

## ABSTRACT

## EFFECT OF MODIFIED HOME PALLIATIVE CARE ON HEART FAILURE PATIENTS' HOSPITAL READMISSION RATES

By Ann M. Kabat

Heart failure (HF) is the most common cause of hospital admissions among Medicare recipients, and readmission rates are disproportionately higher than in other chronic conditions. Over 20% of HF patients are readmitted within 30 days of discharge from the hospital. Various types of palliative care delivery programs have demonstrated positive outcomes for HF patients by decreasing emergency department visits, hospital days, physician visits, and medical costs. However, it appears that more frequent home visits early after hospital discharge may be the best combination to decrease hospital readmissions. Furthermore, research investigating the effect of an advanced practice nurse (APN) led home palliative care program on hospital readmissions in persons with HF is lacking.

The purpose of this retrospective comparison study was to evaluate the difference in hospital readmissions between HF patients enrolled in a non-modified home palliative care program and a modified home palliative care program. Non-modified palliative care is a service provided in the home by an APN that focuses on physical, emotional, social, and spiritual support. Services included with non-modified palliative care program include a 24-hour nurse phone line and monthly visits from the APN, as requested by the patient or primary care provider. Advanced practice nurse visits include evaluation, assessment, planning, care delivery, follow-up, monitoring, and reassessment, along with patient and family education. In addition to the services already described, modified home palliative care includes three APN home visits within the first month post-hospitalization and scheduled monthly visits thereafter. Neuman's Systems Theory provided the organizing framework.

The sample consisted of 102 patients from one Midwest home palliative care agency. Data were collected through a retrospective chart review over two time periods; time one occurred during a non-modified home palliative care program, and time two occurred during a modified home palliative care program. Descriptive statistics were used to describe the sample, and group differences were evaluated using dependent t-test.

The sample was predominantly female (73.5%), with a mean age of 82 years ( $SD = 4.69$ ). Most resided within an assisted-living environment (66%), with the remainder living in a home or apartment. Nearly all subjects (98%) were Medicare recipients. The modified palliative care group demonstrated a significantly lower

readmission rate (3.2%;  $m = 0.03$ ;  $SD = 0.18$ ) compared to the non-modified palliative care group (25%;  $m = 0.25$ ;  $SD = 0.44$ ) at  $p < 0.05$ .

The modified, APN led palliative care program, utilizing more frequent home visits after a hospitalization, significantly reduced hospital readmission rates in this sample. Lack of randomization and control over extraneous variables does not allow for causal inference in this study. However, the positive impact on HF hospital readmission rates in this type of palliative care program utilizing more frequent home visits by an APN should be further investigated. Future research studies are needed with larger, randomized sampling using a longitudinal design.

EFFECT OF MODIFIED HOME PALLIATIVE CARE ON HEART FAILURE PATIENTS'  
HOSPITAL READMISSION RATES

by

Ann M. Kabat

A Clinical Paper Submitted  
In Partial Fulfillment of the Requirements  
For the Degree of

Master of Science in Nursing


Family Nurse Practitioner

at

University of Wisconsin Oshkosh  
Oshkosh, Wisconsin 54901-8621

May 2011

APPROVAL

 Advisor

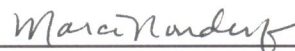
May 2, 2011 Date Approved

PROVOST  
AND VICE CHANCELLOR



5/3/11  
Date Approved

FORMAT APPROVAL



4/21/11  
Date Approved

To my parents – Thank you for your unending love, support, and encouragement throughout the many years of my education. Thanks dad for showing me the value of hard work and education. Thanks mom for inspiring me and passing on the special gift of nursing. My success is a direct result of the hard work and determination you both instilled in me.

To the rest of my family and friends – Thanks for always listening and promoting confidence throughout the process of this endeavor. Your support and encouragement have given me the strength to accomplish my goals.

To Stewie – Thanks for being my constant companion as I sat at my desk working and absorbing the knowledge that has made me the nurse I am today.

To Oscar – I miss you, love you, and will never forget you.

## ACKNOWLEDGEMENTS

I would like to acknowledge Bernie, Karin, and Crystal with the Home Palliative Care Program for their contribution to this project. Thank you for the privilege of working in collaboration with you. I am grateful to have had the opportunity to work with a group so dedicated to the well being of heart failure patients. Our community is a better place for your service.

## TABLE OF CONTENTS

	Page
LIST OF TABLES .....	vi
LIST OF FIGURES .....	vii
CHAPTER I – INTRODUCTION .....	1
Problem Statement .....	3
Purpose .....	4
Research Question .....	4
Conceptual Definitions .....	4
Operational Definitions .....	5
Assumptions .....	6
Chapter Summary .....	6
CHAPTER II – THEORETICAL FRAMEWORK AND LITERATURE REVIEW .....	8
Introduction .....	8
Theoretical Framework .....	8
Client: Structure .....	10
Client: Lines of Defense .....	10
Advanced Practice Nursing .....	11
Prevention as Intervention .....	11
Model Case .....	12
Literature Review .....	15
Heart Failure .....	15
Hospital Readmissions .....	16
Reducing Heart Failure Readmissions .....	17
Palliative Care Research .....	21
Chapter Summary .....	25
CHAPTER III – METHODOLOGY AND DATA ANALYSIS .....	26
Methodology .....	26
Research Design .....	26
Population, Sample and Setting .....	27
Data Collection Instruments .....	27
Data Collection Procedures .....	28
Data Analysis Procedures .....	28
Protection of Human Subjects .....	29
Limitations .....	29
Chapter Summary .....	30

TABLE OF CONTENTS (Continued)

	Page
CHAPTER IV – FINDINGS AND DISCUSSION .....	31
Introduction .....	31
Demographic Data .....	31
Hospital Readmissions .....	36
Chapter Summary .....	39
CHAPTER V – SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS .....	41
Summary .....	41
Conclusions .....	42
Limitations .....	43
Implications for Nursing Practice .....	43
Recommendations for Further Research .....	44
APPENDICES	
Appendix A. Chart Review Data Collection Tool (May 1 – July 31, 2010) .	45
Appendix B. Chart Review Data Collection Tool (Sept. 1 – Nov. 30, 2010)	47
REFERENCES .....	49

## LIST OF TABLES

	Page
Table 1. Gender of Subjects .....	32
Table 2. Ages of Subjects .....	33
Table 3. Type of Insurance .....	34
Table 4. Type of Residence .....	35
Table 5. Type of Assistance .....	36
Table 6. Hospital Admissions and Readmissions .....	37

## LIST OF FIGURES

	Page
Figure 1. The Neuman Systems Model .....	9

## Chapter I

### Introduction

Approximately 5.8 million Americans are currently diagnosed with heart failure (HF) (American Heart Association [AHA], 2010). The course of HF is unstable, involves exacerbations, progression of symptoms, and frequent hospital readmissions producing significant cost (Sethares & Elliot, 2004). Although less than 5% of Medicare recipients die each year, costs in the last year of life encompass more than 25% of Medicare expenditures (Enguidanos, Cherin, & Brumley, 2005). Heart failure is the most common cause of hospital admissions among Medicare recipients and was estimated to cost \$39.2 billion dollars in 2010 (AHA, 2010). With 670,000 new cases of HF each year, combined with an aging population, these financial projections will continue to grow over time (AHA, 2010).

The Center for Medicare & Medicaid Services (CMS) is closely monitoring hospital readmission rates, and hospitals are receiving reduced reimbursement due to higher readmission rates for patients with HF (Medicare Payment Advisory Commission [MedPAC], 2010). Approximately 20% of Medicare patients are readmitted within 30 days of discharge from the hospital, and 34% are readmitted within 90 days (Taylor, 2010). Both MedPAC and CMS have recommended hospital payments for readmissions be reduced (MedPAC, 2008), thus, evaluating and reducing readmission rates is a key focus of hospital administrators. Prevention of hospital readmissions requires coordination and communication between the hospital and post-discharge care providers, including adequate discharge planning and post-discharge follow-up (MedPAC, 2008).

Various HF management programs have proven effective in minimizing exacerbations and hospitalizations. Several studies indicate that HF management programs can effectively reduce hospital readmissions and reduce healthcare cost through home-based intervention programs (Stewart & Horowitz, 2002), discharge planning and post-discharge support (Phillips et al., 2004), discharge education and multidisciplinary strategies (McAlister, Stewart, Ferrua, & McMurray, 2004), and APN centered home care (Naylor et al., 1999).

Palliative care is a practice approach that focuses on reducing disease exacerbations and progression of symptoms for patients with chronic illnesses, such as cancer, HF, and chronic obstructive pulmonary disease (COPD), while providing holistic patient-centered care (Brumley, Enguidanos, & Hillary, 2003; Serra-Prat, Gallo & Picaza, 2001). Patients receiving palliative care can continue to receive active treatment for chronic illnesses, with the focus of enhancing comfort and quality of life through physical, emotional, social, and spiritual support (Storey, Knight, & Schonwetter, 2003). Guidelines for palliative care are less rigid compared to hospice, which requires a 6-month or less prognosis and discontinuation of active treatment (Brumley, Enguidanos, & Cherin, 2003). A patient can receive palliative care once a chronic illness is no longer responsive to treatment, even if the prognosis is more than 6 months. The patient can also continue to pursue active treatment if desired. Palliative care offers a flexible yet holistic model of care (Storey et al., 2003).

In previous studies, palliative care programs have demonstrated several positive outcomes for HF patients. They result in less emergency department visits and physician visits (Brumley, Equidanos, & Cherin, 2003; Brumley, Equidanos, & Hillary, 2003; Enguidanos et al., 2005; Serra-Prat et al., 2001), and patients were more likely to

die at home (Enguidanos et al., 2005) and have decreased hospital length of stay and lower health care costs (Serra-Prat et al., 2001).

The effect of HF programs on hospital readmissions has been extensively studied. There is also research available that shows the positive effects of home palliative care programs on chronic illnesses. It appears that more frequent home visits early after hospital discharge may be the best combination to decrease hospital readmissions. However, there is little research evaluating the effect of APN led modified home palliative care on HF patients' hospital readmission rates. This study retrospectively evaluated hospital admission and readmission data for home palliative patients receiving non-modified palliative care and modified palliative care. Non-modified palliative care is a service provided in the home by an APN that focuses on physical, emotional, social, and spiritual support. Services included with the non-modified palliative care program include a 24-hour nurse phone line and monthly visits from the APN, as requested by the patient or primary care provider. Advanced practice nursing visits include evaluation, assessment, planning, care delivery, follow-up, monitoring, and reassessment, along with patient and family education. In addition to the services already described, modified home palliative care includes three APN home visits within 1 month post-hospitalization and scheduled monthly visits thereafter.

### **Problem Statement**

Hospital readmissions related to HF exacerbations are prevalent and costly (Sethares & Elliot, 2004). The Center for Medicare & Medicaid Services is closely watching hospital readmission rates and has already implemented reform that reduces reimbursement to hospitals with higher readmission rates for patients with HF (CMS,

2010). Although these changes have placed a heavy burden on hospitals, they have resulted in significant cost savings for CMS and are expected to improve healthcare (CMS, 2010). The Affordable Care Act includes a hospital readmissions reduction program, which rewards hospitals that reduce avoidable readmissions (CMS, 2010). In addition, it reduces Medicare reimbursement to hospitals with higher readmissions (CMS, 2010). Heart failure is especially prevalent among the growing elderly population; therefore, solutions are actively being explored (Krumholz et al., 1997). There are a variety of HF programs available that attempt to reduce hospital readmissions, including home palliative care. It appears the most effective programs include frequent home visits post-hospitalization (Sochalski, et al., 2009).

### **Purpose**

The purpose of this retrospective quantitative comparison study was to evaluate the difference in hospital readmissions between HF patients enrolled in a non-modified home palliative care program and a modified home palliative care program.

### **Research Question**

What is the difference in hospital readmissions between HF patients enrolled in a non-modified home palliative care program and a modified home palliative care program?

### **Conceptual Definitions**

*Home palliative care:* A service provided in the home by a care team consisting of physicians, APNs, registered nurses, social workers, and other healthcare

professionals, that focuses on physical, emotional, social, and spiritual support in addition to patient and family education (Brumley, Enguidanos, & Cherin, 2003; Enguidanos et al., 2005; Serra-Prat et al., 2001) for persons with a chronic illness (Storey et al., 2003), while continuing to pursue curative care (Enguidanos et al., 2005).

*Modified home palliative care:* Home palliative care that is changed, altered, or adjusted.

*Hospital readmission:* A hospital admission that occurs within a specified period of time after discharge from the first admission (Guo, Chung, Casey & Snow, 2010).

*Heart failure patient:* A person diagnosed with a disorder caused by a structural or functional disorder of the heart that impairs the ventricle's ability to fill with or eject blood, characterized by symptoms of breathlessness, fatigue, pulmonary congestion, and peripheral edema (AHA, 2010).

*Home:* The place where a person lives.

## **Operational Definitions**

*Non-modified home palliative care:* A service provided in the home by an APN that focuses on physical, emotional, social, and spiritual support, in addition to patient and family education, for persons diagnosed with at least one chronic illness, while continuing to pursue curative care. Services include: 24-hour nurse line and monthly visits from the APN, as requested.

*Modified home palliative care:* An adjustment to non-modified home palliative care program. In addition to the services described by non-modified home palliative care, modified home palliative care includes three APN home visits within 1-month post-hospitalization and scheduled monthly visits thereafter.

*Home:* The place where a person lives, including, personal residence, assisted-living facility, or skilled nursing facility.

*Hospital readmission rate:* The number of home palliative care patients or modified home palliative care patients readmitted to the hospital due to a HF-related cause within 30 days of a previous HF-related discharge, divided by the total number of patients with a diagnosis of HF in the program at the end of each time period. Each admission counts as one tally regardless of days spent in the hospital.

(# of palliative patients with HF readmitted within 30 days/total # of palliative patients with HF in the program x 100 = Readmission Rate)

*Heart failure patient:* A home palliative care patient with a diagnosis of HF using ICD-9 codes 428.0 to 429.0.

### **Assumptions**

1. The effect of a modified home palliative care program is measurable.
2. The health of HF patients is affected by internal and external factors as described (Neuman, 1972).
3. Each client system is unique and may have a range of responses to internal and external factors (Neuman, 1972).

### **Chapter Summary**

The purpose of this study was to evaluate the difference in hospital readmissions between HF persons enrolled in a non-modified home palliative care program and a modified home palliative care program. An introduction to the study was provided, along with a brief analysis of pertinent research studies related to HF, palliative care, and

hospital readmission. There are a variety of HF management programs that can significantly reduce HF exacerbations, hospital admissions, length of stay, hospital readmissions, and healthcare costs. It appears that frequent home care visits post hospitalization has the greatest impact in reducing hospital readmissions. This is an important topic, as CMS continues to cut reimbursement for hospital readmission within 30 days of a previous hospitalization.

## **Chapter II**

### **Theoretical Framework and Literature Review**

#### **Introduction**

The purpose of this study was to evaluate the difference in hospital readmissions between HF patients enrolled in a non-modified home palliative care program and a modified home palliative care program. Neuman's systems theory (1972) was utilized as a framework for this study (Figure 1). In this chapter, a description of the framework, followed by a review of literature will be presented.

#### **Theoretical Framework**

Neuman's systems model describes the dynamic relationship between person and environment (Neuman, 1972). Neuman's systems theory is described as a system of parts that make up a whole. Within the system there is a continuous cyclic exchange of energy moving toward or away from stability. Organization, complexity, and development increase as the system absorbs energy; and the system moves toward a state of wellness. As the system loses energy, disorganization and randomness result, and the system moves away from stability (Neuman, 1972). Modified home palliative care is a resource that assists in moving HF patients toward stability.

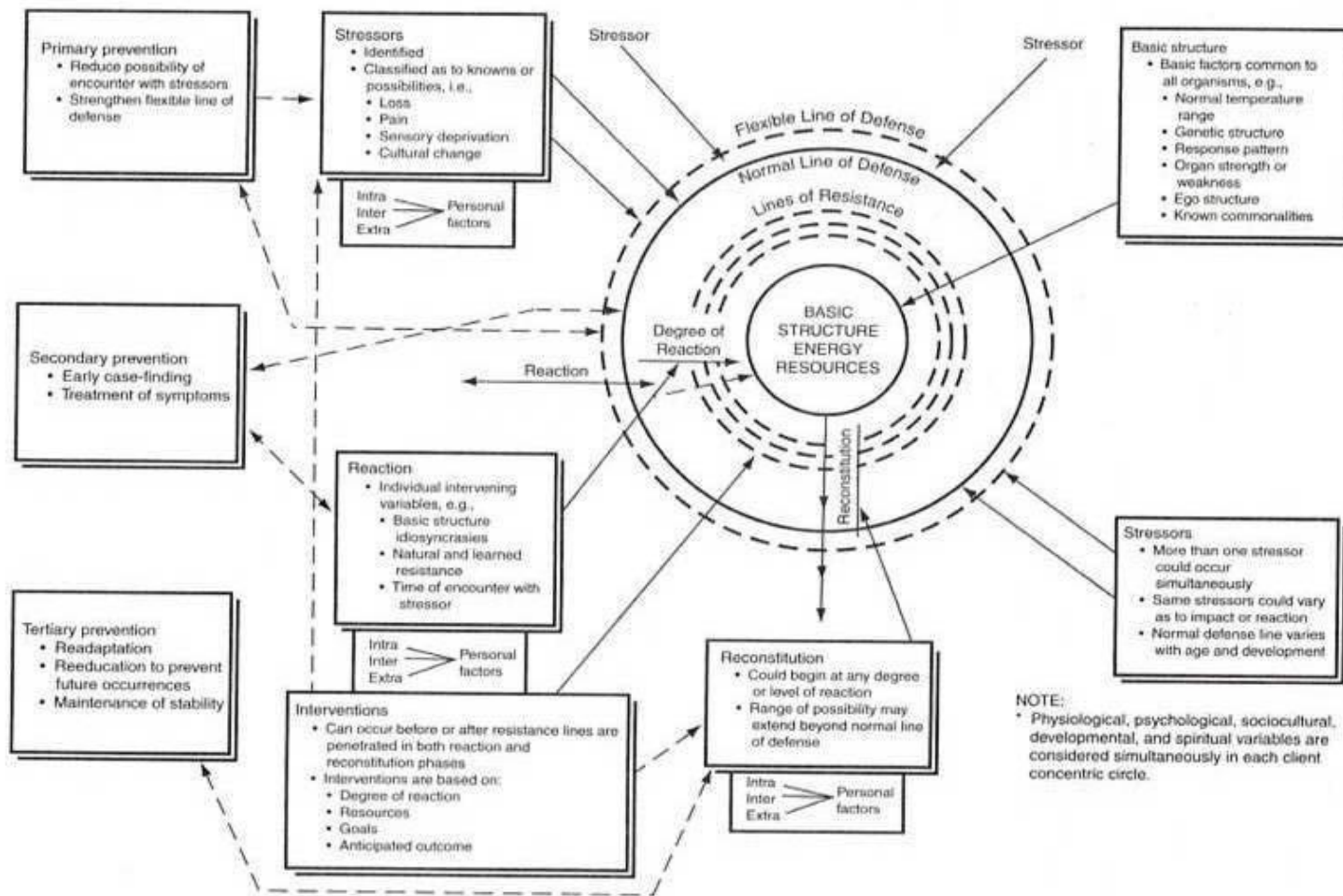


FIGURE 1-3. The Neuman Systems Model. (Original diagram copyright © 1970 by Betty Neuman.)

**Client: Structure.**

The client system is the core of the model and consists of factors necessary for survival, such as, normal physiological state, genetic structure, response pattern, organ strength, ego structure, and commonalities (Neuman, 1972). Concentric circles surrounding the core include, the flexible line of defense, the normal line of defense, lines of resistance, and the basic structure of energy resources (Neuman, 1972). Five variables surround the client system and interact continuously with the lines of defense and resistance. The variables include, physiological, psychological, soicocultural, developmental, and spiritual (Neuman, 1972).

**Client: Lines of defense.**

The flexible line of defense is the outer most circle: “an accordian-like mechanism that acts like a protective buffer system to help prevent stressor invasion of the client system” (Aylward, 2006, p. 283). The flexible line of defense protects the normal line of defense. When the flexible line of defense stretches outward, the client has more protection. When the line moves closer to the core, the client has less protection. The flexible line of defense can be altered quickly as a result of emergency situations or short-term conditions, such as poor nutrition (Neuman, 1972). Home palliative care assists in keeping the flexible line of defense stretched outward. Some examples include, educating the patient about exercise, low sodium diet, medication management, and daily weights. If the patient’s weight increases by three pounds in 1 day, the APN is alerted that the client’s flexible line of defense is moving closer to the core, putting the client system at risk for HF exacerbation. Medications and lifestyle modifications are implemented to promote protection by boosting the client’s flexible line of defense.

The normal line of defense lies beneath the flexible line of defense and represents a client's baseline state of wellness (Neuman, 1972). It is not steady but rather dynamic and changes over time. By determining the normal level of wellness, an APN can perceptively observe changes over time and initiate appropriate interventions (Neuman, 1972). The ability of the five interacting variables (physiological, psychological, sociocultural, developmental, and spiritual) to adjust to the stressor will determine the impact of the stressor on the normal line of defense (Neuman, 1972). During a routine visit, the home palliative APN asks the patient if she is taking her beta-blocker and diuretic. The patient indicates she has not because she ran out of them and cannot afford another prescription. The APN evaluates the medications ordered, looks for less expensive alternatives, and assists the patient in applying for a prescription-assistance program. Although the patient's normal line of defense has not been penetrated, the APN likely prevented this. Physiological, psychological, developmental, and spiritual states are also assessed with each visit.

### **Advanced Practice Nursing**

As described in the examples, APNs can play a vital role in the client's system. According to Aylward (2006), "nursing's major concern is to keep the client system stable by (1) accurately assessing the effects and possible effects of environmental stressors, and (2) assisting client adjustments required for optimal wellness" (p. 288).

### **Prevention as Intervention**

Prevention as intervention is another component of Neuman's systems model. It includes primary, secondary, and tertiary prevention by intervention (Aylward, 2006).

The interventions retain, attain, and maintain optimal client health or wellness when a stressor is introduced to the client system (Neuman, 1995). Stressors are defined as “tension-producing stimuli with the potential for causing system instability” (Neuman & Fawcett, 2002, p. 21).

The APN incorporates primary prevention by reducing risk factors and through stressor prevention. Primary prevention protects the normal line of defense and strengthens the flexible line of defense. Secondary prevention is utilized if a stressor is introduced to the client system. The goal is to conserve energy, maintain stabilization, and strengthen the internal lines of resistance to reduce the impact from the stressors. The APN uses the client’s internal and external resources to assist in stabilizing the system and works with the client to establish goals, determine a diagnostic statement, and implement appropriate interventions (Neuman, 1995). Reconstitution occurs when the system returns to stability after a nursing intervention (Neuman, 1995). The state of wellness may be lower, higher, or the same as it was prior to the stressor (Aylward, 2006). Tertiary prevention can occur during reconstitution. It assists in moving the client toward optimal wellness by using client strengths and conserving energy. The three levels of prevention can occur simultaneously and tend to occur in a circular fashion (Aylward, 2006).

### **Model Case**

The following case study explains how Neuman’s systems model can be applied to this study. The philosophy behind palliative care closely aligns with the model. “Neuman believes the nurse creates a linkage among the client, environment, health, and nursing in the process of keeping the system stable” (Aylward, 2006, p. 288).

Palliative care also provides the linkage between client, environment, health, and nursing.

Mary is a 72-year-old female who was diagnosed with HF 5 years ago. Her primary care provider has managed her care at a family practice clinic. Regardless of frequent clinic visits, medication management, and education, Mary has been admitted to the hospital three times in the last 6 months related to HF exacerbations. After the last hospitalization, home palliative care was consulted to work in conjunction with her primary care provider to manage Mary's care.

Mary can continue to see her primary care provider, but will also receive home visits from the palliative care APN. Because Mary was recently discharged from the hospital, her client system has been disrupted. Her flexible line of defense, normal line of defense, and lines of resistance were recently penetrated. Medications and lifestyle modifications, such as diuretics and a low sodium diet received while in the hospital, helped to restore these lines of resistance, and she was able to be discharged home. However, she is now at a lower level of wellness than before the exacerbation due to increased weakness and dyspnea on exertion.

The home palliative care APN, Sarah, provides education, support, monitoring, and treatment. She orders durable medical equipment, therapy, home health services, and manages coordination of care. Sarah visits Mary three times the first month after discharge from the hospital. She provides physical, emotional, social, and spiritual support. Components of Mary's internal and external environment are assessed and included into the plan of care. Mary's internal environment includes physiological variables, such as decreased mobility due to weakness and dyspnea on exertion. A psychological variable includes a co-morbidity of depression. A sociocultural variable is

that Mary is on a low fixed-income. A spiritual variable is Mary's faith and connection with the Catholic religion. Sarah evaluates Mary's internal and external environment situations and develops a plan of care accordingly.

The client system is constantly changing, as energy is constantly being exchanged. Sarah utilizes prevention as intervention to retain, attain, and maintain optimal client health and wellness. Although Mary already has HF, these lines of prevention are used to avoid or reduce symptoms and future hospitalizations.

Prevention includes reducing risk factors and stressor prevention through education about diet, exercise, daily weight, and medications. For example, Mary reports to the APN that she has canned soup for lunch every day. Sarah educates Mary to read labels and consume less than 1500 mg of sodium a day in addition to following a low saturated fat, transaturated fat, and cholesterol diet (AHA, 2010). She involves Mary's daughters, who agree to prepare heart healthy foods. Sarah also incorporates education, such as smoking cessation, weight loss, tracking daily fluid intake, avoiding alcohol and caffeine, being physically active, managing stress, monitoring blood pressure, getting adequate rest, and getting flu and pneumonia vaccines (AHA, 2010).

By doing these things in the home, Sarah is able to assess the environment and utilize resources the patient has available to her. Secondary prevention can be utilized to identify changes before symptoms may be evident. Sarah educates Mary to weigh herself daily and provides guidelines to call if her weight increases by three pounds over 1 to 2 days. This would alert Sarah to look at possible causes and changes that need to be implemented to prevent penetration of lines of defense.

Tertiary prevention would be implemented if there were a stressor introduced to the system. For example, Mary has increased shortness of breathe and bibasilar rales

during her visit. Sarah increases the dose of her diuretic. The diuretic assists in the elimination of extra fluid, clearing her lungs, and decreasing shortness of breath. Reconstitution occurs, and Mary's system returns to stability. Through primary, secondary, and tertiary prevention, Sarah has the possibility of preventing rehospitalizations.

### **Literature Review**

Causes and prevention of hospital readmission for HF patients has been extensively researched. There is also research evaluating the effect of home palliative care on readmission rates for patients with chronic diseases such as HF, COPD, and cancer. There is a gap in research evaluating readmission rates specifically for HF patients receiving APN led modified home palliative care. Palliative care provides holistic care to patients with chronic illnesses, such as HF, with a goal to prevent unnecessary hospitalizations through prevention, assessment, and intervention (Storey et al., 2003). It appears that frequent home visits early after hospital discharge may be the best combination to decrease hospital readmissions. Research investigating the effect of an APN led modified home palliative care program is lacking.

#### **Heart failure.**

Heart failure is a syndrome caused by a structural or functional disorder of the heart that impairs the ventricles' ability to fill with or eject blood (AHA, 2010). The weakened heart results in a weakened ability to pump oxygen- and nutrient-rich blood to the body, which causes physical symptoms of dyspnea, fatigue, fluid retention, among others (AHA, 2010). Lifestyle factors that can increase the risk of developing HF include smoking, obesity, high fat and cholesterol diet, and physical inactivity (AHA, 2010).

Conditions that can lead to HF include coronary artery disease, past myocardial infarction, hypertension, abnormal heart valves, cardiomyopathy, congenital heart disease, severe lung disease, diabetes, sleep apnea, among others (AHA, 2010).

The course of HF is unstable, involves exacerbations, progression of symptoms, and often requires frequent hospital readmissions that involve significant cost (Sethares & Elliot, 2004). Approximately 5.8 million Americans are currently diagnosed with HF. The average age of HF patients is between 76 years and 77 years (AHA, 2010). Among Medicare recipients, HF is the most common cause of hospital admissions and was estimated to cost \$39.2 billion dollars in 2010 (AHA, 2010). With 670,000 new cases of HF each year and an aging population, these costs will continue to grow over time (AHA, 2010).

#### **Hospital readmissions.**

The Center for Medicare & Medicaid Services is closely watching hospital readmission rates. Hospitals with higher readmission rates are receiving less reimbursement (MedPAC, 2010). Twenty percent of Medicare patients are readmitted within 30 days of discharge from the hospital and 34% are readmitted within 90 days (Taylor, 2010). Both MedPAC and CMS have recommended hospital payments for readmission be reduced (MedPAC, 2008). President Obama allocated an adjustment of \$561 million for 2011, which will be used to reduce improper payments in the Medicare program (Executive Office of the President of the United States: Office of Management and Budget, 2011). With healthcare reform at full force, hospital readmissions are a system-wide problem that will require coordination and communication between the hospital and post discharge care providers. Such post discharge programs may include a modified home palliative care program.

**Reducing heart failure readmissions.**

Phillips et al. (2004) conducted a meta-analysis to evaluate the effect of discharge planning and post-discharge support on readmission rate, all-cause mortality, length of stay, quality of life, and medical costs in HF patients. Post-discharge support included home visits, education, monitoring, and medication management. Eighteen studies from eight countries were included, involving 3,304 patients with HF. Interventions varied. Three studies provided a single home visit between 6 and 9 months post-discharge for the intervention group, four studies increased clinic follow-up and telephone contact, six studies provided home visits and frequent telephone contact, four studies extended home care services, and one study provided day hospital services. When compared with usual care, each type of post-discharge support resulted in significantly fewer readmissions, except for increased clinic visits and frequent telephone contact. Each of the other post-discharge strategies that included home care services also showed a significant reduction in readmissions. Results indicated a 25% relative reduction in the risk of readmissions, 13% relative reduction in all-cause mortality, lower or similar cost, and improved quality of life scores for intervention patients (Phillips et al.). This study demonstrated that home visits post-hospitalization reduced hospital readmissions.

McAlister et al. (2004) conducted a meta-analysis of a variety of multidisciplinary strategies to reduce hospital admissions. Seven studies evaluated a multidisciplinary HF clinic, eight studies evaluated a multidisciplinary team providing follow-up in the home, ten studies evaluated telephone follow-up with physician clinic visits, and three studies evaluated intervention that enhanced patient self-care activities. Twenty-nine randomized control trials were included in the meta-analysis. When results were pooled,

the various programs resulted in a 27% decrease in HF hospitalization rates and a 43% decrease in total number of hospitalizations. Fifteen trials reported cost saving and three reported cost neutral. The review indicated that modified HF programs are effective, but true implications are based on which programs work the best. The authors reveal that enhanced self-care, follow-up monitoring, and access to HF clinics have the largest impact on outcomes. On the other hand, no statistical difference was found between each type of intervention when evaluating hospital admission rates specifically (McAlister et al., 2004). This study demonstrated that there is not one strategy that was found superior over another, but all seemed to reduce hospital admission rates.

Fonarow et al. (1997) evaluated the impact of a HF management program on functional status, hospital readmission rate, and hospital costs. Subjects were potential heart transplant recipients with severe HF (Class III or IV). The intervention included diet and exercise education provided by a HF clinical nurse specialist (CNS) prior to discharge from the hospital. In addition, the cardiologist and CNS did a comprehensive review and adjustment of HF medications. Post-discharge care included weekly clinic visits with the cardiologist and telephone contact within 3 days of hospital discharge, 2 to 3 days after any major medication change, and routinely every 2 to 8 weeks, as needed. In the 6 months prior to the HF management program, 92% of subjects required hospitalization. After 6 months of program treatment, only 26% subjects required hospitalization. The decrease in hospitalizations resulted in a cost reduction of \$3,335,000.00 (Fonarow et al., 1997). This study demonstrated the effectiveness of a HF management team that provided frequent cardiology clinic and CNS visits, phone follow-ups, and statistically reduced hospital readmissions and cost.

Naylor et al. (1999) conducted a randomized clinical trial evaluating the effectiveness of an APN centered discharge planning and home follow-up intervention. The sample consisted of patients over the age of 65 years admitted to the hospital with HF, angina, myocardial infarction, respiratory tract infection, coronary artery bypass graft, cardiac valve replacement, major small and large bowel procedure, and orthopedic procedures of lower extremities. The control group consisted of 186 subjects who received usual discharge planning from hospital staff and home care consistent with Medicare regulations. The intervention group consisted of 177 subjects who received additional care starting with hospital admission through 4 weeks after discharge. Advanced practice nurses provided home visits, telephone availability, and an individualized plan of care for each intervention patient. The APNs collaborated with the patient's physician to individualize the plan of care. The protocol included an initial APN visit within 48 hours of hospital admission, every 48 hours thereafter while in the hospital, and at least two home APN visits. The first home visit occurred 48 hours after discharge, the second 7 to 10 days after discharge, and additional APN visits based on needs. The APN made weekly phone calls to each intervention patient. Intervention patients also had the ability to reach the APN via telephone 7 days a week. The intervention group had 16.8% less hospital admissions, 490 fewer hospital days, and \$597,000 in cost savings (Naylor et al., 1999). These results indicate that an APN driven discharge planning and in home post-discharge support individualized for each intervention patient decreased hospital readmissions and cost of care

Sethares and Elliot (2004) evaluated a registered nurse (RN) led intervention that examined readmission rates, quality of life, and health beliefs in patients with HF. This randomized control trial included a sample of 72 adults admitted to a community

hospital in the United States. Thirty-seven control subjects received usual care, described as generic discharge teaching from hospital staff nurses with written educational sheets and referred to home health as appropriate. Thirty-five intervention subjects received individualized education and treatment by the RN through diet, exercise, and medication during hospitalization, 1 week and 1 month after hospital discharge. Results indicated that neither HF readmission rates nor quality of life were significantly different between the two groups (12 versus 6). The small sample size may have resulted in an underpowered study (Sethares & Elliot, 2004). The study demonstrates that RN led discharge education and post discharge home visits for intervention patient resulted in less hospital readmissions, but not enough to be statistically significant.

Stewart and Horowitz (2002) evaluated the effect of a home-based intervention (HBI) on hospital readmission and survival of HF patients in the United Kingdom (UK). The sample included 148 patients who received usual post-discharge care and 149 who received the HBI. Subjects assigned to the intervention group received a home visit from a cardiac RN 7 to 14 days after discharge that included physical exam, assessment of adherence to treatment plan, review of treatment plan, and review of social support system. A few of the subjects received repeat home visits. A report with the assessment was sent to the primary physician, who then could change the plan of care as desired. Results were obtained over a median of 4.2 years. Compared to usual care, HBI subjects had 11% prolonged survival, 5% fewer hospitalizations, and a cost difference of \$1.1 million. Results indicated a savings of \$7000 per HBI patient, an overall 25% reduction in cost (Stewart & Horowitz, 2002). This study demonstrates that

an RN led intervention can statistically prolong survival, reduce hospital admissions, and significantly reduce cost.

A variety of HF programs have been shown to decrease hospital readmissions and related costs. Discharge planning and post-discharge support that included home visits, as opposed to clinic visits, significantly reduced hospitalizations and cost in one meta-analysis (Phillips et al., 2004). Another meta-analysis demonstrated that follow-up monitoring, promoting self-care, access to HF clinics, and home visits each reduce hospital admission rates, without one method found to be superior over another (McAlister et al., 2004). Increased clinic visits and telephone support with a cardiologist and cardiology CNS also resulted in reduced readmissions and cost (Fonarow et al., 1997). An APN led discharge planning program with home post-discharge support effectively decreased hospital readmissions and cost (Naylor et al., 1999). One RN led discharge education and post-discharge program resulted in less readmissions, but the difference was not statistically significant (Sethares & Elliot, 2004). Another RN led program that provided individualized education in the hospital and post-hospital home visits significantly reduced hospitalizations and cost (Stewart & Horowitz, 2002). It appears that increased home visits significantly reduce hospital readmissions.

#### **Palliative care research.**

Palliative care is a practice approach that focuses on disease exacerbations and progression of symptoms for patients with chronic illnesses, such as cancer, HF, and COPD, while providing holistic patient-centered care (Brumley, Enguidanos, & Cherin, 2003; Brumley, Enguidanos, & Hillary, 2003; Serra-Pratt et al., 2001). Patients receiving palliative care can receive active treatment for chronic illnesses with the focus of enhancing comfort and quality of life through physical, emotional, social, and spiritual

support (Storey et al., 2003). Guidelines for palliative care are less rigid compared to hospice, which requires a 6 month or less prognosis and discontinuation of active treatment (Brumley, Enguidanos, & Cherin, 2003). A patient can receive palliative care once a chronic illness is no longer responsive to treatment, even if the prognosis is more than 6 months. Palliative care offers a flexible treatment plan, while still providing holistic care (Storey et al., 2003).

Brumley, Enguidanos, & Cherin, (2003) implemented a palliative care program to evaluate the effectiveness in providing end-of-life care. A non-randomized sample was collected from the Kaiser Permanente (KP) TriCentral Service Area in southern California. The sample included 300 subjects with a diagnosis of COPD, HF, or cancer, and a prognosis of 2 years or less to live. The 161 subjects in the intervention group who received home palliative care were compared to 139 subjects in the control group that received usual home health services. The palliative care program provided treatment with a focus of enhancing comfort and quality of life through physical, emotional, social, and spiritual support. A palliative care team, including physician, nurse, and social worker, worked closely with each patient's primary care provider to provide holistic patient-centered care. All members of the interdisciplinary team provided home visits and 24/7 telephone support on an as needed basis. Palliative care patients had significantly increased satisfaction, lower mean emergency department visits (1.4), seven fewer mean hospital visits, and 5.8 fewer mean physician visits. Palliative care patients averaged 21.7 more home care visits, but still ended up with a 45% reduction in medical costs; an average savings of \$6,580.00 per patient (Brumley, Enguidanos, & Cherin, 2003). The results of this study suggest that increased multidisciplinary home visits result in fewer hospital admissions and decreased cost.

Enguidanos et al. (2005) conducted a study that evaluated the effect of home-based palliative care on the site of death and costs of medical care. A non-equivalent comparison group study design was used. Subjects included patients with COPD, HF, and cancer. The treatment group consisted of 159 subjects who received home palliative care and 139 subjects in the control group who received usual home health services. The palliative care program provided treatment with a focus of changing the setting of care from acute care centers to the home, while enhancing comfort and quality of life through physical, emotional, social, and spiritual support. Home visits by physicians, nurses, and social workers were provided on an as needed basis. Results indicated that those who received palliative care were 30.4% more likely to die at home. Palliative care patients also had an average of 25.1 fewer hospital visits. Heart failure patients enrolled in the palliative care group spent on average \$8,445 less compared to those receiving usual care. This resulted in a 52% decrease in cost of care (Enguidanos et al., 2005). The results of this study suggest that home-based interdisciplinary care can shift the site of care from hospital to home, which in turn can increase satisfaction and decrease cost.

Serra-Prat et al. (2001) explored the effectiveness of home-palliative care as a cost-saving method for terminally ill elderly. The sample included patients who died from cancer in 1998 and resided in Mataro, Spain. One-hundred eleven standard palliative care patients were compared to 44 intervention patients. In addition to the standard palliative care, intervention patients received care from the PADES team (Programa d'Atenio Domiciliaria i Equips de Suport), which included a physician, three nurses, and a social service professional that assisted in connecting community care with primary care professionals and provided healthcare resources in the home. A retrospective

chart review revealed that 47% fewer PADES group patients were admitted to the hospital compared to the non-PADES group. Once in the hospital, PADES patients' lengths of stays were 3.87 days shorter than the non-PADES group. The PADES patients received 410 home visits while non-PADES patients received none. Overall, non-PADES patients averaged 71% higher cost of healthcare than PADES patients (Serra-Prat et al., 2001). This study demonstrates that home visits for palliative care patients can significantly reduce hospitalizations, length of stay, and healthcare costs.

Palliative care research has demonstrated similar outcomes as other HF programs when evaluating hospitalizations and cost. Palliative care research that is available does not specifically examine the effect on HF patients. One palliative care program demonstrated increased multidisciplinary home visits for patients with HF, COPD, and cancer resulted in fewer hospital admissions and decreased cost (Brumley, Enguidanos, & Cherin, 2003). Another palliative care program demonstrated that home-based interdisciplinary care can shift the site of care for HF, COPD and cancer patients from the hospital to home, which decreased hospitalizations and cost (Enguidanos et al., 2005). Yet another palliative care program was modified to include interdisciplinary care in the home, which resulted in decreased hospitalizations, length of stay, and health care costs (Serra-Prat et al., 2001).

These studies indicate that home palliative care has been more effective than basic home health services due to the fact that the palliative programs had increased visits early after hospital discharge. Similarly, the home palliative care programs were more effective than programs that utilized outpatient visits and acute care settings. Home visits after hospital discharge appear to improve outcomes for HF patients including decreased hospital readmission and cost.

**Chapter Summary**

This chapter provided an overview of Neuman's systems theory and a case study to highlight the use and effectiveness of the theory in relation to the proposed study. In addition, a thorough review of literature was presented that reviewed HF, hospital readmissions, and strategies that have proven to decrease hospital readmission including home palliative care. However, there is little research evaluating the effect of an APN led modified home palliative care program on HF patients' hospital readmission rates.

## **Chapter III**

### **Methodology and Data Analysis**

#### **Methodology**

The purpose of this study was to evaluate the difference in hospital readmissions between HF patients enrolled in a non-modified home palliative care program and a modified home palliative care program. In this chapter, the study design, population, sample, setting, data collection instrument, data collection procedures, and data analysis will be described.

#### **Research Design**

A non-experimental, non-equivalent, comparison pretest-posttest group study design was used. Data was collected through a retrospective chart review from May 1, 2010 through July 31, 2010, when non-modified palliative care was provided. Data were then collected for the time period of September 1, 2010 through November 30, 2010, during which modified palliative care was provided.

During the first time period, all subjects received usual care from the home palliative care program. Usual care included 24-hour nurse phone line and APN home visits as requested monthly. During the second time period, all subjects received modified home palliative care. Modified home palliative care included all services described as non-modified palliative care in addition to three APN home visits post-hospitalization and scheduled monthly visits thereafter.

### **Population, Sample and Setting**

The population included HF patients in central Wisconsin. A convenience sample was obtained from a group of home palliative care patients enrolled in a single agency. Inclusion criteria included: diagnosis of HF based on ICD-9 codes 428.0 to 429.0 and enrolled in the home palliative care program during the time periods of May 1, 2010 through July 31, 2010 and September 1, 2010 through November 30. There were 102 subjects in total.

### **Data Collection Instruments**

Investigator-developed data collection instruments (Appendices A & B) were used to collect demographic information and hospital admission and readmission data from paper charts and electronic medical records. Data were retrospectively collected for the time period of May 1, 2010 through July 31, 2010 and compared to data from September 1, 2010 through November 30, 2010.

The demographic information collected includes: age, gender, type of residence, caregivers, and type of insurance. Hospital admission and readmission data were also collected through a retrospective chart review. Hospital admissions included the total number of HF-related admissions during each time period and the total number of readmissions within 30 days of a previous HF-related hospital discharge within each time period.

The instrument was reviewed and tested by clerical staff and the director of patient services for the home palliative care program to determine time feasibility, ease of instrument application, and clarity. The demographic was formulated based on literature review in order to reliably measure hospital readmissions.

### **Data Collection Procedures**

Clerical staff and the director of patient services for the home palliative care program gathered demographic, hospital admission, and hospital readmission data using the chart review data collection tools. Data collection began after approval from the University of Wisconsin-Oshkosh Institutional Review Board and the Hospital Review Board connected to the home palliative care program. The first tool (Appendix A) was filled out for each patient in the palliative care program from the dates May 1, 2010 to July 31, 2010, with a HF diagnosis based on ICD-9 codes 428.0 to 429.0, using paper charts and electronic medical record. Hospitalization and re-hospitalization information was obtained from electronic medical record. The second tool (Appendix B) was filled out for each patient in the palliative care program from the dates September 1, 2010 to November 30, 2010, with a HF diagnosis based on ICD-9 codes 428.0 to 429.0, using paper charts and electronic medical record. Data were hand-delivered to investigator without personal identifying information.

### **Data Analysis Procedures**

Data were analyzed using SPSS 17. Demographic data were described using frequencies and percentages. Descriptive statistics were used to summarize the data and describe the sample using means, frequencies, and standard deviations. Dependent t-tests were used to assess the change in admission and readmission rates over time. The alpha level was set at 0.05.

There may be a number of extraneous variables that affected the readmission rates other than the modified palliative care program. However, due to the descriptive,

non-experimental design of the study, these potential factors were not controlled for. Factors that may have affected hospital admission and readmission rates other than the palliative care program may include co morbidities, financial status, living arrangements, age, race, and support factors.

### **Protection of Human Subjects**

Approval was obtained from the UW Oshkosh Institutional Review Board Protection of Human Participants Committee and the Institutional Review Board associated with the palliative care program. The investigator did not have access to nor received protected health information including name, medical record number, or social security number. Subjects remained anonymous throughout the study. The Health Insurance Portability and Accountability Act (HIPAA) procedures were maintained throughout the chart review because demographic and hospital admission information were gathered by the home palliative care program clerical staff and the director of patient services and delivered to the investigator without names or other personal identifying information.

### **Limitations**

1. Convenience sample, small sample size, and only one geographic location limits generalization of findings.
2. This is a non-equivalent comparison study, which is a weakness because the groups are not equal. The group evaluated in the first time period was not the same group evaluated in the second time period due to death, discharge, and admission.

3. The demographic was developed by investigator and may not be reliable or valid when measuring hospital readmissions in HF patients.
4. Only 1 month time was given between the non-modified palliative care and the modified palliative care program. This allowed very limited time to implement the modified palliative care program.
5. There was no way to determine hospital admissions if they are out of the hospital network.

### **Chapter Summary**

The purpose of this non-experimental non-equivalent comparison pretest-posttest group study was to evaluate the effect of a modified home palliative care program on hospital readmission rates for HF patients. Hospital readmission rates were evaluated from a 3-month period prior to initiation of the modified home palliative care program and the 3 months following initiation of the modified palliative care program. Results were analyzed quantitatively using SPSS. Human subjects were protected largely due to the retrospective chart review design. In addition, the investigator had no contact with patients, charts, or protected health information. The aim of this study was to contribute to current knowledge and offer implications for nursing.

## **Chapter IV**

### **Findings and Discussion**

#### **Introduction**

The purpose of this retrospective comparison study was to evaluate the difference in hospital readmissions between HF patients enrolled in a non-modified home palliative care program and a modified home palliative care program. A convenience sample was utilized from a single palliative care program located in central Wisconsin. Data were collected from the dates of May 1, 2010 through July 31, 2010, which is when non-modified palliative care was provided. This was compared to the data collected from the dates of September 1, 2010 through November 30, 2010, when modified palliative care was provided. Time constraints allowed for only a 1-month time period between the non-modified and modified transition of care.

Utilizing an investigator developed data collection tool, data were collected retrospectively from paper and electronic medical records by clerical staff and the director of patient services of the home palliative care program during the months of January and February 2011. Data were delivered to the investigator without identifying information in March 2011 and analyzed using SPSS 17. In this chapter, the findings of this study will be discussed.

#### **Demographic Data**

A convenience sample of 102 subjects was evaluated between the two time periods: non-modified palliative care versus modified palliative care. Data collected from the first time period, in which non-modified palliative care was provided, included a

sample of 40 patients: 35% male and 65% female. Data collected from the second time period, in which modified palliative care was provided, included a sample of 62 patients: 21% male and 79% female. The genders of subjects are listed in Table 1.

Table 1

*Gender of Subjects (n=102)*

(n=102)	Non-modified Palliative Care (n=40)		Modified Palliative Care (n=62)	
	Frequency	Percentage	Frequency	Percentage
Male	14	35	13	21
Female	26	65	49	79
Total	40	100	62	100

There is conflicting data regarding the occurrence and progression of HF between the male and female gender. One article indicates that HF occurs equally in men and women (Cleveland Clinic, 2011). An article from the Journal of the American Heart Association reports that HF actually predominates in women, but women have previously been underrepresented in randomized clinical trials (Wegner, 2002). One meta-analysis evaluating 3,304 patients found that 62% of the patients were male and 38% female (Phillips et al., 2004). The convenience sample used in this study was heavily weighted with female subjects. With the conflicting data available, it is hard to say how representative this sample is of the general population of patients with HF.

The data in this study revealed a mean age of 81 years ( $SD = 5.11$ ) for patients receiving care from the non-modified palliative care program and 83 years ( $SD = 4.33$ ) for patients receiving care from the modified palliative care program. Table 2 displays

the number of subjects within each age range. It is reported that 75% to 80% of patients with HF are older than 65 years (Cleveland Clinic, 2011). In one meta-analysis, the average age of study participants varied and was 70 years or older in 16 studies and younger than 70 years in two studies. According to the AHA, the average age of patients with HF in the U.S. is 76 years to 77 years (2010). In which case, the sample for this study is older than the U.S. average.

Table 2

*Ages of Subjects (n=102)*

(n=102)	Non-modified Palliative Care (n=40)	Modified Palliative Care (n=62)
70-75	8	2
76-80	10	18
81-85	11	23
86-90	11	19

Each palliative care patient in both groups was over the age of 65 years and therefore, eligible for Medicare coverage. There was one person, likely the same person in each group, that received palliative care as a benefit from a state-based insurance. Insurance coverage for the non-modified palliative care program was 97.5% Medicare and 2.5% state-based insurance. Insurance coverage for the modified palliative care program was 98.4% Medicare and 1.6% state based insurance. Table 3 shows these results.

Table 3

*Type of Insurance (n=102)*

(n=102)	Non-modified Palliative Care (n=40)	Modified Palliative Care (n=62)
Medicare	97.5%	98.4%
State-Based Insurance	2.5%	1.6%

Of the subjects receiving non-modified palliative care, 40% of the sample resided in a home or apartment and 60% in an assisted-living facility. Forty percent of these patients were identified as independent, 37.5% required assistance from one or more family member, 10% received assistance from an outside agency, and 60% were dependent on facility staff.

Of the subjects receiving modified palliative care, 31% resided in a home or apartment and 69% in an assisted-living facility. Thirty one percent of these patients were identified as independent, 29% required assistance from one or more family member, 15% received assistance from an outside agency, and 69% were dependent on facility staff. This particular palliative care program was just beginning to see patients at nursing homes; however, none of the subjects in the study were currently residing in a nursing home. Table 4 depicts subjects' place of residence.

Table 4

*Type of Residence*

(n=102)	Non-modified Palliative Care (n=40)		Modified Palliative Care (n=62)	
	Frequency	Percentage	Frequency	Percentage
Home/Apartment	16	40%	19	31%
Assisted Living	24	60%	43	69%
Skilled Nursing	0	0	0	0

Due to the debilitating symptoms that are related to HF including edema, weight gain, dyspnea, and fatigue, HF patients often have a limited functional status (AHA, 2010). Therefore, it is not surprising that a high percentage of subjects were dependent on facility staff, family members, or outside agency staff. According to the U.S. Census Bureau (2001), 1.1% age 65 years to 74 years, 4.7% age 75 years to 84 years, and 18.2% age 85 years and greater reside in a nursing homes. These data indicate there are likely many HF patients at nursing homes that simply are not receiving palliative care services from this particular agency. The census does not list information about assisted-living or other supportive care.

According to the General Social Survey (GSS) (2010), no more than 7% to 8% of older people share homes with children or people other than their spouse for support. The subjects in this study required assistance from family 29 % and 37.5% of the time. They also required services from an outside agency 10% and 15% of the time. They relied on assisted living facility staff 60% and 69% of the time. In addition, the subjects of this study were more often dependent on family members, outside agencies, and

facility staff than the general elderly population. Some of the subjects relied on more than one type of assistance. Table 5 depicts the assistance subjects were receiving.

Table 5

*Type of Assistance*

(n=102)	Non-modified Palliative Care (n=40)	Modified Palliative Care (n=62)
Family	37.5%	29.0%
Outside Agency	10.0%	14.5%
Facility Staff	60.0%	69.4%

### **Hospital Readmissions**

During the first time period in which non-modified palliative care was delivered, there were 11 hospital admissions related to HF, which resulted in an admission rate of 27.5%. During the second time period, modified palliative care, there were 15 HF related hospitalizations for an admission rate of 24.2%. During the first time period, there were 10 HF related hospital readmissions or a readmission rate of 25% within 30 days of a previous HF related discharge, compared to the two readmissions or 3.2% in the second time period when modified palliative care had been implemented. The 21.8% decrease in readmission rate from non-modified palliative care to modified palliative care was statistically significant. Table 6 displays the numbers and percentages of hospital admissions and readmissions.

Table 6

*Hospital Admissions and Readmissions*

(n=102)	Non-modified Palliative Care (n=40)		Modified Palliative Care (n=62)	
	f(%)	Mean(SD)	f(%)	Mean(SD)
Admissions	11(27.5)	0.28(0.45)	15(24.2)	0.24(0.43)
Readmissions within 30 days	10(25.0)	0.25(0.44)*	2 (3.2)	0.03(0.18)*

\* $p < 0.05$ 

SD = standard deviation

Levene's test for equality of variances was not significant for the number of HF related hospital admissions between the two groups, which means equal variances can be assumed. Levene's test for equality of variances was significant for HF related readmissions between the two groups,  $F=66.56$ ,  $p < 0.001$ , which means equal variances are not assumed and interpretation of results needs to be considered carefully.

Results indicate there was not a significant difference between HF related admissions between the two time periods. However, there was a significant difference between the number of HF related readmissions during the time period of non-modified compared to modified palliative care [ $t(47,40)=2.99$ ,  $p=0.004$ ]. Mean HF related rehospitalizations within 30 days of a previous hospital discharge during the non modified palliative care time period was 0.25 ( $SD = 0.44$ ) compared to modified palliative care time period, which was 0.03 ( $SD = 0.18$ ). When compared to other studies and interventions, the outcome of this study was quite impressive.

Medicare patients with HF have readmission rates of about 20% within 30 days of hospital discharge (Taylor, 2010), which is comparable to the non-modified palliative care group. Several other studies have shown promising results in decreasing admission and readmission rates through the use of interventions other than palliative care. In one meta-analysis, the readmission rate in 18 studies showed a decrease of readmissions ranging from 4% to 35% when additional discharge planning and post-discharge home visits were incorporated into care (Phillips et al., 2004). Fonarow et al. (1997) conducted a study in which the intervention group received increased cardiologist and cardiology CNS clinic visits and telephone support. This intervention resulted in an 85% reduction in readmission rates (Fonarow et al., 1997).

Most studies have evaluated hospital admission rates. McAlister et al. (2004) implemented multidisciplinary strategies, including home visits and telephone support that resulted in a 27% decrease in HF-related hospitalization rates. Another study evaluated the impact of an APN centered discharge planning and home follow-up intervention, which resulted in a 16.8% decrease in admission rates (Naylor et al., 1999). A RN led intervention offered home visits post hospital discharge, which resulted in 5% decrease in hospital admission (Stewart & Horowitz, 2002).

There are several studies that have shown improved outcomes with palliative care programs. In one study, palliative care was compared to home health services. The palliative care group had seven less mean hospital visits and lower mean emergency department visits (Brumley, Enguidanos, & Cherin, 2003). Another study evaluated palliative care focusing on shifting the site of death from acute care to home. Intervention subjects receiving palliative care were compared to control subjects who received home health services. The intervention group averaged 25.1 fewer hospital

visits (Enguidanos et al., 2005). One study compared two groups of patients receiving palliative care, one with increased home visits. Admission rates for intervention group were 47% lower than the control group (Serr-Prat et al., 2001).

The findings of this study are similar to other studies in that readmission rates significantly decreased with an increase in home visits post-discharge. This study is unique in that it evaluates an APN led home palliative care program for HF patients. Some studies have evaluated APN led HF programs, (Fonarow et al., 1997; McAlister et al., 2004; Naylor et al., 1999; Phillips et al., 2004), but none were within the context of palliative care. Some studies evaluated home palliative care for patients with chronic illnesses, such as HF, COPD, and cancer (Brumley, Enguidanos, & Cherin, 2003; Brumley, Enguidanos, & Hillary, 2003; Enguidanos et al., 2005; Serra-Prat et al., 2001,) but none specifically examined HF outcomes. One theme that continually surfaced from the literature is that increased home visits post-hospitalization appear to decrease hospital admission and readmission rates. This study contributes to the greater body of knowledge that an APN led modified home palliative care program can significantly reduce hospital readmission rates.

In this study, non-modified palliative care resulted in a readmission rate of 25% compared to modified palliative care, which was 3.2%. The reduction of readmission rate of 21.8% is comparable or better than many intervention studies.

## **Chapter Summary**

This chapter presented the results of the data collected in this study. Demographic data, including gender, age, residence, and assistance were presented for both non-modified and modified palliative care groups. Descriptive data of

hospitalizations and re-hospitalizations were also presented. The subjects in this study were HF patients over the age of 70 years receiving palliative care from a single agency. There was a significant decrease in hospital readmission rates within 30 days in those subjects receiving modified home palliative care compared to a non-modified home palliative care.

## Chapter V

### Summary, Conclusions, and Recommendations

In this chapter, a summary of this research study will be presented. This study evaluated the difference in hospital readmissions between HF patients enrolled in a non-modified home palliative care program and a modified home palliative care program. The following is a discussion of the research conclusions and implications for nursing practice. An evaluation of the study limitations and further recommendations will also be included.

#### Summary

Approximately 5.8 million Americans currently have a diagnosis of HF and each year over 670,000 are diagnosed with HF for the first time (AHA, 2010). Heart failure is the most common cause of hospital admissions among Medicare recipients, and approximately 20% are readmitted within 30 days of discharge (Taylor, 2010). It is estimated that Medicare paid \$39.2 billion for HF hospital admissions in 2010 (AHA, 2010).

Recent research has evaluated the impact of various HF programs on hospital readmissions. Heart failure management programs that incorporate in-person communication tend to have the most significant impact in reducing hospital readmissions (Sochalski et. al, 2009). Home palliative care programs have also demonstrated positive outcomes for HF patients by decreasing emergency department visits, hospital days, skilled nursing facility days, physician visits, and medical costs (Brumley, Enguidanos, & Hillary, 2003; Serra-Prat et al., 2001). It appears that more

frequent home visits early after hospital discharge may be the best combination to decrease hospital readmissions. However, research investigating the effect of APN led home palliative care programs on hospital readmissions in persons with HF is lacking.

The purpose of this study was to determine the difference in hospital readmissions between HF patients enrolled in a non-modified home palliative care program during the first time-period and a modified home palliative care program during the second time-period. The modified home palliative care program included three APN home care visits within the first month post-hospital discharge versus routine monthly APN visits in the non-modified model. Neuman's Systems Theory provided the organizing framework.

The sample consisted of 102 patients in the Midwest receiving home palliative care from a single agency. Data were collected through a retrospective chart review. The demographic data in the study varied from data in the literature. The study sample was more heavily populated with females and the mean age was higher than national averages set for patients with HF. Group differences were evaluated using dependent t-test. Results indicated that those receiving modified home palliative care had significantly reduced readmission rates.

## **Conclusions**

In evaluating the results of this study, the following conclusions can be drawn:

1. Increased home visits after hospitalization significantly reduces hospital readmission rates.
2. Advanced practice nurse led modified home palliative care significantly reduces hospital readmission rates.

**Limitations**

There were several limitations in this study. The convenience sample, small sample size, and that the sample was drawn from one palliative care program in only one geographic location limits generalization of findings. Another limitation of the study is the lack of comparability between the two groups due to death, discharge, and admission. There was no statistical control for differences between the non-modified and modified group related to age, severity of illness, comorbidities, or other factors that may affect hospital readmission rates. Finally, the limited amount of time for evaluation of the non-modified palliative care program and modified palliative care program (3 months each), in addition to a limited transition time from the non-modified to modified palliative care program (1 month time), may not have given an accurate measure of readmission rates.

**Implications for Nursing Practice**

Advanced practice nurses provide care for patients across the lifespan. As the population ages and the number of HF patients increase, it will be important for APNs in all settings to utilize programs that will improve quality of life, decrease re-hospitalizations, and reduce cost. Palliative care is a practice approach that focuses on disease exacerbations and progression of symptoms for patients with chronic illnesses, such as HF, while providing holistic patient-centered care. Proper identification and referral to a palliative care program not only positively impacts the patient but the entire health organization.

**Recommendations for Further Research**

Future research should include a study similar to this with a larger, randomized sample that is studied longitudinally over time to offer more accurate and generalizable results. It would be important to include the APN led modified home palliative care with increased home visits post-hospitalization to see if results would be similar. In addition to the demographic information in this study, it would be important to include race to determine if that is a factor in the results. It would also be vital to evaluate and control for other factors that may influence readmission rates in persons with HF.

APPENDIX A

CHART REVIEW DATA COLLECTION TOOL

BASED ON DATES BETWEEN MAY 1, 2010 – JULY 31, 2010

## Demographics

1. Gender
  - a. Male
  - b. Female
  
2. Age (in years) \_\_\_\_\_
  
3. Type of Residence
  - a. Home/Apartment
  - b. Assisted Living Facility
  - c. Skilled Nursing Facility
  
4. Caregivers (may have more than one)
  - a. Independent
  - b. Family Member
  - c. Outside agency
  - d. Facility Staff
  
5. Insurance
  - a. Medicare/Advocare
  - b. Medicaid
  - c. Other \_\_\_\_\_

## Hospital Admission Related Information

6. Number of heart failure related hospitalizations \_\_\_\_\_
  
7. Number of heart failure related rehospitalizations within 30 days of a previous hospital discharge \_\_\_\_\_

APPENDIX B

CHART REVIEW DATA COLLECTION TOOL

BASED ON DATES BETWEEN SEPTEMBER 1, 2010 – NOVEMBER 30, 2010

### Demographics

1. Gender
  - a. Male
  - b. Female
  
2. Age (in years) \_\_\_\_\_
  
3. Type of Residence
  - a. Home/Apartment
  - b. Assisted Living Facility
  - c. Skilled Nursing Facility
  
4. Caregivers (may have more than one)
  - a. Independent
  - b. Family Member
  - c. Outside agency
  - d. Facility Staff
  
5. Insurance
  - a. Medicare/Advocare
  - b. Medicaid
  - c. Other \_\_\_\_\_

### Hospital Admission Related Information

6. Number of heart failure related hospitalizations \_\_\_\_\_
  
7. Number of heart failure related rehospitalizations within 30 days of a previous hospital discharge \_\_\_\_\_

## REFERENCES

- American Heart Association (2010). *Lifestyle changes for heart failure*.  
Retrieved from: [http://www.heart.org/HEARTORG/Conditions/HeartFailure/PreventionTreatmentHeartFailure/Lifestyle-Changes-for-Heart-Failure\\_UCM\\_306341\\_Article.jsp](http://www.heart.org/HEARTORG/Conditions/HeartFailure/PreventionTreatmentHeartFailure/Lifestyle-Changes-for-Heart-Failure_UCM_306341_Article.jsp)
- Aylward, P. D. (2006). Betty Neuman: The Neuman systems model and global applications. (2nd ed.). In M. E. Parker, *Nursing Theories & nursing Practice* (pp. 281-294). Philadelphia, PA: F. A. Davis Company.
- Brumley, R. D., Enguidanos, S., & Cherin, D. A. (2003). Effectiveness of a home based palliative care program for end-of-life. *The Journal of Palliative Medicine*, 6(5), 715-724.
- Brumley, R. D., Enguidanos, S., & Hillary, K. (2003). The palliative care program. *The Permanente Journal*, 7(2), 7-12.
- Center for Medicare & Medicaid Services (CMS). Affordable care act update: Implementing Medicare cost savings. *Federal Register*, June 8, 2010, 1-11.
- Cleveland Clinic. (2011). Heart failure. *U.S. News*. Retrieved from: <http://health.usnews.com/health-conditions/heart-health/congestive-heart-failure>
- Enguidanos, S., & Cherin, D. A., & Brumley, R. D. (2005). Home-based palliative care study: Site of death, and costs of medical care for patients with congestive heart failure, chronic obstructive pulmonary disease, and cancer. *The Journal of Social Work in End-of-life & Palliative Care*, 1(3), 37-56.

- Executive Office of the President of the United States: Office of Management and Budget. (2011). Budget of the U.S. Government Fiscal Year 2011: Terminations, Reductions, and Savings. Retrieved from: [www.budget.gov](http://www.budget.gov)
- Fornarow, G. C., Stevenson, L. W., Walden, J. A., Livingston, N. A., Steimle, A. E., Hamilton, M. A., ... Woo, M. A. (1997). Impact of a comprehensive heart failure management program on hospital readmission and functional status of patients with advanced heart failure. *The Journal of American College of Cardiology*, 30(3), 725-732.
- General Social Survey GSS, (2010). *The National Data Program for the Sciences NORC at the University of Chicago*. Retrieved from: <http://www.norc.uchicago.edu/GSS+Website/>
- Guo, L., Chung, E. S., Casey, D. E., & Snow, R. (2010). Redefining hospital readmissions to better reflect clinical course of care for heart failure patients. *American Journal of Medical Quality*. Retrieved from: <https://ajm.sagepub.com/content/22/2/98.abstract>
- Krumholz, H. M., Parent, E. M., Tu, N., Vaccarino, V., Wang, Y., Radford, M. J. & Hennen, J. (1997). Readmission after hospitalization for congestive heart failure among Medicare beneficiaries. *Archives of Internal Medicine* 157, 99-104.
- McAlister, F. A., Stewart, S., Ferrua, S., & McMurray, J. J. V. (2004). Multidisciplinary strategies for the management of heart failure patients at high risk for admission. *Journal of the American College of Cardiology*, 44(4), 810-819.
- Medicare Payment Advisory Commission. (2008, June). *Reforming the system: A path to bundled payment around a hospitalization*. Washington, DC: MedPAC.

- Medicare Payment Advisory Commission (2010, March). *Medicare payment policy: Hospital inpatient and outpatient services: Assessing payment adequacy and updating payments*. Washington, DC: MedPAC.
- Naylor, M. D., Brooten, D., Campbell, R., Jacobsen, B. S., Mezey, M. D., Pauly, M. V., & Schwartz, J. S. (1999). Comprehensive discharge planning and home follow-up of hospitalized elders. *Journal of the American Medical Association, 281*(7), 613-620.
- Neuman, B. M. (1972). A model for teaching total person approach to patient problems. *Nursing Research, 21*(3), 264-269.
- Neuman, B. (1995). *The Neuman systems model* (3<sup>rd</sup> ed.). Norwalk, CT: Appleton & Lange.
- Phillips, C. O., Wright, S. M., Kern, D. E., Singa, R. M., Shepperd, S., & Rubin, H. R. (2004). Comprehensive discharge planning with post discharge support for older patients with congestive heart failure: A meta-analysis. *Journal of the American Medical Association, 291*(11), 1358-1367.
- Serra-Prat, M., Gallo, P., & Picaza, J. M. (2001). Home palliative care as a cost-saving alternative: Evidence from Catalonia. *Palliative Medicine, 15*(4), 271-278.
- Sethares, K. A. & Elliott, K. (2004). The effect of a tailored message intervention on heart failure readmission rates, quality of life, and benefit and barrier beliefs in persons with heart failure. *Heart & Lung, 33*(4), 249-259.
- Sochalski, J., Jaarsma, T., Krumholz, H. M., Laramée, A., McMurray, J. J., Naylor, M. D. ... Stewart, S. (2009). What works in chronic care management: The case of heart failure. *Health Affairs, 28*(1), 179-189.

- Stewart, S. & Horowitz, J. D. (2002). Home-based intervention in congestive heart failure: Long-term implications on readmission and survival. *Journal of the American Heart Association, 105*, 2861-2866.
- Storey, P., Knight, C. F. & Schonwetter, R. S. (2003). *Hospice/palliative care training for physicians: Pocket guide to hospice/palliative medicine*. Glenview, IL: American Academy of Hospice and Palliative Medicine.
- Taylor, M. (2010). Shutting the door on readmissions. *Hospitals & Health Networks, 84*(1), 33-36.
- U.S. Census Bureau. (2001). The 65 years and over population: 2000. *U.S. Department of Commerce Economics and Statistics Administration*.
- Wegner, N. K. (2002). Women, heart failure, and heart failure therapies. *Journal of the American Heart Association, 2002. 105*, 1526-1528.