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Implementing a Heart Failure Education Program for Bedside Nurses in the Acute Care Setting

David L. Morrow
dmorrow784@gmail.com

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IMPLEMENTING A HEART FAILURE EDUCATION PROGRAM FOR BEDSIDE NURSES
IN THE ACUTE CARE SETTING

By

David L Morrow

Bachelor of Science – Nursing
University of Nevada, Las Vegas
2011

Master of Healthcare Administration
University of Nevada, Las Vegas
2014

A doctoral project submitted in partial fulfillment
of the requirements for the

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Division of Health Sciences
The Graduate College

University of Nevada, Las Vegas
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David L Morrow

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Implementing a Heart Failure Education Program for Bedside Nurses in the Acute Care Setting

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School of Nursing

Jessica Doolen, Ph.D.
Examination Committee Chair

Kathryn Hausbeck Korgan, Ph.D.
Graduate College Dean

Angela Silvestri-Elmore, Ph.D.
Examination Committee Member

Jay Shen, Ph.D.
Graduate College Faculty Representative

Abstract

Heart failure is a chronic disease in which a weakened heart is no longer able to deliver adequate blood flow to supply the body with needed oxygen and nutrients. Heart failure is the most common reason for hospitalization in the United States for patients age 65 and over, accounting for over 1,000,000 hospital admissions annually. Due to the chronic nature of this debilitating condition and associated symptoms, patients discharged from the hospital with a diagnosis of heart failure are at high risk for readmission. Effective self-care behaviors have been shown to reduce readmissions and improve quality of life for these patients. Unfortunately, evidence shows that nurses are often unprepared to deliver effective self-care education to their patients with heart failure.

The primary goal of this project was to implement an educational intervention within a multi-hospital system to improve nurses' knowledge and comfort level in delivering heart failure self-care education to their patients. Two conceptual models were used to guide the project, andragogy and Carper's Fundamental Patterns of Knowing in Nursing. The Nurses' Knowledge of Heart Failure Education Principles Survey (NKHFEP) measured nurses' knowledge of heart failure self-care principles before and after the intervention. A Likert-scale survey was used to assess nurses' self-perception of heart failure knowledge and comfort in delivering such education. Post-intervention scores on the NKHFEP survey indicated a significant improvement in heart failure knowledge, and participant self-assessment of knowledge and comfort levels also increased post-intervention.

The class is now a permanent offering in the hospital system's central education department. By empowering nurses to deliver effective heart failure education to their patients,

this project has a high likelihood of improving patient outcomes as part of a multimodal approach to reducing heart failure readmissions.

Keywords: heart failure, nurse or nursing, education, readmission.

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My coworkers were also instrumental in helping me implement this project. Many thanks to each of you for your kind support. I couldn't have done it without you.

Dedication

“I think over again my small adventures,

My fears,

Those small ones that seemed so big,

For all the vital things I had to get and to reach.

And yet there is only one great thing,

The only thing,

To live to see the great day that dawns,

And the light that fills the world.”

-Old Inuit Song

This project is dedicated to my wife, Kelly. Thank you so much for being part of my life and for your continued love and support. I could not imagine a richer, happier, more hopeful existence than what I've found with you. You and our family are my reason for being, and I know that together we will continue to find joy and enlightenment in our journey through life.

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Chapter I

Introduction

Heart failure is a chronic disease in which a weakened heart is no longer able to deliver adequate blood flow to supply the body with needed oxygen and nutrients. This condition affects more than 6,000,000 Americans, and more than 900,000 new cases are diagnosed annually (American Heart Association, 2018). Heart failure is also the most common reason for hospitalization in the United States for patients age 65 and over, accounting for over 1,000,000 hospital admissions annually (Albert, 2016; Bingham, Thompson, & Kell, 2015). Due to the chronic nature of this debilitating condition and associated symptoms, patients discharged from the hospital with a diagnosis of heart failure are at high risk for readmission. Over 25% of patients will be readmitted to the hospital within 30 days of discharge, and up to 50% of patients will be readmitted within six months of discharge (Annema, Luttik, & Jaarsma, 2009; Gilotra et al., 2017; Giuliano, Danesh, & Funk, 2016).

The cost to our healthcare system is staggering. Readmission costs alone account for over \$17 billion in annual Medicare expenditures, with indirect costs such as lost productivity adding another \$8 billion (American Heart Association, 2018; Giuliano et al., 2016). Not surprisingly, the problem is likely to worsen in the future. The number of Americans living with heart failure is expected to increase drastically, with prevalence estimated to exceed 8,000,000 by the year 2030. An aging population combined with improved survival rates of patients with myocardial infarction and other cardiovascular disorders are the primary drivers behind this increase (Annema et al., 2009). The costs of treating the disease will rise accordingly in the United States, with total costs to society exceeding \$70 billion annually at that time (Albert, 2016; American Heart Association, 2018).

Due to a shifting focus on outcomes, quality of care, and cost-effective treatments, reducing heart failure readmissions has become a national priority (Giuliano et al., 2016). The Affordable Care Act of 2010 includes provisions to reduce Medicare reimbursements to hospitals with a high number of preventable readmissions. The first penalties (up to 1% of reimbursements) were handed out in 2013, and by 2015 the penalties had increased to a maximum of 3% of regular reimbursements (Gilotra et al., 2017; Giuliano et al., 2016). This shift to outcomes-based reimbursement in addition to the increasing prevalence of heart failure means acute care hospitals will need to increase their focus on strategies that reduce readmissions for heart failure patients (Albert, 2016; Annema et al., 2009; Banerjee et al., 2017; Giuliano et al., 2016; Mahramus et al., 2013)

Problem Statement

Poor self-care ability on the part of heart failure patients leads to preventable hospital readmissions. The role of the nurse in providing self-care education to patients is a crucial step for patients to develop effective self-care behaviors. Several studies have shown that nurses' knowledge base and comfort level in providing heart failure education in the acute care setting and during care transition are suboptimal. These gaps in providing education to patients are likely contributors to poor self-care behaviors and poor knowledge of heart failure in this population (Albert et al., 2015). An evidence-based project to address these gaps has the potential to improve nurses' knowledge and level of comfort in delivering heart failure education to their patients.

Significance to Nursing

Heart failure is a progressive disease, and the complexity of self-care management often leads patients back into the acute care setting. Various disease management strategies have been

employed to reduce readmissions, with relatively limited success (Albert, 2016; Annema et al., 2009; Bingham et al., 2015; Gallagher et al., 2017; Mahramus et al., 2013; Moser, 2017; Sezgin, Mert, Özpelit, & Akdeniz, 2017). Strategies are increasingly focused on self-care behaviors in patients with heart failure. Indeed, the ability of patients to manage heart failure is primarily influenced by their level of knowledge about the disease process, medication compliance, dietary restrictions, and various symptoms of heart failure exacerbation. Comorbidities also play a role in readmissions for this patient population, and Annema et al. (2009) found that readmissions related to heart failure accounted for only 32% of the total over an 18-month period for all patients discharged with a heart failure diagnosis. Among all disciplines, nurses occupy a crucial role in educating heart failure patients who are being discharged home (Albert, 2016; Albert et al., 2015; Gilotra et al., 2017; Mahramus et al., 2013; Moser, 2017).

Educating patients is perhaps the most important intervention to implement as a starting point in promoting self-care. Nurses provide education to patients and their family members as a routine function when caring for the patient. A patient's first exposure to education regarding management of heart failure usually comes from a registered nurse (RN). A nurse whose own knowledge base is deficient or who lacks the necessary skills to effectively teach represents a lost opportunity to begin reinforcing heart failure self-care knowledge with patients (Albert, 2016; Mahramus et al., 2013; Paul & Hice, 2014).

Unfortunately, studies have shown that heart failure patients are often not receiving adequate discharge teaching regarding disease management and self-care (Paul & Hice, 2014). Additionally, there is support in current literature that nurses lack the basic knowledge and ability to effectively deliver discharge instructions to heart failure patients (Albert, 2016; Albert et al., 2015; Mahramus et al., 2013). This knowledge gap affects nurse-patient interactions and

may contribute to low rates of effective self-care behaviors in patients with heart failure (Albert et al., 2015).

With the rising prevalence of heart failure and its associated costs, it is paramount that nurses have the necessary resources and skills to deliver high-quality care to patients. This is especially true during periods of care transition, such as discharging a patient home. Nurses must ensure that heart failure patients have adequate knowledge and access to resources to effectively manage their disease process. If acute care nurses lack the necessary skill and knowledge to teach patients about their disease, a critical link to improving outcomes is lost. As the number of heart failure admissions increases, nurses and nurse leaders will be called upon to influence outcomes for this patient population (Albert et al., 2015; Moser, 2017; Paul & Hice, 2014). The primary aim of this project was to provide a crucial link between nurses' knowledge of heart failure self-care principles and the patients they care for on a daily basis. This will ultimately lead to improved nursing care for these patients and provide them with the knowledge and skills needed to attain their highest quality of life.

Purpose

The purpose of this project was to implement an educational intervention within a large multi-hospital system based on best evidence with the goal of improving nurses' knowledge and ability to deliver heart failure education to patients in the acute care setting. Nurses who participated in the intervention were assessed both pre and post-intervention using an evidence-based assessment tool. The teaching intervention was implemented in a classroom setting in which an instructor used evidence-based methods to teach critical elements of heart failure self-care to acute care nurses. The long-term goal from a systems perspective is to lay a foundation of clinical knowledge upon which further heart failure initiatives can be built, leading to truly

multidisciplinary efforts to impact both quality of life and readmission rates for heart failure patients. The class is now a permanent offering in the system's education department and continuing education credit is available through the Nevada State Board of Nursing for registered nurses who complete the class.

Chapter II

Review of the Literature

To support this project, a review of the literature was conducted on four databases: CINAHL, PubMed, Academic Search Premiere, and the Cochrane Database of Systematic Reviews. A thorough search of the Cochrane Database failed to yield any applicable reviews for this project. The search of the three remaining databases was limited to studies with a publication date between 2013 and 2018 that were available in English. Databases were searched within the Boolean/Phrase search mode using the terms *heart failure*, *nurse or nursing*, *education*, and *readmission*. Using this search method, CINAHL produced 332 results, PubMed produced 418 results, and Academic Search Premiere produced 341 results. A hand search was also conducted by exploring links to relevant results; this hand search yielded 22 additional articles for review. Each result's title and abstract were reviewed for relevance to this project. Articles were chosen for additional review if they fell into one of four general categories:

1. Studies that explored heart failure patients' inability to manage self-care and the effect on readmissions.
2. Studies that explored nurses' knowledge and/or comfort levels in delivering heart failure education.
3. Studies that explored educational interventions to improve nurses' knowledge and/or comfort levels in delivering heart failure education.
4. Studies that explored heart failure patient outcomes when properly educated on self-care management.

After discarding duplicates and studies that didn't meet the initial criteria outlined above, 27 articles remained which were reviewed in full text. Of these 27, unpublished dissertations,

opinion pieces, and articles deemed not relevant upon further review were discarded, leaving 14 articles to support this project's goals and interventions. An overview of the articles relevant to each of the four categories listed above follows.

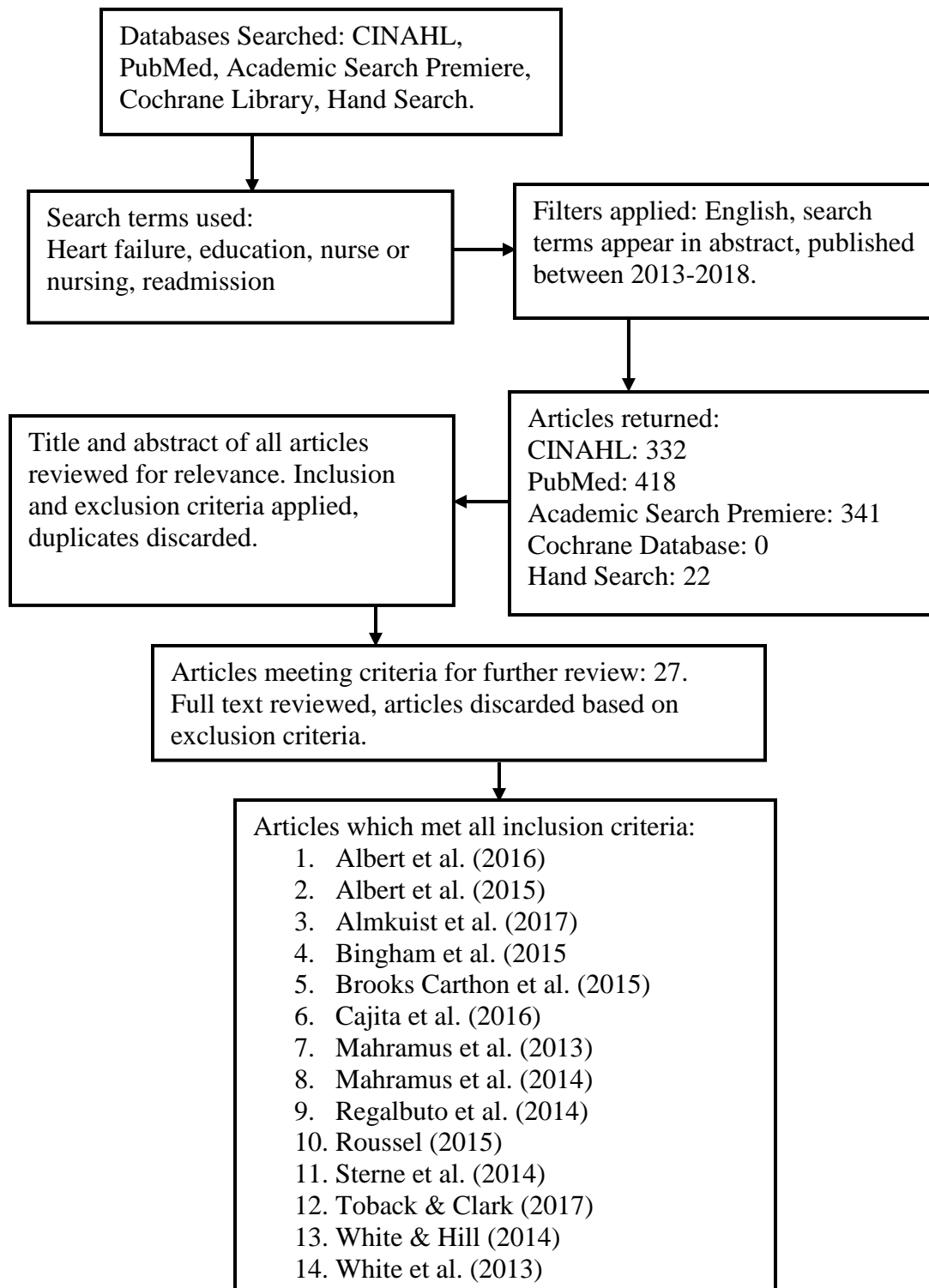


Figure 1: Literature Search

Studies Exploring Patients' Self-Care Behaviors and Effect on Readmissions

The review of literature yielded important evidence that heart failure patients' inability to manage self-care leads to preventable readmissions in the acute care setting. In a systematic review of the literature, Cajita, Cajita, and Hae-Ra (2016) studied low health literacy in heart failure patients and its effect on readmission rates and heart failure-related quality of life. On average, 39% of patients with heart failure have low health literacy. Strategies must be adopted by nurses to mitigate the effect of low health literacy when educating patients about heart failure. The teach-back method, educational materials written at an appropriate literacy level, and other materials deemed appropriate for each learner may help these patients manage their care outside of the hospital setting and potentially avoid unnecessary readmissions.

Brooks Carthon, Lasater, Sloane, and Kutney-Lee (2015) found that nearly one-third of nurses reported difficulty completing patient teaching. The effect of such missed care was estimated to increase 30-day readmissions by as much as 12%. The authors also found that talking to patients, care planning, teaching, and care coordination were of utmost importance regarding self-management of care, and these activities are frequently missed by nurses in the acute care setting. Ensuring that nurses have adequate time and resources to meet these patient care needs could reduce readmissions in this population.

Regalbuto, Maurer, Chapel, Mendez, and Shaffer (2014) found that patients with adequate understanding of their heart failure discharge instructions had lower 30-day readmission rates than patients with inadequate understanding. Additionally, patients with a lower education level who spoke a primary language other than English exhibited inadequate understanding of discharge instructions along with higher 30-day readmission rates. As

recommended by Cajita et al. (2016), self-care teaching must address those with lower health literacy if such efforts are to be successful in reducing readmissions.

In a review of heart failure transition of care literature, Albert (2016) found that patients are often poorly educated regarding a heart failure diagnosis. Some studies indicated that over one-third of heart failure patients were unable to accurately describe their diagnosis and that discharge instructions often use language above patients' level of understanding. Also, patients reported they needed better education regarding self-care behaviors in the context of symptoms of heart failure exacerbation. The complexities of self-care require the development of behaviors which often require more extensive education than most patients receive. In another study, only half of patients were adherent to self-care instructions one month after discharge from the acute care setting (Albert, 2016).

In their review of literature related to strategies to reduce readmissions in heart failure patients, Toback and Clark (2017) found that poor adherence to important aspects of self-management leads to adverse outcomes in this patient population. Studies indicate that as few as 14% of patients weigh themselves and as few as 9% properly self-monitor for changes in symptoms. These studies further support the need for proper patient education as a strategy to reduce readmissions and improve quality of life for heart failure patients.

Nurses' Knowledge and Comfort in Delivering Heart Failure Education

In a prospective, exploratory study, Mahramus et al. (2013) found that nurses' knowledge of self-management principles for heart failure patients was inadequate. These findings were consistent with previous studies. Self-management questions with the lowest scores were in the areas of medications, monitoring of signs and symptoms, and daily weight monitoring. Only 9% of test subjects received a passing score of 85% or better. The authors recommend educating

nurses on heart failure self-management using a focused curriculum in order to facilitate consistent education to patients.

In a systematic review of literature related to heart failure care transition, Albert (2016) identified eight transition of care themes that can be utilized to improve outcomes for heart failure patients. One theme focused on patient education and effective self-management of heart failure signs and symptoms after discharge. Albert's findings support the assertion that nurses' knowledge of basic heart failure self-management principles is inadequate. Studies showed that nurses who exhibit low comfort levels with heart failure education are less likely to deliver such teaching to their patients, and that the education delivered falls short in important self-management areas such as monitoring and managing symptoms of exacerbation.

In another study, Albert et al. (2015) discovered that over half of nurses spent less than 15 minutes providing heart failure education to their patients upon discharge. Not surprisingly, nurses with low comfort levels regarding heart failure self-care management spent less time delivering such education to their patients. Additionally, the self-management content areas that are most likely to affect patient outcomes and readmissions were the lowest scoring areas in terms of nurse comfort and frequency of delivering education to patients. These areas were medications, adherence to a low-sodium diet, and activity. Albert emphasized that hospital leadership should not assume their front-line nursing staff have the knowledge base or practical experience to deliver optimal heart failure education to patients.

Interventions to Improve Nurses' Ability to Teach Heart Failure Self-Care Principles

Several studies in this review indicate that a classroom style educational intervention can improve nurses' ability to teach heart failure self-care principles to their patients. Roussel (2015) found that even a brief 30-minute education session significantly improved nurses' knowledge of

heart failure. The intervention consisted of a lecture using PowerPoint slides along with printed handouts of the class content. Roussel used the Advanced Heart Failure Clinical Competence Survey (AHFCCS) to assess nurses' knowledge both pretest and posttest. Brief as it was, the educational intervention significantly increased nurses' knowledge of heart failure. Roussel also showed that nurses' self-perception of competence in delivering heart failure education is often inaccurate.

A similar study by Sterne, Grossman, Migliardi, and Swallow (2014) also used a 30-minute educational intervention to improve nurses' knowledge of heart failure. The survey tool used was the Nurses' Knowledge of Heart Failure Education Principles Survey (NKHFEPE) developed in 2002 by Albert et al. The authors also studied the effect of the intervention on 30-day readmissions. Heart failure readmissions three months prior to the intervention were compared to rates for three months after the intervention. Not only was there a significant increase in nurses' knowledge after the intervention, there was also a significant reduction in heart failure related readmissions during the three months post-intervention. This study further reinforces the premise that there is a significant gap in nurses' knowledge of heart failure.

Mahramus et al. (2014) used a more comprehensive educational intervention to improve nurses' knowledge of heart failure self-care principles. The authors used the NKHFEP survey to measure knowledge both pre and post-intervention. Along with a three-and-a-half-hour lecture, participants also completed a role-playing scenario in which they were required to demonstrate the teach-back method of patient education. Reinforcement of class content was delivered during the three months following the initial class via email messages and discussions during shift-change huddles with staff. Nurse knowledge significantly increased from 65% pretest to nearly

81% posttest. For nurses who participated in testing after three months of content reinforcement, mean scores improved from 66.5% pretest to 89.5% posttest.

In addition to the improved knowledge of heart failure self-care, nurses also responded positively when surveyed about the class. Ninety-seven percent of nurses indicated the class increased their knowledge, and 90% stated they regularly educate patients on self-care principles. This study shows that an educational intervention can improve nurses' willingness and ability to deliver self-care education to heart failure patients. With brief follow-up interventions, such improvements can be retained over time, leading to an improved ability to properly educate patients about their disease process and self-care principles (Mahramus et al., 2014).

Patient Outcomes When Properly Educated on Heart Failure Self-Care Principles

The impact of patient education on outcomes such as quality of life and 30-day readmission rates for heart failure patients is another important area to investigate. To decrease length of stay (LOS) and readmissions for heart failure patients, White and Hill (2014) implemented a clinical pathway to improve care coordination, patient education, and patient self-care behaviors. The authors point out that half of all readmissions are preventable and are caused by inadequate patient education, non-adherence to self-care principles, or lack of follow-up after discharge. Of seven strategic objectives identified, two focused on patient education and one focused on assessing the impact of the education with a post-discharge callback. Use of the clinical pathway significantly reduced heart failure LOS, as well as reducing the readmission rate from a baseline of 23.1% to 12.08% after full implementation.

Bingham, Thompson, and Kell (2015) also studied the effect of patient education on heart failure self-management skills and overall hospitalizations. Staff nurses at an academic medical center were trained on topics such as health literacy and the use of teach-back as a tool to

enhance patient education. After the intervention, patient self-management knowledge increased from 42.7% to 95.2%. During the same period, hospitalizations for heart failure decreased by 8%. Albert (2016) also found that high-quality heart failure education is associated with a reduction in readmissions at six months post discharge, and patients reported a higher quality of life at 30 days post discharge compared to patients receiving usual care.

In a systematic review of literature, Almkuist (2017) concluded there is evidence that using teach-back to reinforce patient education is associated with a reduction in readmissions for heart failure patients. Combining teach-back with other initiatives is preferred as a means to achieving better self-management in heart failure patients. A study by White, Garbez, Carroll, Brinker, and Howie-Esquivel (2013) found that using teach-back is associated with greater recall of important self-care principles for heart failure patients. Although patients' ability to recall heart failure specific questions was not associated with a reduction in all-cause 30-day readmissions, there was a trend toward a significant reduction in readmissions for heart failure.

Summary

This review of literature supports the association between poor self-care behaviors and the effect on readmissions in heart failure patients (Albert, 2016; Cajita et al., 2016; Regalbuto et al., 2014; Toback & Clark, 2017). Also, nurses' inability to deliver effective patient education contributes to poor self-care behaviors (Albert, 2016; Brooks Carthon et al., 2015). A barrier to the ability of nurses to deliver effective teaching to heart failure patients is their comfort level and level of knowledge regarding heart failure self-care management (Albert, 2016; Albert et al., 2015; Mahramus et al., 2013). Practical interventions are shown to have a dramatic effect on improving nurses' comfort levels and knowledge base regarding heart failure self-care principles (Mahramus et al., 2014; Roussel, 2015; Sterne et al., 2014). Finally, improved patient education

was shown to have a positive effect on quality of life and knowledge of heart failure self-management principles (Albert, 2016; Bingham et al., 2015). Studies also support the association between patient self-care behaviors and readmissions for heart failure (Albert, 2016; Almkuist, 2017; Bingham et al., 2015; White et al., 2013; White & Hill, 2014). Although not a primary outcome measure for this project, an eventual reduction in heart failure readmissions is a desirable end goal. This review of literature shows that improving nurses' comfort levels and knowledge in delivering heart failure education is an integral step to improving patient quality of life and achieving a meaningful reduction in readmissions for these patients.

Needs Assessment and Description of Project

This author has engaged in conversations with several members of nursing leadership within the hospital system in which he is currently employed. The Chief Nursing Officer of one hospital indicated that heart failure readmissions remain a stubborn problem for the hospital despite efforts to impact such readmission rates (J. Malaskovitz, personal communication, January 12, 2018). The director of the hospital system's education and training center agrees that a heart failure training class for nurses is needed and would benefit the entire system (N. Carter, personal communication, various dates, 2018). Additionally, during nursing orientation classes for newly hired RNs, this author conducted an informal poll asking how many of the nurses feel comfortable with their knowledge level and ability to deliver effective heart failure discharge instructions to their patients. This was done over the course of 8 consecutive weeks, and only 5 nurses out of 150 (3.3%) indicated that they feel confident in their ability to deliver such education. These conversations along with evidence found in the literature show that this project is needed and will prove to be an integral step to filling this gap and eventually impacting heart failure readmission rates within the hospital system.

This project consisted primarily of a classroom-based intervention which lasted from three to four hours (Appendix A). The class included a PowerPoint lecture (Appendix B), a teach-back video, a self-guided case study (Appendix C), and a discharge case study (Appendix D) in which the class participants used teach-back with a classmate to reinforce important self-care topics related to heart failure. An evidence-based survey instrument, the Nurses' Knowledge of Heart Failure Education Principles Survey (Albert et al., 2002) (Appendix E), was used both pre and post-intervention to assess the nurses' knowledge of heart failure self-care principles, and a five-question Likert survey (Appendix F) was used to assess the nurses' self-perceived knowledge and level of comfort when educating heart failure patients.

Population Identification

The population that will benefit most from this intervention is heart failure patients who have been admitted to an acute care hospital for either a new diagnosis of heart failure or an exacerbation of pre-existing heart failure. Improvements in knowledge of heart failure self-care principles in this population have been shown to improve adherence to optimal treatment, improve quality of life, and reduce the likelihood of being readmitted once discharged from an acute care hospital (Albert, 2016; Almkuist, 2017; Bingham et al., 2015; White et al., 2013; White & Hill, 2014).

Key Stakeholders

Stakeholders with a vested interest in the outcomes of this project include groups both internal and external to the hospital system in which it was implemented. Internal stakeholders include system leadership at all levels, the central education department, and all nurses working for the system. External stakeholders include patients, their family members, the extended

community served by the system's hospitals, and regulatory agencies that require hospitals to improve patient outcomes, improve quality of care, and reduce preventable readmissions.

Organizational Assessment

The multi-hospital system where the project was implemented is one of the largest employers in its area and is dedicated to facilitating the learning and mentorship of all healthcare providers. The system also provides nursing students with clinical rotation sites at each of its hospitals (Valley Health System, 2019). This project was conducted at the hospital system's central education department. While primarily focused on the education and training of nurses, this center also facilitates learning opportunities for many other job roles within the hospital system.

Assessment of Available Resources

An analysis was completed during the initial planning phases of the project to ensure that the project was feasible from the standpoint of available resources. The resources required for the project included classroom space, overhead projectors, printing and copying capabilities for class materials, as well as available time for an instructor to teach the class. The course instructors are salaried employees of the hospital system and the class sessions occurred during normal working hours, so there were no expenses associated with instructor salaries. Upon implementation, the project did not require any resources beyond what was anticipated by this author during planning.

Scope of Project

Full implementation of this project will lay a foundation of knowledge that enables nurses to effectively teach heart failure self-care principles to their patients. This represents an important first step in improving quality of life and reducing readmissions in patients with heart

failure. Future projects aimed at reducing heart failure readmissions have a higher likelihood of success due to nurses' improved knowledge of heart failure self-care principles. In this way, a truly multimodal approach to managing heart failure patients in the acute care setting can be fully realized.

Project Goals

The primary goal of this project is to significantly improve nurses' knowledge of heart failure education principles as well as nurses' comfort level in delivering heart failure education to their patients. Ideally, nurses' knowledge will improve to a minimum mean score on the Albert et al. (2002) survey of 87.5% or greater, reflecting the authors' true knowledge of heart failure principles construct established during the survey's creation (Albert et al., 2002). In addition to improving nurses' knowledge, a secondary goal is to improve nurses' comfort level in delivering heart failure education to their patients. As the review of the literature showed, such improvements are an important step to improving quality of life and readmission rates for heart failure patients.

Chapter III

Conceptual Framework

The conceptual frameworks used to guide the development and implementation of this project are adult learning theory, also known as andragogy (Knowles, Holton, & Swanson, 2015), and Carper's Fundamental Patterns of Knowing in Nursing (Carper, 1999). While andragogy provides the basic framework for adult learning, Carper's ways, or patterns of knowing provide a more direct application of the learning intervention to nursing, with a focus on authentic, individualized interactions between nurse and patient.

Andragogy

Malcolm Knowles began building on the works of other adult learning theorists as he developed a comprehensive model (Appendix G) of adult learning in the 1960's (Knowles et al., 2015). While aspects of traditional learning theories (behaviorism, humanism, cognitivism, social cognitivism, and constructivism) can be found in most forms of adult learning, andragogy is primarily rooted in humanism, which posits that learning focuses on the personal development of the learner (Merriam & Bierema, 2014). The contributions of clinical psychologists, especially humanistic psychologists such as Abraham Maslow and Carl Rogers, were pivotal in the development of the basic frameworks of adult learning. Maslow took a holistic approach to human growth and personal development, emphasizing the role of safety as a foundation for human beings to reach for new knowledge and experiences (Knowles et al., 2015).

Rogers studied adults in the therapy process and then sought to apply his theories of personalities and behaviors to the field of education. His five basic hypotheses of a student-centered approach to education include the ideas that students will learn that which they perceive as enhancing their basic concept of self, and that learning must be facilitated from the perception

of what is happening within the student, rather than the actions being performed by the teacher (Knowles et al., 2015). Attempts to describe adult learning began to appear as early as the 1920's but provided no integrated conceptual framework to differentiate adult learning from learning theories about children, known as pedagogy. The concept of andragogy was first introduced in the United States by a Yugoslavian adult educator named Dusan Savicevic in 1967. Andragogy was a term that had been used in Europe for quite some time and described the growing field of adult learning (Merriam & Bierema, 2014). In 1968 Malcolm Knowles published an article comparing andragogy with pedagogy, leading to our modern organizing concept of how adults learn (Knowles et al., 2015). As a conceptual model, andragogy is rooted in six assumptions regarding how adults learn and their motivations for learning.

The self-directed human being and adult learning.

As adults mature out of childhood, their motivations to learn will change as they move from being a dependent learner to an independent, or self-directing, learner (Merriam & Bierema, 2014). This is not to say that adults are not motivated to take formal classes in which the learning may be directed by another, but rather that adults need to know why they are learning something and the potential benefits to their lives. In addition to a set of clearly written course objectives, this project must consider the learners' need to know and reinforce the effect this new knowledge will have on their ability to have meaningful, effective interactions with their patients (Knowles et al., 2015; McGrath, 2009).

The self-concept of the learner.

As learners move into adulthood, their self-concept begins to take the shape of those who are capable of taking responsibility for their own decisions and lives. This produces a strong need to be treated by others as being capable of self-direction. They will tend to resist situations

in which they feel they are being forced to learn a new topic or skill. Adult educators must be aware of this potential conflict with students and take steps to ensure learning experiences have elements of self-direction, rather than dependency, in their construction (Knowles et al., 2015; Merriam & Bierema, 2014). This project's intervention will consider the learners' needs within this construct and reinforce the positive benefits the knowledge will produce in their profession.

The learner's life experience as a resource for learning.

Adults bring life experiences into any learning situation to a much greater degree than do children. This has important implications for adult learning, which should be focused on individualized strategies such as group discussions, case studies, the use of simulation, and problem-solving rather than simple information transmittal through lectures. The facilitator must create learning activities which account for the individuality of the learners. Unlike children, whose self-concept is generally rooted in external identifiers, adults' self-concept lies in their individual experiences. Ignoring such experiences may cause adult learners to view learning as an attack on their personhood and individuality, leading to a conflict with their basic need to be self-directing (Knowles et al., 2015). Taking this into consideration, the learning intervention will incorporate such individualized strategies, especially focusing on teach-back simulation, case studies, and group discussion.

An adult's readiness to learn.

Building on the learner's life experience as a resource, an adult's readiness to learn a new subject or skill is rooted in the social roles of adult life. Once a new social role has been undertaken, such as a registered nurse (RN) caring for heart failure patients at the bedside, the readiness to learn information on that subject intensifies (Knowles et al., 2015). Direct experience has also been shown to increase this readiness, as those with exposure to a situation

or problem will naturally seek out relevant solutions (Merriam & Bierema, 2014). This implies that both new and experienced RNs will be motivated and ready to learn new ways to provide excellent care to their patients. The RNs' previous experience and knowledge gained at the bedside provide a foundation for additional learning during this project's educational intervention.

Problem-centered orientation to learning.

Adults are motivated to learn new concepts, skills, values, and ways of accomplishing tasks if the learning can be immediately applied to real-world situations (Knowles et al., 2015). Adults tend to be focused on problems rather than subject matter. These problems or issues tend to arise from the social roles they hold, such as their career, being a parent, a spouse, or the head of a household. McGrath (2009) emphasizes that an effective way to engage adult learners is for the learning facilitator to ask questions that students can apply to problems and situations encountered in their workplace. Allowing adults to analyze class material and make meaningful connections between the material and real-life scenarios is far more effective than lecturing and asking them to repeat information word for word (McGrath, 2009). This project's intervention will incorporate real-world situations into the learning material to reinforce this aspect of adult learning.

Motivation to learn.

While adults can be motivated by external factors such as a better salary or a job promotion, internal factors such as self-esteem and job satisfaction present greater motivation for the adult learner (Knowles et al., 2015). This aspect of adult learning is tied to the humanistic views of Maslow and Rogers. When adults are free to choose what they desire to learn, they are significantly more likely to engage in the learning process and apply new information (Merriam

& Bierema, 2014). Although some class participants will attend voluntarily, a secondary goal of this project is to include the heart failure class as required content for nurses taking certain specialty courses required for higher acuity nursing units. As a required course, emphasizing the potential for improved care and greater satisfaction with patient interactions will be paramount.

Carper's Fundamental Patterns of Knowing in Nursing

While andragogy provides a framework for the educational intervention of this project, a theoretical framework specific to nursing care is needed to both guide and provide a deeper meaning within the nurse-patient relationship. Carper's (1999) Fundamental Patterns of Knowing in Nursing provides this project with a framework that ensures the educational intervention focuses on the provision of nursing care that is not only authentic within its interactions, but also effective. Carper identified four fundamental patterns that explain phenomena encountered in nursing practice, stating that an understanding of these patterns is crucial to both teaching and learning the practice of nursing. The four patterns identified are empirics, or the science of nursing, esthetics, or the art of nursing, personal knowledge in nursing, and ethics, or moral knowledge in nursing (Carper, 1999).

Empirics and the science of nursing.

When Carper identified her fundamental patterns of nursing knowledge, the science of nursing practice was, in many ways, still in its infancy (Carper, 1999). Empirical knowing focuses on verifiable, factual descriptions which generate predictions based on group data, or as Fawcett, Watson, Neuman, Walker, and Fitzpatrick (2001) state, empirical knowing is concerned with averages. While forming a scientific basis for nursing practice, Fawcett et al. (2001) argue that Carper's other patterns of knowing are also integral to evidence-based practice. Within this paradigm, the best available empirical evidence will be used to guide needed changes within the

hospital system's training and education of nurses with respect to heart failure. Additionally, the project will use empirical data to measure the effectiveness of the intervention.

The esthetic pattern and the art of nursing.

An ideal starting point for the discussion of esthetics centers around the nurse's perception of an individual patient and what is significant in his or her behavior in relation to desired health outcomes. In considering esthetic knowing, the nurse is no longer concerned with the "averages" associated with empiric knowledge, but rather the particulars of a unique individual's situation and responses to therapy (Fawcett et al., 2001). Perceptions on the nurse's part of unique needs and subsequent interventions to meet those needs provides an esthetic and meaningful quality to nursing care. These unique interactions provide the nurse with new knowledge that Carper stated may not be amenable to purely scientific study (Bender & Elias, 2017). More recently, understanding of the various types of scientific evidence has led to a different view of esthetic processes, in which esthetic knowing may be just as amenable to scientific inquiry as is empirical knowing (Bender & Elias, 2017; Fawcett et al., 2001).

In arguing for the importance of esthetic knowing, Carper (1999) stated that as perception and ability to empathize increase, the nurse will develop a holistic repertoire of interventions to use in designing and implementing nursing care that is not only effective, but also satisfying to nurse and patient alike. Bender and Elias (2017) also argue for the importance of esthetic knowing, stating that the esthetic process requires authentic presence on the part of the nurse along with perception of the unique needs of the patient, creating a nursing action in which the patient is uniquely cared for. Within the esthetic paradigm, this project will focus on teaching nurses the importance of authentic interactions in order to design interventions tailored to each patient's individual needs.

Personal knowledge as a pattern of knowing in nursing.

Carper (1999) claims that personal knowing is not only the most difficult process to teach and master but is also the most crucial to understanding the effect of interpersonal relationships on coping with illness and becoming well. This is important to reflecting on the patient's unique responses to illness and creating an authentic, therapeutic relationship between nurse and patient (Carper, 1999; Fawcett et al., 2001). Personal knowing requires the nurse not to generalize patients into specific categories or traits, but to see the uniqueness of the patient and respect his or her freedom to choose the interventions and outcomes that are most important to their sense of being (Carper, 1999). Within this paradigm, the project will emphasize the unique qualities of each patient and their response to illness.

Ethics as a pattern of knowing in nursing.

Carper (1999) described the moral component of nursing practice within the context of an increasingly complex healthcare system in which the right action or treatment may be difficult to discern. Ethical conduct in nursing is primarily rooted in the obligation of service to others and respect for life. Nursing's value is seen as conserving life, health promotion, and the alleviation of suffering. Within this construct, the nurse is often faced with difficult choices related to a patient's goal of attaining their own view of health and wellness versus normative judgements of the nurse or society in general. Ultimately, ethical knowing requires the nurse to understand and respect different views of what is good and right, and to make moral choices regarding their treatment of patients while respecting these differences (Carper, 1999). Within this paradigm of nursing practice, this project will emphasize the ethical obligations of nurses to promote health and treat all patients justly, without the interference of personal bias.

Conclusion

It is important to note that Carper's patterns of knowing are not mutually exclusive, and each pattern should not be used as an isolated concept from the others (Carper, 1999; Fawcett et al., 2001). Indeed, Fawcett et al. (2001) extend the understanding of Carper's four patterns, stating that each is a type of theory unto itself, and these four theories constitute much, and possibly all, of the knowledge needed for the practice of nursing. Carper (1999) argues that effective nursing depends on scientific knowledge of health and illness, an esthetic perception of human experiences, personal understanding of the uniqueness of individual patients, and the capacity to make moral judgements within unique situations (Carper, 1999). While the concepts of andragogy provide a basis for designing an educational intervention suitable for the adult learner, Carper's fundamental patterns of knowing provide a conceptual framework to ensure the intervention creates holistic nursing actions which are effective and respectful to the unique humanity of each patient.

Chapter IV

Project Plan

The project was planned and designed within the context of several considerations, including the setting, available resources, the population of interest for the intervention, outcomes measurement, and a timeline for achieving the project goals.

Project Setting and Resources

This project was implemented at the central education department of a multi-hospital system in the Southwest United States. Authorization to conduct the project at this center was obtained in August 2018 (Appendix H). This department provides services such as new employee onboarding, specialty courses for hospital units such as emergency, critical care, intermediate care, etc., new graduate nurse internship and residency classes, as well as electronic medical record computer training. Resources needed for the project were readily available, and included classroom space, overhead projectors, and printing and copying capabilities for class materials. Upon implementation of the project, this author found that there were no significant resources needed beyond what was expected during project planning.

Project Population

This project focused on registered nurses directly caring for inpatients in the acute care setting. Any nurse working for the hospital system is eligible to take the heart failure class, and it is expected that most of them work in roles in which they have direct contact with heart failure patients. While the classes will be available to all nurses within the system for continuing education (CE) credit, RNs might also take the class as part of the new-hire orientation process or as a requirement for completion of a specialty course such as the ER or ICU internship for nurses who are new to those areas.

Measurement Instruments

The primary measurement instrument for this project was the Nurses' Knowledge of Heart Failure Education Principles Survey (NKHFEP) developed by Albert et al. (2002). The survey measures nurses' knowledge of the core heart failure self-care principles of diet, fluid intake, weight monitoring, signs and symptoms of heart failure exacerbation, medications, and activity levels. The authors addressed the reliability of the instrument and content validity was established by a panel of heart failure experts who worked at the facilities where the survey was initially tested (Albert et al., 2002). The instrument has been used successfully in a variety of practice settings to assess nurses' knowledge of heart failure education principles, as well as being used in pretest/posttest interventional studies to assess the effectiveness of heart failure education initiatives for nurses (Fowler, 2012; Mahramus et al., 2014; Marske, 2016; Sterne, Grossman, Migliardi, & Swallow, 2014).

While Albert et al. (2002) do not mention psychometric analysis of the survey results, such analysis was performed by Hart, Spiva, and Kimble (2011), who found that internal consistency was relatively low at 0.27. The authors created a Likert-scored version of the test which improved internal consistency to 0.53, later improving it to 0.70 after removal of three survey items. On the information page of the website where the NKHFEP survey can be purchased, it is pointed out that reliability testing using Cronbach's alpha is not appropriate for analysis of the internal consistency of this survey. This is due to the multi-factorial nature of the survey instrument as it measures several different heart failure topics with unique questions (Adeo, 2019). This project utilized the original dichotomously scored version of the survey to measure participants' knowledge of heart failure education principles.

A second survey instrument was developed by this author and consisted of a five-point Likert-scale assessment of nurses' self-perceived knowledge and ability to deliver effective heart failure teaching to patients. Statements on this survey also measured participants' assessment of the class and their level of agreement regarding heart failure education and its effect on patient outcomes. For each statement in the survey, there were five levels of agreement from which a participant could choose: strongly disagree, disagree, neither, agree, or strongly agree. In addition to the five Likert-scale statements, three demographic questions were asked regarding age, years of practice as a registered nurse, and highest earned nursing degree.

Data Collection/Measurement

Data collection occurred immediately before and after the educational intervention. Demographic data such as years of practice, education level, and previous healthcare experience were also collected. Pre and posttest scores were compared for significance using appropriate statistical analysis.

Timeline

The timeline for this project from proposal to completion is as follows:

- August 2018 – Project proposal defense
- October 2018 – IRB approval
- October 2018 – Development of heart failure class content
- October 2018 through February 2019 – Project implementation/data collection
- February 2019 – Project evaluation/dissemination of results
- February 2019 – Full project implementation
- March 2019 – Project finalization and defense

Threats

A primary threat to this project is that making the class mandatory for a large number of nurses is difficult. Educational offerings at the system's central education department for continuing education credit are voluntary, so there is always the possibility of limited interest in the class. To mitigate this threat, this author utilized strategies to teach the class to captive audiences, such as newly hired nurses during orientation as well as nurses taking specialty courses in areas such as intensive care/intermediate care (ICU/IMC). System leadership has now approved the class to be offered to new-hire RNs, and the class is also a permanent offering in the ICU/IMC internship for the system. Additionally, the class is now a permanent offering for continuing education credit (Appendix I) and is offered a minimum of six times per year at the system's central education department (Appendix J). To sustain the project this author will continually seek out new opportunities to teach the class to nurses within the system.

Institutional Review Board Approval

This author took all appropriate steps to mitigate any ethical concerns regarding the project's implementation. All subjects taking the class during the initial implementation of the project were recruited and consented (Appendix K) per the protocol submitted to the Institutional Review Board (IRB) of the University of Nevada, Las Vegas (UNLV). IRB approval for this project was obtained (Appendix L) and the project was determined to be exempt from a full review.

Evaluation Plan

Evaluation of the project included an analysis of project implementation along with data measurement and analysis. Additional evaluation will include an assessment from this author as well as system leadership of the feasibility of sustaining and expanding the project in the future.

After implementation and data collection, this author analyzed pretest/posttest knowledge survey data along with the Likert survey administered pre and post-intervention. A discussion of the project results follows in Chapter five.

Conclusion

Available evidence shows that heart failure readmissions remain an ongoing issue that is likely to worsen in the coming years. Multimodal strategies to reduce high readmission rates will be needed in the coming age of value-based reimbursement. The evidence also shows that nurses are often inadequately prepared to deliver effective self-care education to their patients with heart failure. Due to the link between patient knowledge and outcomes, the inability of nurses to deliver this education to their patients is concerning. A review of current literature shows that educating nurses to deliver effective heart failure teaching is an important first step in ensuring that patients are also properly educated. This education has been shown to reduce readmissions, improve patient satisfaction with care, and improve quality of life. This project is not only feasible from the standpoint of available resources, it is also likely to positively impact patient outcomes.

Chapter V

Summary of Implementation and Results

Heart failure is the most common reason for hospitalization in the United States for patients age 65 and over, accounting for over 1,000,000 annual hospital admissions (Albert, 2016; Bingham, Thompson, & Kell, 2015). Patients discharged from the hospital with a diagnosis of heart failure are at high risk for readmission due to the complexities of self-care. Over 25% of patients will be readmitted to the hospital within 30 days of discharge, and up to 50% of patients will be readmitted within six months (Annema, Luttkik, & Jaarsma, 2009; Gilotra et al., 2017; Giuliano, Danesh, & Funk, 2016).

Inadequate self-care ability on the part of heart failure patients leads to preventable hospital readmissions. The role of the nurse in providing self-care education to patients is a crucial step for patients to develop effective self-care behaviors. Several studies have shown that nurses' knowledge base and comfort level in providing heart failure education in the acute care setting and during care transition are suboptimal. These gaps in providing education to patients are likely contributors to inadequate self-care behaviors in this patient population (Albert et al., 2015). An evidence-based project to address these gaps has the potential to improve nurses' comfort level and knowledge base regarding heart failure education.

The purpose of this project was to implement an evidence-based intervention within a large, multi-hospital system to improve nurses' knowledge and ability to deliver heart failure education to patients in the acute care setting. Nurses who participated in data collection were assessed for knowledge of heart failure education principles both pre and post-intervention using an evidence-based assessment tool. A five-point Likert survey developed by this author was used to assess nurses' self-perception of knowledge and comfort levels with educating patients about

heart failure both pre and post-intervention. The teaching intervention is approximately three to four hours in length and covers critical elements of heart failure self-care in addition to the use of teach-back with interactive case studies.

Project Barriers and Threats

The primary barrier to this project having a significant impact is lack of interest in the heart failure class. A related barrier concerns the methods through which the project's class session can be implemented to a large number of nurses. This author negotiated with members of the education team to have the class session presented to groups of nurses who were taking part in new-hire orientation and specialty classes at the system's education and training center. Capturing groups of nurses in this manner represents an important step in ensuring that the heart failure class content is delivered to as many nurses as possible.

Project Monitoring

This author provided the primary monitoring of the project in conjunction with the project committee chair. Regular discussions with system leadership also provided a level of oversight to ensure the project met the needs of nurses within the hospital system. Ongoing monitoring of the heart failure class sessions after the project is fully implemented will be the responsibility of this author. Input from system leadership regarding the class and the learning needs of nurses will be integral to that process.

Data Collection

After implementation of the first class session in October of 2018, data collection continued with three additional classes in January and February of 2019. Two surveys were used to collect data, and both were administered pre and post-intervention. The knowledge survey was the Nurses' Knowledge of Heart Failure Education Principles (NKHFEPE) survey developed by

Albert et al., (2002). This 20-question survey instrument measures nurses' knowledge of heart failure self-care principles, focusing on daily weights, worsening symptoms, diet, fluid intake, medications, and activity levels. The second survey was a five-question Likert-scale survey to determine participants' self-assessed comfort levels with delivering heart failure education to patients. In addition to the five Likert-scale statements, three demographic questions were asked regarding years worked as a registered nurse, highest earned nursing degree, and each participant's age range.

Data were collected during four separate class sessions with a total of 109 participants. Data from five of the knowledge surveys were not used due to participants not completing the survey instrument correctly. All surveys were numbered such that pretest and posttest survey results could not be linked to any student. None of the class attendees declined to participate in data collection and other than the five unusable surveys, data collection occurred as expected.

Data Analysis

Statistical analysis of the project data was completed using the Statistical Package for Social Science (SPSS) version 25. Demographic data were collected (Table 1) and showed that of the 109 participants, approximately 54% had been working as an RN for 2 years or less, 23% for three to five years, 16.5% for six to ten years, and 5.5% for 11 or more years. For participant ages, approximately 10% were age 18-25, 57% were 26-35, 22% were 36-45, 7% were 46-55, and 3% were 56 years of age or older. For highest earned nursing degree, approximately 1% of participants had a nursing diploma, 18% had an associates degree, 78% had a bachelor's degree, and 2% had a master's degree or higher.

Table 1: Demographic Data

	Class A n=38	Class B n=17	Class C n=24	Class D n=30	Total N=109
<i>Age</i>	# (%)	# (%)	# (%)	# (%)	# (%)
18-25	4 (10.5)	2 (11.8)	1 (4.2)	4 (13.3)	11 (10.1)
26-35	27 (71.1)	9 (52.9)	11 (45.8)	15 (50.0)	62 (56.9)
36-45	3 (7.9)	4 (23.5)	10 (41.7)	7 (23.3)	24 (22.0)
46-55	3 (7.9)	2 (11.8)	2 (8.3)	1 (3.3)	8 (7.3)
56+	0 (0.0)	0 (0.0)	0 (0.0)	3 (10.0)	3 (2.8)
No answer	1 (2.6)				1 (0.9)
<i>Years as an RN</i>					
0-2	23 (60.5)	11 (64.7)	12 (50.0)	13 (43.3)	59 (54.1)
3-5	9 (23.7)	4 (23.5)	7 (5.8)	5 (16.7)	25 (22.9)
6-10	4 (10.5)	2 (11.8)	4 (33.3)	8 (26.7)	18 (16.5)
11 or more	1 (2.6)	0 (0.0)	1 (8.3)	4 (13.3)	6 (5.5)
No answer	1 (2.6)				1 (0.9)
<i>Highest Education</i>					
Diploma	0 (0.0)	0 (0.0)	0 (0.0)	1 (3.3)	1 (0.9)
Associates	10 (26.3)	3 (17.6)	2 (8.3)	5 (16.7)	20 (18.3)
Bachelor's	26 (68.4)	14 (82.4)	22 (91.7)	23 (76.7)	85 (78.0)
Master's +	1 (2.6)	0 (0.0)	0 (0.0)	1 (3.3)	2 (1.8)
No answer	1 (2.6)				1 (0.9)

The five-question Likert-scale survey focused on nurses' self-perception of heart failure knowledge and comfort levels with using teach-back to assess learning. Additional statements on the survey focused on nurses' agreement that heart failure education would improve patient outcomes and whether participants would recommend the heart failure class to other nurses. Results were tabulated (Table 2) so that comparisons could be made between pre and post-intervention data. Each statement had five possible levels of agreement: strongly disagree, disagree, neither, agree, and strongly agree. For comparative purposes, this author chose to assign a numeric identifier to each level of agreement with "1" indicating strong disagreement

and “5” indicating strong agreement with each statement. The first statement was “I feel confident in my ability to teach patients about heart failure self-care principles.” The mean pre-intervention response was 3.41 out of 5, indicating neutral to moderate agreement with the statement. The mean post-intervention response was 4.42, indicating moderate to strong agreement. The second statement was “After taking this class, I am more likely to educate patients and their family members about heart failure.” Data were tabulated only for post-intervention responses to this statement, as it applies to participant perceptions after taking the heart failure class. The mean post-intervention response was 4.53, indicating moderate to strong agreement.

The third statement was “Teaching patients and their family members about heart failure will help reduce readmissions for these patients.” The mean pre-intervention response was 4.42 and increased to 4.63 post-intervention. The fourth statement was “I am comfortable using teach-back to assess patient understanding of heart failure self-care principles.” The mean pre-intervention response was 3.95 (neutral to moderate agreement) and increased to 4.46 post-intervention, indicating moderate to strong agreement. The fifth statement was “I would recommend this class to other nurses who care for heart failure patients.” Data for this statement were tabulated only for post-intervention responses, generating a mean score of 4.64, indicating moderate to strong agreement.

Table 2: Likert Survey Results

	<i>Class A</i> <i>n=38</i> <i>mean</i> <i>(SD)</i>		<i>Class B</i> <i>n=17</i> <i>mean</i> <i>(SD)</i>		<i>Class C</i> <i>n=24</i> <i>mean</i> <i>(SD)</i>		<i>Class D</i> <i>n=30</i> <i>mean</i> <i>(SD)</i>		<i>Total</i> <i>N=109</i> <i>Mean</i> <i>(SD)</i>	
	<i>Pre</i>	<i>Post</i>	<i>Pre</i>	<i>Post</i>	<i>Pre</i>	<i>Post</i>	<i>Pre</i>	<i>Post</i>	<i>Pre</i>	<i>Post</i>
<i>Statement 1</i>	3.21 (.96)	4.43 (0.50)	3.50 (0.89)	4.44 (1.03)	3.70 (0.70)	4.42 (0.58)	3.40 (0.89)	4.40 (0.56)	3.41 (0.89)	4.42 (0.63)
<i>Statement 2</i>	*	4.51 (0.51)	*	4.50 (1.03)	*	4.63 (0.49)	*	4.50 (0.51)	*	4.53 (0.60)
<i>Statement 3</i>	4.37 (0.67)	4.57 (0.55)	4.41 (1.06)	4.56 (1.03)	4.35 (0.78)	4.67 (0.48)	4.53 (0.82)	4.70 (0.47)	4.42 (0.80)	4.63 (0.61)
<i>Statement 4</i>	3.74 (1.03)	4.41 (0.50)	4.12 (0.93)	4.56 (1.03)	4.04 (0.56)	4.46 (0.72)	4.07 (1.14)	4.47 (0.51)	3.95 (0.97)	4.46 (0.65)
<i>Statement 5</i>	*	4.62 (0.49)	*	4.56 (1.03)	*	4.58 (0.50)	*	4.73 (0.45)	*	4.64 (0.59)

Data analyzed with SPSS version 25.

Data for the heart failure knowledge (NKHFEK) survey results (Table 3) indicated a significant increase in participants' knowledge of heart failure education principles. The four classes were labeled A, B, C, and D. Class A (n=34) had a mean pre-intervention (pretest) score of 14.68 out of 20 (SD=1.57) and a mean post-intervention (posttest) score of 17.44 (SD=1.31) for a mean difference of 2.76 ($p < .001$). Class B (n=17) had a mean pretest score of 15.47 (SD=1.18) and a mean posttest score of 18.41 (SD=1.28) for a mean difference of 2.94. Class C (n=23) had a mean pretest score of 15.26 (SD=1.66) and a mean posttest score of 17.17 (SD=2.01) for a mean difference of 1.91. Class D (n=30) had a mean pretest score of 15.03 (SD=1.65) and a mean posttest score of 18.86 (SD=1.17) for a mean difference of 3.83 ($p < .001$). In aggregate, there were 104 surveys from which data could be analyzed, with a mean

pretest score of 15.04 (SD=1.56) and a mean posttest score of 17.95 (SD=1.60), generating a mean difference of 2.91 ($p < .001$, 95% confidence interval = 2.50-3.32).

Table 3: NKHFEP Survey Results

	<i>Pretest mean</i>	<i>Posttest mean</i>	<i>Mean diff</i>	<i>p</i>
<i>Class A n=34</i>	14.68	17.44	2.76	< 0.001
<i>Class B n=17</i>	15.47	18.41	2.94	*
<i>Class C n=23</i>	15.26	17.17	1.91	*
<i>Class D n=30</i>	15.03	18.87	3.84	< .001
<i>Total N=104</i>	15.04	17.95	2.91	< .001

Data analyzed with SPSS ver. 25 using a paired samples T-test, 2-tailed significance.

**p-values excluded for data sets consisting of fewer than 30 participants.*

Discussion

Analysis of the participants' demographic data shows that a majority (67%) were 35 years of age or younger, and 77% had been working as an RN for 5 years or less. Education data show that the vast majority (78%) hold a bachelor's degree, with associates degree holders making up a little more than 18% of participants. Analysis of the Likert survey showed a marked improvement in participants' self-assessment of comfort levels and ability to deliver effective heart failure education to their patients. Participants also indicated moderate to strong agreement that they were more likely to engage in heart failure education with their patients after taking the

class and that they would recommend the class to other nurses. Mean responses for statement three (agreement that patient education would lower heart failure readmissions) also increased from pretest to posttest although participant agreement with the statement was already moderate to strong before taking the class.

All data from the Likert survey were encouraging and indicated that participants felt they were better prepared to deliver effective heart failure teaching to their patients after taking the class and that they would recommend the class to other nurses. These results directly impact the problem found by Albert et al. (2015), showing that nurses with lower comfort levels in delivering heart failure education to their patients are less likely to deliver such education. Indeed, improving nurses' comfort level in delivering heart failure education to their patients was one of the primary goals of this project.

The NKHFEP survey results were equally encouraging, with aggregate mean scores improving from 15.04 out of 20 to 17.95, with a mean difference of 2.91 ($p < .001$). This author chose 85% (17/20) to be the minimum score indicating competence, similar to Mahramus et al. (2013), who also used the NKHFEP survey instrument to measure nurses' knowledge of heart failure self-care principles. Out of the 104 participants in this project with usable posttest surveys, 91 (87.5%) achieved a score of 17 or higher, indicating competence in heart failure self-care knowledge. In contrast, only 20 participants (19%) managed to achieve a score of 17 or higher on the pretest. The aggregate mean pretest score of 15.04 is similar to results found in other studies using the NKHFEP survey instrument. Albert et al. (2002) analyzed data for 277 registered nurses who scored a baseline mean of 15.3 on the survey, and Mahramus et al. (2013) analyzed baseline data from 90 registered nurses revealing a mean score of 14.2.

This outcome addresses the problem found in the literature of nurses not having adequate knowledge of heart failure self-care principles to effectively teach patients about their disease process (Albert et al., 2015; Mahramus et al., 2013, Mahramus et al., 2014; Sterne, Grossman, Migliardi, and Swallow, 2014). Along with improving nurses' comfort level in delivering heart failure education, improving their knowledge base was a stated objective of this project. The data indicate that this outcome was achieved and that the heart failure class will continue to positively impact nursing care within this multi-hospital system.

Conceptual Framework

During the proposal phase of the project, this author identified the principles of andragogy as integral to creating learning activities that were tailored to the specific needs of adult learners. Knowles et al. (2015) developed six assumptions regarding how adults learn and their motivations for learning. An important assumption about adult learning is that adults are relatively self-directed as learners. This is not to say adults only wish to learn things on their own, but rather that they need to know why they are learning a new skill or acquiring new knowledge and how it may benefit them. During the heart failure class, this author covered material showing that nurses are the primary link to patient education and that effective education leads to better outcomes for heart failure patients. Adult learners also have a need to be treated by others as having this capacity for self-direction. This need was met through interactive case studies in which participants worked independently and in small groups to reinforce important class elements.

Other important assumptions of andragogy include a readiness to learn based on life experiences and one's social role in the context of his or her work. By emphasizing the growing problem of heart failure readmissions in the acute care setting, the learning session satisfied this

principle and created learning that participants could directly apply to their interactions with patients. Another principle of andragogy is adults' motivation to learn, which can be greatly influenced by the prospect of career advancement, greater self-esteem, or improved job satisfaction. This project succeeded in convincing nurses that they can deliver effective heart failure education to their patients and that this education directly impacts the quality of life for these patients along with a reduction in readmissions to the acute care setting. This author believes most nurses want to deliver excellent care to their patients, and this project's heart failure class enables them to accomplish this desire.

While andragogy provided a conceptual model for the design of the educational intervention, Carper's (1999) Fundamental Patterns of Knowing in Nursing provided a nursing framework that would ensure the project focused on effective and authentic nursing care. These patterns were identified as empirics, esthetics, personal knowing, and ethics. Empirics deals with factual knowledge that Carper identified as being integral to the provision of evidence-based practice. As the literature review shows, this project utilized best evidence to create the most current knowledge base for nurses working directly with heart failure patients at the bedside. Carper's esthetic pattern states that nurses need to identify the uniqueness of each patient and his or her response to therapy. The emphasis on teach-back during the class session provided the participant with a guide to identifying unique patient needs and developing interventions to address those needs.

The class session also emphasized personal knowledge as a basis for effective nursing care, teaching that the nurse must strive to create nursing interactions that are both authentic and therapeutic for the patient. Each patient is unique, and therapies that may appeal to one patient might not appeal to the next. While difficult to quantify and teach, this author made sure to

include this element of knowing in the class session. Carper's final pattern of knowing, ethics, is rooted in the obligation of service to others and respect for life. The value of nursing care is primarily seen as conserving life, promoting health, and the alleviation of suffering (Carper, 1999). To the extent that the class sessions emphasized health promotion and improvements in quality of life for heart failure patients, this pattern of knowing was successfully implemented. Carper's fundamental patterns were integral to providing a nursing framework to this project that helped create nursing actions that are effective as well as respectful each patient's unique humanity.

Limitations of the Project

While the project class content has been delivered to over 150 nurses at the time of this writing, this represents a small fraction of the total number of nurses working in the hospital system. Although data analysis shows significant improvements in knowledge and comfort levels in delivering heart failure education, it is important to continue with a plan to deliver the class content to as many nurses as possible. If additional avenues to delivering the class are not found, the project may fall short of truly impacting quality of life and readmissions for heart failure patients throughout the system.

Project Sustainability

Process changes negotiated by this author have helped to ensure the ongoing sustainability of the project's heart failure class. The coordinator for the ICU/IMC specialty course has now adopted the class for use with all nurses new to these practice areas. This includes the lecture portion of the class along with all case studies. The class is also approved content for the weeklong nursing orientation for all new hire nurses within the multi-hospital system. These avenues are in addition to class sessions being offered for continuing education

(CE) credit to all nurses within the system. This CE class is currently being offered six times per year, with additional classes available for scheduling if the need arises. Through these processes, this project is highly sustainable and will continue to impact the quality of nursing care within this hospital system for years to come.

Future Activity

As stated in the project proposal, this project has the potential to lay a significant foundation for a truly multimodal approach to improving quality of life and reducing hospital readmissions for heart failure patients. This author plans to expand the system's focus on heart failure readmissions based on knowledge of heart failure education in the acute care setting and potential avenues aside from patient education to impact quality of life and outcomes. In addition, this author will continue to seek avenues to present the heart failure class to as many nurses as possible. A large, multi-hospital system should present a multitude of opportunities to accomplish this goal.

Dissemination of Results

Dissemination of the project's results will be accomplished through sharing class data with system leadership as well as publishing the results in a peer-reviewed journal. Results have already been shared with members of the education team, leading to the permanent adoption of the class into nursing orientation as well as the ICU/IMC specialty course. After graduation, this author plans to submit an article for publication based on the project and its results. Specific journals will be identified when the article is written. The literature review portion of this project will be presented as a poster at the Western Institute of Nursing (WIN) conference in San Diego, CA in April 2019.

Conclusion

The success of this project will hopefully raise awareness that a critical element to impacting heart failure patient outcomes is missing in the acute care setting. This project showed that nurse knowledge and comfort levels in delivering heart failure education are inadequate, but also that an interactive learning session can significantly improve both knowledge and comfort levels, leading to an improved ability and intent on the part of nurses to deliver such education. Avenues to deliver class content to more nurses within this multi-hospital system will help the project realize its full potential impact on patient outcomes.

Appendix A: Class Outline

1. Introduction and Pretest – **30 mins**
 2. PowerPoint Presentation
 - Objectives – **10 mins**
 - Overview of Heart Failure and Scope of Problem – **10 mins**
 - Physiology of Heart Failure
 - Significance to Nursing Practice
 - Break – **10 mins**
 - Overview of Heart Failure Self-Care – **60 mins**
 - Follow Up with Provider
 - Medications
 - Diet/Fluid Intake
 - Alcohol
 - Smoking
 - Activity Level
 - Weight Monitoring
 - Worsening Symptoms
 - Break – **10 mins**
 - Teach-Back Method of Patient Education – **30 mins**
 - Discussion
 - Assessing Patient Understanding
 - Making Adjustments Based on Pt Response
 - Teach-Back Video – Demonstration of Proper Technique
 3. Role Play Patient Scenarios – **40 mins**
 - Case Study for Each Group
 - Small Groups of 2-3 Students
 - Each Demonstrates Proper DC Instructions with Teach-Back Method
 - Break – **10 mins**
 4. Posttest and Conclusion – **30 mins**
- Total: 240 mins**

Appendix B: Heart Failure Class PowerPoint Slides

Heart Failure Self-Care Education Principles



Valley Health System
David Morrow, MHA, BSN, RN

Objectives

- Upon completion of this course the learner will be able to:
 - Describe the pathophysiology of heart failure
 - Demonstrate knowledge in the six areas of basic heart failure self-care:
 - Body weight monitoring
 - Diet
 - What to do for worsening symptoms
 - Post-discharge follow-up
 - Activity level
 - Medications
 - Describe the "teach-back" method of patient education
 - Demonstrate effective "teach-back" with a classmate

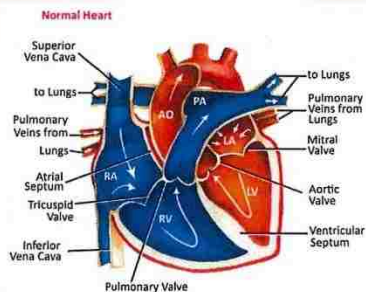
Background

- Heart Failure affects more than 6 million Americans
- Over 900,000 new cases diagnosed annually
- Accounts for over 1 million hospital admissions annually
- Over 25% of patients readmitted within 30 days; up to 50% readmitted within 6 months
- Heart Failure costs are staggering, and only likely to worsen in the coming years

Background

- Patient education → Better outcomes
 - Patients often have inadequate understanding of heart failure discharge instructions
 - Studies have shown that better understanding of self-care principles/DC instructions leads to significantly lower readmission rates for this population
 - Due to their interactions with patients, nurses have the greatest opportunity to impact patient understanding of DC instructions and the overall outcomes for these patients
 - Always assess your patient's level of understanding regarding DC teaching along with coping skills. Also assess family understanding and their involvement with the patient's care

Physiology of the Heart

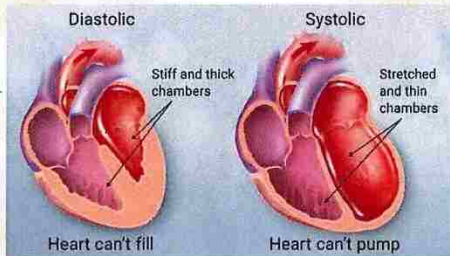


Pathophysiology of HF



- CHF: Congestive Heart Failure...older term used for HF
- Heart cannot pump enough blood to meet the body's metabolic needs
- What is the underlying structural abnormality causing the ventricular dysfunction/symptoms?

Pathophysiology of Heart Failure



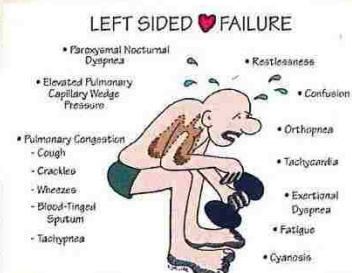
Left-Sided Heart Failure

- Causes
 - Aortic Stenosis
 - Cardiomyopathy – Increased workload due to contractility issues
 - Hypertension
 - Infection of heart muscle
 - Myocardial Infarction
 - Mitral Valve Regurgitation

Right-Sided Heart Failure

- Similar Pathophysiology to Left-Sided Failure
 - Increased workload on R-Ventricle
- Causes
 - L-Ventricle Failure is most common cause
 - Increased pulmonary pressures >>> Cor Pulmonale
 - Pulmonary HTN
 - Pulmonary Valve Stenosis

Symptoms of Heart Failure



Symptoms of Heart Failure



Compensatory Mechanisms

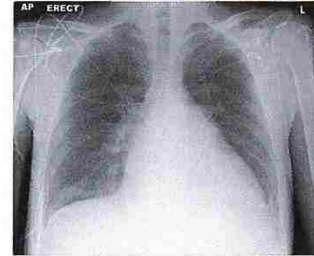
- If one of the systemic issues we've discussed is present, the patient's body will compensate through a variety of means to maintain cardiac output (CO)
- All of these mechanisms eventually lead to a worsening of HF
- Sympathetic Nervous System (SNS)
 - Detects low CO >> release of epinephrine and norepinephrine >> increases HR/SVR
- Renin-angiotensin-aldosterone system
 - Kidneys detect low renal blood flow, RAAS results in release of antidiuretic hormone >> fluid retention

Compensatory Mechanisms

- Effects on the heart
 - Over time, the heart begins to enlarge (dilation) and increase its muscle mass (hypertrophy)
 - Both are designed to increase contractile force
 - Although both of these mechanisms temporarily improve symptoms, they also increase oxygen demands of the heart.
 - In addition, the heart walls begin to stiffen, eventually leading to a reduction in pumping ability
 - Leads to decrease in contractility and EF

Diagnostic Tests for HF

- Chest X-ray
- Echocardiogram
- EKG
- Cardiac Catheterization
- ABG
- BNP



Patient Assessment - Subjective

- Respiratory
 - Hx of Lung disease? Climb stairs w/o fatigue? Pillows used? Dyspnea at rest or when awakening from sleep?
- Cardiovascular
 - Cardiac Hx? (MI, HTN, valves, anemia, dysrhythmias) Chest pain? ADLs? Vertigo or syncope?
- Fluid Retention
 - Daily Na intake? Any weight gain? Swelling, edema, etc.
- GI
 - Appetite? N/V, abd pain?
- GU
 - Decrease in daytime U/O? Nocturia?
- Neuro
 - Behavioral changes, confusion, etc.

Patient Assessment - Objective

- Respiratory
 - Tachypnea, crackles, wheezing, effort, dyspnea w/exertion
- Cardiovascular
 - Rate, rhythm, JVD, peripheral edema, Blood pressure
- GI
 - Abd distention, ascites, hepatomegaly, splenomegaly
- Neuro
 - Confusion, LOC, restlessness, memory problems
- Integumentary
 - Skin temp, pallor, cyanosis
- Patient's weight and Dx test results

Nursing Care for Patients with HF

- Activity Intolerance
 - Provide rest, space activities to conserve energy
 - Assist as needed with ADLs to allow for rest
- Fluid Volume Overload
 - Assess lung sounds, daily weights
 - Monitor for edema, crackles, JVD
 - Monitor I/O balance daily
 - Administer diuretics as ordered
 - Decrease sodium intake
 - Maintain fluid restriction

Nursing Care (cont)

- Ensuring adequate sleep patterns
 - Identify barriers such as anxiety, nocturia, orthopnea, PND
 - Comfortable sleep positions, semi-Fowler's, use of pillows
 - Teach patients why dyspnea occurs at night
 - May reduce anxiety
 - Nocturia
 - Encourage patient to recline for 30-60 mins before bedtime
 - Redistributes fluid to kidneys so patient more likely to void before falling asleep

HF Core Measures

- Left ventricular function assessment
- ACE inhibitor and/or ARB for left ventricular systolic dysfunction (EF < 40)
- Evidence-Based Beta Blocker (Bisoprolol, Carvedilol, Metoprolol succinate) at discharge
- Discharge Instructions include activity, diet, medications, worsening symptoms, weight monitoring, F/U appt
- Follow up appointment at discharge with Cardiologist, documented Date and Time
- Referral to Cardiac Rehab
- Referral to AHA My HF Guide/Heart Failure Interactive workbook (link in Heart Failure Book)

HF Discharge Instructions

- Documentation of 60 minutes 1 on 1 education regarding six components (below)
- Discharge instructions include six components:
 - - Activity level
 - - Diet/fluid
 - - Medication reconciliation
 - - Follow-up appointment with physician
 - - Worsening symptoms
 - - Weight monitoring
- All or none: one failed component is a failed discharge instruction measure
- Cardiac Rehab Referral provided to patient and documented in Cerner as being given to patient

Heart Failure Self-Care Principles

- Patients with limited education and those who speak English as a second language tend to have poorer understanding of discharge instructions
- Studies have shown that better understanding of self-care principles/DC instructions leads to significantly lower readmission rates for this population
- Assess your patient's level of understanding regarding DC teaching along with coping skills. Also assess family understanding and involvement with patient's care

DC Instructions: Activity



- Physical activity may be difficult, but inactivity may make symptoms worse
- Follow physician's recommendation for activity
- A good goal is to aim for 20-30 mins of exercise 5 times per week
- Begin slowly! Take frequent breaks, especially when starting the exercise program
- Referral to cardiac rehabilitation program
- Discuss with physician when it's safe to return to work, drive a car, or resume sexual activity

DC Instructions: Diet/Fluids



- Patients should eat a diet rich in whole grains, unprocessed fruits and vegetables, and nuts. Lean meats and milk products are good options as well
- Avoid deli meats or other processed/canned meat products...often very high in sodium!
- For canned vegetables choose low-salt options
- Use herbs and spices to flavor food
- Beware of salt-substitutes...often high in Potassium

DC Instructions: Diet/Fluids



- Make sure patient follows physician recommendation for daily fluid intake
- Patients often restricted to 1-2 L per day, depending on HF symptoms and disease progression
- Spread out fluid over the entire day, use small cups and drink slowly
- Ice cubes can be helpful if patient having difficulty
- An 8 oz cup is about 250 ml

DC Instructions: Medications



- A combination of medications may be prescribed.
- Ensure patient understands to take all meds as directed, even if they're feeling better
- Do not stop taking a medication unless they speak with their physician first
- Poor adherence to medication regimen is a major cause of preventable readmissions

DC Instructions: Medications

- Beta-Blockers
 - Initially contraindicated in HF patients due to negative inotropic properties
 - Studies eventually showed that beta-blockers in correct dosages reduce SNS activation and norepinephrine levels, also reduce cardiac remodeling and disease progression
 - Evidence-based beta-blockers have been shown to reduce sudden cardiac death, overall cardiovascular mortality, and mortality due to disease progression
 - Instruct patient to take their pulse daily, notify provider if below 60 bpm. Rise slowly to prevent dizziness

DC Instructions: Medications

- ACE Inhibitors
 - First-line therapy to decrease afterload, which helps to reduce cardiac hypertrophy
 - Common meds include captopril, enalapril, lisinopril
 - Tell patient to take as directed, check pulse daily and BP bi-weekly. Take initial doses at night to adjust to lower BP.
 - Side effects include dry cough, hyperkalemia, fatigue, dizziness, headache. Rise slowly to avoid dizziness. Report persistent cough to provider.

DC Instructions: Medications

- Angiotensin II Receptor Blockers (ARB)
 - Often used when ACE inhibitors are poorly tolerated
 - Common meds include losartan and valsartan
 - Side effects include HA, dizziness, syncope, N/V, diarrhea, hyperkalemia
 - Teach patient to rise slowly, check pulse daily, blood pressure bi-weekly. Report any unusual symptoms to HCP, especially fever, rash, swelling of feet or legs, chest pain, dyspnea, or irregular heartbeat

DC Instructions: Medications

- Diuretics
 - Loop diuretics very commonly used in HF patients
 - Examples include furosemide, torsemide, bumetanide
 - Usually administered in the morning to avoid nocturia
 - Other diuretics include spironolactone if potassium levels become a problem
 - Teach patient to adhere to daily weights to monitor effectiveness of therapy and report weight gain to provider

DC Instructions: Medications

- Digoxin
 - Positive inotrope, negative chronotrope
 - No longer commonly used in HF patients due to increased risk of death
 - Teach patient to take pulse before taking medication, hold if HR below 60 bpm and contact provider
 - Signs of toxicity include abd pain, N/V, visual changes (yellow or green halos, photophobia, diplopia), bradycardia, and dysrhythmias

DC Instructions: Medications

- Other less common medications:
 - Vasodilators such as isosorbide dinitrate (Isorbid, Isordil)
 - Hydralazine (Apresoline)
 - Nitroglycerin
 - Hydralazine/Isosorbide combo (Bidil) has been shown to have specific benefits to African-American patients

DC Instructions: Medications



- Avoid NSAIDs!
 - These drugs can cause Na retention and vasoconstriction
 - Can also increase the toxicity of ACE inhibitors and diuretics
 - This includes aspirin!

DC Instructions: Follow-Up



- Follow-up appointment with PCP after discharge... even if they're feeling better!
- HF is a chronic condition needing life-long management
- Encourage patient to have an open dialogue about challenges adhering to treatment plan, symptoms, and medications

DC Instructions: Worsening Symptoms

- Identifying worsening symptoms early can help to improve quality of life and decrease readmissions
- Instruct patient to contact physician/PCP if they notice:
 - SOB, esp when lying down, persistent wheezing or cough
 - Swelling of feet, ankles, or legs
 - Frequent urination, esp at night
 - Unexplained weight gain, even if no symptoms
 - 2-3 lbs in 1-2 days, or 3-5 lbs in 1 week. Compare to ideal (dry) weight
 - Dry weight is a measure of patient's weight without water accumulation/edema, 1st thing in the morning, after emptying bladder, in the nude or wearing same/similar clothing

DC Instructions: Worsening Symptoms



- When to contact physician/PCP (cont):
 - New onset or worsening fatigue
 - Trouble sleeping
 - Needing additional pillows to sleep comfortably
 - Abd pain/tenderness
 - Signs of infection including fever/chills
 - Rapid/irregular heartbeat
 - Persistent dizziness/lightheadedness

DC Instructions: Worsening Symptoms



- Call for medical help (911) or go to ER if:
 - Chest pain
 - Severe shortness of breath
 - Fainting
 - Any worsening symptom that indicates a possible medical emergency

DC Instructions: Weight Monitoring



- Daily Weight Monitoring
 - Weigh at same time every day on the same scale, before breakfast, wearing same clothes (or nude) and after voiding
 - Keep a daily log to track fluid changes
 - Call PCP if you gain 2-3 lbs over a 1-2 day period, or 3-5 lbs or more in a week. Compare weights to your dry, or ideal, weight
 - Continue weighing every day, even if your symptoms improve! Many patients do not adhere to daily weights and this is a common cause for readmissions

DC Instructions: Smoking



- If your patient smokes, you should encourage them to talk to their PCP about quitting
- Nevada Tobacco Quitline: 1-800-QUIT-NOW or www.nevadatobaccoquitline.com
- Avoid secondhand smoke by avoiding areas where others are smoking. If possible, do not allow smoking in your house.

DC Instructions: Alcohol



- Reduce alcohol consumption
 - Heavy drinking associated with exacerbation of HF
 - Light to moderate drinking may have beneficial effect
 - Encourage patient to speak with PCP if they have concerns about alcohol consumption

Summary

- Studies have shown that better understanding of self-care principles/DC instructions leads to significantly lower readmission rates for this population
- Due to their interactions with patients, nurses have the greatest opportunity to impact patient understanding of DC instructions and the overall outcomes for these patients
- Remember to use "teach-back" to assess patient and family understanding of important points for heart failure self-care
 - Activity: Follow physician's recommendations and start slowly. Aim for 20-30 mins of exercise 5x per week.
 - Diet/Fluids: Whole grains, unprocessed fruits and vegetables, avoid salt-substitutes, avoid deli meats! Adhere to fluid restriction as set by physician.

Summary

- Important self-care points (cont)
 - Medications: Take meds as prescribed, even if feeling better. Never stop a med unless discussed first with your physician. Cardiac meds for HF often have side effects...rise slowly, dizziness or lightheadedness is normal during first 5 mins of rising. Call physician if HF symptoms persist. Take BP and pulse as directed.
 - Follow-up: Keep F/U appt even if feeling better.
 - Worsening Symptoms: SOB, esp when lying down, persistent wheezing or cough, swelling of feet, ankles, or legs, frequent urination, esp at night, new onset or worsening fatigue, abd pain/tenderness, trouble sleeping, irregular heartbeat, persistent dizziness. Call 9-11 if: Severe SOB, CP, fainting.

Summary

- Important self-care points (cont)
 - Daily Weight Monitoring: Weigh at same time every day on the same scale, keep a daily log to track fluid changes
 - Call PCP if you gain 2-3 lbs over a 1-2 day period, or 3-5 lbs or more in a week. Compare weights to your dry, or ideal, weight.
 - Continue weighing every day, even if your symptoms improve...Many patients do not adhere to daily weights and this is a common cause for readmissions. Make sure you drive this point home!

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Appendix C: Heart Failure Class Case Study

Heart Failure Case Study

Mr. Cooper – Part 1

Mr. Cooper is a 64-year-old male. He arrived at the hospital complaining of difficulty breathing, even at rest. He has high blood pressure and takes Lisinopril once daily. His baseline vital signs at his last primary care appointment were BP 118/74, pulse 80 beats/min, respirations 16, height 5'7", and weight 175 lbs. He tells the nurse that he has been short of breath while exercising and that he has trouble sleeping unless he uses additional pillows. His current assessment reveals BP 140/86, pulse 106 beats/min, respirations 24/min, weight 184 lbs, and lung crackles upon auscultation.

1. What symptoms of HF is the patient exhibiting?
2. Do these symptoms indicate right- or left-sided heart failure?
3. What is causing the symptoms?
4. Why does he need additional pillows to help him sleep?

Mr. Cooper – Part 2

A chest x-ray is taken and shows enlargement of the heart.

1. Why is his heart enlarged?
2. How does an enlarged heart affect hemodynamics? Oxygen demand?

Mr. Cooper – Part 3

During Mr. Cooper's hospital stay, the physician continues the Lisinopril, starts furosemide (Lasix) BID, and puts Mr. Cooper on a sodium restricted diet (2 grams per day).

1. Why is the ACE inhibitor being continued?
2. How does the ACE inhibitor work to relieve symptoms of heart failure?
3. What lab result is important to know before giving the diuretic?
4. Why is Mr. Cooper on a 2-gram sodium restricted diet?
5. What is the overall goal in terms of managing the patient's heart failure?

Mr. Cooper – Part 4

After 3 days of treatment, Mr. Cooper is discharged from the hospital. The discharging physician instructs Mr. Cooper to continue his ACE inhibitor, and writes a prescription for Metoprolol and Lasix, along with a 2-gram per day sodium restriction.

1. What should the nurse teach Mr. Cooper about his medications and diet?
2. What foods should Mr. Cooper include in his diet? What should be avoided?
3. Why does Mr. Cooper need to weigh himself every day? What specific instructions are important regarding how Mr. Cooper weighs himself?
4. What guidelines does the nurse teach Mr. Cooper to follow with reporting of weight gain?
5. What should the nurse teach Mr. Cooper about exercise and his activity levels?

Appendix D: Heart Failure Class Discharge Case Study

Heart Failure Discharge Case Study - 1

Discharge Teaching

Your patient is being discharged home with a new diagnosis of heart failure. She asks you about her diet and fluid intake. The physician has prescribed a 2-gram daily sodium restriction along with a 2-liter daily fluid restriction. Use the teach-back method of assessing understanding on one of your peers as you teach them about this area of self-care.

1. What are some foods your patient should avoid?
2. What are some strategies your patient might employ to help stick with the fluid restriction?

Next your patient asks about weighing herself daily (Switch sides with your peer).

1. What are the most important points for your patient to remember about weighing herself?
2. When should the patient be concerned about her weight gain and report it to her PCP?

Heart Failure Discharge Case Study - 2

Discharge Teaching

Your patient is being discharged home with a new diagnosis of heart failure. The physician has prescribed furosemide (Lasix), Lisinopril, and Metoprolol to be taken daily. What are the most important points to teach your patient about taking his medications? Use the teach-back method of assessing understanding on one of your peers as you teach them about this area of self-care.

1. How often should the patient take his pulse? Blood pressure?
2. What are some side effects the patient may experience with these medications?

Next your patient asks about his activity levels. He is afraid that his heart failure means he can no longer be active and that he might have to spend all of his time resting. What discharge teaching would you give this patient regarding his activity levels? (Switch sides with your peer)

1. Can your patient begin an exercise program?
2. What is the relationship between exercise and management of heart failure?

Heart Failure Discharge Case Study - 3

Discharge Teaching

Your patient is being discharged home with a new diagnosis of heart failure. A follow-up appointment has been made with both his PCP and his cardiologist. Use the teach-back method of assessing understanding on one of your peers as you teach them about this area of self-care.

1. What should you teach your patient about the importance of following up with his physicians?

2. If your patient says he'll skip his follow-up appointment if he's feeling better what would you say to him?

Next your patient wants to know what symptoms he should be concerned about after he goes home. What discharge teaching would you give your patient in this area of self-care? (Switch sides with your peer)

1. What signs or symptoms would indicate that your patient needs to contact his physician/PCP?

2. What signs or symptoms would indicate that your patient should seek immediate medical attention?

Appendix E: Nurses Knowledge of Heart Failure Education Principles Survey

Per the copyright holder's request, the NKHFEP survey instrument is not included as an attachment in this appendix. For additional information regarding the NKHFEP survey, please see <https://onADEO.com>.

Appendix F: Survey of Nurses' Comfort Level in Delivering Heart Failure Education

Survey of Nurses' Comfort Level in Delivering Heart Failure Education

Please indicate your agreement with the following statements by placing a check mark in the appropriate box:

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel confident in my ability to teach patients about heart failure self-care principles					
After taking this class, I am more likely to educate patients and their family members about heart failure					
Teaching patients and their family members about heart failure will help reduce readmissions for these patients					
I am comfortable using teach-back to assess patient understanding of heart failure self-care principles					
I would recommend this class to other nurses who care for heart failure patients					

Demographic Survey: (You may decline to answer any of these questions)

How many years have you been working as a registered nurse?

0-2 years___ 3-5 years___ 6-10 years___ 11 or more years___

What is your highest earned nursing degree?

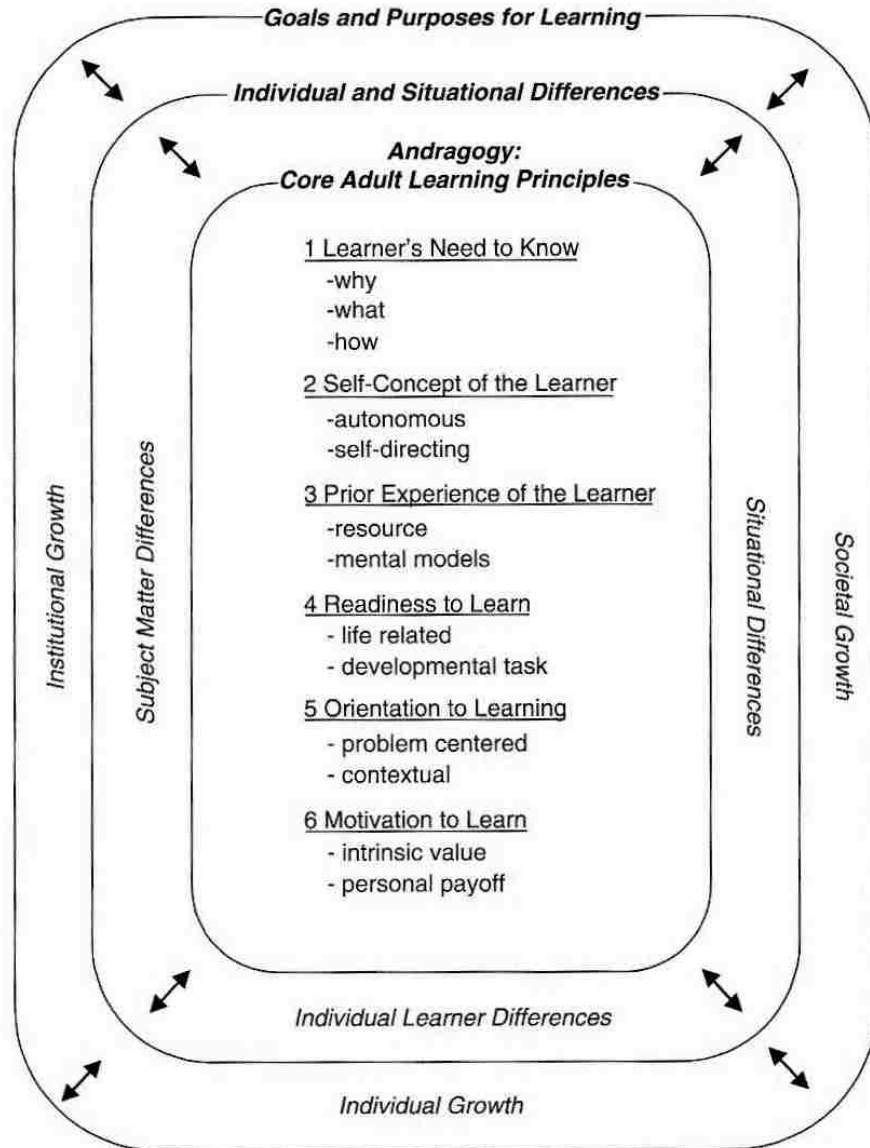
Diploma___ Associate's___ Bachelor's___ Master's or higher___

What is your age?

18-25___ 26-35___ 36-45___ 46-55___ 56+___

Appendix G: Andragogy Conceptual Model

Andragogy in Practice



Andragogy in Practice

Source: Knowles *et al.* (2015)

Appendix H: Facility Authorization Letter



Letter of Authorization to Conduct Research at Facility

Office of Research Integrity – Human Subjects
University of Nevada Las Vegas
4505 Maryland Parkway Box 451047
Las Vegas, NV 89154-1047

Subject: Letter of Authorization to Conduct Research at Valley Health System Education & Training Center.

Dear Office of Research Integrity – Human Subjects:

This letter will serve as authorization for the University of Nevada, Las Vegas (“UNLV”) researcher/research team, Jessica Doolen and David Morrow, to conduct the research project entitled “Implementing a Heart Failure Education Program for Bedside Nurses in the Acute Care Setting” at The Valley Health System Education & Training Center; 6655 Cimarron Rd., Las Vegas, NV 89113.

The Facility acknowledges that it has reviewed the protocol presented by the researcher, as well as the associated risks to the Facility. The Facility accepts the protocol and the associated risks to the Facility, and authorizes the research project to proceed. The research project may be implemented at the Facility upon approval from the UNLV Institutional Review Board.

If we have any concerns or require additional information, we will contact the researcher and/or the UNLV Office of Research Integrity – Human Subjects.

Sincerely,



Facility’s Authorized Signatory

August 28, 2018

Date

Nina Carter, PhD, RN; VHS Market Director Learning & Development

Printed Name and Title of Authorized Signatory

Appendix I: Approval Email for Continuing Education Credit

RE: Heart Failure CE App
Carter, Filomena (Nina) Nina.Carter@uhsinc.com
Wed 12/19/2018 10:58 AM
To: Morrow, David <David.Morrow@uhsinc.com>

Hi David,

Thank you. Please accept this email as official notice of approval regarding course titled, "Heart Failure Self Care Principles" as meeting CE requirements set forth by the Nevada State Board of Nursing. The course number is **NV000448-2651218** and is valid through July 31, 2019. We will review it at that time for renewal. I am attaching a course sign in sheet and evaluation form. Please use these for class sessions (edit as needed). The completed sign in sheet and evaluation form must be submitted to Debra for certificate processing. Please let me know if you need anything else and thank you for submitted your course for review. These documents will be posted in the CE folder on the shared drive for your convenience.

Regards,

Nina Carter, RN, PhD
Market Director, Learning & Development

Valley Health System Education and Training Center
6655 S. Cimarron Rd.
Las Vegas, NV 89113
Office (702)369-7591
Fax (702) 853-8256



Appendix J: Heart Failure CEU Class Flyer

Heart Failure Self Care Principles

The fundamentals of delivering excellent discharge teaching to heart failure patients

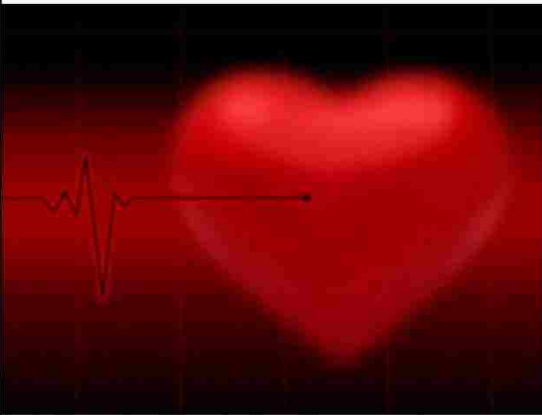
4 Continuing Education Credits
Approved by
Nevada State Board of Nursing

Open to all Valley Health System RNs

Instructor:
David Morrow, MHA, BSN, RN

January 17, 2019
February 12, 2019
April 2, 2019
June 20, 2019

Additional dates available through December



Please sign up in LMS

All classes held at:

VHS Education and Training Center
6655 S. Cimarron Road, Las Vegas, NV 89113
Located East of the intersection of Durango and Sunset Rd. in the Centra Point business park



Time off to take the course must be arranged with unit management. Employees seeking paid time to take this course must have it approved by the executive leadership at their facilities.

Appendix K: Informed Consent



University of Nevada Las Vegas
Informed Consent
Research Involving Human Subjects
Research Consent Form

Title of Study: “Implementing a Heart Failure Education Program for Bedside Nurses in the Acute Care Setting”

Investigators:

Jessica Doolen, Ph.D., APRN, Project Chair/Supervisor
School of Nursing
University of Nevada Las Vegas
jessica.doolen@unlv.edu

David L Morrow, MHA, BSN, RN
Doctor of Nursing Practice Student
University of Nevada Las Vegas
morrowd2@unlv.nevada.edu

For questions or concerns about the study, you may contact David Morrow at 702-526-8054

For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, contact the **UNLV Office of Research Integrity – Human Subjects at 702-895-2794, toll free at 877-895-2794, or via email at IRB@unlv.edu.**

Purpose of the Study

You are being invited to participate in a research study. The purpose of this study is to implement a heart failure education class for acute care bedside nurses to improve their knowledge and comfort level when delivering heart failure education to their patients.

Participants

You are being asked to participate in the study because you are employed at one of the hospitals in the Valley Health System as a Registered Nurse (RN).

Procedures

If you volunteer to participate in this study, you will be asked to complete 2 assessment surveys before and after taking a heart failure class. You will also be asked for some demographic information (age, education level, years of practice). The class session will consist of a PowerPoint presentation, interactive class discussions, and interactive teaching sessions in which you will practice using the “teach-back” method with your classmates.

Benefits of Participation

There may be direct benefits to you as a participant in this study. The investigators of this study hope to learn if a classroom session can significantly improve nurses’ knowledge and comfort level in delivering heart failure education to their patients in the acute care setting.

Risks of Participation

There are risks involved in all research studies. This study may include only minimal risks. You may feel uncomfortable or nervous when answering questions on the survey instruments.

Cost/Compensation

There is no financial cost to you to participate in the study. The study will take up to 4 hours of your time. You will not be compensated for your time.

Confidentiality

All records of participation will be kept as confidential as possible. The results from this study will be reported in aggregate in a written report as well as an oral report to my project committee. Information about the project will not be made public in any way that identifies individual participants. All records will be stored in a locked facility at UNLV for 7 years after completion of the study. After this storage period, all records related to this study will be shredded or electronically deleted.

Voluntary Nature of the Project

Your participation in this research project is completely voluntary. You may withdraw at any time for any reason without explanation and without penalty. You may choose not to answer any question for any reason. You are encouraged to ask questions about this study at the beginning or at any time during the research study.

Participant Consent

I have read the above information and I agree to participate in this study. I understand that I can ask questions or withdraw at any time. I am at least 18 years of age. A copy of this form has been given to me.

Signature of Participant

Date

Participant Name (Please Print)

Appendix L: IRB Approval Email

IRBNet Board Action

Meg Rayner <no-reply@irbnet.org>

Thu, Oct
25, 2018,
2:28 PM

to me, Jessica

Please note that UNLV Biomedical IRB has taken the following action on IRBNet:

Project Title: [1311659-1] Implementing a Heart Failure Education Program for Bedside Nurses in the Acute Care Setting
Principal Investigator: Jessica Doolen, PhD, APRN

Submission Type: New Project
Date Submitted: September 29, 2018

Action: EXEMPT
Effective Date: October 25, 2018
Review Type: Exempt Review

Should you have any questions you may contact Meg Rayner at meg.rayner@unlv.edu.

Thank you,
The IRBNet Support Team

www.irbnet.org

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Curriculum Vitae

David Morrow, MHA, BSN, RN
dmorrow784@gmail.com

Education/Degrees

In Progress: Doctor of Nursing Practice, University of Nevada, Las Vegas 2017-2019
Master of Healthcare Administration, University of Nevada, Las Vegas 2011-2014
Bachelor of Science, Nursing, University of Nevada, Las Vegas 2008-2011

Experience Overview

- | | |
|---|----------------|
| • Clinical Nurse Educator, Valley Health System Education and Training Center | 1 year |
| • Manager, IMC, Desert Springs Hospital Medical Center, Las Vegas, NV | 1 year |
| • Part-time Nursing Instructor, Health Systems and Technology, Arizona College of Nursing, Las Vegas, NV | 1 year |
| • Part-time Clinical Instructor, University of Nevada, Las Vegas, Las Vegas | 4 months |
| • Manager, Education Department, Desert Springs Hospital Medical Center, Las Vegas, NV | 2 years |
| • Clinical Supervisor, Medical/Surgical, Desert Springs Hospital, Las Vegas, NV | 2 years |
| • House Supervisor, Desert Springs Hospital Medical Center, Las Vegas, NV | 2 years/1 year |
| • Staff RN, Emergency Services/Intensive Care Unit, Desert Springs Hospital Medical Center, Las Vegas, NV | |

Publications

- Saunders Comprehensive Review for the NCLEX-RN Examination, 6th ed. Chapter 4: The NCLEX-RN Examination: From a Graduate's Perspective.

Memberships

- American College of Healthcare Executives (2012-present)
- National Audubon Society (2009-present)
- The Nature Conservancy (2001-present)
- National Arbor Day Foundation (2006-present)

Awards

- Spirit of Nursing, Special Dean's Award, UNLV, Spring, 2011
- Nevada Nurses' Foundation Scholarship (2011)
- Cum Laude Graduate, BSN, UNLV (2011)

Courses Taught

- **Academic**
 - Health Systems and Technology, Arizona College of Nursing, 2015-2016
 - Introduction to the social, political, and economic contexts of the nursing profession and health care systems in the United States.
 - Level IV Clinical Rotation, UNLV School of Nursing, Fall 2016
- **Corporate**
 - General orientation: Service Excellence presentation
 - Nursing orientation
 - Computer charting
 - Annual skills fair at hospital level
 - Sepsis and care of the hospitalized patient
 - Heart failure self-care principles

Interests

- Health policy, access to care issues, healthcare system reform, community education, wellness and prevention
- Environmental issues, hiking, camping, travel, photography