies

to address those barriers, including improved information technology steps. I began what I hope to be a lifelong journey as an evidence-based change agent in a complex health care system.

Summary

The purpose of this DNP project was to improve transition of care for HF patients served by the project site. Best outcomes for the HF population will also benefit their families and the local community. By expanding the project's recommendations to other chronic disease populations and providers in upstate South Carolina, I envision social change that will be a blessing to the local population and society at large.

References

Albert, N. M., Barnason, S., Deswal, A., Hernandez, A., Kociol, R., Lee, E.,…White-

Williams, C. (2015). Transitions of care in heart failure a scientific statement

from the American Heart Association. *Circulation: Heart Failure, 8*(2), 384-409.

doi:10.1161/HHF.0000000000000006

Albert, N. M., Cohen, B., Liu, X., Best, C. H., Aspinwall, L., & Pratt, L. (2014). Hospital

nurses' comfort in and frequency of delivering heart failure self-care education.

European Journal of Cardiovascular Nursing, 1-10.

doi:10.1177/1474515114540756

Alspach, J. G. (2015). Heart failure and low health literacy: Mitigating this lethal

combination. *Critical Care Nurse, 35*(5), 10-14. doi:10.4037/ccn2015734

Armola, R. R., Bourgault, A. M., Halm, M. A., Board, R. M., Bucher, L., Harrington, L.,

... Medina, J. (2009). AACN levels of evidence: What's new? *Critical Care*

Nurse, 29(4), 70-73. doi:10.4037/ccn2009969

Baas, L. S., Kirkwood, P., Lewis, C., Prasun, M. A., Reigle, J., Bither, C.,…Galvao, M.

(2014). Perceived barriers and facilitators to patients receiving 60 minutes of heart

failure education: A survey of AAHFN members. *Heart & Lung: The Journal of*

Acute and Critical Care, 43(1), 3-5. doi:10.1016/j.hrtlng.2013.10.013

Bandura, A. (2004). Health promotion by social cognitive means. *Health Education &*

Behavior, 31(2), 143-164. doi:10.1177/1090198104263660

Baptiste, D. L., Mark, H., Groff-Paris, L., & Taylor, L. A. (2013). A nurse-guided patient-centered heart failure education program. *Journal of Nursing Education and Practice, 4*(3), 49-57. doi:10.5430/jnep.v4n3p49

Becker's Healthcare. (2015). *47 hospitals with the lowest 30-day heart failure readmission rates.* Retrieved from http://www.beckershospitalreview.com/quality/47-hospitals-with-the-lowest-30-day-heart-failure-readmission-rates.html

Bettany-Saltikov, J., & Whittaker, V. J. (2014). Selecting the most appropriate inferential statistical test for your quantitative research study. *Journal of Clinical Nursing, 23*(11-12), 1520-1531. doi:10.1111/jocn.12343

Bowers, M. (2013). Managing patients with heart failure. *Journal for Nurse Practitioners, 9*(10), 634-642. doi:10.1016/j.nurpra.2013.08.025

Burggraf, V. (2012). Overview and summary: The new millennium: Evolving and emerging nursing roles. *Online Journal of Issues in Nursing, 17*(2), 1-11. doi:10.3912/OJIN.Vol17No02ManOS

Byrd, R. J., Steinhubl, S. R., Sun, J., Ebadollahi, S., & Stewart, W. F. (2014). Automatic identification of heart failure diagnostic criteria, using text analysis of clinical notes from electronic health records. *International Journal of Medical Informatics, 83*(12), 983-992. doi:10.1016/j.ijmedinf.2012.12.005

Cajita, M. I., Cajita, T. R., & Han, H. (2015). Health literacy and heart failure: A systematic review. *Journal of Cardiovascular Nursing (published ahead-of-print)*, 1-10. doi:10.1097/JCN.0000000000000229

Carr, H. J., McDermott, A., Tadbiri, H., Uebbing, A., & Londrigan, M. (2013). The effectiveness of computer-based learning in hosptialized adults with heart failure on knowledge, re-admission, self-care, quality of life, and patient satisfaction: A systematic review protocol. *JBI Database of Systematic Reviews & Implementation Reports*, *11*(8), 129-145. doi:10.11124/jbisrir-2013-984

Centers for Disease Control and Prevention. (2014). *Health literacy.* Retrieved from http://www.cdc.gov/healthliteracy/learn/understandingliteracy.html

Chyung, S. Y. Y. (2015). Foundational concepts for conducting program evaluations. *Performance Improvement Quarterly*, *27*(4). Retrieved from http://onlinelibrary.wiley.com/doi/10.1002/piq.21181/full

Cowie, M. R., Anker, S. D., Cleland, J. G., Felker, G. M., Filippatos, G., Jaarsma, T.,…López-Sendón, J. (2015). Improving care for patients with acute heart failure: Before, during and after hospitalization. *ESC Heart Failure*, *1*, 110-145. doi:10.1002/ehf2.12021

Dennison, C. R., McEntee, M. L., Samuel, L., Johnson, B. J., Rotman, S., Kielty, A.,…Russell, S. D. (2011). Adequate health literacy is associated with higher heart failure knowledge and self-care confidence in hospitalized patients. *Journal of Cardiovascular Nursing*, *26*(5), 359-367. doi:10.1097/JCN.0b013e3181f16f88

Dickson, V. V., Melkus, G. D. E., Katz, S., Levine-Wong, A., Dillworth, J., Cleland, C. M., & Riegel, B. (2014). Building skill in heart failure self-care among community dwelling older adults: Results of a pilot study. *Patient Education and Counseling*, *96*(2), 188-196. doi:10.1016/j.pec.2014.04.018

Feltner, C., Jones, C. D., Cené, C. W., Zhi-Jie, Z., Sueta, C. A., Coker-Schwimmer, E. L.,... Jonas, D. E. (2014). Transitional care interventions to prevent readmissions for persons with heart failure. *Annals of Internal Medicine*, *160*(11), 774-784. doi:10.7326/M14-0083

Gilmour, J., Strong, A., Chan, H., Hanna, S., & Huntington, A. (2014). Primary health care nurses and heart failure education: A survey. *Journal of Primary Health Care*, *6*(3), 229-237. Retrieved from http://espace.library.uq.edu.au/view/UQ:340267

Grove, S. K., Burns, N., & Gray, J. R. (2013). *The practice of nursing research: Appraisal, synthesis, and generation of evidence* (7th ed.). St. Louis, MO: Elsevier.

Harkness, K., Spaling, M. A., Currie, K., Strachan, P. H., & Clark, A. M. (2015). A systematic review of patient heart failure self-care strategies. *Journal of Cardiovascular Nursing*, *30*(2), 121-135. doi:10.1097/JCN.0000000000000118

Harris, D., Fenner, D., Gulati, S., & Cuomo, K. (2012). Use of an inpatient nurse navigator to coordinate care for heart failure patients. *Heart & Lung*, *41*(4), 422-423. doi:10.1016/j.hrtlng.2012.04.035

Hountras, S. C. (2015). What guides your nursing practice? *Journal of Christian Nursing, 32*(3), 179-181. doi:10.1097/CNJ.0000000000000181

Hung, D., & Leidig, R. C. (2014). Implementing a transitional care program to reduce hospital readmissions among older adults. *Journal of Nursing Care Quality, 30*(2), 121-129. doi:10.1097/NCQ.0000000000000091

Huntington, M. K., Guzman, A. I., Roemen, A., Fieldsend, J., & Saloum, H. (2013).

Hospital-to-home: A hospital readmission reduction program for congestive heart

failure. *South Dakota Medicine*, *66*(9), 370-373. Retrieved from

http://eds.a.ebscohost.com.ezp.waldenulibrary.org/eds/detail/detail?vid=6&sid=e7

9e0dc4-7091-4042-b2f8-

81d37335860f%40sessionmgr4005&hid=4102&bdata=JnNpdGU9ZWRzLWxpd

mUmc2NvcGU9c2l0ZQ%3d%3d#db=edo&AN=94829163

Johantgen, M., & Newhouse, R. (2013). Participating in a multihospital study to promote

adoption of heart failure guidelines: Lessons for nurse leaders. *Journal of Nursing

Administration*, *43*(12), 660-666. doi:10.1097/NNA.0000000000000008

Johnson, A. E., Winner, L., Simmons, T., Eid, S. M., Hody, R., Sampedro, A.,...Parakh,

K. (2016). Using innovative methodologies from technology and manufacturing

companies to reduce heart failure readmissions. *American Journal of Medical

Quality, 31*(3), 272-278. doi:10.1177/1062860614562627

Manderson, B., Mcmurray, J., Piraino, E., & Stolee, P. (2012). Navigation roles support

chronically ill older adults through healthcare transitions: Systematic review of

the literature. *Health & Social Care in the Community*, *20*(2), 113-127.

doi:10.1111/j.1365-2524.2011.01032.x

McAfee, J. L. (2012). Developing an advanced practice nurse–led liver clinic.

Gastroenterology Nursing, *35*(3), 215-224. doi:10.1097/SGA.0b013e31825a2786

McNaughton, C. D., Cawthon, C., Kripalani, S., Liu, D., Storrow, A. B., & Roumie, C. L.

(2015). Health literacy and mortality: A cohort study of patients hospitalized for

acute heart failure. *Journal of the American Heart Association, 4*(5), 1-9.

Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4599411/

Monza, K., Harris, D., & Shaw, C. (2015). The role of the nurse navigator in the

management of the heart failure patient. *Critical Care Nursing Clinics of North

America*, 27(4), 537-549. doi:10.1016/j.cnc.2015.07.010

Moser, D. K., Robinson, S., Biddle, M. J., Pelter, M. M., Nesbitt, T., Southard, J.,...

Dracup, K. (2015). Health literacy predicts morbidity and mortality in rural

patients with heart failure. *Journal of Cardiac Failure, 21*(8), 612-618.

doi:10.1016/j.cardfail.2015.04.004

Peter, D., Robinson, P., Jordan, M., Lawrence, S., Casey, K., & Salas-Lopez, D. (2015).

Reducing readmissions using teach-back. *Journal of Nursing Administration*,

45(1), 35-42. doi:10.1097/NNA.0000000000000155

Prasun, M. A. (2014). Heart failure patient education. *Heart & Lung: The Journal of

Acute and Critical Care*, *43*(6), 485. doi:10.1016/j.hrtlng.2014.08.002

Pruitt, Z., & Sportsman, S. (2013). The presence and roles of nurse navigators in acute

care hospitals. *Journal of Nursing Administration*, *43*(11), 592-596.

doi:10.1097/01.NNA.0000434510.74373.40

Rasmusson, K., Flattery, M., & Baas, L. S. (2015). American Association of Heart

Failure Nurses position paper on educating patients with heart failure. *Heart &

Lung: The Journal of Acute and Critical Care, 44*(2), 173-177.

doi:10.1016/j.hrtlng.2015.01.001

Reeves, S., Boet, S., Zierler, B., & Kitto, S. (2015). Interprofessional education and practice guide No. 3: Evaluating interprofessional education. *Journal of Interprofessional Care*, 29(4), 305-312. doi:10.3109/13561820.2014.1003637

Riegel, B., & Moser, D. K. (2015). Interventions for adults with heart failure. *Journal of Cardiovascular Nursing, 30*(4), S1-S2. doi:10.1097/JCN.0000000000000283

Riley, W. T., Keberlein, P., Sorenson, G., Mohler, S., Tye, B., Ramirez, A. S., & Carroll, M. (2014). Program evaluation of remote heart failure monitoring: Healthcare utilization analysis in a rural regional medical center. *Telemedicine and e-Health, 21*(3), 157-162. doi:10.1089/tmj.2014.0093

Robert Wood Johnson Foundation. (2014). *Imperative to improve health literacy.* Retrieved from http://www.rwjf.org/en/blogs/culture-of-health/2014/11/the_imperative_toim.html

Sand-Jecklin, K., Daniels, C. S., & Lucke-Wold, N. (2016). Incorporating health literacy screening into patients' health assessment. *Clinical Nursing Research (published ahead-of-print)*, 1-15. doi:1054773815619592.

Sanders, E. D. (2014). Aging patients: Nursing implications for direct care nurses. *Nursing Administration Quarterly*, 38(2), 173-178. doi:10.1097/NAQ.0000000000000026

Schaffer, M. A., Sandau, K. E., & Diedrick, L. (2013). Evidence-based practice models for organizational change: Overview and practical applications. *Journal of Advanced Nursing*, 69(5), 1197-1209. doi:10.1111/j.1365-2648.2012.06122.x

Schell, W. (2014). A review: Discharge navigation and its effect on heart failure
   readmissions. *Professional Case Management*, *19*(5), 224-234.
   doi:10.1097/NCM.0000000000000040

Shan, D., Finder, J., Dichoso, D., & Lewis, P. S. (2014). Interventions to prevent heart
   failure readmissions: The rationale for nurse-led heart failure programs. *Journal
   of Nursing Education and Practice*, *4*(11), 23-32. doi:10.5430/jnep.v4n11p23

South Carolina Radio Network. (2015). *Lt. Gov. warns of "gray tsunami" as state
   population ages*. Retrieved from
   http://www.southcarolinaradionetwork.com/2014/03/26/lt-gov-warns-of-gray-
   tsunami-as-state-population-ages/

Stamp, K. D., Machado, M. A., & Allen, N. A. (2014). Transitional care programs
   improve outcomes for heart failure patients: An integrative review. *Journal of
   Cardiovascular Nursing*, *29*(2), 140-154. doi:10.1097/JCN.0b013e31827db560

Stevens, K. R. (2012). Delivering on the promise of EBP. *Nursing Management*, *43*(4),
   19-21. doi:10.1097/01.NUMA.0000413102.48500.1f

Terry, A. J. (2015). *Clinical research for the doctor of nursing practice.* (2nd ed.).
   Burlington, MA: Jones & Bartlett Learning.

Thomason, T. R., & Mayo, A. M. (2015). A critique of the short test of functional health
   literacy in adults. *Clinical Nurse Specialist*, *29*(6), 308-312.
   doi:10.1097/NUR.0000000000000156

Thompson, C. (2014). Safe passage: A nurse-led multidisciplinary team approach to

improving transitions and reducing readmissions for heart failure patients. *Heart*

& Lung, *43*(4), 386. doi:10.1016/j.hrtlng.2014.06.021

University of Texas Health Science Center at San Antonio. (2015). *Star model.* Retrieved

from http://nursing.uthscsa.edu/onrs/starmodel/star-model.asp

Vesterlund, M., Granger, B., Thompson, T. J., Coggin III, C., & Oermann, M. H. (2015).

Tailoring your heart failure project for success in rural areas. *Quality*

Management in Healthcare, *24*(2), 91-95. doi:10.1097/QMH.0000000000000055

Vidic, A., Chibnall, J. T., & Hauptman, P. J. (2015). Heart failure is a major contributor

to hospital readmission penalties. *Journal of Cardiac Failure*, *21*(2), 134-137.

doi:10.1016/j.cardfail.2014.12.002

Vijayakrishnan, R., Steinhubl, S. R., Ng, K., Sun, J., Byrd, R. J., Daar, Z.,...Stewart, W.

F. (2014). Prevalence of heart failure signs and symptoms in a large primary care

population identified through the use of text and data mining of the electronic

health record. *Journal of Cardiac Failure*, *20*(7), 459-464.

doi:10.1016/j.cardfail.2014.03.008

Westlake, C., & Sethares, K. (2015). Learning style, health literacy, and 90-day health

care utilization in heart failure patients. *Journal of Cardiac Failure*, *21*(8), S77.

doi:10.1016/j.cardfail.2015.06.241

Westlake, C., Sethares, K., & Davidson, P. (2013). How can health literacy influence

outcomes in heart failure patients? Mechanisms and interventions. *Current Heart*

Failure Reports, *10*(3), 232-243. Retrieved from

http://www.ncbi.nlm.nih.gov/pubmed/23873404

Yancy, C. W., Jessup, M., Bozkurt, B., Butler, J., Casey Jr, D. E.,...Wilkoff, B. L. (2013).

2013 ACCF/AHA guideline for the management of heart failure: A report of the

American College of Cardiology Foundation/American Heart Association Task

Force on Practice Guidelines. *Circulation*, *128*(16), e240-e327.

doi:10.1161/CIR.0b013e31829e8776

Yehle, K. S. (2015). A picture is worth a thousand words—does health literacy level

matter in patients with heart failure? *Journal of Cardiac Failure*, *21*(8), 619-620.

doi:10.1016/j.cardfail.2015.06.002

Appendix A: Expanded Brief Patient Health Literacy Screen (EBHLS)

	Health Literacy score
1. If you need to go to the doctor, clinic or hospital, how confident are you in filling out the medical forms by yourself? ____ not at all confident (1)____ a little confident (2) ____ somewhat confident (3)____ quite confident (4) ____ extremely confident (5)	_____
2. How often do you have someone (family member or staff at the clinic or hospital) help you to read health or medical forms? ____always (1) ___often (2) ____ sometimes (3) ____occasionally (4) ____never (5)	_____
3. How often do you have problems learning about your health because of trouble understanding written health information? ____always (1) ____often (2) ____ sometimes (3) ____occasionally (4) ____never (5)	_____
4. How often do you have trouble understanding what your doctor, nurse, or pharmacist (druggist) tells you about your health or about treatments? ____always (1) ____often (2) ___ sometimes (3) ____occasionally (4) ____never (5)	_____ _____
5. How often do you have trouble remembering instructions from the doctor, nurse or pharmacist (druggist) after you get home? ____always (1) ____often (2) ____ sometimes (3) ____occasionally (4) ____never (5)	Total Score_____
Score < 19 indicates probable limitation in patient health literacy **Score of 3 or < on an individual item indicates an area of attention/assistance needed to assure patient ability to understand health information/materials**	

Appendix B: Permission to Include EBHLS

Hello Catherine,

You have permission to use the tool.   It is attached. Best wishes in your

capstone project.

Kari S-J

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Appendix C: Permission to Include Stevens Star Model

Ms. Murray...

I am happy to provide permission to you to use/reproduce the Star Model under the fair-use rule, with the stipulation that credit is cited. If you are re-publishing the copyrighted material (as in publishing in a journal or book), specific permission is required by the publisher. In that case, there is usually a template letter of permission from the publisher that I will readily sign.

Please note that the model has been renamed to "Stevens Star Model of Knowledge Transformation." I have attached an image that you may use.

Dr. Stevens

...to the best of our knowledge

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