

HOME CARE FOLLOW-UP FOR PEOPLE WITH HEART FAILURE

by

Carol Kittrell Sisk

A professional project submitted in partial fulfillment
of the requirements for the degree

of

Master of Nursing

in

Nursing

MONTANA STATE UNIVERSITY
Bozeman, Montana

February, 2011

©COPYRIGHT

By

Carol Kittrell Sisk

2011

All Rights Reserved

APPROVAL

of a professional paper submitted by

Carol Kittrell Sisk

This professional paper has been read by each member of the professional project committee and has been found to be satisfactory regarding content, English usage, format, citation, bibliographic style, and consistency, and is ready for submission to the Division of Graduate Education.

Elizabeth Kinion, EdD, MSN, APN-BC, FAAN

Approved for the Department of Nursing

Helen Melland, PhD, RN

Approved for the Division of Graduate Education

Dr. Carl A. Fox

STATEMENT OF PERMISSION TO USE

In presenting this professional paper in partial fulfillment of the requirements for a master's degree at Montana State University, I agree that the Library shall make it available to borrowers under rules of the Library.

If I have indicated my intention to copyright this thesis by including a copyright notice page, copying is allowable only for scholarly purposes, consistent with "fair use" as prescribed in the U.S. Copyright Law. Requests for permission for extended quotation from or reproduction of this thesis in whole or in parts may be granted only by the copyright holder.

Carol Kittrell Sisk

February, 2011

TABLE OF CONTENTS

1. INTRODUCTION	1
Purpose of the Project	1
Rationale	2
Background for the Project	4
Medications	6
Diuretics	7
Anti-hypertensives.....	7
Beta Blockers.....	8
Digitalis	9
Anti-anginals	9
Activity.....	10
Weight	11
Diet.....	12
Symptom Recognition.....	12
Significance of the Project	13
Project Description.....	15
2. REVIEW OF THE LITERATURE	18
Medication Logistics.....	18
Attention to Individuals' Needs in Discharge Plans	20
Patient Perceptions of Care	21
Post Hospital Support and Patient Education.....	21
Summary	23
3. PROJECT DEVELOPMENT AND IMPLEMENTATION.....	24
4. RESULTS, DISCUSSION, CONCLUSION, AND LIMITATIONS	26
Results.....	26
Demographics.....	26
Supportive Services at Home	
Following Discharge	26
Medications	27
Activity.....	27
Weight	28
Diet.....	28
Symptom Recognition.....	28
Participant Comments	31
Participants' Unmet Needs.....	32

TABLE OF CONTENTS-CONTINUED

Actions Taken by the Author	32
Results of the Author's Actions	32
Discussion	33
Conclusion	35
Limitations of the Study	36
REFERENCES	38
APPENDICES	42
APPENDIX A: Institutional Review Board for the Protection of Human Subjects	43
APPENDIX B: Subject Consent Form for Participation in Human Research at Montana State University	45
APPENDIX C: Letter from Supporting Physician.....	48
APPENDIX D: Heart Failure: Self-Care after Hospitalization.....	50
Nursing Interview Questionnaire	50

LIST OF TABLES

Table	Page
1. Presence of Heart Failure Symptoms in Participants A - E.....	30

ABSTRACT

Heart failure (HF) is a major health problem in the United States and is one whose prevalence is steadily on the rise. For people over the age of 65 years it is the most common reason for hospital admission and many of these people have to be readmitted to the hospital because of HF exacerbations. Follow-up care by professional nurses in the immediate time period after hospital discharge to home is limited despite suggestions from research studies that it may be helpful in decreasing the occurrence of exacerbations from HF, and thus decrease rehospitalizations.

This project was developed with the support of a local physician with the purpose of investigating the needs of HF patients after they had been discharged from the hospital. Part one of the project involved a literature review centered on the topic of home care follow-up for this population. Part two of the project was the collection of data obtained during home visits by the author with the participants. The third part of the project included the compilation of results.

Of the five participants taking part in this project the two with the least amount or no supportive care had unanswered questions and voiced some lack of confidence in their ability to take care of their needs. The other three participants were comfortable that their needs would be met by the supportive care providers who were involved with their care.

The findings from this project would suggest that patients with HF may not have their needs totally met by the time they are discharged from the hospital. Each patient will have individual variation in their needs. A post hospitalization phone call or home visit from a professional nurse may provide an opportunity for clarification of symptom management.

CHAPTER 1

INTRODUCTION

Purpose of the Project

The purpose of this project was to implement guidelines for nurse-led follow-up in the home for adult patients with heart failure (HF) who were discharged from the local community hospital following an acute episode of their disease. The author visited with patients in their home who were recently discharged from the local community hospital following treatment for either a new diagnosis or exacerbation of HF. The purpose of the visit was to (a) clarify their understanding of medications, physical activity level, weight changes, diet and fluid restrictions, and symptoms, (b) find out if they had any questions, and (c) determine their need for additional education about their prescribed therapeutic regimen. The format for the follow-up visit was based on that used by Intermountain Health Care (IHC) in Salt Lake City, Utah for follow-up with patients with HF.

Although the term “congestive heart failure” (CHF) has been used historically, currently the preferred term is “heart failure” (HF). The rationale for the change of terminology is that dyspnea/fatigue and crackles/edema (which indicate congestion) may not occur simultaneously. The ability of the heart to eject blood, or ejection fraction (EF), is not always indicative of whether or not there are symptoms. It is possible to have a low EF with no signs or symptoms of HF whereas, someone with an adequate or normal EF may have symptoms of HF that are disabling (Hiratzka et al., 2005).

Much of the literature reviewed for this paper used the term “congestive heart failure” (CHF) rather than HF and when citing information from those studies CHF will be used. Otherwise, in an effort to be consistent with the current terminology the author will use HF.

Rationale

The author, a registered nurse, developed an interest in follow-up home care over five or six years of close involvement with an elderly father whose health began a slow decline initiated by heart problems. He and his wife had shared disabilities of hearing loss and lack of familiarity with medical jargon, both of which are common to many elderly people. The author accompanied her father and mother to office visits with his health care providers and observed the limited time allowed by health care providers for teaching and assessment of their understanding. This experience caused the author to wonder if people who do not have assistance from family members or do not have medical knowledge might benefit from follow-up care after going home from the hospital to help them with their self care as well as prevent future problems.

In spite of continual advances in the treatment options for patients with congestive heart failure (CHF), morbidity and mortality as well as poor quality of life remain high for this population (Di Carli & Sleight, 2005). CHF is the most common reason for Medicare recipients’ admissions to the hospital with a 40% readmission rate within three months (Berwick, Nolan & Whittington, 2008) and up to 50% readmissions within six months (Phillips et al., 2004). The trend toward shorter hospital stays decreases the time

available for discharge teaching (Mistiaen & Poot, 2008) and also places a greater burden for patient care in the home on family members and/or caregivers. Medicare requires that a person must be homebound in order to receive skilled nursing care which presents a barrier for more mobile patients to receive an optimal amount of care in the post hospital phase of recovery (Narsavage & Naylor, 2000).

The therapeutic regimen for CHF is multifaceted requiring patients to retain knowledge about multiple medications, restrictions in diet and activity, monitoring of their weight, and when to report symptoms which indicate a decline in their status (Balinsky & Muennig, 2003; Department of Health and Human Services Centers for Disease Control and Prevention, 2006; Heart Failure Society of America, 2006; Hunt et al., 2009; Mistiaen & Poot, 2008). Factors involved with relapses that may necessitate readmission to the hospital include poor adherence to drug and diet therapy, not enough social support, and failure to seek medical attention soon enough when symptoms decline (Di Carli & Sleight, 2005). Mistiaen and Poot reported that in general, in the first weeks after discharge from the hospital, 80% of elders had trouble figuring out what signs and symptoms were important as well as the management of their medication and dietary requirements. An additional aspect to this problem is that patients have reported concerns about bothering their healthcare providers if they call with questions (Mistiaen & Poot, 2008).

Balinsky and Muennig (2003), Barth (2001), Berwick et al. (2008), and Palmer, Appleton and Rodrigues (2003) noted that the potential for a 53–80% reduction in readmissions for relapses due to CHF exists. The common thread in these studies was

related to the benefit of home care follow-up in the post-hospital phase of recovery. It has been suggested that one way to increase patient quality of life and decrease health care costs, especially the use of Medicare dollars, is to provide some sort of home care follow-up for patients with CHF. Because the therapeutic regimen is multi-faceted and complicated, the Heart Failure Society of America (HFSA) (2006) reported that one learning session in hospital is not enough to provide patients with adequate knowledge for self care, and they need to be given a choice of learning methods. Another of their recommendations is for coordination of care between the primary care provider and agencies such as home health and cardiac rehabilitation programs. Patients with HF must demonstrate an ability to manage their treatment regimens independently. Until they are able to do so they need the assistance of follow-up care from professionals. Hoyt and Bowling (2001) reported that monitoring patients with HF after hospital discharge using a single home visit or telephone call may significantly help decrease the rate of readmissions because up to 50% of patients do not follow the treatment programs sufficiently. Home health nurses would be able to impact this by applying approved heart failure protocols to assist patients' independence in their care.

Background for the Project

The most basic symptoms of HF are dyspnea and/or fatigue which may affect a person's ability to tolerate exercise. Clinical signs of HF, caused by fluid retention, are pulmonary congestion (crackles) and/or peripheral edema (Hiratzka et al., 2005). HF is usually initiated by injury to or stress on the myocardium, and may progress with or

without further insults to the heart muscle. The term cardiac remodeling refers to pathological changes in the heart muscle that may occur in response to cardiac stress. During this process the left ventricle (LV) may dilate or hypertrophy, which leads to increased stress on the wall of the heart. The ventricle loses its ability to perform normally, that is to eject the blood effectively, and this may result in a backflow of blood through the mitral or tricuspid valves. All of these physiological changes add to further remodeling, eventually reaching a point where a therapeutic regimen is unable to control the symptoms. There tend to be three scenarios associated with HF and these are (a) a person dies before developing symptoms, (b) a person develops symptoms that can be controlled with therapy, or (c) a person dies of HF which had continued to progress (Heart Failure Society of America, 2006).

In 1928, the New York Heart Association (NYHA) published a classification system in order to describe the functional capacities of a person with HF (American Heart Association, 2010). This classification system is based on symptoms which are designated in Class I through Class IV (Heart Failure Society of America, p. 19, 2006)

- “Class I: No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation or dyspnea.
- Class II: Slight limitation of physical activity. Comfortable at rest, but ordinary physical activity results in fatigue, palpitations, or dyspnea.
- Class III: IIIA: Marked limitation of physical activity. Comfortable at rest, but less than ordinary activity causes fatigue, palpitation or dyspnea. IIIB: Marked limitation of physical activity. Comfortable at rest, but minimal exertion causes fatigue, palpitation or dyspnea.
- Class IV: Unable to carry on any physical activity without discomfort. Symptoms of cardiac insufficiency present at rest. If any physical activity is undertaken, discomfort is increased.”

In 2001, the American College of Cardiology (ACC) and American Heart Association (AHA) put forth a new method of classifying HF based on the development and progression of the disease (Hiratzka et al., 2005).

- Stage A: presence of coronary artery disease (CAD), hypertension (HTN) or diabetes mellitus (DM) with no evidence of impaired LV functioning or remodeling.
- Stage B: no symptoms exist but there is impaired LV function and/or hypertrophy.
- Stage C: symptoms exist now and/or in the past with impaired heart function.
- Stage D: refractory HF – need advanced therapies such as intravenous (IV) medication infusions, ventilator support, fluid removal, heart transplant or end of life care.

The purpose of this ACC/AHA classification system was not to replace the NYHA classifications, but rather to function as a complementary tool. This system acknowledges that morbidity and mortality can be decreased if therapy is started early, before the occurrence of cardiac remodeling (Hiratzka et al., 2005).

Patients with HF are faced with a multifaceted therapeutic regimen. A typical regimen includes the management of medications, physical activity, daily weight monitoring, dietary/fluid restrictions, and symptom recognition (Heart Failure Society of America, 2006; Hiratzka et al., 2005; Hunt et al., 2009; Intermountain Health Care, 2003).

Medications

The primary reasons for a standard array of HF medications to be administered are to (a) eliminate excess fluids that manifest as central or peripheral edema, (b)

maintain blood pressure, (c) control heart rate, and (d) strengthen heart muscle contractions. It is important for patients to have a basic knowledge of these medications such as the name of the medication, the expected therapeutic effect, and the rationale for use. It is also important for the patient to understand when and how to take the medications and what to do if a dose is missed. Patients with HF need to understand that HF is a chronic condition and that the medications must be taken for the rest of their life, even if they are feeling well (Heart Failure Society of America, 2006; Intermountain Health Care, 2003).

Diuretics. Diuretics help remove excess fluid and sodium. When these are effective there is a decrease in (a) jugular venous distention, (b) congestion in the pulmonary system, (c) edema in the periphery, and (d) body weight. Cardiac function is improved which leads to improvement in symptoms and an increased ability to tolerate activity and exercise (Hunt et al., 2009). Loop diuretics are the most frequently utilized classification of diuretics for treating fluid retention associated with HF. These diuretics enhance excretion of sodium and free water in the loop of Henle and have the ability to remain efficacious unless there is significantly decreased renal function. The second class, the thiazide diuretics, promote less sodium and water excretion and are less effective than the loop diuretics when there is renal impairment (Hunt et al., 2009).

Anti-hypertensives. Angiotensin converting enzyme inhibitors (ACEI) are given for control of hypertension, to lessen symptoms related to HF, decrease cardiac remodeling, and to decrease the risk of myocardial infarction (MI) or death. ACEIs affect

the renin-angiotensin-aldosterone system by inhibiting the enzyme that converts Angiotensin I to Angiotensin II, thus promoting systemic vasodilation and decreasing the BP (Hunt et al., 2009).

ACEIs are usually chosen prior to selecting an angiotensin receptor blocker (ARB), however ARBs are an acceptable alternative if a patient is unable to tolerate ACEIs. ARBs help decrease BP by blocking angiotensin II at various receptor sites, thereby preventing vasoconstriction and the secretion of aldosterone (Deglin & Vallerand, 2007).

The function of naturally occurring aldosterone is to conserve sodium (which promotes water retention in the vasculature). Because long term suppression of aldosterone may not be sustained with the use of ACEIs/ARBs and aldosterone also can cause negative effects on the heart's structure and function, aldosterone antagonists may be given along with the ACEIs and/or ARBs (Hunt et al., 2009)

Beta Blockers. Beta-adrenergic receptor blockers are used to block the normal compensatory sympathetic effects. Normal sympathetic responses may be helpful initially, but in the long run cause an increased stress on the myocardium and elicit harmful effects. Results of beta effects include (a) vasoconstriction (which increases ventricular volume and pressure), (b) decreased sodium excretion by the kidneys, (c) increased automaticity (which can lead to cardiac arrhythmias), (d) increased heart rate, and (e) decreased potassium levels. The increased volume and pressure in the ventricles contributes to the possibility of cardiac hypertrophy as well as decreased blood flow through the cardiac arteries causing ischemia. The effects of beta-adrenergic blockers

(beta blockers) control the sympathetic responses and decrease the workload of the heart. Beta blockers have been useful in Stage C HF and all patients with stable HF who have decreased left ventricular ejection fraction (LVEF). Beta blockers should not be used in unstable patients, in the face of fluid overload, when volume depletion is present, or if patients require an intravenous positive inotrope. When patients with HF are stabilized they may be started on a beta blocker. Beta blockers should be used with caution if a patient has reactive airway disease or has asymptomatic bradycardia, however these pathologies do not necessarily constitute contraindication for the drugs (Hunt et al, 2009).

Digitalis. Digitalis glycosides (positive inotropes) may be added to the above regimen for the purpose of improving cardiac contractability. Digitalis glycosides inhibit sodium-potassium ($\text{Na}^+\text{-K}^+$) adenosine triphosphatase (ATPase) in cardiac cells, therefore promoting the ability of the heart to contract. Digitalis glycosides are also believed to (a) affect the vagal afferent (sensory) fibers, sensitizing cardiac baroreceptors and therefore slowing the sympathetic outflow from the central nervous system (CNS), and (b) decrease sodium renal tubular reabsorption resulting in less secretion of renin from the kidneys. Therefore, it is hypothesized that digitalis is not primarily a positive inotrope but it also acts in HF by improving neurohormonal effects, thus allowing patients with mild-moderate HF the possibility of improved exercise tolerance, improved symptoms, and therefore better quality of life (Hunt et al., 2009).

Anti-anginals. Nitrates work by dilating the venous and arterial systems, thereby decreasing the workload of the heart. Nitrates may help decrease dyspnea at night and

with exercise as well as decrease the process of cardiac remodeling by repressing abnormal cardiac and vascular growth (Hunt et al., 2009).

Activity

Exercise is an important part of the treatment regimen for patients with HF (Heart Failure Society of America, 2006; Hoyt & Bowling, 2001; Intermountain Health Care, 2010). Physical conditioning may help decrease symptoms and increase the capacity to exercise thereby improving the patient's quality of life and psychological well-being. Hunt et al. (2009) reported short term studies have shown that exercise can help decrease the activation of the neurohormonal systems and slow the cardiac remodeling that occurs with HF. Regular exercise patterns are important, and selecting an exercise that is enjoyable will help patients succeed in this aspect of their therapy (Intermountain Health Care, 2003). Cardiac rehabilitation programs may be helpful for determining patients' physical limits in a controlled setting, thereby helping decrease fears about exercise in the setting of HF (Intermountain Health Care, 2010). Patient education addresses self monitoring of the body's response to exercise. Formal exercise programs help patients with HF progress safely from workloads of 40-70% of maximal effort for 20 minutes to an approximate 45 minute period of time. Participants are encouraged to exercise three to five days a week for a period of eight to twelve weeks (Hunt et al., 2009).

Aerobic exercise promotes the transport of oxygen in the blood which then fuels the muscles. This type of exercise incorporates the use of large muscle groups, is rhythmic, and can be performed at moderate intensity over a period of time. Examples of

types of exercise for heart patients are walking, jogging, riding a bicycle, swimming, dancing, and cross country skiing (Intermountain Health Care, 2009).

Building strength with weight lifting is also helpful and beneficial for maintaining healthy bones. This is also called resistance training and it is necessary to do this with the supervision of a professional. Because it may not be safe or beneficial for every heart patient, it is necessary to ask the health care provider before beginning a program (Intermountain Health Care, 2009).

Patients are also encouraged to perform stretching exercises in order to lengthen the muscles which can then promote optimal range of motion and enhancement of circulation. Yoga or martial arts would guide a patient in this as well as any professional in this field of knowledge (Intermountain Health Care, 2009).

Weight

Fluid retention caused by HF will affect a patient's weight. Patient education about weight gain is critical so they understand that the underlying concern is about fluid retention which indicates worsening heart failure. This knowledge may help them appreciate the importance of weighing themselves daily (Heart Failure Society of America, 2006; Hoyt & Bowling, 2001; Intermountain Health Care, 2010). Loop diuretics or thiazide diuretics are given to control the fluid retention. Occasionally patients may be taught how to adjust the doses of these drugs according to certain parameters of weight gain or loss, and the ideal weight (target weight) should be determined initially. Patients should be instructed to call their health care provider if they

gain more than two pounds in one day or if they have a weight gain of five pounds over the target weight (Heart Failure Society of America, 2006; Hoyt & Bowling, 2001; Hunt et al., 2009).

Diet

Restrictions of sodium, fluids and alcohol are key elements in dietary guidelines for persons with HF. The daily sodium consumption should be under 2,000 milligrams (mg), fluid intake should be less than two liters per day, and alcohol intake should be less than or equal to one cocktail, beer or glass of wine per day (Hoyt & Bowling, 2001). Patients may achieve improved dietary success if they understand the potential forms of hidden sodium, because sodium is found in many forms other than salt in a salt shaker. Coaching patients about how to read food labels and what forms of foods are lower in sodium than others is helpful. Informing patients about how sodium, fluid, and alcohol intake can affect HF should also be part of the education process (Hoyt & Bowling, 2001).

Symptom Recognition

Patients with HF ought to monitor their symptoms. It is important that they recognize when the symptoms become worse. Education of symptom recognition is important, and patients need to be taught about symptoms that require them to contact their health care provider (Heart Failure Society of America, 2006; Hoyt & Bowling, 2001; Intermountain Health Care, 2003). Symptoms of worsening HF include increased fatigue, shortness of breath with activity and at night, edema, not feeling well and/or

weight gain. It is critical for patients to know that if they develop (a) shortness of breath or chest pressure while resting, (b) syncope, and/or (c) a weight gain of five pounds or more in one day it is imperative they call their health care provider or go to the emergency room (Heart Failure Society of America, 2006; Hoyt & Bowling, 2001).

Significance of the Project

Hospitals use a variety of methods to deal with the discharge planning and teaching needs of patients with HF in their facilities. Palmer et al. (2003) reported results from their study that focused on attempts to identify ways to decrease the incidence of relapses and rehospitalizations people with HF experience. In many discharge plans, consideration for patients' individual needs and capabilities was still lacking. When patients were discharged without understanding enough about what they needed to do, or did not have the capability to follow the prescribed plan of care, they frequently had relapses and needed to be readmitted to the hospital (Palmer et al., 2003).

Recent statistics indicate approximately five million people in the United States have a diagnosis of CHF (Department of Health and Human Services Centers for Disease Control and Prevention, 2006; Hiratzka et al., 2005; Hope et al., 2004) and each year approximately 550,000 new cases will be diagnosed (Department of Health and Human Services Centers for Disease Control and Prevention, 2006; Hiratzka et al., 2005). According to Lesperance, Bell and Ervin (2005) heart failure is the second most prevalent diagnosis of patients older than 65 who are admitted to the emergency rooms in hospitals.

Balinsky and Muennig (2003), Barth (2001), Hiratzka et al. (2005), Hope, Wu, Tu, Young and Murray (2004), Lesperance et al. (2005), and Phillips et al. (2004) repeatedly discussed the prevalence of CHF in the U.S. population as well as its financial impact. Hiratzka et al. (2005) noted that 6.5 million hospital days per year are due to heart failure. CHF is the most common diagnosis related group (DRG) for hospitalization both in the acute phase and with subsequent readmissions in the older than 65 year old population (Hiratzka et al., 2005; Phillips et al., 2004). According to Phillips et al. (2004) there has been an increase in readmissions for this population since the start of the Medicare Prospective Payment System in 1983, and these authors suggest this may be related to inadequate assessment of patients' readiness for discharge, inadequate discharge planning, inadequate care and follow-up in the post-discharge phase, or some combination of these factors.

The ACC/AHA guidelines estimated that in 2005 the cost of heart failure in the United States would be \$27.9 billion, including direct and indirect expenditures (Hiratzka et al., 2005) and the Department of Health and Human Services Centers for Disease Control (2006) estimated \$29.6 billion was spent on heart failure in 2006. Phillips et al. (2004) reported approximately 700,000 elderly patients with CHF who are on Medicare are discharged every year from acute care, non-federal hospitals. Fifty percent of these patients are readmitted to the hospital within six months at an average cost of \$7,000 per patient. Phillips et al. suggest if patients received post-discharge support with a nurse visit, approximately 84,000 readmissions could be prevented and an estimated \$424 million per year could be saved in Medicare payments.

Multiple research studies by Balinsky and Muennig (2003), Barth (2001), Di Carli and Sleight (2005), Narsavage and Naylor (2000), Palmer et al. (2003), Phillips et al. (2004) and Proctor, Morrow-Howell, Li and Dore (2000) explored the idea of adding some kind of follow-up for CHF patients in their post discharge phase of recovery. Some of the findings from these studies suggested that follow-up care can significantly reduce the number of readmissions in this population due to exacerbations of the congestive heart failure.

Project Description

This project consisted of three parts with the first part encompassing the review of literature and preparation of material for the Institutional Review Board (IRB). Part two focused on data collection, guided by a questionnaire that was administered by the author during a home visit to the participants following hospital discharge. At this time the participants were encouraged to ask the author questions and the author conducted a brief physical assessment of the patients' lungs and peripheral edema if the participant so desired. Part three of the project entailed a discussion of findings.

During part one of the project, the author conducted a comprehensive literature review which centered on the topic of home care follow-up for people with HF. Three databases were used including CINAHL, Medline, and the Cochrane Database. Keywords included "congestive heart failure", "discharge", "discharge planning", and "nursing". With the exception of one article from 1993, articles published between 2000 and 2009 were used in order to obtain the most recent knowledge on the topic of HF and

discharge from the hospital. The author used information from the literature review to develop a foundation for the project. The project description, guidelines, and consent form (see Appendix A) were submitted to the Montana State University Institutional Review Board and the project was approved (see Appendix B). The author met with the local internal medicine physician who provided support for the project (see Appendix C). The project was then explained to the other healthcare providers in the medical practice group where the supporting physician worked as recruitment for participants might come from any of their patient populations. A home visit questionnaire (see Appendix D) was finalized with the supporting physician's help for the purpose of consistent information gathering during the home visit interview. An informational poster about the project was posted in the local hospital in the area where healthcare providers sit to document in patients' charts. Following the IRB and physician's approval patients with HF were recruited by the author with the help of the local hospital discharge planners. Inclusion criteria for participants were (a) 18 years of age and older, (b) recently discharged (within 7-10 days) from the local community hospital with a medical diagnosis of heart failure, (c) living at home, either alone or with family members/caregivers, and (d) using English as their primary language. The subjects also had to be patients of healthcare providers who belonged to the same medical practice as the supporting physician.

The second phase of the project, data collection, occurred over a period of several months. Hospitalized persons over the age of 18 years with a diagnosis of heart failure received a short visit by the author during which an explanation of the project was given. If the person agreed to participate in the study written consent for a home visit was

obtained by the author. The author visited the participant within seven to ten days after hospital discharge.

Part three of the project, compiling results, took place after the home visits were made. The description of findings will be discussed in chapter four.

CHAPTER 2

REVIEW OF THE LITERATURE

A review of the literature relevant to the factors that pertain to follow-up care after hospital discharge for patients with congestive heart failure to prevent relapses will be presented here. The author reviewed the following articles by Barth (2001), Bryant (2002), Hope et al. (2004), Lesperance et al. (2005), Palmer et al. (2003), Phillips et al. (2004), Proctor et al. (2000), and Schneider, Hornberger, Booker, Davis and Kralicek (1993). The purpose of the literature review was to identify research studies that explored and described whether or not people with HF benefitted from home care follow-up after they had been discharged from the hospital.

Medication Logistics

Schneider et al. (1993) reported that when individualized discharge care specifically related to medication instructions was given to patients with CHF, there was a significant decrease in the readmission rate in the experimental group. Successful management of CHF is dependent upon appropriate medication administration, and these researchers hypothesized that the rate of relapses might be due to problems patients had with their medication regimen at home. Patients might experience a lack of understanding of the medications as to why and how to take them. Other problems might be label misinterpretation, inability to understand changes that were made in the prescriptions, not filling the prescriptions for some reason and discontinuing the medications too soon.

These authors conducted an experiment using five nurse investigators who followed a specific format for medication discharge planning and, after finding out what each patient knew about their medications and what their daily schedules were, the nurses answered questions and with the patient's input developed a plan for discharge. The family members were included whenever possible. After discharge, the nurse contacted the patient to again answer questions and help make necessary changes (Schneider et al., 1993).

Hope et al. (2004) acknowledged that older patients frequently need to take a variety of medications to treat their CHF as well as associated health problems, such as hypertension. These authors explored the area of medication regimen also, questioning whether inadequate medication knowledge, skills, and adherence led to suboptimal therapeutic benefits, increased morbidity and increased cost of care including emergency room visits. They gathered data pertaining to patients' knowledge and skills with their medications such as (a) basic knowledge of the medication and why they were taking it, (b) how much to take and when, (c) ability to open the pill bottles, and (d) ability to read the labels and distinguish pills by their color and shapes. Hope et al. determined patients' knowledge levels, and then examined different sources to follow the patients' medication adherence, progress and rate of readmission to the hospital for relapses of CHF. The results reported by Hope et al. (2004) suggest that in the population they studied, the better the knowledge, skills, and adherence HF patients had (related to the prescribed medications), the fewer the visits made to the emergency room.

Attention to Individuals' Needs in Discharge Plans

Bryant (2002) addressed the individual needs of patients related to discharge planning because she found that the discharge plans in a regional medical center did not take into account that many of the patients had visual or hearing impairment, and/or were illiterate. Dietary restriction of sodium is important to help control CHF, and the usual diet teaching tool in this specific medical center was of no use to people who could not read and/or understand it. The diet sheet was confusing to look at for those who were unable to hear the information that was presented. A new low-sodium diet sheet was developed with the special needs of this population in mind. Although Bryant was not able to link decreased readmissions due to relapses of CHF to the new teaching tool, it did show promise and pointed to the importance for future studies.

Lesperance et al. (2005) also addressed the importance of individualized care in order to help patients with HF monitor daily weights after they were discharged to home from the hospital. Medical records of patients older than 65 years who had HF were reviewed to evaluate discharge instructions that addressed weight gain. There was no evidence in the documentation that would indicate the patients had received enough information for adequate monitoring of their weight. Lesperance et al. noted that basic requirements for this would be to find out if the patients (a) had a scale at home, (b) were able to stand on the scale, (c) were able to read the scale, (d) had an adequate way to record their weight, and (e) would be able to remember to record their weight. Along with the need for adequate discharge teaching these authors suggested that

re-hospitalization might be avoided if someone from a home health agency visited each patient to help them with self-care (Lesperance et al., 2005).

Patient Perceptions of Care

Adequate treatment of CHF includes specific requirements for diet, meal preparation, shopping for the correct foods, medication administration, physical activity and how activities of daily life can be accomplished. Proctor et al. (2000) studied patients' perceptions about the quality of the care they received as a potential to influence their health care outcomes. Data were collected through both in-home and telephone interviews relating to medication compliance, whether home care had been received, socioeconomic status and how well the patients were functioning with their illness of CHF. The authors noted that those patients who felt they had had adequate post hospital care experienced a lower rate of readmission than those who did not feel good about their care (Proctor et al., 2000).

Post Hospital Support and Patient Education

According to Barth (2001), Palmer et al. (2003) and Phillips et al. (2004) support in the post hospitalization phase for patients with CHF had been repeatedly indicated as an intervention that may have a positive impact in the prevention of readmissions due to relapses. This support should come from a nurse or nurse practitioner, and the goal was to help patients obtain more knowledge about their disease and treatments, and give them a

readily accessible resource for anything they might encounter that they were unable to handle by themselves.

Barth (2001) did not imply that costs would be reduced, but support for a nurse-managed program had the potential to help patients have improved quality of life. In this study patients with CHF in the experimental group received a series of phone calls from the investigator using a structured questioning format relating to how the patient was doing. Questions were answered by the investigator and advice was given if necessary. Patients gave verbal reports of being appreciative of the program, because although family support was important to them, they were more reassured by the reinforcement they received from healthcare professionals.

Palmer et al. (2003) reviewed literature pertaining to follow-up care for patients with CHF in outpatient or home environments. Their results suggested there was strong evidence supporting the value of nurse-led interventions for after hospital care of patients with CHF because of its cost effectiveness in reducing hospitalizations and re-admission (Palmer et al., 2003).

Phillips et al. (2004) also concluded that evidence supported the implementation of comprehensive hospital discharge planning as well as support for patients with CHF in the time period after hospital discharge. They reviewed 18 studies that focused on comprehensive discharge planning as well as support for this population in the postdischarge phase of their care. Phillips et al. suggested the findings from their review provided important implications for future changes in health care systems, use of

resources and outcomes in patients who lived with the chronic condition of congestive heart failure.

A more recent source came from Hunt et al. (2009) in the updated ACC/AHA 2005 guidelines on HF. A home visit by a nurse or nurse practitioner was not mentioned in those specific terms, but they suggested that a comprehensive discharge plan plus post-discharge support resulted in fewer readmissions. This conclusion came about after examining the results from a meta-analysis of 18 studies which represented data from eight countries and included 3,304 randomized older in-patients with HF.

Summary

Information from the literature review provided a foundation for this graduate project that focused on home care follow up for patients with HF. Specifically, information was gained about various ways professional nurses might have a role to play in home care follow up in order to help decrease rehospitalizations associated with HF exacerbations. All human beings have specific characteristics and personalities that affect how they respond to situations and how they cope with health-related problems. It is important for health care providers to assist patients by decreasing the burdens associated with the impact of their illness (Barth, 2001; Bryant, 2002; Hope et al., 2004; Lesperance et al., 2005; Palmer et al., 2003; Phillips et al., 2004; Proctor et al., 2000; Schneider et al., 1993). The literature suggests that discharge planning and follow up care via home visits will decrease exacerbations of HF which lead to re-hospitalization.

CHAPTER 3

PROJECT DEVELOPMENT AND IMPLEMENTATION

This project was conducted in a rural community. The small community hospital in this project averaged 6,421 patient admissions in the fiscal year 2009 and 7,119 patient admissions during fiscal year 2008. In 2009, 93 patients were discharged with the primary diagnosis of heart failure (L. Larson, personal communication, July 16, 2010).

A local internal medicine physician whose practice included older adults with HF allowed this author to solicit patients with HF from this physician's practice for follow up home visits. Following Institutional Review Board for Protection of Human Subjects approval data were collected by the author during home visits in the local community and neighboring towns within a 35 mile radius of the hospital.

Nine patients with HF were contacted during the study period and of those, five accepted a follow up home visit by the author. The home visits took place over a period of several months. Data will be reported in the following categories: demographics, supportive services, medications, activity, weight, diet, symptom recognition, participants' comments, participants' unmet needs, actions taken by the author, and results of the author's actions.

The home visits took place over a period of several months. Prior to the home visit the author visited the patients in the hospital when they were in stable condition and shortly before they were discharged to home. Patients received verbal and written information about the project. Individuals who decided to participate signed a consent

form, witnessed by the author. Following hospital discharge the author contacted each participant by phone, and they agreed on a day and time for the home visit. On the day of the visit the author called to verify the participant's status and continued interest in the home visit.

During the home visit the author began the interview with social conversation and then moved into the questions on the questionnaire. After the author completed the assessment based on the participant responses to the questionnaire the participant was asked if she had any more questions. The author conducted a brief physical assessment which included assessment of the lungs and an assessment of peripheral edema. If the participant had questions for her primary health care provider, the author contacted the provider following the visit and relayed the participant's questions to him/her. The author then notified the participant that the primary health care provider had been contacted.

CHAPTER 4

RESULTS, DISCUSSION, CONCLUSION, AND LIMITATIONS

Results

The results topics included here are (a) participant demographics, (b) supportive services at home following discharge, (c) medications, (d) activity, (e) weight, (f) diet, (g) symptom recognition, (h) participant comments, (i) participants' unmet needs, (j) actions taken by the author, and (k) results of the author's actions. The participants will be identified by letters A through E.

Demographics

All of the participants in this study were female with a diagnosis of HF. Participant A was 63 years old, lived alone and had chronic HF. Participant B was 69 years old, lived alone and had chronic HF. Participant C was 84 years old, lived with her husband and had chronic HF. Participant D was 72 years old, lived alone and had new onset HF. Participant E was 73 years old, lived alone and had chronic HF.

Supportive Services at Home
Following Discharge

Participants A and E were assisted by physical therapy (PT) and a registered nurse (RN). Participant B had no supportive services. Participant C was seen by occupational therapy (OT), PT and an RN. Participant D had PT helping her with an exercise program.

Medications

The number of medications used by each participant ranged from 7 to 15 in number. When asked if they could describe the reason for each medication Participants A, C and E were able to describe all of their prescribed medications. Participants B and D knew the reasons for taking the majority of their medications. All of the participants were taking each of their prescribed medications and had various arrangements made for the medications to be refilled and obtained. Participants A, B and C relied on children or grandchildren to pick up the medications from the pharmacy, fill their pill boxes and/or draw up insulin. Participants D and E were able to fulfill these obligations independently, although participant E needed someone to drive her to the pharmacy.

Activity

When asked about physical activity all of the participants reported various degrees of activity. To facilitate their activity four participants (A, C, D, & E) used home health services to follow an exercise program. Participants A and D performed some type of exercise every day. Participant B did not have a formal exercise program and described her activity as moving around in her house with occasional trips to the grocery store. Participant C exercised one to two times a week and participant E exercised three times a week.

Weight

Checking a daily weight was done by four of the participants (A, C, D, & E) and the fifth (B) reported doing so every other day. Participant (B) reported slight weight gain following hospital discharge. Weight loss was reported by two of the participants (C and D). Each participant was able to describe parameters for weight gain and when to notify their health care provider.

Diet

During a discussion about diet, each participant described what they were doing to achieve the level of sodium in their diet that had been suggested by their health care provider. All of the participants related some knowledge regarding necessary fluid intake amounts. Reading labels on prepared foods was discussed and all five participants were aware of the need to do so. Alcohol intake was negative in four participants (A, B, C, & D) with the fifth participant (E) reporting an occasional glass of wine with dinner and a rum and coke approximately two times per month.

Symptom Recognition

Participants A, B, C, and E all had chronic HF while Participant D had new onset HF. The following symptoms were reviewed with each participant: respiratory effort, level of fatigue, ability to participate in desired activities, peripheral edema, cough, gastrointestinal symptoms (nausea, vomiting, abdominal discomfort or fullness early in a meal), lightheadedness, and chest pressure or pain (see Table 1). Two participants (C & D) used oxygen continuously, one used it occasionally (E) but none of the participants

reported difficulty with breathing. Three (A, B & C) reported fatigue beyond what they thought they should experience. All five participants reported limitations in their ability to participate in desired activities. Two participants (C & E) reported swelling in their feet and lower legs and one (B) reported a cough that felt wet but was not productive. This same participant (B) sometimes had an early feeling of fullness during a meal, something that was denied by the other four participants. All five denied nausea or vomiting. A feeling of being lightheaded upon rising from supine or sitting positions was reported by one participant (B). None of the five participants reported having chest pressure or pain.

Participant (B) reported feeling more tired than she thought she should, had a wet cough (non-productive), sometimes felt full early in a meal, and experienced a lightheaded feeling upon getting up. Participants A, D, & E individually had a maximum of three symptoms and participant C had four. The participant with no supportive services (participant B) had the greatest number of symptoms to report.

Table 1. Presence of Heart Failure Symptoms in Participants A – E.

Category	Participant A	Participant B	Participant C	Participant D	Participant E
Difficulty breathing	Yes	Yes	Yes		
Oxygen use: Continuous Occasional			Yes	Yes	Yes
Level of fatigue greater than expected	Yes	Yes	Yes		
Limited ability to participate in desired activities	Yes	Yes	Yes	Yes	Yes
Edema in feet and lower legs			Yes		Yes
Cough		Yes			
Early feeling of fullness with a meal		Yes			
Nausea, vomiting					
Lightheaded feeling on rising from supine to sitting		Yes			
Chest pressure or pain (none of the participants experienced chest pain)					

Participant Comments

Participant A stated she wouldn't be able to manage if her daughter didn't help her out with medications and activities of daily living. She received supportive care from an RN and PT and commented these services were very important to her well-being while living in her home.

Participant B had a teenaged grandson living with her. She stated her grandson was very helpful, and her life would be very difficult without his help. This participant received no formal supportive services.

Participant C acknowledged the only reason she could be confident in her current condition living at home was because of her husband's help and the supportive services she received. She had the benefit of assistance from OT, PT and an RN.

Participant D talked about how she felt the doctors were so insulated that it was very difficult to communicate with them from her home in the case of problems or questions. She had questions about her blood pressure (BP) and the lack of treatment for it. She was not able to remember what her BP had been. She also had questions about whether or not she should be taking a potassium supplement as she was taking a diuretic. PT assisted her with an exercise program.

Participant E acknowledged that it was hard having so many doctors—she felt that she didn't have a close relationship with any of them and because of that felt as if she was just a number to them. If she did not have the supportive services she had (RN and PT) she commented that she would be somewhat scared to try to live on her own as she was doing.

Participants' Unmet Needs

Of the five participants in this study two reported they had issues with which they needed assistance. Participant B had no supportive services and was unsure about how to find out about when she needed to have a follow-up visit with her health care provider. Participant D had PT as her single supportive service. She had questions regarding potassium replacement and BP medication.

Actions Taken by the Author

Assessment for lung sounds and peripheral edema was offered by the author to each participant. Two of the participants (C and E) accepted this offer and both had edema in their feet, ankles, and lower legs. In both participants lungs were clear to auscultation.

During the home visit with Participant B the author made a telephone call to the appropriate physician's office and was able to obtain the information the participant needed. For Participant D the author contacted the appropriate physician by phone the morning after the home visit to discuss the participant's concerns about potassium supplement and BP medication.

Results of the Author's Actions

Participant B was notified by the physician's office regarding her next appointment date and time. This occurred the same day as the author's visit.

The physician for Participant D was unaware her follow-up appointment was scheduled for three weeks from the initial post-hospitalization office visit (made two days

before the home visit by the author) rather than the two weeks he had specified. He related his plan had been for her to have her potassium checked at two weeks with no replacement during that time. (She was taking a potassium wasting diuretic.) Participant D had new onset HF and had been started on several new medications. During the conversation between the physician and author the physician asked about the participant's Lisinopril and was told by the author the participant did not have that on her medication list and was not taking it. He acknowledged his plan had been for her to start Lisinopril three days prior to this conversation. He then stated he would check to see if he had failed to carry through with that and have his office contact the participant about the Lisinopril. Following this conversation the author made a phone call to the participant to let her know a connection had been made with the physician and his office would contact her.

Discussion

The findings from this project revealed that the two participants with the least amount of supportive services after their discharge home from the hospital had unmet needs. One of these participants, B, had no formal supportive services and the other one, D with new onset HF, had PT helping with her exercises. Participants A, B, C, and E had chronic HF and had all been hospitalized more than once.

Family members played a part in the success of living alone at home for four of the participants (A, B, D, & E). The participant who lived with her husband (C) depended on him for most of the house keeping and cooking that needed to be done. Overall all five

participants had a good knowledge of the reasons for specific medication use, all were taking their medications as prescribed and all had adequate methods for obtaining the medications.

Four of the five participants (A, C, D, & E) were involved in an exercise program that was initiated and guided by home health services. The fifth participant (B) without any of these supportive services reported her activity consisted of moving around in her house but nothing specific.

All of the participants weighed themselves daily or every other day. They were able to relate the parameters for notifying their healthcare providers if necessary. At the time of the home visits none of the participants had experienced significant weight gain.

The diet requirements for a reduced sodium daily intake were recognized by all five participants and they were all able to relate how they were carrying this out. They were all knowledgeable about reading labels and decreasing processed food intake when possible. Daily fluid intake was not standardized across the sample but all were aware of the importance of daily fluid intake restrictions.

A variety of symptoms were noticed throughout the sample and the participant with no supportive services had the most (five symptoms) whereas the other four had either none or a maximum of four symptoms. Chest pain or pressure was not reported by any of the participants.

Conclusion

In this project the limited participant sample demonstrated a good understanding of the HF regimen consisting of medications, activity, weight, diet and symptom recognition. Hope et al. (2004) and Schneider et al. (1993) suggested that if patients had a good understanding of medications this would correlate with decreased hospital readmissions. Lesperance et al. (2005) discussed the importance of making sure each patient was able to adequately monitor their daily weight, including ascertaining each patient had a scale at home and knew how to use it. All five of the participants in this study fulfilled this requirement without difficulty.

Barth (2001), Palmer et al. (2003), and Phillips et al. (2004) suggested support from a nurse or nurse practitioner gave patients a readily accessible source for questions that needed to be answered as well as for anything patients could not handle by themselves after they went home from the hospital. Hunt (2009) did not specify the use of nurses or nurse practitioners but suggested that a comprehensive discharge plan plus post-hospital discharge support would lead to a decrease in readmissions. In this graduate study the majority ($n = 3$) of the participants each received more than one supportive service and all commented favorably about the value of that help. The participants ($n = 2$) with one or less supportive home health service had unmet needs and of the two, the participant with no supportive services was the least active and also exhibited the most HF symptoms. The single home visit made by the author allowed these two participants to have some of their needs met.

In the end, the results from this project were similar to the literature referenced in the project (Barth, 2001; Bryant, 2002; Hope et al., 2004; Lesperance et al., 2005; Palmer et al., 2003; Phillips et al., 2004; Proctor et al., 2000; Schneider et al., 1993) and suggest that patients with HF have needs that may not be totally met by the time they are discharged from the hospital. It is likely they will discover new questions and/or problems when they are in their own home and this will vary from person to person. Assistance in the form of a home or telephone visit from a registered nurse (RN) or advanced practice registered nurse (APRN) may well help them answer unmet needs which could in the end prevent exacerbations that would require re-hospitalization. Post hospital visits from an RN or APRN may also assist the patients' health care providers to provide more complete care. Of utmost importance for the individual's health would be having a post hospitalization resource person who could reinforce discharge care, so that the individual could gain confidence.

Limitations of the Study

The number of participants in this project was small and they were recruited from one hospital in a rural state. Therefore, the findings do not provide a strong representation of the general population of patients with HF. The sample consisted solely of white females and was not representative of the overall population of persons with HF. HF demographics indicate a prevalence and mortality that is greater in males than females (National Institutes of Health, National Heart, Lung, and Blood Institute, 2009).

Because this project was a requirement for a graduate degree it was limited by time. In order to truly help support previous research, a larger heterogeneous sample would be required and the study should be carried out over a long enough period of time to obtain data on rates of rehospitalizations. The author had no alliances that would cause bias on her part in pursuing this project and gathering the data and results.

REFERENCES

- American Heart Association. (2010). *Classification of Functional Capacity and Objective Assessment*. Retrieved from, <http://www.americanheart.org/presenter.jhtml?identifier=4569>.
- Balinsky, W., & Muennig, P. (2003). The costs and outcomes of multifaceted interventions designed to improve the care of congestive heart failure in the inpatient setting: A review of the literature. *Medical Care Research and Review*, 60(3), 275-293. doi:10.1177/1077558703254697.
- Barth, V. (2001). A nurse-managed discharge program for congestive heart failure patients: Outcomes and costs. *Home Health Care Management & Practice*, 13(6), 436-443, doi: 10.1177/108482230101300604.
- Berwick, D. M., Nolan, T. W., & Whittington, J. (2008). The triple aim: Care, health, and cost. *Health Affairs*, 27(3), 759-769. doi: 10.1377/hlthaff.27.3.759.
- Bryant, P. K. (2002). Congestive heart failure performance-improvement project: Special needs for special patients. *Lippincott's Case Management* 7(4), 152-162.
- Deglin, J. H., & Vallerand, A. H. (2007). *Davis's drug guide for nurses* (10th ed.). Philadelphia: F. A. Davis Company.
- Department of Health and Human Services Centers for Disease Control and Prevention (CDC) (2006). *Heart Failure Fact Sheet*. Retrieved from http://www.cdc.gov/dhdsp/library/fs_heart_failure.htm.
- Di Carli, M., & Sleight, P. (Eds.). (2005). Randomised trial of telephone intervention in chronic heart failure: DIAL trial. *British Medical Journal*, 331: 425. doi:10.1136/bmj.38516.398067.E0.
- HealthGrades. (2010). *Bozeman Deaconess Hospital*. Retrieved from <http://www.healthgrades.com/hospital-directory/montana-mt/Bozeman-Deaconess-Hospital-HGST42A70596270057>.
- Heart Failure Society of America (HFSA). (2006). *HFSA 2006 Comprehensive Heart Failure Practice Guideline*. Retrieved from <http://www.heartfailureguideline.org/document/pocketguide361.pdf>.
- Hiratzka, L. F., Hunt, S. A., Jacobs, A. K., Nishimura, R., Adams, J. P., Anderson, J. L., Yancy, C. W. (2005). ACC/AHA 2005 guideline update for the diagnosis and management of chronic heart failure in the adult [Electronic version]. *Circulation* 112, e154-e235. doi:10.1161/CIRCULATIONAHA.105.167586.

- Hope, C. J., Wu, J., Tu, W., Young, J., & Murray, M. D. (2004). Association of medication adherence, knowledge, and skills with emergency department visits by adults 50 years or older with congestive heart failure. *American Journal of Health-System Pharmacy*, 11, 2043-2049. Retrieved from <http://web.ebscohost.com.proxybz.lib.montana.edu/ehost/pdfviewer/pdfviewer?vid=3&hid=110&sid=57f090bf-01c6-474b-970d-6669f700fdc7%40sessionmgr110>.
- Hoyt, R. E., & Bowling, L. S. (2001). Reducing readmissions for congestive heart failure. *American Family Physician*, 63(8), 1593-1598. Retrieved from <http://www.aafp.org/afp/20010415/1593.html>.
- Hunt, S. A., Abraham, W. T., Chin, M. H., Feldman, A. M., Francis, G. S., Ganiats, T. G., Yancy, C. W. (2009). 2009 focused update incorporated into the ACC/AHA 2005 guidelines for the diagnosis and management of heart failure in adults. A report of the American College of Cardiology Foundation/American Heart Association Task Force on practice guidelines [Electronic version]. *Circulation* 119, 1-89. doi: 10.1161/CIRCULATIONAHA.109.192065.
- Intermountain Health Care. (2003, November). *Management of heart failure*. Author.
- Intermountain Health Care. (2009). *Heart & Vascular Services*. Retrieved from <http://intermountainhealthcare.org/services/heart/prevention/healthyhabits/Pages/exercise.aspx>.
- Intermountain Health Care. (2010). *Living with heart failure*. Retrieved from <http://intermountainhealthcare.org/xp/public/>.
- Lesperance, M. E., Bell, S. E., & Ervin, N. E. (2005). Heart failure and weight gain monitoring. *Lippincott's Case Management* 10(6), 287-293. Retrieved from <http://ovidsp.tx.ovid.com.proxybz.lib.montana.edu/sp-2.3.1b/ovidweb.cgi?WebLinkFrameset=1&S=GFJGFPKNEGDDLPMANCDLLBJCDAFBAA00&returnUrl=http%3a%2f%2fovidsp.tx.ovid.com%2fsp-2.3.1b%2fovidweb.cgi%3f%26TOC%3dS.sh.15.17.20.41%257c9%257c50%26FORMAT%3dtoc%26FIELDS%3dTOC%26S%3dGFJGFPKNEGDDLPMANCDLLBJCDAFBAA00&directlink=http%3a%2f%2fgraphics.tx.ovid.com%2fovftpdfs%2fFPDDNCJCLBMAEG00%2ffs046%2fovft%2flive%2fgv023%2f00129234%2f00129234-200511000-00009.pdf&filename=Heart+Failure+and+Weight+Gain+Monitoring>.
- Mistiaen, P., & Poot, E. (2008). Telephone follow-up, initiated by a hospital-based health professional, for postdischarge problems in patients discharged from hospital to home. *Cochrane Database of Systematic Review*, 4. doi: 10.1002/14651858.CD004510.pub3.

- National Institutes of Health, National Heart Lung and Blood Institute. (2009) *Morbidity and mortality: 2009 chart book on cardiovascular, lung, and blood diseases*. Retrieved from, http://www.nhlbi.nih.gov/resources/docs/2009_ChartBook.pdf.
- Narsavage, G. L., & Naylor, M. D. (2000). Factors associated with referral of elderly individuals with cardiac and pulmonary disorders for home care services following hospital discharge. *Journal of Gerontological Nursing*, 26(5), 14-20.
- Palmer, N. D., Appleton, B., & Rodrigues, E. A. (2003). Specialist nurse-led intervention in outpatients with congestive heart failure. *Discharge Management Health Outcomes*, 11(11), 693-698. Retrieved from <http://web.ebscohost.com.proxybz.lib.montana.edu/ehost/pdfviewer/pdfviewer?vid=3&hid=110&sid=34e9c152-94e9-411a-bd2d-26247265a394%40sessionmgr110>.
- Phillips, C. O., Wright, S. M., Kern, D. E., Singa, R. M., Shepperd, S., & Rubin, H. R. (2004). Comprehensive discharge planning with postdischarge support for older patients with congestive heart failure. *Journal of American Medical Association*, 291(11), 1358-1368. Retrieved from <http://jama.ama-assn.org.proxybz.lib.montana.edu/cgi/content/full/291/11/1358>.
- Proctor, E. K., Morrow-Howell, N., Li, H., & Dore, P. (2000). Adequacy of home care and hospital readmission for elderly congestive heart failure patients. *Health and Social Work*, 25(2), 87-96. Retrieved from <http://web.ebscohost.com.proxybz.lib.montana.edu/ehost/pdfviewer/pdfviewer?vid=5&hid=110&sid=9f3d967b-3bf1-4056-ba3f-a063907c0d5f%40sessionmgr112>.
- Schneider, J. K., Hornberger, S., Booker, J., Davis, A., & Kralicek, R. (1993). A medication discharge planning program. *Clinical Nursing Research*, 2(1), 41-53. doi: 10.1177/105477389300200105.

APPENDICES

APPENDIX A

INSTITUTIONAL REVIEW BOARD
FOR THE PROTECTION OF HUMAN SUBJECTS



INSTITUTIONAL REVIEW BOARD
For the Protection of Human Subjects
FWA 00000165

966 Technology Blvd. Room 127
 c/o Veterinary Molecular Biology
 Montana State University
 Bozeman, MT 59718
 Telephone: 406-994-6783
 FAX: 406-994-4303
 E-mail: cherylj@montana.edu

Chair: Mark Quinn
 406-994-4707
 mquinn@montana.edu
Administrator:
 Cheryl Johnson
 406-994-6783
 cherylj@montana.edu

MEMORANDUM

TO: Carol Sisk

FROM: Mark Quinn, Ph.D. Chair *Mark Quinn*
 Institutional Review Board for the Protection of Human Subjects

DATE: March 6, 2009

SUBJECT: Home Care Follow-up for People with Heart Failure [CS030609-EX]

The above research, described in your submission of February 4, 2009, is exempt from the requirement of review by the Institutional Review Board in accordance with the Code of Federal Regulations, Part 46, section 101. The specific paragraph which applies to your research is:

- ☐ (b)(1) Research conducted in established or commonly accepted educational settings, involving normal educational practices such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.
- ☒ (b)(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.
- ☐ (b)(3) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if: (i) the human subjects are elected or appointed public officials or candidates for public office; or (ii) federal statute(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.
- ☐ (b)(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available, or if the information is recorded by the investigator in such a manner that the subjects cannot be identified, directly or through identifiers linked to the subjects.
- ☐ (b)(5) Research and demonstration projects, which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine: (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs.
- ☐ (b)(6) Taste and food quality evaluation and consumer acceptance studies. (i) if wholesome foods without additives are consumed, or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the FDA, or approved by the EPA, or the Food Safety and Inspection Service of the USDA.

Although review by the Institutional Review Board is not required for the above research, the Committee will be glad to review it. If you wish a review and committee approval, please submit 3 copies of the usual application form and it will be processed by expedited review.

APPENDIX B

SUBJECT CONSENT FORM FOR
PARTICIPATION IN HUMAN RESEARCH AT
MONTANA STATE UNIVERSITY

**SUBJECT CONSENT FORM FOR
PARTICIPATION IN HUMAN RESEARCH AT
MONTANA STATE UNIVERSITY**

Project Title: "Home Care Follow-up for People with Heart Failure"

You are being asked to participate in a clinical project dealing with self-care at home after hospital discharge for patients with heart failure. This may help us obtain a better understanding of peoples' self-care needs when they go home from the hospital with heart failure. Dr. _____ identified you as a potential subject in this study because of your diagnosis of heart failure.

Procedures involved:

If you agree to participate, I will visit you 7-10 days after you go home from the hospital and review your treatment plan with you. The home visit will be made in person by me or by telephone if the home visit is not practical. The visit will last between 60 – 90 minutes. We will be able to stop at any time during the visit if you wish. I will ask you questions about your medications, activity, weight, diet and symptoms. We will review each of these one at a time to find out how well you understand what your doctor has ordered for you to do. I will listen to your heart and lungs as well as check your legs and feet for swelling if you would like me to do so. If you have questions, I will make a record of them, and they will be presented to your healthcare provider.

Risks:

If you decide to participate, there will be minimal risk involved for you. The information you give me will be kept confidential. I will not use your name in any of my notes or paper but will instead use a code, and the key to the code will be kept in a locked file. It is possible that you will become fatigued during the questioning period; however, you can to stop the interview at any time.

Benefits to the participant:

A potential benefit for you will be the opportunity to ask a registered nurse questions you might have about how to follow your treatment plan. This study may help us improve treatment plans.

APPROVED
MSU IRB
03/06/2009
Date approved
NA
Expiration date

Alternatives available:

If you decide not to participate in this study, your decision will be respected and will bring no repercussions to you or your family. It will in no way affect your care.

Confidentiality:

The information you give me will be kept confidential throughout the study. I will not use your name in any of my notes or paper but will instead use a code. The key to the code (which will include your name) will be kept in a locked file.

In the unlikely event your participation in this research directly results in injury to you, we will refer you to your physician for treatment; however, there are no funds available from MSU to cover the costs of such treatment. For further information on any aspects of this project, please contact Carol Sisk at (406) 578-2200 or Elizabeth Kinion at (406) 994-2725.

Additional questions about the rights of human subjects can be answered by the Chairman of the Institutional Review Board, Mark Quinn, (406) 994-4707.

AUTHORIZATION: I have read the above and understand the discomforts, inconvenience and risk of this study. I, _____ (*name of subject*), agree to participate in this research. I understand that I may later refuse to participate and that I may withdraw from the study at any time. I have received a copy of this consent form for my own records.

Signed: _____

Witness: _____

○ Investigator: Carol Kittrell Sisk, RN

Date: _____

APPROVED
MSU IRB
03/06/200
Date approved
NA
Expiration date

APPENDIX C

LETTER FROM SUPPORTING PHYSICIAN

March 6, 2009

Carol K. Sisk, BSN, RN
800 Fairy Creek Rd.
Wilsall, MT 59086

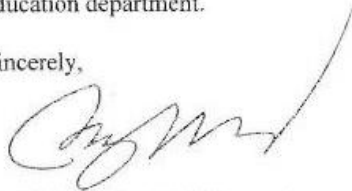
Dear Carol:

You have my permission to make one home (or telephone) visit to patients with the diagnosis of heart failure who have been discharged from the hospital to home. This patient population will be drawn from people who are clients of Bozeman Deaconess Internal Medicine Associates. My partners and I will assist you by identifying appropriate patients, and you will check each week with Carol Kelley in our office to retrieve that information.

As agreed, you will visit potential participants in the hospital after they are stable and within one to two days of anticipated discharge to home. During this visit you will explain the project to them and obtain their written consent. The patient population will be limited to people who have heart failure and were in the hospital for that reason. You will make one visit to each participant's home within 7-10 days after they are discharged home from the hospital. Because you are a registered nurse with many years of experience in Intensive Care and the Emergency Department, you may do a brief physical assessment including auscultation of heart and lung sounds as well as checking for peripheral edema if the participant is agreeable. You may ask the participants questions from the questionnaire which I approved, and then record their answers. You may also record any other questions that each participant may have in the comments section of the questionnaire.

In order to keep each participants' identity anonymous, you will use an identifier code and all of the data will be kept in a locked file. The information you obtain may be used for your professional paper but without the participants' names, using the designated code instead. My partners and I at Bozeman Deaconess Internal Medicine Associates will appreciate receiving the results of your findings. Your results may also be of interest to the Bozeman Deaconess Hospital education department.

Sincerely,



APPENDIX D

HEART FAILURE: SELF-CARE AFTER HOSPITALIZATION
NURSING INTERVIEW QUESTIONNAIRE

DATE OF INTERVIEW:
PHYSICIAN:
DISCHARGE TO:
DISCHARGE DATE:
INFORMATION SOURCE (Participant, family member, care giver):
GENERAL FEELING OF HEALTH:
1. Are you feeling well? If not, please describe.
MEDICATION REVIEW:
1. In order to help you, I would like to review all of your medications and it would be best if I am able to look at the bottles your medications came in. Is that okay with you?
a. Are you taking all of your discharge medications?
b. If not, which medications are you not taking?
c. Why are you not taking your medications?
d. Do you need assistance so you will be able to take the medications?
e. Do you have a convenient way to get your medications refilled?
2. Tell me about each of your medications: what they are, what they are for, why you are taking it, how and when you take each one.
3. Please remember to take all your medications to the next appointment you have with your healthcare provider.
ACTIVITY
1. Are you staying active every day?
2. Do you have an exercise program you are following?
3. Tell me how you are doing with your exercise program.
WEIGHT
1. Do you weigh yourself every morning?
2. Have you noticed any change in your weight?
3 What color zone are you in today?

DIET/ FLUID RESTRICTION
1. Tell me about your low salt diet.
2. What foods are you eating?
3. What fluids are you drinking each day? How much of each?
4. Do you drink alcohol? If so, how much and how often?
SYMPTOMS
1. How is your breathing? (Shortness of breath at rest or with activity, trouble breathing at night in bed)
2. Do you feel more tired than you think should be?
3. Are you able to do the activities and exercise you like to do? What would you like to be able to do?
4. Do you have any swelling in the feet, ankles, or abdomen?
5. Do you have a cough that has become more noticeable?
6. Do you have nausea, vomiting or do you feel full early in a meal?
7. Do you have abdominal discomfort?
8. Do you ever feel lightheaded?
9. Do you ever have any chest pressure or pain? Do you ever take anything for chest pressure or pain? Do you have any medication to take if you have any chest pressure or pain?

FOLLOW-UP NOTES: