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Implementation of Standardized Heart Failure Educational and Documentation Processes within an Outpatient Heart and Vascular Clinic

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Implementation of Standardized Heart Failure Educational and Documentation Processes within an Outpatient Heart and Vascular Clinic

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Abstract

Heart failure is a prevalent, high-risk condition associated with high mortality and frequent hospitalizations. Heart failure is characterized by acute exacerbations of signs and symptoms, and affects almost six million Americans leading to one of the most costly illnesses in the United States. Management of heart failure is complex and individualized relying on appropriate education, self-care management, medications, and adequate follow-up to succeed in treatment. Many organizations have initiated evidence-based heart failure management or educational programs that provide easy-to-learn education on diagnosis, medication, and self-care behaviors. Research has shown that these programs help patients to better manage their symptoms at home, leading to better disease management and quality of life. This Doctor of Nursing Practice (DNP) project utilized evidence obtained through the literature review, guidance from theoretical and conceptual models, and information from the organizational assessment to develop a standardized heart failure educational process in an outpatient cardiology clinic to improve patient education tools, and provider/clinician documentation. Pre- and post-implementation chart audits were conducted on 25 randomized patient electronic health records. Prior to implementation, only 20% (5/25) of patients with a diagnosis heart failure had documentation showing that evidence-based education was provided. After initiation of the standardized heart failure educational process, the percentage of patients who received evidence-based education increased to 44% (11/25). Chart audits were also conducted on patients that received a heart failure nurse visit with utilization of the new documentation tool and written educational materials. Results displayed an increase to 100% in evidence-based documentation of heart failure topics. Nurse evaluations were also performed using anonymous surveys, showing improved employee satisfaction with the educational process.
Keywords: heart failure self-care educational program, self-care behaviors, educational session, self-care management
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Implementation of Standardized Heart Failure Educational and Documentation Processes within an Outpatient Heart and Vascular Clinic

Executive Summary

Heart failure is a debilitating condition that affects millions of people throughout the United States (Roger, 2013). Heart failure is marked with decreased functional capacity due to shortness of breath, lower extremity and abdominal edema, and multiple comorbidities. Patients with heart failure require a variety of medications and frequent monitoring through office visits, phone calls, follow-up tests, and procedures (Proctor et al., 2015). Individuals with this complex condition require thorough education regarding the diagnosis, signs and symptoms, management, and treatment to aid in patient success (Oyanguren et al., 2016). The purpose of this DNP project was to identify the current problems related to the heart failure educational process within a Midwestern cardiovascular clinic, identify evidence to improve the educational process within the cardiology clinic, utilize conceptual models to aid in the implementation of an evidence-based educational process, and identify a project plan to implement a standardized heart failure educational process to improve patient education within this outpatient cardiovascular clinic.

With the increased prevalence and mortality rates related to heart failure within the United States, healthcare and national organizations have identified a need for improved heart failure education and self-care management (American Heart Association, 2017; Office of Disease Prevention and Health Promotion, 2017; Institute for Healthcare Improvement, 2017). Therefore, many healthcare organizations have developed and initiated a heart failure educational or management program. These programs focus on evidence-based education of heart failure topics while educating patients on self-care behaviors and clinical consultation.
This Midwestern cardiovascular clinic does not currently have a heart failure educational process. Patients are educated in routine office visits with a provider with little time for questions or concerns. These individuals are given lengthy, difficult to read printed written educational tools that do not take into account their health literacy. A small percentage of patients are scheduled for a 30-minute heart failure visit with a registered nurse to review the educational materials but the visit lacks an educational workflow or documentation tool leaving room for missed information and inadequate documentation. This Doctor of Nursing Practice (DNP) project will determine if a standardized heart failure educational process initiated in an outpatient cardiology clinic improves patient education tools, and provider/clinician documentation based on the evidence-based heart failure topics identified in the literature review.

A literature review was conducted to identify evidence-based educational programs, educational topics, patient perceptions, the effects of health literacy, caregiver support, and care management on patients diagnosed with heart failure. The researchers of the literature concluded that developing and implementing a heart failure educational program within a cardiovascular clinic improves heart failure knowledge, self-care behaviors, morbidity and mortality, 30-day readmissions, and length of stay (Bryant, 2017; Oyanguren et al., 2016; Rodriguez-Gazquez, Arredondo-Holguin, & Herrera-Cortes, 2012). Programs with written educational tools, tailored to a sixth to eighth grade health literacy level (Badarudeen & Sabharwai, 2010), have a greater likelihood of success in the retention of knowledge, self-care behaviors, and clinical consultation (Chen et al., 2014; Matsuoka et al., 2016). The involvement of caregiver support and nurses to promote education and self-care behaviors improves the likelihood of success in the educational process (Clark et al., 2014). With the consideration of these evidence-based findings, the educational process took into account the health literacy, educational topics, and provision of
education by the nursing staff to improve the education of heart failure patients within this outpatient cardiology clinic.

To further increase the success of the implementation and sustainability of the heart failure educational process, the Revised Symptom Management Model and the Promoting Action on Research Implementation in Health Services (PARiHS) model were used to guide the project. The Revised Symptom Management Model identifies success in the management of symptoms through evaluation of symptom experience, symptom management strategies, and outcomes (Dodd et al., 2001). These dimensions were evaluated to improve the development and implementation of the standardized workflow. The PARiHS Model was utilized in translating research and evidence into practice through evaluation of three concepts: evidence, context, and facilitation (Kitson, Harvey, & McCormack, 1998). The evidence within the literature review and clinical setting, the context within the organization, and the facilitation characteristics, roles, and styles were considered in developing a heart failure educational process, workflow, and documentation tool. These dimensions will continue to be assessed to improve the sustainability of the process.

To successfully implement and sustain a change within the organization, the characteristics within an organization must be understood. Several factors must be accounted for while reviewing an organization, including the internal performance, culture, and external environment (Universalia, 2017). In order to assess the organization’s culture and readiness and ability to change, an organizational assessment was conducted using the Universalia Institutional and Organizational Assessment (IOA) Model along with the strengths, weaknesses, opportunities and threats (SWOT) analysis.
The organization has many established goals that aided in the implementation of the heart failure educational process including improving the patient and community experience, improving patient outcomes, improving the quality, safety and efficiency of the organization, increasing the focus on prevention through community health and wellness programs, reducing 30-day readmissions, and increasing the use of evidence-based care while reducing healthcare costs throughout all healthcare specialties. The stakeholder support and increasing budget supported the initiation of new evidence-based processes. In addition, the mission, vision, and culture within the organization supported improving healthcare for the community and providing safe, quality patient care for the consumers.

This DNP project utilized evidence obtained through the literature review, guidance from the theoretical and conceptual models, and information from the organizational assessment to develop a standardized heart failure educational process initiated in an outpatient cardiology clinic to improve patient education tools, and provider/clinician documentation based on evidence-based heart failure topics identified in the literature review. The project was evaluated through the completion of chart audits to measure clinical utilization of the educational tools specified in the standardized procedure workflow. The collected data was compared to baseline chart audits on the percentage of heart failure patients who received evidence-based heart failure education prior to the initiation of the standardized process. Following implementation, anonymous evaluations were conducted with the cardiology nurses to determine the strengths and weaknesses of the written materials and educational process.

Pre- and post-implementation chart audits were conducted on 25 randomized patient electronic health records. Prior to implementation, only 20% (5/25) of patients with a diagnosis heart failure had documentation showing that evidence-based education was provided. After
initiation of the standardized heart failure educational process, the percentage of patients that received evidence-based education increased to 44% (11/25). Chart audits were also conducted on patients who received a heart failure nurse visit with utilization of the new documentation tool and written educational materials. Results displayed an increase to 100% in evidence-based documentation of heart failure topics. Nurse evaluations were also performed using anonymous surveys showing improved employee satisfaction with the educational process.

With continuation of the heart failure educational process within this cardiovascular clinic, an increased number of patients will receive evidence-based heart failure education increasing the likelihood of performing self-care behaviors, improving quality of life and reducing hospital admissions and emergency department visits. These are the ultimate goals of the initiation and implementation of the educational process for heart failure patients.

**Introduction and Background**

Heart failure is a prevalent, high-risk condition associated with high mortality and frequent hospitalizations (Proctor et al., 2015). Heart failure affects more than 5.8 million Americans costing each individual approximately 110,000 dollars annually (Braunwald, 2013; Roger, 2013). While many advances in treatment have occurred, the Institute of Medicine continues to identify an inconsistency between current treatment success rates and what researchers consider to be attainable (Viswanathan et al., 2012). Management of heart failure is complex and individualized, relying on appropriate education, self-care management, medications, and adequate follow-up to succeed in treatment (Ensign, Hawkins, & Greenberg, 2015). Due to the high health care costs, increasing prevalence, and high mortality rates, interventions targeted at management success need to be implemented.

Heart failure is a disease that requires a complex lifelong treatment regimen (Meng et al.,
The condition is considered a critical public health problem due to the high morbidity and mortality rates and the large economic and social burden to patients and their caregivers (Rodriguez-Gazquez et al., 2012). As a result, many nationally recognized initiatives to improve heart failure care have been created. The Office of Disease Prevention and Health Promotion (2017) has established an objective in Healthy People 2020 to reduce hospitalizations at least 10% by improving health access, self-care, cardiovascular screening, and education. The Institute for Healthcare Improvement (2017) created the Five Million Lives campaign to aid in the improvement of medical care and reduce morbidity and mortality among patients with chronic disease through the delivery of reliable, evidence-based care. The American Heart Association (2017) has developed the Rise Above Heart Failure initiative to empower patients to take an active role in their healthcare by encouraging small changes that lead to better disease management. Heart failure is a difficult disease to manage for the patient and the provider. Initiatives set in place to address these challenges and empower patients to live healthier, longer lives can help to improve patient care and outcomes.

Health care organizations have developed heart failure management or educational programs to support these initiatives and provide patients with better, quality care. Heart failure disease management programs are shown to have a marked improvement in symptoms, hospitalization rates, and mortality (Proctor et al., 2015). Heart failure disease management programs consist of individualized education and ensure patients are provided with appropriate evidence-based care and treatment options. Many programs focus on early identification of exacerbations and control risk factors that may further worsen heart failure through comprehensive education on the diagnosis, signs and symptoms, self-care management, lifestyle changes, and treatment (Oyanguren et al., 2016; Proctor et al., 2015). Patients are taught self-
management activities, which encourage symptom perception through monitoring, recognition, and response. Engagement in heart failure self-care has the potential to reduce heart failure readmissions and healthcare costs, while improving patients’ quality of life (Oyanguren et al., 2016).

Many researchers have evaluated the effectiveness of heart failure programs in the outpatient setting, and demonstrated positive results in patient satisfaction and healthcare outcomes (Chung, Bartone, Daly, Menon, & McDonald, 2015; Oyanguren et al., 2016). While heart failure management focuses on ensuring evidence-based therapies are prescribed, providers often fail to assess the patient’s and/or caregiver’s ability and self-confidence to provide self-care (Ensign et al., 2015). Current guidelines recommend that health care professionals provide comprehensive heart failure education and counseling that is focused on knowledge, management, and self-care (Ensign et al., 2015).

A key component of a heart failure management program is the education provided to patients and/or designated caregivers. Researchers have found that self-care educational sessions and take-home toolkits decrease hospital admission rates and improve self-care behaviors, and increase self-efficacy among patients (Bryant, 2017; Rodriguez-Gazquez et al., 2012). These educational sessions consist of easy-to-understand information about the heart failure diagnosis, symptoms, management, medications, lifestyle changes, and development of an action plan. Additionally, the integration of an educational toolkit empowers patients to achieve optimal heart health and independence through self-care maintenance, management, and confidence. The incorporation of a take-home individual calendar to self-record symptoms, weights, and pharmacological treatment assists patients to better manage the progression of disease and the success of treatment plan (Bryant, 2017). In combination with one-on-one counseling sessions,
As previously highlighted, this DNP project focused on the initiation of a standardized heart failure educational process in an outpatient cardiology clinic with newly developed patient education tools, and provider/clinician documentation based on the evidence-based heart failure topics identified in the literature review. The leaders identified a need for this DNP project due to the current gap in care delivery related to the absence of a standardized process, and use of evidence-based educational topics and materials for heart failure patients. The stakeholders’ goal was to aid in the clinician’s education of heart failure symptoms, management, screening, and treatment based on topics derived from the literature review in combination with the development of written educational tools for patient use, tailored to a eighth-grade health literacy level. The benefits of initiating a DNP-led heart failure educational process include better utilization of evidence-based educational materials, enhanced management of heart failure symptoms, improved quality of care, better patient satisfaction, reduced readmission rates, and a decrease in the progression of heart failure (Proctor et. al., 2015). The standardized process promoted patient knowledge regarding early identification of symptoms to control exacerbations and education on risk factors that could potentially further worsen heart failure.

**Problem Statement**

The diagnosis of heart failure brings many challenges. Patients who are treated for heart failure are characterized by episodic exacerbations that require treatment intensification, often leading to hospitalization (Roger, 2013). Heart failure is the most frequent cause of hospitalization in patients over the age of 65 (Roger, 2013). Approximately one million hospitalizations occur each year due to heart failure, costing over eight million dollars in healthcare costs and consuming over 20% of Medicare’s hospital funds (McClintock, Mose, &
Not only are millions of people currently affected by heart failure, but the American Heart Association projects a further rise in the prevalence of heart failure, increasing healthcare costs for these patients, and compromising the health of these individuals (Roger, 2013).

The complexity of the patient with heart failure is further complicated due to the low survival rates among the population. After a diagnosis of heart failure is made, survival estimates are 50% at five years and 10% at 10 years (Roger, 2013). If the patient suffers from left ventricular dysfunction, the risk of sudden cardiac death is increased. The reported lifetime risk of developing heart failure is 20 to 33% over a person’s lifetime. The risk is adjusted based on a person’s age, gender, race, and comorbidities (Roger, 2013). This percentage of individuals who are projected to be affected demonstrates that advancement in education and management is needed to prevent an expanding epidemic.

Currently the providers and nursing team within the outpatient cardiovascular clinic offer education through scheduled office visits with a provider and/or nurse, in addition to written educational materials from Lexicomp®, an online educational tool for clinical information. The office visits consist of 20 to 30 minutes in which the provider must discuss symptoms, test or procedure scheduling, test results, and new treatment options, as well as complete a physical assessment, leaving little time for education, questions, or concerns. A small percentage of outpatients are scheduled for an additional 30-minute visit with a registered nurse, one to two weeks following the provider office visit, to assess heart failure symptoms, with time to review materials extracted from Lexicomp®. This written material is lengthy, consisting of nine pages of paragraphs and bullet points on the heart failure diagnosis, causes, signs and symptoms, lifestyle changes, and clinical consultation. The information is often repeated several times throughout the
document. The provided material is difficult to read with very minimal pictures. The previous authors of the materials did not take into account that some patients have poor health literacy. In addition, there is not a standardized workflow to guide which information should be covered to achieve patient success. Each nurse approaches the visit differently, covering a variety of areas within the information. Current patient education does not meet evidence-based standards, thus, warranting an educational redesign. Improving the standardized process can help to improve knowledge retention, patient self-care behaviors, and patient outcomes.

With the current lack of sufficient education for heart failure patients, the goals supporting evidence-based practice care, decreasing 30-day readmissions, enhancing patient experience and quality of care, and improving the healthcare of the community are not met. The organization has a variety of resources that could aid in the development of a heart failure educational program including an integrated clinical research department and heavily engaged clinicians who are dedicated to the advancement of patient care. Physicians and clinical researchers have shown their commitment by initiating programs to decrease amputation rates, improve treatment of hypertension, and decrease the occurrence of atrial fibrillation. With the organizational focus on budget and cost-effective measures, interventions to improve 30-day readmissions and emergency department visits due to heart failure need to be improved. The development of a standardized workflow and documentation tool for use among all clinicians, as well as written education tools can better educate patients on evidence-based heart failure topics, aid in the management of heart failure symptoms, decrease 30-day readmissions, and reinforce the organization’s goals and purpose.

The importance of improving the educational component and self-care behaviors for this complex, vulnerable population led to the clinical question for this DNP project: Does a
standardized heart failure educational process initiated in an outpatient cardiology clinic result in better patient education tools and improved provider/clinician documentation based on evidence-based topics derived from the literature review? This project was evaluated through chart audits to measure completion rates of educational activities and documentation provided by clinicians within the patient medical record. This project assisted in providing tailored education, self-care behaviors and treatment options, coupled with documentation standards, to cardiology patients based on literature findings and requirements among payers, including the Centers for Medicare and Medicaid Services (CMS, 2012).

**Evidence-Based Initiative**

In order to determine best practices and evidence-based processes for the development of a standardized heart failure educational process, a literature review was completed. Improving the educational process by identifying evidence-based interventions was the primary focus of the literature review. Additional literature reviewed evaluated the effectiveness of the addition of caregivers in the educational process, as well as the use of registered nurses in the education of patients. To further enhance the results and evaluation of a heart failure education program, health literacy and patient perspectives were also assessed.

Several databases were used in the search for applicable studies including the Cumulative Index of Nursing and Allied Health Literature (CINAHL), ProQuest Medical Library, PubMed, and footnote chasing. The search resulted in a total of 545 potential articles (see Appendix A). Various combinations of search terms were used and included the following: heart failure education, heart failure management program, outpatient heart failure education, heart failure literacy, heart failure self-care management, heart failure readmissions, and symptom monitoring. For most searches, data ranges were between 2012 and 2017 to ensure the
information was relevant to the current healthcare climate. Articles were limited to those that included an available abstract or text to evaluate. The Hierarchy of Evidence Table for Intervention Studies (see Appendix B) was used to classify research designs based on the type of evidence presented. For the classification, each research design is given a numerical classification from one to seven based on the methodological quality of the design, validity, and the applicability to patient care. The final result of this literature review included 14 articles, which met inclusion criteria. Inclusion criteria included publication in the English language between 2012 and 2017, and a focus on heart failure education, self-care, or improvement of care. The resulted studies included two systematic reviews (Level I), two randomized-controlled trials (Level II), two pre-post-intervention studies (Level III), one cohort study (Level IV), and seven studies with various designs and methodologies.

**Heart Failure Educational Program**

The focus of the literature review was to evaluate the importance of a heart failure management or educational program with an emphasis on self-care behaviors. Patient education is especially important in those diagnosed with heart failure as lifestyle changes and self-care behaviors are key to prolonging life and decreasing symptom burden. Bryant (2017) and Rodriguez et al. (2012) found that initiating a heart failure education program with one-on-one counseling sessions during regularly scheduled office visits with the nursing staff and providing a take-home toolkit improved heart failure hospital admissions, self-care management, heart failure knowledge, quality of life, and provider consultation. Chung et al. (2015) conducted a similar heart failure management program, consisting of patient education and improved follow-up care with telemanagement, and found significant improvements in cardiovascular function and mortality rates. Oyanguren et al. (2016) also found a reduction in morbidity and mortality
among patients enrolled in a heart failure management program with a focus on education.

**Patient Perception**

Heart failure management programs are recommended throughout the literature and through patient perception. How patients perceive health care processes and outcomes is important in the development of appropriate education and management strategies (Newhouse et al., 2017). Efforts to understand heart failure self-care through determination of actual rather than anticipated needs of the patient can improve the effectiveness of the intervention (Clark et al., 2014). Clark et al. (2014) found that patients believed the key limitation affecting self-care was the lack of basic heart failure self-care knowledge. This lack of knowledge contributed to confusion, delays in help seeking, uncertainty over future illness progression, and poor self-care (Clark et al., 2014). Ptotka, Prokop, Migaj, Straburzynska-Migaj, & Grajek (2017) found that patients only reported alarming symptoms such as chest pain or dyspnea, often neglecting the less severe indications of disease progression such as insomnia, anorexia, or orthopnea, due to a lack of knowledge. Understanding a patient’s wants and needs, while providing open communication in a heart failure educational program is essential for appropriate decision making, adherence to treatment guidelines, and improvement in patient outcomes. Engagement improves the credibility of results and applicability to heart failure patients, while fostering better adoption of results by both the clinician and the patient.

**Caregiver Involvement**

To further engage heart failure patients, the effects of caregiver involvement on heart failure self-care were also assessed. Many studies indicated the importance of caregiver involvement and support in heart failure self-care. Social support for heart failure patients may positively influence individual self-care behaviors by assisting them with activities associated
with symptom management and evaluation, as well as adherence to heart failure treatment regimens (Graven & Grant, 2014). Srisuk, Cameron, Ski, & Thompson (2016) found that the initiation of a heart failure educational program for patients and their caregivers increased self-care maintenance, and improved self-care knowledge, confidence, and overall quality of life. Similar numbers were found with patient’s caregivers. Graven and Grant (2014) found comparable results through an integrative study showing that social support had a positive relationship on self-care maintenance and management. Therefore, the incorporation of family and caregivers can play a pivotal role in assisting heart failure patients with positive self-care behaviors and management.

**Health Literacy**

Evaluating the health literacy of each individual patient can further enhance the use of self-care behaviors. Badarudeen and Sabharwai (2010) report an inadequacy in the current readability of patient educational materials within the healthcare field. Chen et al. (2014) and Matsuoka et al. (2016) conducted two different studies to evaluate how health literacy affects the knowledge, self-care behaviors, and self-efficacy of heart failure patients and found that those with lower health literacy levels had less heart failure knowledge and subsequently lower self-care scores compared to those with higher health literacy. Poor heart failure knowledge affects self-care behaviors, which has a negative effect on self-efficacy of the patient over time. Therefore, Matsuoka et al. (2016) recommend the evaluation of health literacy levels during an educational session to introduce individualized interventions by connecting obtained knowledge with self-care behaviors. Badarudeen and Sabharwai (2010) recommend that written educational materials be written at no higher than a sixth-to-eighth grade literacy level to prevent misunderstandings and confusion. The Centers for Disease Control and Prevention and the
Centers for Medicare and Medicaid Services (2012) have established tools to enhance the literacy level of patient education materials throughout healthcare. Tailoring health literacy level to the patient population can improve patient-centered communication and patient’s comprehension of materials.

**Nurse-Led Heart Failure Program**

Successful heart failure education requires an individualized, supportive approach led by an interdisciplinary team. Ensign and Hawkins (2017) conducted a heart failure program consisting of a self-care educational session, led by a registered nurse, using an interactive workbook. The researchers found improvements in care maintenance, management, and confidence in completing self-care behaviors. A 45% reduction in readmissions within the three-month study and a cost-savings of $500,000 was found with the initiation of the program. Leppin et al. (2014) found similar improvements in patient outcomes and care through a systematic review and meta-analysis. With frequent patient communication and follow-up visits, improvement in patient-provider communication, self-care education, and management of symptoms was established.

Although many aspects of patient education were assessed, additional information missing from the literature included length of educational sessions, numbers of visits, modes of education (verbalization, videos, presentations), and how patients’ knowledge was assessed during the visit (teach back, follow-up phone calls). Although some key elements were missing from the literature review, the most influential educational topics and materials were identified, such as the diagnosis, signs and symptoms, clinical consultation, self-monitoring, use of a self-care diary, dietary and lifestyle changes, importance of physical activity, understanding treatment, adherence to pharmacological and non-pharmacological treatment, psychosocial
aspects, and self-concept to improve empowerment and motivation (Bryant, 2017; Ensign & Hawkins, 2017; Oyanguren et al., 2016; Rodriquez-Gazquez et al., 2012). This Doctor of Nursing Practice (DNP) project utilized the evidence obtained through the literature review, guidance from the theoretical and conceptual models, and information from the organizational assessment to develop a standardized heart failure educational process initiated in an outpatient cardiology clinic, to improve patient education tools and provider/clinician documentation.

**Conceptual Models**

To strengthen implementation and sustainability, this project was based on a theoretical and an implementation model. The theoretical model used was the Revised Symptom Management Conceptual Model (see Appendix D). The model is derived from the symptom management theory, a middle range nursing theory that is based on symptom management and the relationships between three dimensions: symptom experience, components of symptom management strategies, and outcomes or symptom status (Dodd et al., 2001). To assist in the implementation of a standardized heart failure educational process and utilization of the Revised Symptom Management Conceptual Model, the PARiHS model was used. The PARiHS model focuses on evidence, context and facilitation to improve implementation and sustainability of evidence-based practice changes (Kitson et al., 1998).

**Theoretical/Conceptual Framework – Revised Symptom Management Conceptual Model**

The Revised Symptom Management Conceptual Model was designed to assist clinicians in selecting clinical interventions, inform research, and establish a connection between an array of symptoms and chronic disease (Dodd et al., 2001). The model conveys the importance of patient recognition of signs and symptoms and their relationship to the heart failure diagnosis. The symptom management model is based on six assumptions: patient perception, symptom
experience, effect on nonverbal patients, the management strategy, and individualized care (Dodd et al., 2001).

According to Dodd et al. (2001), effective management of any given symptom due to a disease/illness is based on three different dimensions: the symptom experience, the symptom management strategies, and outcomes (Appendix D). These dimensions are positively or negatively influenced by dependent variables including individual characteristics, health/illness, and environment. These variables merge to help providers and patients understand symptoms, design and assess management strategies, and evaluate outcome measures (Dodd et al., 2001). To further strengthen the development and implementation of the heart failure educational process, the dependent variables and dimensions were assessed.

**Person domain.** Individual characteristics such as demographics, psychological, sociological, and physiological variables are intrinsic to the way an individual views and responds to each symptom experience (Dodd et al., 2001). The importance of the symptom experience is apparent in the literature regarding the health literacy, educational attainment, and socioeconomic status of patients and how these factors influence their knowledge and the clinician consultation regarding heart failure and symptom recognition (Dodd et al., 2001). The socioeconomic status may also affect the individual’s ability to obtain the necessary pharmacologic management, surgical interventions, dietary changes, or referrals (Dodd et al., 2001). These domains must be considered to successfully develop and integrate an educational process in an outpatient cardiology clinic that will educate patients to improve self-care behaviors and potentially, further clinical and operational outcomes (Dodd et al., 2001).

**Health and illness domain.** The health and illness domain is comprised of variables unique to the health and illness state of an individual and includes a patient’s risk factors,
injuries, or disabilities (Dodd et al., 2001). These domains can have a direct or indirect effect on symptom experience, management, and outcomes. Individuals may be at risk for the development of specific symptoms related to comorbidities, occupational hazards, treatment adverse events, or as a result of consequences that are associated with persistent symptoms of chronic disease (Dodd et al., 2001). These symptoms can be recognized, predicted, prevented, or eliminated through successful intervention and education. In addition, the Revised Symptom Management Model warrants the assessment of factors that may influence the perception, evaluation, and response of an individual at risk for potential symptoms (Dodd et al., 2001).

The health and illness contextual variable is important in heart failure as patients often suffer from multiple comorbidities affecting their ability to differentiate between symptoms caused by heart failure or another condition (Clark et al., 2014). In addition, heart failure patients often have disabling symptoms including shortness of breath, lower extremity edema, and poor cardiac function (Roger, 2013) that affect their ability to obtain and adhere to prescribed medications, ambulate to the bathroom following diuretic administration, or obtain transportation to and from office visits. The perceived assessment of disease symptoms may also be a limiting factor in heart failure patients (Clark et al., 2014), as noted in the literature review. Patients who perceive their symptoms as severe may be more likely to consult a clinician than those who see their symptoms as non-life threatening. Symptom perceptions affect response and initiation of treatment for these individuals (Clark et al., 2014).

Environment domain. The environment refers to the context within which a symptom occurs, including the associated physical, social, and cultural variables (Dodd et al., 2001). The physical environment includes the home, work, or medical setting. The social environment refers to one’s social network and interpersonal relationships. The cultural aspects of the environment
include beliefs, values, and practices that are unique to one’s ethnic, racial, or religious background (Dodd et al., 2001). The environmental domain is particularly important in heart failure management as indicated by the evidence that incorporating social support and caregivers into the educational process improves self-care behaviors (Graven & Grant, 2014). Social support, including caregivers, family or friends, improves symptom knowledge, recognition, and management (Srisuk et al., 2017). Additionally, a consistent environment, such as a home or work, helps to initiate necessary lifestyle changes and promote sustainability of self-care behaviors (Clark et al., 2014).

**Symptom experience.** The symptom experience includes an individual’s perception of a symptom including the evaluation of meaning and the patient’s response (Dodd et al., 2001). Perception of symptom refers to whether an individual notices a change from the way he or she usually feels or behaves. People evaluate their symptoms by making judgments about the severity, cause, treatability, and effect on their lives (Dodd et al., 2001). Based on the evaluation of symptoms, a response to symptoms may or may not occur. Responses to symptoms include the physiological, psychological, sociocultural, and behavioral components (Dodd et al., 2001). Understanding the relationship between these variables is important to effectively manage individual symptoms. Each of these components, perception, evaluation, and response, can have an effect on one another based on the individual’s perceived significance (Dodd et al., 2001).

The symptom experience is an important consideration to guide the development of a standardized workflow and development of evidence-based educational materials for heart failure patients. The education related to symptom cause and severity and when to initiate clinical consultation enhances detection of symptoms and therefore response to treatment, leading to decreased emergency department visits and hospitalizations. Following the symptom
perception, the evaluation then determines complexity, intensity, location, frequency, impact, and threat (Dodd et al., 2001). Based on the perceived threat, through physiologic, psychosocial, sociocultural, and behavioral components, a response to the symptom occurs.

Appropriate education for the patient and the family regarding symptom experience is important to provide these individuals with the knowledge to adequately perceive, evaluate, and interpret their symptoms. The Revised Symptom Management Model reinforces the importance of individualized education due to the differences in perception and severity of symptoms (Dodd et al., 2001). The ability for both the family and the patient to correctly identify threatening symptoms is important to prevent worsening progression and future hospitalizations.

**Symptom management strategies.** The goal of symptom management is to delay a negative outcome through biomedical, professional, and self-care strategies (Dodd et al., 2001). The first strategy includes an assessment of symptom experience from the individual’s perspective. Following symptom perception, the assessment identifies the focus for intervention strategies (Dodd et al., 2001). These strategies may be targeted at one or more components of the individual’s symptom experience to attain the desired outcome. The process is individualized and self-motivated, and may require alterations in symptom management in response to perceived acceptance or success of strategies (Dodd et al., 2001).

The model also incorporates a description of the strategy including when, where, why, how much, to whom, and how the management is delivered (Dodd et al., 2001). These characteristics are an important consideration in the development of a heart failure educational process as determining the best strategy to educate patients effectively is essential for the retention of knowledge. In addition, patient adherence is a critical factor that affects the strategy outcomes and is under the control of the patient and/or family member who is the target of the
intervention (Dodd et al., 2001). Characteristics of the health care provider and health care system can also influence the success and adherence to the recommended intervention (Dodd et al., 2001). These variables must be considered to adequately develop a successful educational process.

**Outcomes.** Outcomes emerge from management strategies as well as from the symptom experience (Dodd et al., 2001). The outcomes dimension focuses on eight factors which are involved in successfully relieving or decreasing symptoms, including functional status, self-care, costs (healthcare utilization and socioeconomic status), quality of life, morbidity and comorbidity, mortality, and emotional status (Dodd et al., 2001). These factors are interrelated and may influence the outcomes of the intervention. The duration of symptom evaluation depends upon its resolution, need for continued intervention, and response to treatment (Dodd et al., 2001).

The outcomes dimension is particularly important in heart failure patients, as the diagnosis requires continuous symptom perception, evaluation, response, and management strategies to obtain a successful outcome. The creation of a heart failure educational process will incorporate many of the factors that outcomes encompass. To effectively improve self-care behaviors the functional, emotional, and financial status, as well as health care utilization must be considered (Dodd et al., 2001). Use of these variables assists the provider to develop an individualized educational process that helps patients retain knowledge, initiate self-care behaviors, and successfully respond to symptoms. The extent of education may differ for each individual based on the outcome dimension. Some patients may require further education beyond the 30-minute session, while others may successfully retain and independently educate themselves beyond the visit. The literature review and the Revised Symptom Management
Model both indicate that implementing an individualized program reduces morbidity and mortality while improving patient’s quality of life (Oyanguren et al., 2016).

The Revised Symptom Management model is applicable to the development of a heart failure educational process and workflow as it guides the implementation of evidence-based individualized education for the patient and/or family based on his/her disease/illness. Promotion of education and sufficient management through interventions and management strategies, tailored to individual need is recommended through the model. This model assisted in the development of process and outcomes indicators through the creation of an educational workflow that is individualized based on the patient’s experience, health literacy, management, and outcomes.

The individualized process, proposed by the model, helped to guide the development of the written educational materials and improve patient understanding of content. Through the evaluation of personal characteristics such as socioeconomic status, supplementary educational content regarding cost-effective dietary options and lifestyle changes may be added. The patient’s comorbidities and heart failure stage will also be considered, as signs and symptoms experienced may be different for each patient, based on the progression of the disease, affecting the extent of education on each topic. Furthermore, the patient’s symptom experience and knowledge of the disease may lead to delivery of supplementary education. Along with the documentation of evidence-based educational materials, clinicians will have the option to document the delivery of additional information, individualizing the educational process. The interrelatedness of the model demonstrates the importance of each dimension and helps clinicians identify and create interventions to improve patient outcomes and quality of life.
Implementation Model: Promoting Action on Research Implementation in Health Services (PARiHS) Model

The PARiHS model by Kitson et al. (1998) was used to create an implementation plan for a heart failure educational process and workflow within a cardiovascular outpatient clinic in a Midwest healthcare organization. The PARiHS framework is utilized to assist researchers in translating research and evidence into practice (Kitson et al., 1998). Three main concepts within the framework include evidence, context, and facilitation. Kitson et al. (2008) explain that successful implementation strategies incorporate items related to the nature and type of evidence, the characteristics of the context in which the evidence is being introduced, and the way the process is integrated into practice. Therefore, if the relationships between the three concepts are strong, then the ideal situation for implementation into practice will be achieved (see Appendix F; Kitson et al., 1998). To successfully utilize this model, each concept will be explained and applied to the clinic and organization where the implementation into practice occurred.

Evidence. Evidence includes research, clinical experience, and patient preferences related to a specific practice (Kitson et al., 1998). The evidence for the development of a heart failure educational process within an outpatient setting is strong. The research has shown a variety of studies consisting of systematic reviews (Level I), randomized controlled trials (Level II), cohort studies (Level IV), and pre- and post-intervention designs (Level IV) that have demonstrated the effectiveness of a heart failure self-care educational program.

The identified organization’s staff has clinically observed the need for a heart failure self-care educational process and workflow to bridge the current gaps in care delivery. The PARiHS model defines this observation as the clinical expertise, which includes consensus among all organizational staff members that a new process is needed, increasing the likelihood of adoption
into practice (Kitson et al., 1998). Within the outpatient cardiovascular clinic, the current heart failure practice leaves a gap in care delivery, due to the lack of a standardized process and use of evidence-based educational topics and materials for the patients. The clinical expertise is strengthened by the many nationally recognized initiatives that support evidence-based heart failure care including improved education and focus on self-care behaviors (American Heart Association, 2017; Institute of Healthcare Improvement, 2017; Office of Disease Prevention and Health Promotion, 2017). These initiatives further necessitate the need for the implementation of a heart failure educational process with improved patient education, within the organization.

Evidence is also informed by patients’ verbalized need for improved education, with strong patient and family support influencing the success of implementation and sustainability. The identification of patient perception on health care processes and patient outcomes is important in the development of appropriate strategies to aid in health education and management (Newhouse et al., 2017). The researchers found that strong patient and family preferences towards the implementation of a standardized heart failure educational process and workflow improves knowledge, self-care behaviors, and effectiveness of management strategies.

**Context.** The context within the PARiHS model includes the environment or setting in which the proposed change was implemented (Kitson et al., 1998). Context is composed of three core elements: an understanding of the culture of the organization and the leadership roles, and the routine monitoring of systems and services within the organization (Kitson et al., 1998). Using the IOA Model to guide the data collection of an organizational assessment of the Midwest healthcare organization, the culture, leadership and measurements were assessed.

This organizational culture focuses largely on community involvement and value of care through evidence-based practice, health initiative programs, and sustainable efforts. The
engagement and accountability of the health system is essential for succeeding in population health management and holistic care. Leadership staff and employees embody the culture through patient care. Providers and leadership support new actions, behaviors, and teamwork to expand patient care and grow the organization. Individual roles within the organization are clearly defined and easily accessible to all employees. Finally, the measurements within the cardiovascular outpatient clinic are clearly indicated to all employees and routinely reported. These measurements include patient satisfaction, admission/readmission rates, and quality of care. With the implementation of a standardized heart failure educational process, improvement in these measurements can be further assessed.

Facilitation. Facilitation includes the support required to help people change their attitudes, habits, skills, ways of thinking, and workflow (Kitson et al., 1998). This support includes helping people understand what they have to change and how to adjust their behaviors to achieve the desired outcome. Facilitation is comprised of a variety of characteristics, roles, and styles that encourage implementation (Kitson et al., 1998). The identified cardiovascular clinic within this Midwest organization has displayed high levels in each of these areas. Due to the complexity of cardiovascular patients and the associated morbidity and mortality rates, employees within the organization have high levels of respect and empathy for patients and fellow employees. The staff frequently communicates with patients and are trusted to relay reliable, credible information between patients and providers. These characteristics are important for successful facilitation and implementation within the organization.

Due to the multiple cardiovascular conditions and complexity of diseases, employees must also be flexible and continuously support and assist in patient care. All individuals are easily accessible throughout the cardiovascular clinic including leadership, nurses, medical
assistants and providers, ensuring patient care is delivered in an efficient, timely manner. Any changes made throughout the outpatient clinic are successfully negotiated through interdisciplinary communication and frequent clinic meetings between leadership staff and employees. The facilitation is high for the development and implementation of a heart failure educational process and workflow within the cardiovascular outpatient clinic based on these dimensions.

Using the PARiHS framework by Kitson et al. (1998), the project was conducted utilizing evidence-based educational topics, tailored written materials, individualized education, clinical experience, and patient preferences. The project was developed and implemented with the help of an interdisciplinary team. The framework informs the development and implementation of the project through the utilization of context variables and facilitation techniques to improve patient education. Kitson et al. (2008) describes facilitation as the support, guidance, learning, and coaching delivered by the facilitator to the recipient. Facilitation requires thorough education and support for the nurses who will be the facilitators of the information to the patients. The facilitator’s role is to improve understanding, assist others towards goal achievement, provide encouragement, and promote action (Kitson et al., 1998). The effect of the interrelatedness of the evidence, context, and facilitation to implement an evidence-based educational process was evaluated with outcome indicators including chart audits and staff evaluations. Through the implementation of the standardized process, the continued assessment of the needs, resources, and culture within the cardiovascular clinic, and the encouragement of the staff, the sustainability of the educational process can further be strengthened.
Needs and Feasibility Assessment of the Organization

To successfully implement and sustain a change, the characteristics of the organization must be understood. Several factors must be accounted for when reviewing the organization, including internal performance, culture, and external environment (Lusthaus, Adrien, Anderson, Carden, & Montalván, 2002). An assessment of the organization’s culture and readiness and ability to change was conducted using the IOA Model along with an analysis capturing strengths, weaknesses, opportunities, and threats (SWOT).

The Universalia Institutional and Organizational Assessment (IOA) Model

An organizational assessment framework, the IOA model, was used to assess the organization as a whole with emphasis on the heart and vascular specialty clinic. The detailed and comprehensive outline of the IOA framework assists in understanding and improving overall organizational functioning (Lusthaus et al., 2002). The framework is divided into four areas: organizational performance, capacity, motivation, and external environment (see Appendix H). Through evaluation of these dimensions, a determination was made that the development of a heart failure self-care educational process and workflow would be supported.

Organizational performance. The Midwestern healthcare organization’s leaders have established several goals to improve the healthcare of the community: improve the patient and community experience, improve patient outcomes, improve the quality, safety and efficiency of the organization, increase the focus on prevention through community health and wellness programs, reduce 30-day readmissions, and increase the use of evidence-based care while reducing healthcare costs throughout all healthcare specialties. These goals are supported by the past, present, and future stakeholders within the organization. The organization’s leaders support the needs of these stakeholders by ensuring that available funds are utilized in advancing
research, increasing community resources, and improving healthcare access to the local community. In addition, the organization’s financial strength supports the improvement in established processes and implementation of evidence-based practice through the annual revenue of over 820 million dollars and affiliation with a larger nationally recognized healthcare system.

The established goals, stakeholder support, and financial growth support the need to improve the heart failure process within the cardiovascular care clinic. Several organizational characteristics such as physician engagement, strong interdisciplinary team involvement, desire to improve evidence-based practice, recent initiation of transition of care telemanagement, and a growing budget, support the development and implementation of a heart failure educational process, workflow, and documentation tool. The goal of implementing a standardized heart failure educational and documentation process, coupled with development of patient educational tools is to improve clinician utilization of evidence-based educational topics, and better patient outcomes. The standardized educational process helps to decrease the progression of disease and improves patients’ understanding of their condition. The educational process allows patients to become more involved in their plan of care and strengthen patient-provider communication.

**Organizational motivation.** The mission and vision of the organization is to improve the health and well-being of the community and take healthcare to a better place, and hence, to impact and strengthen the goals and culture within the organization. The organization’s leaders have established a culture that supports evidence-based practice and health initiative programs through patient care excellence. The engagement and accountability of the health system is essential for succeeding in population health management and holistic care. The leaders and employees embody the culture through patient care. Providers and the leadership team support new actions, behaviors, and teamwork to expand patient care and grow the organization. Respect
and compassion for employees is felt throughout the organization with positive attitudes and dedication to the growing organization. These characteristics improve the acceptance of the implementation of a heart failure educational process within the outpatient cardiology clinic.

**External environment.** The organization’s healthcare providers serve a diverse population with complex health, behavioral, and social needs with efforts to address determinants of health through preventative care measures and routine follow-up. The leaders within the organization seek to achieve health equity by addressing social and environmental determinants through direct and population based approaches and create an environment where individuals are treated with integrity, respect, and compassion. These characteristics are important in the development and implementation of a heart failure educational workflow as individualized education ensures the retention of materials and maintenance of self-care behaviors.

Additionally, the increased involvement of the consumers, government, and insurance providers in the cost of coverage and quality of care options for healthcare within the United States intensifies the need to develop more cost-effective measures. Consumers are reevaluating how and when to spend on healthcare services. Therefore, organizations must evolve to offer more individualized care plans and alternative treatment options such as educational programs and preventative care (Santilli & Vogenberg, 2015). With this change in healthcare, technological advances are important to achieve success in education, management, and treatment of chronic diseases (Santilli & Vogenberg, 2015). The organization has one of the most advanced, state-of-the-art information technology systems in the region, featuring heightened safety components, a highly complex computer network, and integrated designs to improve
provider and staff efficiency. This technology was utilized to develop a documentation tool to ensure evidence-based patient education charting was completed within the medical record.

To develop and initiate a heart failure educational process, the inclusion of key stakeholders such as cardiologists, advanced practice providers, registered nurses, the clinic manager, information technology specialists, the patients, families and caregivers, fiscal services staff, as well as the rest of the care team within the outpatient cardiology clinic is important. Support among stakeholders for the development and implementation of the heart failure educational program is shown through communication to improve the current process and the verbalized desire to improve evidence-based practice and patient care within the outpatient cardiology clinic. Clinicians and leaders within the outpatient cardiovascular clinic displayed interest in the development of a standardized process through communication with the Doctorate of Nursing Practice (DNP) student. The outpatient cardiology clinic’s leaders have plans to develop an outpatient heart failure clinic with evidence-based management, treatment, and education within the next six months to one year. The leaders within the cardiovascular clinic have verbalized that this DNP-led educational process will be the beginning of the development of this new, innovative clinic. The organizational drive for an educational process and heart failure clinic is due to the increased budget, the affiliation with a larger healthcare organization, the desire to improve evidence-based practice, the growing population of heart failure patients, and the recent initiation of the transition of care process.

The need for improved care and education is observed through national statistics on the increased growth of individuals diagnosed with heart failure. Heart failure is the only cardiovascular disease that continues to grow in prevalence (McClintock et al., 2014) increasing the number of admissions and readmissions in the nation (Braunwald, 2013). Within the
organization, heart failure is the leading cause of hospital admissions and readmissions, higher than caused by chronic obstructive pulmonary disease, myocardial infarctions, pneumonia, stroke, and surgical complications (CMS, 2017a). Heart failure accounts for over three million office visits per year in the United States. This high-risk disease has a five-year survival rate of approximately 50% and among Medicare patients a 10 to 12% mortality rate over 30 days (Braunwald, 2013). These devastating statistics call for initiatives within healthcare organizations to improve the education and patient care of this complex population.

This outpatient cardiology clinic is under the umbrella of a larger healthcare organization. The clinic’s leaders do not currently measure specific quality metrics related to outpatient heart failure office visits, phone calls, or emergency department visits. The cardiovascular clinic staff currently only measure quality metrics related to heart failure readmission rates among the outpatient population. The heart failure readmission rates for the cardiovascular clinic are low (approximately 4-5%). Definitive quality data is not available related to office visits, phone calls, emergency department visits, and patient satisfaction. The providers, leaders, and nurses have observed a lack of patient education and an evidence-based educational process for heart failure patients within the outpatient clinic. This lack of evidence-based education may affect a patient’s ability to understand and utilize the knowledge received, further emphasizing the need for better educational techniques.

**Organizational capacity.** The organizational capacity consists of interrelated topics that underlie performance including the financial, process, and program management within the healthcare system (Lusthaus et al., 2002). These areas have the ability to affect the implementation of a new process. The financial department’s staff oversees the budget and finances within the outpatient cardiovascular clinic. Leaders meet with a financial representative
once a month to discuss budget and profits. The information gathered is then used to adjust daily operations, staffing ratios, and provider schedules. For the development and initiation of a standardized heart failure educational process, budget, and finances were discussed with the cardiovascular outpatient manager who is in agreement with the implementation of this project.

Each department has its own leadership team to manage operations and profit margins. Leaders of the cardiovascular outpatient clinic encourage an interprofessional teamwork approach, allowing employees to have an integral role in daily operations including decision-making and workflow processes. Working as a team, improves staff satisfaction, retention, and quality of care, and helps to manage operation costs, while improving patient satisfaction and care (Nancarrow et al., 2013).

As the organization’s cardiovascular clinic continues to expand, new opportunities to care for heart failure patients will develop. The improvement of heart failure care at the organizational level assisted in the education, management, screening, and treatment of heart failure patients. The current patient education does not meet evidence-based standards, thus, warranting an organizational redesign. The benefits of initiating a heart failure educational process include the enhanced management of heart failure symptoms, higher quality of care, better patient satisfaction, reduced readmission rates, and decreased progression of heart failure (Proctor et al., 2015).

**Strengths, Weaknesses, Opportunities, and Threats Analysis**

Identifying the internal strengths and weaknesses, and the external opportunities is important when conducting an organizational assessment. Through the evaluation, strategies are organized and implemented to offset threats and take advantage of opportunities that present (Hollingsworth, 2011). A SWOT analysis evaluates internal organizational resources and
capabilities and conducts an evaluation of the external environment to identify opportunities in the area and competitive pressures that could sacrifice achievement (Hollingsworth, 2011). The analysis emphasizes vulnerable areas and identifies strengths for achieving a goal (see Appendix J).

Strengths of the organization include strong physician and provider engagement, collaboration with an internal clinical research department, and support for evidence-based practice and the development of new, innovative programs to improve patient care. Opportunities for growth include multiple heart failure patients within the community, the affiliation with a larger, nationally recognized healthcare system, and the need for improvement in patient-provider communication and patient accountability. Other opportunities related to this DNP project include creation of educational materials and protocol to initiate a heart failure educational program.

While the strengths and opportunities of developing a heart failure educational program are present, this Midwestern healthcare organization also has some weaknesses and threats. Weaknesses include identified insufficient staffing of providers, nurses, and medical assistants making it difficult to perform adequate follow-up care. Although insufficient staffing is a concern, the current situation allots time for registered nurses to provide heart failure educational visits throughout the day. Unfortunately, these visits lack an evidence-based process and information, according to the research. This lack can be corrected with the initiation of a standardized heart failure educational process. Threats to the organization include competition with other providers who provide heart failure care within the area, and a lack of cardiothoracic surgical interventions and electrophysiology support, making other area providers more appealing. The surrounding area has two other heart failure clinics and multiple heart failure
physicians and providers within a 20-mile radius, which could affect the amount of patients utilizing the organization’s cardiovascular care and education. The surrounding area providers have availability to more resources including advanced surgical interventions and cardiovascular specialists within their system. Having a project plan in place to improve patient care and outcomes is important to address these threats and barriers.

**Project Plan**

This DNP project included the implementation and evaluation of a standardized heart failure education and documentation process in an outpatient cardiology clinic. The project aided in the education of heart failure symptoms, management, screening, and treatment integrated from evidence-based topics obtained from the literature review. The development of written educational tools for patient use, tailored to an eighth grade literacy level, were distributed to all patients participating in heart failure education. Implementation of the standardized process aided in the education of symptoms related to the early identification of an exacerbation and in the management of risk factors that could potentially further exacerbate heart failure in the future. The process offers improved support for patients and their families through all stages of the disease to reduce symptoms and improve quality of life. Furthermore, a clinical documentation SmartPhrase, built into the electronic medical record, allowed clinicians to succinctly document all educational components provided to patients within this clinic.

**Purpose of Project**

The purpose of this DNP project was to determine if a standardized heart failure educational process initiated in an outpatient cardiology clinic improves patient education tools, and provider/clinician documentation based on evidence-based heart failure topics identified in the literature review.
Objectives

Through the development of a standardized workflow, the DNP student attempted to improve both the educational discussion and materials received by patients with heart failure through attainment of the following objectives:

- Develop a procedure/standard workflow for use among all providers in the outpatient cardiology clinic including the steps required to provide evidence-based patient education topics to outpatients diagnosed with congestive heart failure by January 8th, 2018.

- Develop a computerized documentation tool within the medical record for providers to document evidence-based educational components and additional individualized patient need by January 8th, 2018.
  - Integrate topics derived from the literature review to educate patients about self-care maintenance, management, and confidence.

- Develop written educational tools and obtain organizational approval for patient education, tailored to an eighth grade literacy level, in the cardiovascular clinic by January 8th, 2018.

- Monitor the following quality improvement metrics related to project action steps:
  - Complete chart audits prior to implementation of standardized heart failure educational process to determine a baseline average percentage of patients who are receiving evidence-based heart failure education including information on daily weights, low sodium diet, fluid restriction, physical activity, shortness of breath, and edema (Bryant, 2017, Oyanguren et al., 2016; Rodriguez-Gazquez et al., 2012) by January 8th, 2018.
o Evaluate nurse satisfaction of the standardized process, documentation tool, and written materials, as well as recommendations for improvement in patient education topics or techniques through an anonymous evaluation form to determine if improvements to the heart failure educational process are needed by February 7th, 2018.

o Complete a randomized chart audit post-implementation to measure the average percentage of patients receiving evidence-based heart failure education including information on daily weights, low sodium diet, fluid restriction, physical activity, shortness of breath, and edema (Bryant, 2017; Oyanguren et al., 2016; Rodriguez-Gazquez et al., 2012) post implementation of a standardized workflow by February 12th, 2018.

o Complete chart audits to measure completion rate of heart failure educational process and documentation among clinicians providing education to patients by February 12th, 2018.

Type of Project

This DNP scholarly project was a quality improvement project that utilized available evidence and current practice techniques within the organization to develop a procedure/standard workflow for use among all clinicians regarding steps required to provide evidence-based patient education topics to outpatients diagnosed with heart failure. A quality improvement project is a methodical, formal approach to the evaluation of practice, and endeavors to improve performance (American Academy of Family Physicians, 2017). The quality improvement process is based on the following principles: establishing a culture of quality in the practice, determining and prioritizing potential areas of improvement, collecting and analyzing data,
communicating results, and committing to ongoing evaluation (American Academy of Family Physicians, 2017).

Within this DNP scholarly project, an organizational assessment was conducted. The assessment identified the gaps in care and organizational needs that must be addressed to improve practice and process of care. Utilizing current practice data and available evidence, a heart failure educational process and workflow was developed to improve clinician utilization of heart failure educational tools. Over time, this educational process will assist patients in improving the use of self-care behaviors while decreasing hospital admissions and improving quality of life.

**Setting and Resources Utilized**

The setting for the development of this DNP scholarly project was a cardiovascular outpatient clinic in a Midwest healthcare organization. The clinic provides a variety of cardiovascular and peripheral vascular specialties including amputation prevention, device implementation and management, hypertension treatment, myocardial infarctions, and heart failure care. The organization is in direct affiliation with a 208-bed hospital and a large nationally recognized healthcare system. In combination with the organization, physicians and providers contribute to attain achievements in patient safety, recognition of excellent care for patients with myocardial infarctions, and success in patient satisfaction.

With the advancements of cardiovascular care, support of staff, and focus on evidence-based practice within the outpatient cardiovascular clinic, the clinic employees and leadership supported the development and implementation of a standardized heart failure educational process. The development and initiation of this process necessitated several resources to increase
its success. Time of clinicians, leadership staff, and information specialists were considered as well as the materials needed to complete this project. Resources included:

- Time with the clinic manager to obtain the necessary resources for financing and production of the written educational tools
- Time with the designated site mentor to successfully and effectively develop and implement the educational process within the cardiovascular care clinic
- Time to develop the procedure/standard workflow for use among all clinicians regarding steps required to provide evidence-based patient education topics
- Time to develop written educational tools for patient use, tailored to a eighth grade literacy level
  - Utilization of the Centers for Medicare and Medicaid Service’s Toolkit for Making Written Material Clear and Effective was utilized to help create written materials that are easier for patients to read, understand, and use. This 11-part toolkit provides practical tools and advice on ways to make written material clear and effective for the patient population intended (Centers for Medicare and Medicaid Services, 2012).
  - Flesch-Kincaid and the Simple Measure of Gobbledygook (SMOG) readability formula was utilized to evaluate grade level of information as well as comprehension of information. An aim of an eighth-grade reading level was established (Badarudeen & Sabharwal, 2010). These readability formulas are evidence-based and are utilized among many institutions to provide a grade-level literacy level of written materials. The Flesch-Kincaid readability formula calculates the average number of words used per sentence and the average number
of syllables per word within a mathematical equation to provide the appropriate literacy level of the materials. The SMOG readability formula takes into account syllables within a mathematical equation to calculate comprehension of materials related to the literacy grade level.

- Time with the forms committee for the development and utilization of the heart failure educational materials to approve templates and written materials
- Time to develop a computerized tool to improve documentation of educational components and efficiency of clinicians
- The time required of the informatics specialist to meet with the DNP student and develop this documentation tool
- Clinician time in the education of the standardized workflow, documentation tools, and patient educational materials
- Access to the electronic medical records to complete de-identified chart audits prior to implementation of the standardized educational workflow to assess for documentation of evidence-based heart failure educational topics
- Access to electronic medical records to complete chart audits post implementation to evaluate for improvement of documentation and education of the evidence-based heart failure topics, and to determine clinician utilization of the educational tools specified in the standardized workflow.
- Time to implement the educational workflow in practice by the registered nurses. The cardiovascular nurses are currently allotted 30-minute time slots for patient education visits; this improved standardized process will help better educate the patients for heart
failure management and decrease time needed to document education provided by the nurses.

**Design for the Evidence-Based Initiative**

The PARiHS Model by Kitson et al., (1998) was used as a guide for implementing this project as follows:

- **Evidence**: the available research was compiled utilizing a literature review to determine outcomes of a heart failure educational process, education content, as well as evidence-based inclusion criteria. Additionally, current practice, clinical expertise, and patient preferences were considered in the development of a standardized workflow for use among all providers in the education of heart failure patients, as well as written educational tools for patient use, tailored to an eighth-grade health literacy level.

- **Context**: The context of the organization is conductive to the successful implementation of evidence into practice (Kitson et al., 2008). Organizational contexts include the culture, transformational leadership, and appropriate monitoring, evaluation, and feedback (Kitson et al., 2008). The culture of the healthcare organization and cardiovascular care clinic is patient-centered with an emphasis on evidence-based practice. The drive for improving evidence-based practice guided the development and implementation of the standardized educational process. The organizational leaders encouraged and supported the project throughout development and implementation. Providers and leaders support new actions, behaviors, and teamwork to expand patient care. This support improved the staff approval and compliance with executing the educational process. The development and implementation of the heart failure educational process among cardiovascular clinicians is identified as a need by both the
staff and leaders. This identified need guided the development of the educational brochures and weight log, as well as the implementation of the standardized process. The clinicians were receptive to the new materials and educational process providing helpful advice and recommendations. This approval displayed readiness to change.

- Facilitation: Facilitation is a broad term used to describe human support, guidance, learning, and coaching by a facilitator (Kitson et al., 2008). The DNP student facilitated the heart failure standardized process by enabling, empowering, and training outpatient cardiovascular nurses to provide patients with evidence-based education. The DNP student created and produced brochures and weight logs to be given to the patient, as well as a standardized heart failure educational process to guide nurses in the provision of patient information. The DNP student then met with outpatient cardiovascular clinicians and educated the staff on evidence-based heart failure topics and the new standardized process. The DNP student shared results from the literature review and how the provision of evidence-based education can improve patient care and outcomes. Providing this education enabled the nurses to execute the standardized process.

Educating clinicians improved the delivery of evidence-based education during office visits and in the translation of test results to patients. Facilitation is defined as a technique to make objectives easier for others (Kitson et al., 2008). The documentation tool was created to improve nurse efficiency and workflow, decreasing the nurses’ time spent charting patient information. The educational brochures were created to decrease repetitive data and provide succinct information, while improving patients’ understanding of the materials. Envelopes were organized and placed in the education rooms to reduce the amount of time the nurses spent preparing the materials. This
preparation allowed the nurses to focus on the patient and provide the education needed for the patient to succeed. Throughout the project, the DNP student was available to provide help and support to achieve the goal of improving evidence-based heart failure education. This DNP project was multifaceted, combining a range of techniques to improve success and sustainability. The PARiHS framework explains successful implementation and facilitation involves multiple approaches and practices to thrive and succeed (Kitson et al., 2008).

**Participants**

This DNP project required participation from several different professionals. Participants included cardiovascular outpatient nurses, informatics specialists, cardiology providers, and the cardiovascular clinic manager. Nurses provided education to heart failure patients and documented their findings with the use of a SmartPhrase that was created for use within the medical record. Informatics specialists assisted in the development of the computerized documentation tool for providers and clinicians to document the educational components provided to patients. The manager provided the necessary finances to allow the DNP student to implement new educational and documentation processes. Additionally, a cardiology nurse practitioner had oversight of this project through mentoring of the DNP student. Although patients, caregivers, and family members were the recipients of the heart failure educational process, they were not directly involved in the creation, implementation, and measurement of project goals and outcomes.

**Measurement: Sources of Data and Tools**

Data for this project came from a variety of sources. Background information for the standardized educational process was collected from the cardiovascular clinic staff as well as
evidence-based policies collected through a literature review. De-identified, randomized chart audits of heart failure patients were assessed pre- and post-implementation of the standardized workflow to obtain changes in education completion rates among patients. Review for determination by the Institutional Review Board (IRB) was obtained prior to development and implementation of an educational process and access to the electronic medical record system.

**Steps for Implementation of Project**

The proposed DNP project was conducted to determine if a standardized heart failure educational process, initiated in an outpatient cardiology clinic, improves patient education tools and provider/clinician documentation based on evidence-based heart failure topics identified in the literature review. The objectives were to develop a standardized heart failure educational workflow for use among providers in an outpatient cardiology clinic, develop a computerized documentation tool to improve clinician efficiency and the patient educational process, and develop written education tools for patient use, tailored to an eighth grade literacy level. To ensure the goals and objectives were met for this project, the following steps were acquired.

1. The DNP student developed a procedure/standard workflow for use among all providers/clinicians in the outpatient cardiovascular clinic regarding steps required to provide evidence-based patient education topics to outpatients diagnosed with congestive heart failure by January 8\textsuperscript{th}, 2018.

2. The DNP student created evidence-based heart failure educational tools for clinician and patient use in the outpatient heart and vascular clinic. Materials were developed and approved for use by January 8\textsuperscript{th}, 2018.
   a. The Centers for Medicare and Medicaid Service’s Toolkit for Making Written Material Clear and Effective was utilized to assist in the development of written
materials, making them easier for patients to read, understand and use (Centers for Medicare and Medicaid Services, 2012).

b. Flesch-Kincaid and the SMOG readability formula were utilized to evaluate grade level of information as well as comprehension of information. An aim of an eighth-grade reading level was established (Badarudeen & Sabharwal, 2010).

3. The DNP student partnered with an informatics specialist to develop a computerized evidence-based documentation tool for clinicians to document educational components and additional related clinical priorities in the patient medical record for use in the outpatient cardiology clinic by January 8th, 2018. The computerized tool included evidence-based topics derived from the literature review.

4. The DNP student completed chart audits prior to implementation of a standardized heart failure educational process to determine a baseline average percentage of patients who are receiving evidence-based heart failure education by January 8th, 2018.

5. The cardiovascular outpatient registered nurses began implementing the standardized heart failure educational process on January 8th, 2018.

6. The DNP student completed a randomized chart audit post-implementation to measure the average percentage of patients receiving evidence-based heart failure education by February 12th, 2018.

7. The DNP student completed chart audits to determine clinician utilization of the educational tools specified in the standardized procedure workflow by February 12th, 2018.
8. The DNP student evaluated nurse satisfaction and recommendations through an anonymous evaluation form to determine if improvements to the heart failure educational process are needed by February 12th, 2018.

9. The DNP student wrote a de-identified scholarly paper describing the project and results and will submit to GVSU Scholar Works by April 20th, 2018.

**Project Evaluation Plan**

The project was evaluated through the completion of chart audits to measure clinician utilization of the educational tools specified in the standardized procedure workflow. This data was compared to baseline chart audits on the percentage of heart failure patients who received evidence-based heart failure education prior to the initiation of the standardized process. Education on the standardized heart failure educational process was arranged with the cardiology clinic nurses and they began implementing the process on patients with a diagnosis of heart failure between January 8th, 2018 and February 4th, 2018 within the outpatient cardiovascular clinic. Health literacy was considered during the development of the educational materials based on the results of the literature review. Anonymous written evaluations were conducted with the cardiology nurses to determine the positives and negatives of the educational process and written materials developed.

This project had strong support from leadership, providers, and nurses. The resources necessary for success were provided through the organization. Deliverables for this project included an evaluation of the new heart failure educational process, utilization among cardiovascular clinicians, and evaluation by the cardiovascular nurses of the written educational tools and the standardized educational workflow for patient care.
In addition to assessing the success of the educational program through the evaluation of clinician utilization, this project was evaluated using the American Association of Colleges of Nursing DNP Essentials (2006). Essentials addressed with the project included Essential I (Scientific Underpinnings for Practice), Essential II (Organizational and Systems Leadership for Quality Improvement and Systems Thinking), Essential III (Clinical Scholarship and Analytical Methods for Evidence-Based Practice), Essential IV (Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care), Essential VI (Interprofessional Collaboration for Improving Patient and Population Health Outcomes), Essential VII (Clinical Prevention and Population Health for Improving the Nation’s Health), and Essential VIII (Advanced Nursing Practice).

**Ethics and Human Subjects Protection**

An application for this project was submitted to both Grand Valley State University Human Research Review Committee for IRB and the organization’s IRB review board for a quality improvement project. The IRB for Grand Valley State University determined that the project is quality improvement and not research according to their guidelines (see Appendix M). The project was assessed and determined to be a quality improvement project by the organization’s IRB department (see Appendix N).

**Budget**

To evaluate the proposal and complete the development and implementation of the evidence-based process, a preliminary budget was developed. When conducting the budget for the implementation of the standardized educational process, both revenue and expenses display comparable data. This repetition was completed to exhibit the time of staff supporting the project is an in-kind donation (revenue) while also an expense as the employees were taken away from
their regular practices while meeting with the DNP student, conducting the standardized heart failure educational session, and completing the staff evaluation. As noted in Appendix K, the budget does not show an initial cost-savings during the duration of the project. However, as noted in the literature review, evidence-based heart failure education may generate cost-savings after a longer length of implementation through decreased 30-day hospital readmissions, length of stay, and emergency department visits.

Costs for this DNP project included time needed for the DNP student to create the content for the standardized educational workflow, documentation tool, and written education tools for patient use (see Appendix K). Meetings with the cardiology outpatient manager, clinic nurses, and cardiology providers were conducted to assess the current protocol at the Midwest healthcare organization and how the heart failure educational process could be improved. Further meetings were conducted to educate the clinicians about the educational process, written materials, and documentation tool. Final costs were determined by the number of hours needed to develop and initiate the educational process. Additional resources included the materials needed to develop and produce the written educational materials.

Resources needed to develop, implement, and evaluate the educational process required meetings with multiple disciplines. Meetings were conducted with the manager to update the leadership staff on the progress of the project every two weeks. The average hourly rate of a cardiovascular manager in the United States is $54 an hour (Salary.com, 2017). Meetings conducted with the manager complied four hours in total over the duration of the project. Multiple meetings with a cardiology nurse practitioner, who is the site mentor for the DNP project, occurred to discuss the educational process and progress of the project. Prior to initiation, the heart failure educational materials were reviewed with the site mentor to assess for
necessary changes related to the organization. The mentor also reviewed the proposal prior to initiation of the project at the organization. The average hourly rate of a nurse practitioner in a cardiology outpatient office is $46 an hour. In total, approximately eight hours was spent with the mentor discussing the DNP project. This time included meetings to discuss current practice within the outpatient clinic, ways to improve heart failure education, training on the new standardized heart failure educational process, meetings with the advisor, and time spent defending the proposal and project defense.

To implement the project, four cardiovascular nurses were educated on the standardized process. Together the nurses completed 15 heart failure education nurse visits over four weeks, each with the duration of 30 minutes. Time included educating the patients, discussing questions concerns, and documenting the visit. The average cost of a registered nurse in the outpatient cardiology office is $29 an hour. To create an evidence-based documentation tool for nurses to document the educational components discussed and improve workflow efficiency, a meeting with a clinical informatics specialist was conducted to discuss and develop a documentation tool for use among clinicians (one hour). The average hourly rate of a clinical informatics specialist is $39 an hour (Glassdoor, 2017).

The cost of the written educational patient tools was also included in the budget. This cost included 100 educational brochures ($2.72 per brochure). The preliminary budget included the cost of a heart failure calendar as well but this was not printed due to cost restrictions. A grant request is currently in progress to assist in paying for the calendars. While waiting for approval of the grant, a weight log was created for patients (0.34 cents per weight log), to assist in recording and monitoring of daily weights. The heart failure zones handout was supplied to patients (34 cents per sheet) to assist in clinical consultation. The standardized educational
process document was printed for the nurses as well as a sample of nutritional labels for the patients (approximately two cents per sheet). The final budget included costs for the 15 patients educated.

A meeting with a comparable organization’s heart failure program was conducted to discuss the process of their program and information to help guide the process at this Midwest healthcare organization. The meeting times of the two registered nurses (two hours) and one nurse practitioner (one hour) were included in the budget. Both meetings were a one-time occurrence.

To determine revenue associated with the heart failure educational process, insurance coverage was assessed. A majority of the patients within the clinic have Medicare coverage. Unfortunately, Medicare generally does not cover health education or wellness programs alone, other than diabetes and kidney disease education (Centers for Medicare & Medicaid Services, n.d.). Private insurance coverage differs depending on provider. Cost-savings can still be established with the initiation of the heart failure educational process through the reduction of hospital readmissions, length of stay, and emergency department visits, as stated in the literature review (Bryant, 2017; Oyanguren et al., 2016; Rodriguez-Gazquez et al., 2012).

**Stakeholder Support/Sustainability**

Prior to implementing a change within an organization, the approval of the organization’s stakeholders is important to obtain. Stakeholders are those who are involved with and value the organization (Universalia, 2017). Attention to, and involvement of, key stakeholders is believed to enhance the design and implementation of evaluations and results in decision-making (Bryson, Patton, & Bowman, 2011). The understanding and application of stakeholder identification and analysis techniques are important when developing and implementing a new project. This
understanding and application was shown with the creation of a stakeholder power interest grid (see Appendix L).

Stakeholders for the organization include financial donors, the government, suppliers, leadership, outside medical partnerships, and the community. Significant stakeholders in this DNP project included leadership, nurse practitioners, nurses, the financial department, and informatics. The nurses are significant stakeholders, as they were most affected by the heart failure educational program. Individuals who have high interest but little power included heart failure patients and their caregivers and/or families. The support for these key stakeholders is important, as the implementation of the heart failure educational process will have an effect on both patient and family outcomes. Another key aspect of the power interest grid is the stakeholders within the organization. These individuals have high interest and significant power for the project, and include leaders, cardiologists, nurse practitioner/physician assistants, and nurses. Individuals described as context setters are those who have power but little interest in the program. These individuals include insurance companies, government, and the financial department. An authorization from the insurance company must be completed to approve and cover the appointment for the heart failure education, if possible. Although Medicare does not pay for heart failure education, other insurance companies may reimburse for this service. These stakeholders are important to include as they could affect the coverage, participants involved, and the supplies needed. Lastly, individuals described as the crowd included those who have little interest or power in the project. These individuals do not require much effort, but were informed of the project and its outcomes, and included medical assistants, families of cardiovascular patients without heart failure, and/or marketing sources.
The project was verbally supported throughout the outpatient cardiovascular clinic by key leaders, cardiologists, nurse practitioners/physician assistants, and nurses. The heart failure cardiologist and the manager brought the project to the DNP student for consideration. The manager and the cardiologist had oversight of the program following DNP initiation and completion of the program. The education of staff members within the cardiovascular clinic at the Midwest organization increased acceptance of the new heart failure education protocol and will help to maintain sustainability. Leaders and clinicians have communicated plans for sustainability and further development of the educational process within the outpatient cardiology clinic. Expected actions include hiring a heart failure coordinator nurse practitioner within the next six months with a dedicated registered nurse to sustain project efforts in tandem with job related responsibilities. In addition, the outpatient clinic leaders have expressed interest in developing a heart failure clinic for further management and care of heart failure patients. The development and initiation of a heart failure clinic is supported through the organizational strategic plan resulting from affiliation with a larger, nationally recognized healthcare system.

**Project Outcomes**

The outcomes of this project are important to the continuation of improvements in heart failure education and care at this outpatient cardiology clinic. To achieve the desired outcomes, several objectives were met prior to implementation of the DNP project. A standardized workflow was created (Appendix O) with steps to deliver evidence-based heart failure education with newly developed written educational materials. The written materials were created in conjunction with the inpatient heart failure clinical specialist as well as input from the organization’s forms committee. The forms committee verbalized a recommended health literacy goal of an eighth grade level for the written materials. A heart failure educational brochure was
thus created synthesizing evidence-based heart failure topics integrated from the literature review and the previously used materials (Appendix P). Following development, the brochure was then processed through both the Flesch-Kincaid and the SMOG readability formulas to assess health literacy level. A majority of the document read at less than an eighth grade reading level in both readability formulas but due to the discussion of appropriate medications and causes of heart failure (diabetes, obesity, irregular heartbeats, etc.) parts of the brochure read at a ninth grade to college level. Each term was mentioned and then explained in easy-to-understand descriptions that met the eighth grade health literacy level. These areas were addressed in detail in the nurse visits to avoid any misunderstanding or confusion.

To further assist the patient in the self-management of heart failure, a weight log was created and distributed to patients (Appendix Q). The weight log allows the patient to write down daily weights with the corresponding date to help detect fluid retention prior to experiencing symptoms. The patients are encouraged to bring this weight log to all appointments to ensure appropriate monitoring of fluid status. Included with the weight log, a heart failure zones handout was also provided. This handout is an easy-to-understand document that displays different levels of symptoms and when to seek clinical consultation. This heart failure handout provides the patient with three zones, green signifies the absence of symptoms; yellow denotes caution, seek clinical consultation; and red is an emergency, immediately call the provider or proceed to the emergency department. The zones handout provides the patient with the cardiologist’s name as well as the clinic phone number to call with questions or concerns.

To ensure education and documentation of evidence-based heart failure topics was completed with each patient, a documentation SmartPhrase was created (see Appendix R). A SmartPhrase is an easy to use documentation tool that allows clinicians to document evidence-
based heart failure education by typing a one-word algorithm into the patient’s progress notes. This algorithm then automatically populates into evidence-based education provided to the patient including information on the diagnosis of heart failure, associated symptoms, necessary dietary restrictions, adherence to daily weights, the use of appropriate medications, and the importance of staying active. This documentation tool helps to improve the efficiency of nurses and acts as a prompt to the education necessary to provide to the patient.

**Heart Failure Education**

The outpatient cardiology clinic scheduled 18 heart failure nurse visits within the four-week implementation timeframe. Unfortunately due to weather, three patients were unable to make their appointments, thus 15 heart failure nurse visits were conducted. The nurse visits provided patients with evidence-based heart failure education utilizing the new written educational materials and documentation tool. The project was evaluated through the completion of chart audits to measure clinician utilization of the educational tools specified in the standardized procedure workflow. This data was compared to baseline chart audits on the percentage of heart failure patients who received evidence-based heart failure education prior to the initiation of the standardized process. Clinician utilization of the documentation tool was also assessed through evaluation of nurse visit chart audits. Following the project, nurse evaluations were conducted to determine the satisfaction with the new process and any comments or recommendations for improvement.

**Chart Audits**

Randomized chart audits were conducted prior to implementation of the heart failure educational process to determine the percentage of patients who received education on evidence-based heart failure education. To complete the pre- and post-implementation chart audits, 25
randomized patient charts were examined. Result notes, telephone encounters, office visits, and nurse visits were reviewed. Prior to implementation only 20% (5/25) of patients evaluated had documented evidence-based heart failure education on the diagnosis, causes, symptoms, daily weights, dietary restrictions, and importance of physical activity. If one topic was excluded the patient’s chart was considered to not have documentation that all evidence-based heart failure education was provided.

Following clinician education by the DNP student and implementation of the heart failure educational process with written materials and verbalized education, randomized chart audits were again conducted. Out of the 25 patient charts evaluated, 44% (11/25) had documented evidence-based heart failure education on the diagnosis, causes, symptoms, daily weights, dietary restrictions, and importance of physical activity. Despite having only completed 15 heart failure nurse visits, there was an improvement of 24% over the four-week implementation. The results were surprising, considering the short timeframe and small sample size. The improved percentage could be due to the provided education on evidence-based heart failure topics provided to both nurses and providers leading to increased education in telephone encounters, result notes, and office visits. The improved education provided will be important in the sustainability of the program.
Figure I. Improvement in evidence-based heart failure education

The evaluation of chart audits, both before and after implementation, uncovered that a majority of patients with newly diagnosed heart failure are not receiving the recommended evidence-based education to appropriately self-manage their condition. This lack of education is an area for improvement as poor patient knowledge has the potential to increase the progression of heart failure as well as worsen the symptom experience. Assessment of the chart audits also found that patients suffering from multiple cardiovascular conditions are at an increased risk of not receiving appropriate evidence-based education due to time constraints during office visits. To enhance the problem, patients who are receiving heart failure information are often lacking education on key concepts related to the diagnosis. For example, patients are provided education on the importance of a fluid restriction and daily weights but receive no education on associated symptoms, sodium restriction, and the importance of physical activity. This omission was a common theme among the patient charts evaluated, both pre- and post-implementation.
To assist in the improvement of heart failure education among patients treated at the outpatient heart and vascular clinic, a documentation tool within the electronic health record was developed. The documentation tool and provision of evidence-based heart failure education was evaluated through chart audits of the 15 nurse visits completed. Evaluation of the patient’s charts found that 100% (15/15) of patients who received a nurse visit had documentation that evidence-based heart failure education was completed. This completion rate is a significant improvement based on the pre-implementation percentage of 20% completion. These results demonstrate the capacity of improvement if patients continue to be referred for heart failure nurse visits. These visits provide evidence-based heart failure education while also providing the time for patients to ask questions and address concerns.

Figure II. Improvement of Evidence-Based Heart Failure Education through Nurse Visits

Staff Evaluations

To further assess the changes that were made, anonymous written evaluations (see Appendix S) were conducted with the cardiology nurses to determine the positives and negatives
of the educational process and written materials developed. The first topic assessed the extent to which the heart failure educational process covered the necessary topics for patient education. The nurses felt that the educational topics provided were imperative for the self-management of heart failure and important in the prevention of worsening heart failure symptoms and progression of the disease. The one recommendation received was that due to the succinct nature of the educational materials, the nurse felt that the educational brochure lacked appropriate education on a low-sodium diet. This recommendation will be provided to the organization to ensure patients are receiving enhanced education on this topic.

The second topic assessed if improvements in heart failure education were made with the initiation of the standardized heart failure process. All four nurses agreed that the process improved heart failure education. One nurse stated that the standardization of the educational topics made the process more unified, enabling all patients to receive the same evidence-based education.

The third topic addressed if improvements were made in nurse efficiency and workflow with the initiation of the documentation SmartPhrase within the electronic medical record. All nurses stated that the SmartPhrase improved the ease of documentation and decreased the time spent recording information following the nurse visit. One nurse stated that it also served as a prompt to ensure evidence-based heart failure topics were addressed with each patient further unifying the information provided in the nurse visits.

The last topic addressed in the staff evaluation was if improvements were made in the patient understanding of the new educational brochures and if the materials provided the patients with the necessary information to self-manage their condition. All of the nurses agreed that the written materials were an excellent concise patient resource. The materials were easy to
understand and displayed in a better format than previously used materials. The nurses agreed that the materials were created at a lower health literacy level making it more applicable to a greater number of patients. One recommendation was developing the educational brochure in a variety of languages so that more patients could utilize the materials. This recommendation will be provided to the organization and can be further addressed as the heart failure program expands.

Through the staff evaluations, another unanimous recommendation was that the delivery of heart failure education should be divided into more than one nurse visit. The nurses felt that the amount of education provided to the patient in the 30-minute nurse visit is often overwhelming, causing misunderstanding and poor knowledge retention. Additional nurse visits would allow a breakdown of educational topics and permit the patient the time to address questions and concerns. Follow-up education with additional nurse visits would also allow the patient to revisit previously learned topics leading to better knowledge retention. Fortunately, the organization is already planning for the development of a heart failure clinic with a dedicated nurse to provide the time to expand the educational process.

This project began with the question: Does a standardized heart failure educational process initiated in an outpatient cardiology clinic result in improved patient education tools and improved provider/clinician documentation based on evidence-based topics derived from the literature review? The outcomes described above demonstrate that even in the short timeframe of this project, although slight, improvements in the percentage of patients educated with evidence-based heart failure education were found. Additionally nurse evaluations displayed staff approval of the new standardized heart failure education. The nurse’s responses and comments displayed the importance of the continuation of this standardized heart failure process as well as continued
use of the concise, easy-to-understand written materials. These results support the importance and hope for sustainability within the cardiology clinic to continue improving heart failure education for the community.

**Implications for Practice**

The number of patients with heart failure is reaching an all-time high and continues to rise (Leppin et al., 2014). These patients are complex and fragile individuals who require close management and care. Heart failure patients are subject to frequent readmissions estimated to cost over 31 billion dollars a year in the United States (Newhouse et al., 2017). Research has shown that heart failure is a chronic disease characterized by acute exacerbations of signs and symptoms that require thorough education and frequent management (Roger, 2013). If these educational and management needs are not met, patients suffer from increased morbidity and mortality. Many organizations have combated the progression and severity of heart failure with the initiation of a heart failure management program or educational program that provides easy-to-learn education about diagnosis, medication, and self-care behaviors. These programs help patients to better manage their symptoms at home with diet and exercise changes, leading to a better quality of life.

The diagnosis of heart failure can be difficult, requiring new lifestyle changes, medications, and self-care behaviors. Heart failure education must be presented in an understandable manner to patients and families. Education and self-care behaviors need to be reinforced and assessed regularly to ensure the patient is following the treatment plan. Research has shown that self-care behaviors and provider consultation can be further reinforced with the involvement of caregivers and family members in the patient’s plan of care (Srisuk et al., 2017). These individuals can help to reinforce positive behaviors and monitor for concerning signs and
Heart failure research has found that frequent follow-up and education improves heart function, ensures better treatment, decreases hospitalizations, improves quality of life, and reduces morbidity and mortality among participants (Oyanguren et al., 2016). The need for these programs was further enforced by the patient’s perception of heart failure knowledge and care. Patients agreed that they lacked heart failure knowledge and did not receive the necessary education to adequately participate in their care (Clark et al., 2014). Qualitative research has shown that after a heart failure diagnosis, patients state the importance of heart failure knowledge, frequent follow-up, and the ability to self-manage at home. Literature has also found that poor health literacy affects the ability of patients to understand and retain health information. Therefore, to improve patients’ understanding, information must be tailored to an acceptable health literacy level (Chen et al., 2014).

Leadership and employees with the Midwest healthcare organization have verbalized the desire to create and implement a new standardized heart failure educational process that will improve the education about disease knowledge and ability to perform self-care behaviors, and also increase adherence to treatment and provider consultation with worsening symptoms. Increasing the patient and family’s knowledge of the heart failure diagnosis, management, and treatment increases symptom response time, improves patients’ quality of life, and reduces hospital admissions and emergency department visits. These outcomes improve patient satisfaction and reduce costs for the organization.

**Successes and Difficulties**

**Strengths**

The main strength for this project was the support from an organization that values
evidence-based practice and improvements in quality improvement initiatives. The assistance and support from the leadership team, nurses, and providers helped the DNP student to develop and implement the standardized heart failure educational process. An unintended strength was the initiation of the cardiology transition of care process for recently discharged heart failure patients. The new process assisted in scheduling patients diagnosed with heart failure for educational nurse visits. The nurse visits helped to reinforce inpatient education and allowed patients more time to discuss questions and concerns.

Challenges

Although the project improved evidence-based heart failure education for patients, it did not come without challenges. One of the biggest challenges was developing and implementing the evidence-based written educational materials. Through discussion with the forms committee within the organization, the members felt that the written materials should be consistent in both the inpatient and outpatient setting. After meeting with the inpatient cardiology clinical specialist, the DNP student in conjunction with the clinical specialist developed evidence-based written heart failure educational brochures to be distributed to both the inpatient and outpatient settings. These new brochures brought additional challenges for the outpatient clinic with marketing and printing of the materials. A patient education grant was applied for to assist in purchasing the brochures but has not yet been finalized. To avoid delay of initiation of the standardized process, the materials were printed and provided to patients.

Another challenge encountered was the creation and printing of the heart failure calendars with corresponding weight log. The forms committee verbalized the importance of maintaining consistency with the calendars and weight logs in both the inpatient and outpatient setting. The current calendar that is utilized inpatient is a wall calendar that includes heart failure
education as well as space to record daily weights and symptoms. The outpatient clinic applied for a grant to assist in paying for the marketing and printing of these calendars. This process takes several weeks and has not yet been approved. While waiting for the grant approval, a weight log was developed and printed by marketing for patients to record daily weights.

Another challenge that was encountered following implementation of the standardized heart failure educational process was the number of heart failure patients referred for education. The number of patients referred ranged from three to five a week. Due to the small sample size and short timeframe, the improvement in the percentage of patients who received heart failure education is relatively low. The organization is hoping to continue the heart failure educational process and expand care for this population with the initiation of a heart failure clinic. The initiation of this clinic would provide further data for evaluation of the standardized heart failure educational process.

**Sustainability**

There is a strong likelihood this project will be sustainable following the implementation of this DNP project. The leaders and providers within the organization have previously verbalized support for heart failure nurse visits prior to the implementation of this project. The previous nurse visits lacked evidence-based heart failure education, written materials, and a documentation tool. With the initiation of a standardized heart failure educational process, the materials and education delivered to the patients are evidence-based and will hopefully aid in the self-care and clinical consultation for the patients.

Additionally as discussed above, the organization plans to develop and implement a heart failure clinic to care and support this population. The heart failure clinic will include heart failure nurse visits as well as frequent follow-up care by a nurse practitioner or physician assistant. The
initiation of this clinic will help to ensure sustainability of this DNP project.

**Relation to Other Evidence / Healthcare Trends**

Improvement in heart failure care has become a national priority. CMS (2017b) began publicly reporting 30-day heart failure readmissions, complications, and mortality rates for all healthcare organizations in 2007. Publicly reporting these numbers increases the transparency of hospital care, provides information for consumer’s knowledge, and assists healthcare organizations in quality improvement efforts. In addition, under the Hospital Readmissions Reduction Program of the Affordable Care Act, CMS (2017c) is required to reduce payments to hospitals with excess 30-day readmission rates. The Affordable Care Act requires hospitals to improve heart failure care including education on self-care and provider consultation as well as assessment and management aspects for all patients.

In addition to reduction of funds and payment for readmissions, the Agency for Healthcare Research and Quality (AHRQ) has established guidelines to improve heart failure care within the United States. These guidelines incorporate many aspects of heart failure care including physical assessment, laboratory recommendations, management options, treatment, and patient education (AHRQ, 2013). The AHRQ recommends thorough education aimed at symptom recognition, activity level, dietary restrictions, daily weights, clinical consultation, and treatment plan adherence. Education should emphasize self-management strategies to maintain patients’ engagement in their own heart failure care (AHRQ, 2013). This education should be ongoing and consistently reinforced. Inadequate heart failure education leads to poor patient compliance and high hospital admission and readmission rates (AHRQ, 2013). These guidelines are recommended for all healthcare organizations to improve patient outcomes and quality improvement initiatives.
Limitations

Time constraints were a major limitation in the implementation and evaluation of this project. The standardized heart failure educational process was initiated in the beginning of January and was followed for four weeks. Although improvements were seen in the documentation of evidence-based heart failure education in overall chart audits as well as in nurse visits, a longer timeframe with a larger sample size would help generalize the results to the overall population. Another significant limitation is the low number of heart failure visits conducted during implementation. Due to staff constraints, scheduling more than five to seven heart failure nurse visits per week was difficult, making it challenging to determine if the change in percentage was due to the heart failure educational process or an external cause.

Reflection on Doctor of Nursing Practice Essentials and Competencies

This project was evaluated through outcome measures as well as through the American Association of Colleges of Nursing (AACN) Essentials of Doctoral Education for Advanced Nursing Practice. The DNP Essentials stress the importance of the translation of research into practice and the dissemination and integration of new knowledge into practice for DNP graduates (AACN, 2006). This knowledge is integrated through diverse sources and multiple disciplines to solve practice problems and improve health outcomes for patients.

Essential I (Scientific Underpinnings for Practice) prepares a DNP nurse to integrate nursing science as well as other disciplines into practice while utilizing science-based theories and concepts to assess, evaluate, and manage health and illness (AACN, 2006). This knowledge prepares the DNP graduate to develop and evaluate practice approaches to improve patient care (AACN, 2006). The completion of the organizational assessment and literature review as well as the linkage between theory and practice assists in the implementation of an evidence-based
practice change by the DNP student. Through Essential I, the DNP student utilized the Revised Symptom Management Conceptual Model and the PARiHS framework to guide the development and implementation of an evidence-based heart failure educational process into practice.

Essential II (Organizational and Systems Leadership for Quality Improvement and Systems Thinking) focuses on developing and evaluating care delivery approaches to improve patient care (AACN, 2006). The Essential emphasizes quality of care and patient safety through the use of advanced communication skills, cultural sensitivity, and principles of business, finance, economics, and health policy (AACN, 2006). Essential II was attained through working with multiple disciplines in obtaining a thorough assessment of the organization’s culture, motivation, performance, and environment as well as developing, implementing, and evaluating a quality improvement initiative in the heart failure educational process.

Essential III (Clinical Scholarship and Analytical Methods for Evidence-Based Practice) focuses on the competency of a DNP student to translate research into practice, evaluate care delivery, improve patient care and outcomes, and participate in collaborative research (AACN, 2006). Through this project, analytic methods were used to critically appraise existing literature to determine and implement evidence-based practice. This information will be used to design, direct, and evaluate quality improvement initiatives to promote effective patient-centered care. When this project is concluded, the DNP student will practice as a specialist in the collaborative knowledge-generating research and have the ability to disseminate findings from evidence-based practice and research to improve patient outcomes.

Essential IV (Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care) prepares a DNP prepared nurse to design, utilize, and evaluate quality improvement programs that use health care information technology
as well as develop and implement an evaluation plan involving data extraction from an electronic health care record (AACN, 2006). Essential IV was addressed through the evaluation of randomly selected chart audits pre- and post-implementation to determine the provision and documentation of evidence-based heart failure education. The Essential was also addressed through the creation of a documentation SmartPhrase within the patient electronic medical record that enables nurses to document evidence-based heart failure educational topics with the use of a one-word algorithm. This new documentation tool aids in the improvement of workflow and the efficiency of nurses.

Essential VI (Interprofessional Collaboration for Improving Patient and Population Health Outcomes) prepares a DNP graduate to utilize communication and collaborative skills to develop and implement quality improvement initiatives as well as lead interprofessional groups in the analysis of practice and organizational systems (AACN, 2006). Essential VI also focuses on utilizing leadership skills to work with an interprofessional team to create change within an organization (AACN, 2006). Essential VI was attained by working with an interdisciplinary team to review and obtain information regarding the organizational assessment and in the development and initiation of a heart failure educational process within an outpatient cardiology clinic.

Essential VII (Clinical Prevention and Population Health for Improving the Nation’s Health) prepares a DNP prepared nurse to analyze data related to individual and population health as well as develop, implement, and evaluate interventions that improve the health and access to care for all communities (AACN, 2006). The Essential also focuses on the evaluation of care delivery models related to community and environmental health as well as cultural and socioeconomic aspects of care (AACN, 2006). This Essential was addressed by the utilization of the IOA model to analyze the epidemiology, economics, culture, current practice, and
performance of the community and the organization. This data was then used to develop and implement interventions to improve individual and family knowledge regarding heart failure symptoms, management, and treatment.

Essential VIII (Advanced Nursing Practice) prepares a DNP student to conduct a comprehensive and systemic assessment of the physical and psychological aspects of health while providing diverse and culturally sensitive care (AACN, 2006). This essential was addressed through the use of therapeutic communication with the patients and interdisciplinary team as well as through the use of advanced levels of clinical judgment and systems thinking to develop and implement the standardized heart failure educational process. The Essential also prepares a DNP graduate to guide, mentor, and support other nurses as well as educate individual and communities through complex health and situational transitions (AACN, 2006). These aspects were addressed through the completion of an advanced assessment of heart failure patients as well as the entire community to aid in the development and implementation of the new educational process. To appropriately execute the new standardized process, the DNP student helped to direct and support the clinic’s heart failure nurses in the evidence-based education of patients diagnosed with heart failure.

Through the education and experience in the DNP Essentials, the student was able to integrate the various competencies into the development, implementation, and evaluation of an evidence-based quality improvement project. Through the Essentials and the use of the PARiHS model, the importance and achievement of sustainability was learned to continue the work following the DNP project. This project will enhance patient care, better outcomes, and improve care delivery throughout the outpatient cardiology clinic. With the improvements made through the progress of the project, the standardized heart failure educational process enables the
outpatient cardiology clinic to continue to expand heart failure care and provide more patients with evidence-based heart failure education.

**Dissemination of Outcomes**

Plans for dissemination of this project include poster and podium presentations at Grand Valley State University with hopes of journal publications in the future. The results of the project will also be shared with the leadership team, providers, and nurses within the outpatient cardiology clinic. This work will be submitted to Grand Valley State University’s ScholarWorks. This dissemination will help to address inadequacies in heart failure education for this complex population as well as aid in the expansion of heart failure services within the outpatient cardiology clinic.

Patients diagnosed with heart failure are at an increased risk for adverse outcomes, hospital admissions, and poor quality of life. The heart failure diagnosis is challenging and requires lifestyle changes, medications, and self-care behaviors. Without appropriate education and follow-up, patients’ symptoms and prognoses will continue to worsen.

Many healthcare organizations have developed heart failure educational programs to better educate and follow-up with patients regarding diagnosis, symptoms, self-care, management, and treatment. Recommendations for improving heart failure education include the development of an evidence-based standardized workflow and computerized documentation tool regarding educational components, and the creation of written educational tools for patient use, tailored to an eighth grade literacy level. By standardizing heart failure education, an increased number of patients will receive evidence-based heart failure education increasing the likelihood of performing self-care behaviors, improving quality of life, and reducing hospital admissions and emergency department visits. These are ultimate goals of the initiation and implementation
of the educational process for heart failure patients.
References


Appendix A

PRISMA Flow Diagram

Records identified through database searching (n=540)

Additional records identified through other sources (n=5)

Records after duplicates removed (n = 545)

Records screened (n = 82)

Records excluded (n = 33)

Full-text articles assessed

Studies included in qualitative synthesis (n = 3)

Studies included in quantitative synthesis (meta-analysis) (n = 11)

Full-text articles excluded, due to low level of evidence, lack of relationship to educational management, lack of evidence-based practice (n = 35)

Appendix B

Hierarchy of Evidence Table
### Hierarchy of Evidence for Intervention Studies

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<th>Description</th>
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<td>Systematic review or meta-analysis</td>
<td>I</td>
<td>A synthesis of evidence from all relevant randomized controlled trials.</td>
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<tr>
<td>Randomized controlled trial</td>
<td>II</td>
<td>An experiment in which subjects are randomized to a treatment group or control group.</td>
</tr>
<tr>
<td>Controlled trial without randomization</td>
<td>III</td>
<td>An experiment in which subjects are nonrandomly assigned to a treatment group or control group.</td>
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<tr>
<td>Case-control or cohort study</td>
<td>IV</td>
<td>Case-control study: a comparison of subjects with a condition (case) with those who don’t have the condition (control) to determine characteristics that might predict the condition. Cohort study: an observation of a group(s) (cohort[s]) to determine the development of an outcome(s) such as a disease.</td>
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<tr>
<td>Systematic review of qualitative or descriptive studies</td>
<td>V</td>
<td>A synthesis of evidence from qualitative or descriptive studies to answer a clinical question.</td>
</tr>
<tr>
<td>Qualitative or descriptive study</td>
<td>VI</td>
<td>Qualitative study: gathers data on human behavior to understand why and how decisions are made. Descriptive study: provides background information on the what, where, and when of a topic of interest.</td>
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<td>Expert opinion or consensus</td>
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<td>Authoritative opinion of expert committee.</td>
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Appendix C

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3655 Collingwood Ave SW  
WYOMING, MI 49519  
United States  
Attn: Mallory Myslenski |
HEART FAILURE STANDARDIZED PROCESSES

Publisher Tax ID 13-2932696
Billing Type Invoice
Billing Address Mallory Myslenski
3655 Collingwood Ave SW

WYOMING, MI 49519
United States
Attn: Mallory Myslenski

Total 0.00 USD

Terms and Conditions
Appendix D

Revised Symptom Management Conceptual Model

Appendix E

Permission to use the Revised Symptom Management Conceptual Model

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Licensed Content Title Advancing the science of symptom management
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Licensed Content Pages 9
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Requestor type University/Academic
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Original Wiley figure/table number(s) Figure 1 Revised Symptom Management Conceptual Model.
Will you be translating? No
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Expected completion date Apr 2018
Expected size (number of pages) 35
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3655 Collingwood Ave SW

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Appendix F

The Relationships within the PARIHS Framework

Figure 4. A three-dimensional matrix in which evidence, context, and facilitation can either be expected to influence the outcome in a positive or negative way. Reprinted from “Enabling the Implementation of Evidence Based Practice: A Conceptual Framework,” by A. Kitson, G. Harvey, & B. McCormack, 1998, Quality in Health Care, 7, pp. 149-158. Reprint permission granted.
Appendix G

Permission to use the PARiHS Model

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Appendix H

The Universalia Institutional and Organizational Assessment (IOA) Model

(Lusthaus et al., 2002)
Appendix I

Permission to use the Universalia Institutional and Organizational Assessment (IOA) Model

Marie-Hélène Adrien <mhadrien@universalia.com>

Oct 16 (3 days ago) 

To: Mallory, mo

Subject: Fwd: Permission to use the Universalia Institutional and Organizational Assessment (IOA) Model

Dear Mallory,

By all means, feel free to use the IOA model and good luck in completing your doctoral studies.

Regards,

Marie-Hélène Adrien
CEO, UNIVERSALIA
Appendix J

Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis

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<th>INTERNAL STRENGTHS</th>
<th>EXTERNAL OPPORTUNITIES</th>
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<tr>
<td>• Strong support for evidence based practice and development of new, innovative programs</td>
<td>• Numerous heart failure patients in the community</td>
</tr>
<tr>
<td>• Strong physician engagement and a drive to reduce readmission rates</td>
<td>• Increase in heart failure patients due to the aging population and increasing survival of heart failure patients</td>
</tr>
<tr>
<td>• Already established innovative inpatient initiatives to decrease hospital admissions</td>
<td>• Increase opportunities for advancement in evidence-based practice and greater management of heart failure patients with the affiliation of a larger healthcare system</td>
</tr>
<tr>
<td>• Recent affiliation with a larger healthcare system brings growing budget, greater opportunities for research and greater access to healthcare</td>
<td>• Advancement in patient technology</td>
</tr>
<tr>
<td>• Focus on disease and illness prevention</td>
<td>• Advancement in treatment options and care techniques for heart failure patients</td>
</tr>
<tr>
<td>• Large amount of technology specialists located within the organization</td>
<td></td>
</tr>
<tr>
<td>• Advanced, state-of-the-art information technology system in the region</td>
<td></td>
</tr>
<tr>
<td>• High level of patient satisfaction</td>
<td></td>
</tr>
<tr>
<td>• High level of employment satisfaction</td>
<td></td>
</tr>
<tr>
<td>• Strong support for interdisciplinary teamwork</td>
<td></td>
</tr>
<tr>
<td>• Already developed and established space for educational sessions</td>
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<table>
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<tr>
<th>INTERNAL WEAKNESSES</th>
<th>EXTERNAL THREATS</th>
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<tr>
<td>• Lack of heart failure management process, hospital follow-up protocol, heart failure educational services, adequate medication reconciliation</td>
<td>• Competition with local providers in the area involved in heart failure clinics. This offers a variety of provider options for patients that could affect the enrollment of patients in the educational process.</td>
</tr>
<tr>
<td>• Staff shortages with nurses, medical assistants and providers</td>
<td>• Other area providers have the ability to offer more specialty and surgical options for heart failure patients. This could affect the participation of</td>
</tr>
<tr>
<td>• Lack of electrophysiologists and cardiothoracic surgeons within the organization, which could affect the number of patients that choose to</td>
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patients in the heart failure educational process at this outpatient cardiology clinic as they may go to other clinics that offer more opportunities for care.

- Long distance travel to drive to affiliate providers for cardiothoracic and electrophysiology specialists. The cardiology clinic often refers patients to the participating heart failure clinic for evaluation of surgical interventions or specialty consults, where other organizations within the area have their own cardiothoracic surgeons and specialists that offer services within the area.

- Patients may need to travel to more than one physician for treatment because of the lack of additional specialists within the organization. This may deter patients from this outpatient cardiology clinic affecting the number of participants involved in the heart failure educational process.
Appendix K

**Doctor of Nursing Practice Project Financial Operating Plan**

**Implementation of Standardized Heart Failure Educational and Documentation Processes within an Outpatient Heart and Vascular Clinic**

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<td>Team Member Time:</td>
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<tr>
<td>Education of Cardiology Nurses (four nurses)</td>
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</tr>
<tr>
<td>Implementation of educational process by nurse to patient (15 30-minute sessions)</td>
<td>217.50</td>
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<tr>
<td>Nurse Practitioner Mentor (eight hours)</td>
<td>368.00</td>
</tr>
<tr>
<td>Cardiovascular Outpatient Manager (four hours)</td>
<td>216.00</td>
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<tr>
<td>Forms Committee Members (one hour)</td>
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<td>Informatics Specialist (one hour)</td>
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<td>MidMichigan Heart Failure Registered Nurse (one-time occurrence)</td>
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<td>MidMichigan Heart Failure Nurse Practitioner (one-time occurrence)</td>
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**TOTAL INCOME**

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**Net Operating Plan**

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Budget

Appendix L

Stakeholder Power Interest Grid
Appendix M

GVSU IRB Approval
DATE: November 17, 2017

TO: Amy Manderscheid
FROM: HRRC
STUDY TITLE: Implementation of Standardized Heart Failure Educational and Documentation Processes within an Outpatient Heart and Vascular Clinic
REFERENCE #: 18-109-H
SUBMISSION TYPE: HRRC Research Determination Submission

ACTION: Not Research
EFFECTIVE DATE: November 16, 2017
REVIEW TYPE: Administrative Review

Thank you for your submission of materials for your planned scholarly activity. It has been determined that this project does not meet the definition of research* according to current federal regulations. The project, therefore, does not require further review and approval by the Human Research Review Committee (HRRC).

A summary of the reviewed project and determination is as follows:

This study seeks to measure the change in the percentage of patients receiving educational materials in a single healthcare clinic after the implementation of a standardized process to deliver the educational materials. The study is systematic, but it is not generalizable, as it is designed as a quality improvement project at a single location. Therefore, this study does not meet the federal definition of human subjects research.

An archived record of this determination form can be found in IRBManager from the Dashboard by clicking the "_xForms" link under the "My Documents & Forms" menu.

If you have any questions, please contact the Office of Research Compliance and Integrity at (616) 331-3197 or rci@gvsu.edu. Please include your study title and study number in all correspondence with our office.

Sincerely,
Office of Research Compliance and Integrity

*Research is a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge (45 CFR 46.102 (d)).

Human subject means a living individual about whom an investigator (whether professional or student) conducting research obtains: data through intervention or interaction with the individual, or identifiable private information (45 CFR 46.102 (f)).

Scholarly activities that are not covered under the Code of Federal Regulations should not be described or referred to as research in materials to participants, sponsors or in dissemination of findings.

Office of Research Compliance and Integrity | 1 Campus Drive | 049 James H Zumberge Hall | Allendale, MI 49401
Ph 616.331.3197 | rci@gvsu.edu | www.gvsu.edu/rci

Appendix N
Organization IRB Approval
NON-HUMAN RESEARCH DETERMINATION

November 20, 2017

Ms. Mallory Myslenski
Grand Valley State University
Kirkhof College of Nursing
Cook DeVos Center for Health Sciences
301 Michigan St. NE Suite 300
Grand Rapids, Michigan 49503-3314

PROJECT NAME: Standardized Heart Failure Education Process

Dear Ms. Myslenski:

On November 20, 2017, the above referenced project was reviewed. It was determined
the proposed activity does not meet the definition of research as defined in 45 CFR
46.102(d). Please be aware when presenting or publishing the collected data that it is
presented as a Quality Improvement initiative and not as research.

Approval by the Metro Health IRB is not required. This determination applies to the
activities described in the application submitted to the Metro Health IRB on November 9,
2017. If changes are made and there are questions about whether these activities are
research, please contact the IRB office.

Your project will remain on file with the IRB office, but only for purposes of documenting
this determination.

If you should have questions regarding the status of your project, please contact Maureen
Oostendorp at 616-252-5026 or email irb@metrogr.org.

Sincerely,

[Signature]

Maureen A. Oostendorp, MM, CIP
Human Research Protection Program Officer

cc: Amy Manderscheid
    Danielle Rush

Metro Health Institutional Review Board

Metro Health Professional Building
2122 Health Dr. SW, Suite 233  |  Wyoming, MI 49519
p  616.252.5026  |  c  616.401.1084  |  f  616.252.0269
irb@metrogr.org  |  metrohealth.net

Appendix O
Heart Failure Educational Process

1. Educate patient on evidence-based heart failure education
   a. About heart failure
   b. Low sodium diet
   c. Fluid restriction
   d. Symptoms
      i. Shortness of breath
      ii. Orthopnea
      iii. Fatigue
      iv. Rapid weight gain
      v. Edema
   e. Daily weights
   f. Medications
   g. Causes

2. Ensure patient understands education and assess for questions

3. Provide patients with educational brochure, daily weight log, heart failure zones, and nutritional label sample

4. If necessary, provide additional information regarding medications, management and treatment
WHAT IS CHF?

Congestive Heart Failure (CHF) or heart failure, means that your heart is not pumping blood as well as it should. As a result, your body is not getting enough of the oxygen-rich blood it needs to function properly. As the heart’s pumping action weakens, blood backs up around the lungs, causing leakage of fluids in the lungs. Fluid starts to build up in your body and may cause shortness of breath, weakness, fatigue and swollen legs, feet and/or abdomen.

The heart is a big muscle that pumps blood around in the body. This blood carries oxygen to our cells and organs and then returns to the heart so it can be pumped to the lungs to pick up more oxygen. A healthy heart provides enough oxygen for the body to do activities. CHF is a condition where the heart doesn’t pump as well as it did. The heart muscle may be weakened as a result of a heart attack, high blood pressure, a viral infection, diabetes, obesity, excessive alcohol use or smoking.

There are many signs and symptoms of heart failure. Some of these are listed here to help you understand this disease process and to recognize early warning signs.
SIGNS & SYMPTOMS OF HEART FAILURE

Shortness of breath (dyspnea) with or without activity

Why? Blood backs up in the pulmonary veins (vessels that return blood from the lungs to the heart), the heart can’t keep up with the supply and this causes fluids to leak into the lungs, making breathing more difficult.

How do I feel? I feel very tired, possibly anxious, breathless or restless during any activity, rest or sleep.

Persistent Coughing or Wheezing

Why? Because I have additional fluid in my lungs.

How do I feel? I feel more tired than usual and or not able to perform activities of daily living.

Swelling (edema) in your legs, ankles, feet or abdomen

Why? The blood flow from the heart is slower and the blood returning to the heart backs up resulting in fluid buildup.

How do I feel? My shoes or pants may feel tight and I may weigh more. Swelling in legs, feet, ankles and/or abdomen may be noticed.

Rapid or Irregular Heartbeat

Why? My heart beats faster to increase pumping activity.

How do I feel? My heart feels like it is racing, throbbing or I may have palpitations.

Lack of Appetite or Possible Nausea

Why? The digestive system is not receiving enough blood.

How do I feel? I may feel full or sick to my stomach.

Confusion or Not Able to Think Clearly

Why? Certain chemicals in the blood change and cause these feelings.

How do I feel? I might have memory loss, feel confused or disoriented.
CONTRIBUTING FACTORS OF HEART FAILURE

High blood pressure (hypertension)
Makes the heart work harder and causes other medical problems

Heart Attack
Heart attack damages heart muscle so it pumps less efficiently.

Coronary Artery Disease
Narrowed arteries may limit your heart’s supply of oxygen-rich blood, resulting in a weakened heart muscle.

Diabetes
Increases risk of high blood pressure and coronary artery disease.

Obesity
Poor eating habits can lead to obesity, diabetes and elevated cholesterol readings.

Drinking too much alcohol
Excessive alcohol consumption may damage heart muscle. Alcohol is also high in calories.

Irregular Heartbeats
Increases the workload of the heart.

Sleep Apnea
Makes the heart work harder.

Smoking
Causes chronic lung problems, raises blood pressure, can make your blood more likely to clot.

Infection
Might damage the heart muscle.
MANAGING YOUR HEART FAILURE — STEPS YOU CAN TAKE

- **Weigh yourself daily**: preferably every morning after urinating and before eating and drinking. Write down your weight on your calendar. A small weight gain could mean that your body is holding water and your heart has to work harder.

- **Use less salt**: salt can cause fluid to build up, which makes your heart work harder.

- **Eat a heart-healthy diet**: Heart-healthy diet is rich in vegetables and fruits, whole grains, peas and beans, skinless poultry, fish and low-fat dairy products. Limit red meat and avoid saturated fats, trans-fats and added sugars and salt (canned soup, frozen meals, packaged lunch meat).

- **Be active**: exercise can improve circulation, decrease stress, lower your blood pressure and triglycerides and raise HDL (good) cholesterol. It strengthens your muscles and helps with weight control and fatigue. Anything that makes you move your body and burn calories such as walking, climbing stairs or raking leaves.

- **Don’t smoke**: If you smoke, try to quit. Smoking raises blood pressure and heart rate. Carbon monoxide gets into your blood and robs your heart and brain of much-needed oxygen.

- **Don’t drink**: too much alcohol can lead to heart failure. Alcohol also raises blood pressure and is high in calories.

- **Reduce stress**: take time to rest and relax every day. Stress can make the heart work harder and make symptoms worse.

- **Avoid flu and pneumonia**: Get a flu vaccine every year and pneumonia vaccine as recommended. Avoid anyone who has cold or flu, stay out of crowds, wash your hands frequently and keep your hands away from your face.

FLUID RESTRICTION

Your doctor may place you on a fluid restriction to reduce the heart’s workload. Many patients are on diuretics to help them get rid of extra fluids and sodium to reduce their heart’s workload. You may feel thirsty but your body may not need more liquids. Patients do not want to replace the fluid that diuretics are getting rid of. The restriction may be six to eight 8 ounce cups per day. This includes any water or other drinks taken with medications. There are also some foods that are high in liquids such as watermelon, grapes, ice cream, jell-o and soups/broths.
**TIPS FOR FLUID CONTROL**

- Eat allowed fruits and vegetables ice cold between meals.
- Try lemon wedges, sour hard candy or chewing gum to stimulate saliva and moisten a dry mouth.
- Rinse your mouth with mouthwash.
- Use small cups and glasses for beverages.
- Remember that 2 cups of retained fluid is equal to 1 pound of fluid weight gain.
- Measure fluid allotment for the day and store it in a container in the refrigerator.

**Items that Count as Fluids**

<table>
<thead>
<tr>
<th>Water</th>
<th>Non-dairy creamer</th>
<th>Fruit drinks</th>
<th>Sorbet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>Coffee</td>
<td>Vegetable juice</td>
<td>Popsicles</td>
</tr>
<tr>
<td>Soft drinks</td>
<td>Tea</td>
<td>Ice cream</td>
<td>Soup/broth</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Fruit juice</td>
<td>Sherbet</td>
<td>Ice cubes</td>
</tr>
</tbody>
</table>

**TIPS FOR A HEALTHY DIET**

- You can lower cholesterol by what you eat.
- Start by making changes to one food group at a time.
- Limit saturated fats to 1 to 2 servings per week. Trim fat from red meat and remove skin from chicken before eating. Use cooking methods that use little or no fat such as baking, broiling, grilling, stewing or stir-frying.
- Switch from whole milk to skim or 1% milk. Choose low-fat yogurts, cheese and desserts.
- Increase whole grains in your diet, such as breads and cereals.
- Try to eat at least 5 servings of fruits and vegetables every day.
- Be aware of sugar intake. Excess sugar can raise triglycerides.
- Limit intake of caffeine, alcohol and salt.

**Low salt Diet Tips**

- Take the salt-shaker off the table and don’t add salt to food. This can cut salt intake by 30% or 1/3 teaspoon.
- Pick foods naturally low in salt: fresh fruits and vegetables, fresh meat, poultry, fish, canned fruits, plain frozen vegetables, or canned vegetables that state "no salt added". Use dried beans, peas and rice.
- Learn to read food labels and avoid processed foods that are high in sodium.
MEDICATIONS

Diuretics
Help the body get rid of extra water and sodium and reduces the heart’s workload. May cause loss of potassium so you may need a potassium supplement. **Examples:** Furosemide (Lasix), Bumetanide (Bumex), Spironolactone (Aldactone), Hydrochlorothiazide (HCTZ, Maxzide).

ACE inhibitors (angiotensin-converting enzyme inhibitor)
Keep heart failure from getting worse. Limits a hormone called angiotensin that causes blood vessels to tighten and the heart to work harder. **Examples:** Benazepril (Lotensin), Lisinopril (Zestril), Ramipril (Altace).

Vasodilators
Widen (dilate) blood vessels so blood flows more easily and the heart doesn’t have to work as hard. **Example:** Hydralazine (Apresoline).

Beta Blockers
Slows the heart rate and reduces workload of the heart. Lowers heart rate and blood pressure. **Examples:** Atenolol (Tenormin), Metoprolol (Toprol XL, Lopressor), Carvedilol (Coreg).

Digitalis
May be used to strengthen the heart’s pumping action. The digitalis level in the blood must be monitored with a blood test. If too much digitalis builds up in the blood, you may have nausea, vomiting, loss of appetite or headaches. **Example:** Digoxin (Lanoxin).

Blood Thinners
Help to prevent blood clots from forming and blocking blood flow. Clots may form in the legs, lungs or heart. If a clot breaks off and blocks a blood vessel that supplies the heart or brain, a heart attack or stroke can result. **Examples:** Warfarin (Coumadin), Rivaroxaban (Xarelto), Ticagrelor (Brilinta), Apixaban (Eliquis).

CCBs (calcium channel blockers)
Allows muscles to relax which helps control high blood pressure. Also controls abnormal heart rhythms. **Examples:** Diltiazem (Cardizem), Amlodipine (Norvasc), Verapamil (Calan).

Potassium
Helps control heart rhythm and is essential for normal muscle and nerve function. Diuretics can remove potassium from the body. So potassium supplements may be needed to replace what is lost. Potassium is found in many fruits and vegetables: bananas, oranges, cantelopes, prunes, potatoes. **Examples:** K dur, K tab, Klor-con, Micro

Cholesterol-lowering Drugs
Help to prevent formation of plaque in blood vessels. Reduces risk of heart attack and stroke. **Examples:** Atorvastatin (Lipitor), Rosuvastatin (Crestor), Ezetimibe (Zetia).
WHEN SHOULD I CALL THE DOCTOR?

- Weight gain of 2-3 pounds in 1 day or 5 pounds in 5 days.
- Shortness of breath that is worse or occurs at rest.
- Increased swelling in legs, feet, hands or abdomen.
- Extreme tiredness, unable to do your normal activities.
- Very fast or very slow heart rate.
- Chest pain or discomfort that goes away.
- Feeling dizzy or light-headed.
- Feeling like it’s harder to breathe while lying down or being unable to rest. You may notice that you need to prop up on more pillows for comfort.

911 SYMPTOMS

- Chest pain that lasts longer than 10 minutes, chest pain that is worse than usual or is unrelieved by taking nitroglycerin.
- Inability to catch your breath
- Fainting or passing out
- Coughing up pink or white foamy sputum.
# PATIENT PASS: A TRANSITION

**Patient Preparation to Address Situations (after discharge) Successfully**

<table>
<thead>
<tr>
<th>I was in the hospital because</th>
<th>Important contact information</th>
</tr>
</thead>
<tbody>
<tr>
<td>If I have the following problems... __________ I should...</td>
<td>1. My primary doctor:</td>
</tr>
<tr>
<td>1. __________________________</td>
<td>(_____ ) ____________________</td>
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<tr>
<td>2. __________________________</td>
<td>2. __________________________</td>
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<td>3. __________________________</td>
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<td>5. __________________________</td>
<td>5. __________________________</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>My appointments:</th>
<th>Tests and issues I need to talk with my doctor(s) about at my clinic visit:</th>
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<tbody>
<tr>
<td>1. __________________________</td>
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<tr>
<td>Or: <em><strong><strong>/</strong></strong></em> at ___: ___ am/pm</td>
<td>2. __________________________</td>
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<tr>
<td>For: __________________________</td>
<td>3. __________________________</td>
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<td>2. __________________________</td>
<td>4. __________________________</td>
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<tr>
<td>Or: <em><strong><strong>/</strong></strong></em> at ___: ___ am/pm</td>
<td>5. __________________________</td>
</tr>
<tr>
<td>For: __________________________</td>
<td>Other: __________________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other instructions:</th>
<th>I understand my treatment plan, I feel able and willing to participate actively in my care:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. __________________________</td>
<td>Patient/Caregiver Signature</td>
</tr>
<tr>
<td>2. __________________________</td>
<td>Provider Signature</td>
</tr>
</tbody>
</table>
| ________________________ | Date / / }
Appendix Q

Weight Log

Weight Management Worksheet

Name __________________________

Date of Birth ____________________

Medical Record Number __________

Physician Name __________________

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>WEIGHT</th>
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<tbody>
<tr>
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continued on back
Appendix R

Heart Failure Educational Documentation SmartPhrase

SmartPhrase: .MHVHFEDUCATION

*** was educated on the diagnosis of heart failure including the meaning of heart failure and how it affects the body as well as causes of the condition. Education was provided on symptoms of heart failure including shortness of breath, orthopnea, fatigue, rapid weight gain, and edema. Education was provided on the importance of a low sodium diet and fluid-restricted diet including foods and beverages to avoid. The importance of accurately reading a nutritional label was discussed including reviewing sodium content and serving size. A sample nutritional label was reviewed and provided to the patient. The patient was educated on the importance of daily weights and when to call with weight gain. Discussed heart failure medications and the reasoning behind each medication prescribed. Educated the patient on the importance of staying active. Provided printed heart failure educational materials, heart failure zones handout, and weight management log to the patient.
Appendix S

Nurse Evaluations

1. To what extent does the heart failure educational process cover the necessary topics for patient education?

2. Did you feel that the heart failure educational process improved heart failure education within Metro Heart and Vascular?

3. Did the evidence-based computerized documentation smartphrase improve nurse efficiency and workflow and ensure appropriate education was documented?

4. Did the written educational materials appear to be easy to understand for patients and provide them with the necessary information to understand and manage their condition?