USE OF AN ASSESSMENT TOOL TO FACILITATE EVIDENCE BASED MANAGEMENT OF HOME HEALTH HEART FAILURE PATIENTS

by

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

Master

of

Nursing

MONTANA STATE UNIVERSITY
Bozeman, Montana

November 2013

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November 2013

ACKNOWLEDGEMENTS

This professional project is dedicated to my fiancé Travis Burrow and my two boys Gunner and Serek. Thank you to all three of you for your patience while I spent many evenings and weekends typing. I would not have been able to successfully finish this project if it had not been for your support.

A very special thank you goes to the chair of my committee, Sandy Kuntz, for all her time and wisdom that has gone into guiding this project. You have helped me grow not only as a nurse but also as a person. Thank you to my other committee members Teresa O'Connell and Laurie Glover for your support and participation. Teresa, you really helped facilitate the success of this project by allowing me to include the home health staff in data collection.

Lastly, I would like to thank the Spectrum Home Health staff for participating in this project. By collecting data on thirty different patients, you helped me learn what it is really like to be in a Clinical Nurse Leader position and manage a project.

TABLE OF CONTENTS

1. INTRODUCTION TO THE STUDY 1

Introduction 1
Background of the Study 3
History of Heart Failure 3
Cost of Heart Failure 4
Impact of Quality of Life 5
Home Health and Heart Failure 6
Local Home Health Agency Microsystem Assessment 6
Purpose 7
Patients 7
Providers 8
Process 9
Patterns 11
Statement of the Problem 11
Purpose 11
Inquiry Questions 12
Conceptual Framework 13
Significance of the Study to Nursing 13
Operational Definition of Terms 14
Assumptions and Limitations 16
Organization of the Remainder of the Study 16

2. REVIEW OF LITERATURE 18

Introduction 18
Search Methods/Results 18
Topics 19
Heart Failure Guidelines 19
Self-Care 20
Beta-blocker and ACE Inhibitor Use 21
Sodium Intake and Weight Management 23

3. METHODS 26

Introduction 26
Design Overview 26
Setting/Sample and Population 28
Protection of Human Subjects 28
Procedures/Measures 28
Data Analysis 30
Summary 31

TABLE OF CONTENTS CONTINUED

3. RESULTS 32

Introduction 32
Sample Characteristics 32
Heart Failure Assessment Tool Components 34
Weight Management 34
Medications 38
Diet 41
History of Smoking 43
Signs and Symptoms 44
Summary 46

5. DISCUSSION AND RECOMMENDATIONS 47

Introduction 47
Discussion 49
Recommendations 53

REFERENCES CITED 55

APPENDIX A: Assessment Tool 57

LIST OF TABLES

Table Page

1. Patient Population for Year 2012 8

2. Home Health Agency's 2012 Heart Failure Population 8

3. Patient Gender 33

4. Patient Age 33

5. Patient Race 33

6. Heart Failure Class 34

7. Heart Failure Type 34

LIST OF FIGURES

Figure Page

1. Current Care Management of a Patient with Heart Failure, 2013 10

2. Root Cause Analysis (RCA) of health Failure ER Visits/Hospitalizations Related to Self-Care Deficits, 2013 12

3. Patients and Daily Weights 35

4. Frequency of Weights 36

5. Reasons for Not Weighing Daily 36

6. Patient/Caregiver Independence with notifying Provider of Weight Gain 37

7. Reasons for Not Notifying Provider of Weight Gain 37

8. Patients Taking Beta-Blockers 39

9. Reasons for Not Taking a Beta-Blocker 39

10. Patients with LOVSD Taking an ACE Inhibitor or an ARB 40

11. Reasons for Patients with LVSD Not Taking an ACE Inhibitor or ARB 40

12. Sodium Compliance Knowledge 41

13. Sodium Non-Adherence Reasons 42

14. Sodium Interpretation on a Food Label 42

15. History of Smoking 43

16. Patient's Smoking Status 44

17. Signs and Symptoms of Worsening Heart Failure Identified 45

ABSTRACT

Heart failure (HF) is a costly and debilitating disease that impacts the quality of life of not only the patients who suffer from its effects but also the ones who care for them. Home health is a post-acute care service that has the potential to impact the effects heart failure has on patients, their caregivers, and the healthcare system. Evidence-based management of home health HF patients improves self-care and decreases readmission and admission rates. Currently no standardized HF needs assessment tools exist for use in the target home health agency. Visiting clinicians need a tool to identify patient/caregiver self-care deficits in order to appropriately provide education and interventions. The purpose of this project is to utilize an existing guideline to create a HF needs assessment tool. This tool was implemented by home health clinicians when admitting a HF patient to services. The design of the tool was guided by the literature reviewed and customized to the home health setting. Age, gender, and race were included on the tool to capture basic demographic information. Other data consisted of differentiating HF type, class, and whether it is the patient's primary or secondary diagnosis. The tool was then divided into different assessment areas: Daily weight practices; Patient/caregiver's knowledge of reporting a weight gain; Guidelines for recommended medications; Knowledge of sodium intake; Knowledge of food labels; Past/present smoking; and Patient/caregiver's independence with identifying signs and symptoms of worsening heart failure. Fifteen females and fifteen males were assessed with the heart failure tool. The results showed that the majority of patients with any class or type of heart failure were not meeting the recommended guidelines. The reasons identified for not meeting the guidelines consisted of knowledge deficit, functional limitations, forgetfulness, lack of equipment, and refused. Many of the medication guidelines were not met due to the drug not being ordered. It is recommended that interventions be designed to address each assessment area and an evaluation tool be implemented to determine if the intervention made a difference. Information gathered should be stored electronically for quality improvement initiatives

CHAPTER 1

INTRODUCTION TO THE STUDY

Introduction

Home health services represent thirty-three percent of post-acute care services for patients with heart failure. Many of these patients are admitted to home health directly from an acute care facility in hopes of preventing a decline in their condition, a re-hospitalization, and increased medical expenses. Unfortunately, heart failure is difficult to manage due to the progressive downhill trajectory and exacerbations that occur (Madigan, 2008).

Britz and Dunn (2010) report that "Self-care deficits have been found to be significantly associated with negative healthcare outcomes among heart failure patients" (p. 480). However, home health is in a unique position to influence patient/caregiver knowledge and self-care in order to facilitate identification of worsening cardiovascular status and doctor notification. Visiting clinicians are able to assess the patient's real world lifestyle in an uncontrolled environment and help modify this environment for optimal disease management.

It is imperative that patients or their caregivers are knowledgeable about caring for heart failure and identifying signs and symptoms of worsening status. Prompt notification of these symptoms may allow a change in treatment and therefore prevent a costly re-hospitalization.

Guidelines have been developed to help pave the way for home health clinicians in improving patient outcomes. The Institute for Clinical Systems Improvement (ICSI) describes the guidelines available to healthcare providers in caring for the patient with heart failure. They identify signs and symptoms of worsening heart failure that should be reported. These include: dyspnea, orthopnea, cough, edema, fatigue, weakness, and a weight gain of two pounds over night or five pounds in one week (ICSI, 2011).

All types and classes of heart failure patients should be taking a beta-blocker due to its ability to reduce mortality, increase ejection fraction, improve exercise duration, and decrease hospitalizations. ICSI (2011) also shows that patients with left ventricular systolic dysfunction should be taking an angiotensin converting enzyme (ACE) inhibitor or and angiotensin receptor blocker (ARB) due to the drugs ability to decrease mortality, progression of heart failure, and need for hospitalization. ACE inhibitors are recommended first but ARBs are to be used if ACE inhibitors are not tolerated (ICSI, 2011).

Dietary indiscretion remains the most common cause of exacerbation of heart failure. When heart failure patients consume too much sodium, it causes fluid retention that can lead to a decompensated condition and hospitalization. It is recommended that daily sodium intake should not exceed 2,000 mg (ICSI, 2011). Patients or their caregivers should be able to read and interpret food labels to keep within the daily limits of sodium intake.

Cigarette smoking is considered an independent risk factor for heart failure. ICSI (2011) states that smoking cigarettes is one of the precipitating factors in the relapse of

heart failure. Fortunately, "Quitting smoking is associated with a significant decrease in risk of all-cause mortality among patients with coronary heart disease" (ICSI, 2011, p 51). The ICSI also claims that in patients with left ventricular dysfunction, quitting smoking decreases morbidity and mortality within two years. Therefore, patients should be assessed for history of smoking and provided smoking cessation material if appropriate (ICSI, 2011). Home health clinicians can use the knowledge they gain from the above guidelines to partner with patients and their caregivers to enhance disease management and self-care.

Background to the Study

History of Heart Failure

Heart failure can be traced back to ancient Egypt, Greece, and India (Davis, Hobbs, and Lip, 2000). It is also known that the Romans used foxglove as a medicine to treat heart disease (Davis et.al, 2000). According to Davis et.al (2000), William Harvey described circulation in 1628, Rontgen discovered x-rays, and Einthoven developed electrocardiography in the 1890's. These developments led to improvements in the discovery of heart failure. More recent events include: echocardiography, cardiac catheterization, and nuclear medicine (Davis et.al, 2000).

Bloodletting and leeches were used for centuries as heart failure treatment, and William Withering wrote about the benefits of digitalis in 1785. In the 19th and 20th centuries, tubes were inserted into edematous peripheries to drain fluid. These tubes were known as Southey's tubes (Davis et al., 2000). Davis et al. (2000) explained that it

was not until the 20th century that diuretics were developed but unfortunately these early diuretics were highly toxic. Thiazide diuretics were not introduced until the 1950's and ACE inhibitors were not developed until the 1970's. It was the development and introduction of ACE inhibitors that demonstrated unequivocal survival benefits in patients with heart failure (Davis etal., 2000).

Cost of Heart Failure

Heart failure continues to be a major concern for Americans. According to the ICSI (2011), the estimated 2004 prevalence of heart failure in adults age 20 and older in the United States was 5.2 million. This was equally distributed among men and women. Madigan (2008) states that even though treatments and medications continue to increase in availability, heart failure is expected to increase in prevalence as well. Davis et.al (2000) claims that the prevalence of heart failure per 1000 people is as follows: Eight men and eight women ages 50-59, 66 men and 79 women ages 80-89, and 7.4 men and 7.7 women of all ages. Heart disease is also the leading cause of death internationally (Madigan, 2008).

Heart failure also has a costly impact on our nation. Titler , Jensen, McCloskey Dochterman , Xie, Kanak, & Reed (2008) discussed how heart failure is the most expensive of the Medicare diagnoses in the United States. The mean total charges in 2000 were $15,293 per visit with the average American hospital losing more than $1,000 per visit (Titler et al., 2008). Linden and Adler-Milstein (2008) claimed that "approximately 14% of Medicare beneficiaries have heart failure (and) account(ed) for 43% of Medicare spending (p.1). Thomas and Rich (2006) announce that:

> Heart failure is the leading cause of hospitalization among older adults (more than 1 million hospitalizations annually), and it is a major cause of chronic disability, impaired exercise tolerance, reduced quality of life, loss of independence, institutionalization, and death among older Americans (p. 25).

Heart failure also has a costly impact on home health services. “Home health care represents a significant proportion of post-acute care provision and a significant financial expenditure: $2.2 billion per year for heart failure alone (Madigan, 2008)."

Impact on Quality of Life

Heart failure is a disease that requires management to maintain health. This maintenance takes time and resources from patients and their caregivers. This can affect their quality of life; however, Britz and Dunn (2010) identified that increasing medication compliance, following a low-sodium diet, weighing daily, and identifying early warning symptoms of worsening heart failure have led to decreased hospitalizations and an increase in quality of life.

It is when fluid retention, edema, and shortness of breath are unrecognized or ignored that hospitalization occurs and decreases quality of life. Patients have reported that it is the shortness of breath and fatigue that interfered most with their ability to do normal activities of daily living. They report that frequent rest periods during the day and difficulty with walking and climbing stairs impacted the quality of their life. Patients also identified that length of hospital stay and decreased recreational activities were directly related to heart failure symptoms (Britz and Dunn, 2010).

Increased self-care abilities empower patients and their caregivers. When they feel empowered, they are more likely to take initiative and responsibility for proper

disease management. With appropriate self-care, disease progression is slowed and quality of life is improved.

Home Health and Heart Failure

Traditionally, there were several common measures of outcomes in home health care. These consisted of the percentage of home health patients admitted to the hospital, where patients resided upon discharge from home health, and improvement in functional status (Madigan, 2008). Unfortunately, more disease specific outcomes were not accounted for and are still not accounted for today.

According to Strategic Healthcare Programs (SHP) (2011), 116 patients were admitted to a local home health agency with a primary or other diagnosis of heart failure during the year 2011. This represents 13% of the total admissions for the year 2011. From this same home health agency, 14 patients were hospitalized with heart failure related complications and 11 patients were seen in the emergency room with heart failure related complications (SHP, 2011).

Local Home Health Agency Microsystem Assessment

A microsystem assessment was conducted for a home health agency that provides care to heart failure patients in north central Montana. The Dartmouth Microsystems Improvement Curriculum guided this process (Nelson, Bataldan, & Godfrey, 2007). Microsystems can be thought of as units of care. Together microsystems make up the larger macrosystem. A home health agency can be thought of a unit of care within the larger macrosystem that includes other levels of care.

The assessment of the home health agency included a review of the 5 P's (purpose, patients, professionals, processes, and patterns). After the 5 P's assessment was conducted, a problem was identified and a plan to address the problem was made.

Purpose. The agency purpose is guided by an umbrella organization with values including quality and safety; cost effectiveness and efficiency; respect and compassion; service and stewardship; leadership and teamwork; and integrity. Twelve of the home health staff were interviewed regarding their perception of the purpose of home health. It was found that: the purpose of the home health microsystem is to facilitate patient safety and independence at home. In the case of the heart failure patient, the home health agency has a responsibility to assure patient /caregiver self-management of the disease.

Patients. For year 2012 this home health agency's patient population consisted mostly of patients over 80 (n=487), 66 to 80 (n=400), 51 to 65 (n=186), 20 to 50 (n=46), and pediatric n=2 (See Table 1). Females made up the largest group of patients at 62.3%. Also for this year: 181 patients were admitted to this home health agency with a primary or other diagnosis of heart failure. Of these patients, 13 were re-hospitalized with heart failure related symptoms while 11 had emergency room visits related to heart failure (See Table 2).

Table 1. Patient Population for year 2012

Home Health Agency's Patient Population (n=1,121)	
Age	Number of Patients
Over 80	487
66-80	400
51-65	186
20-50	46
Pediatric	2

Table 2. Home Health Agency's 2012 Heart Failure Population

Heart Failure Patients (n= 181)	
Emergency Room Visits	Hospitalizations
11	13

Additional data regarding heart failure patients in year 2012: 34 out of the 181 were re-hospitalized for "any cause" this may not be a re-admission related to heart failure. 31 had emergency room visits for "any cause".

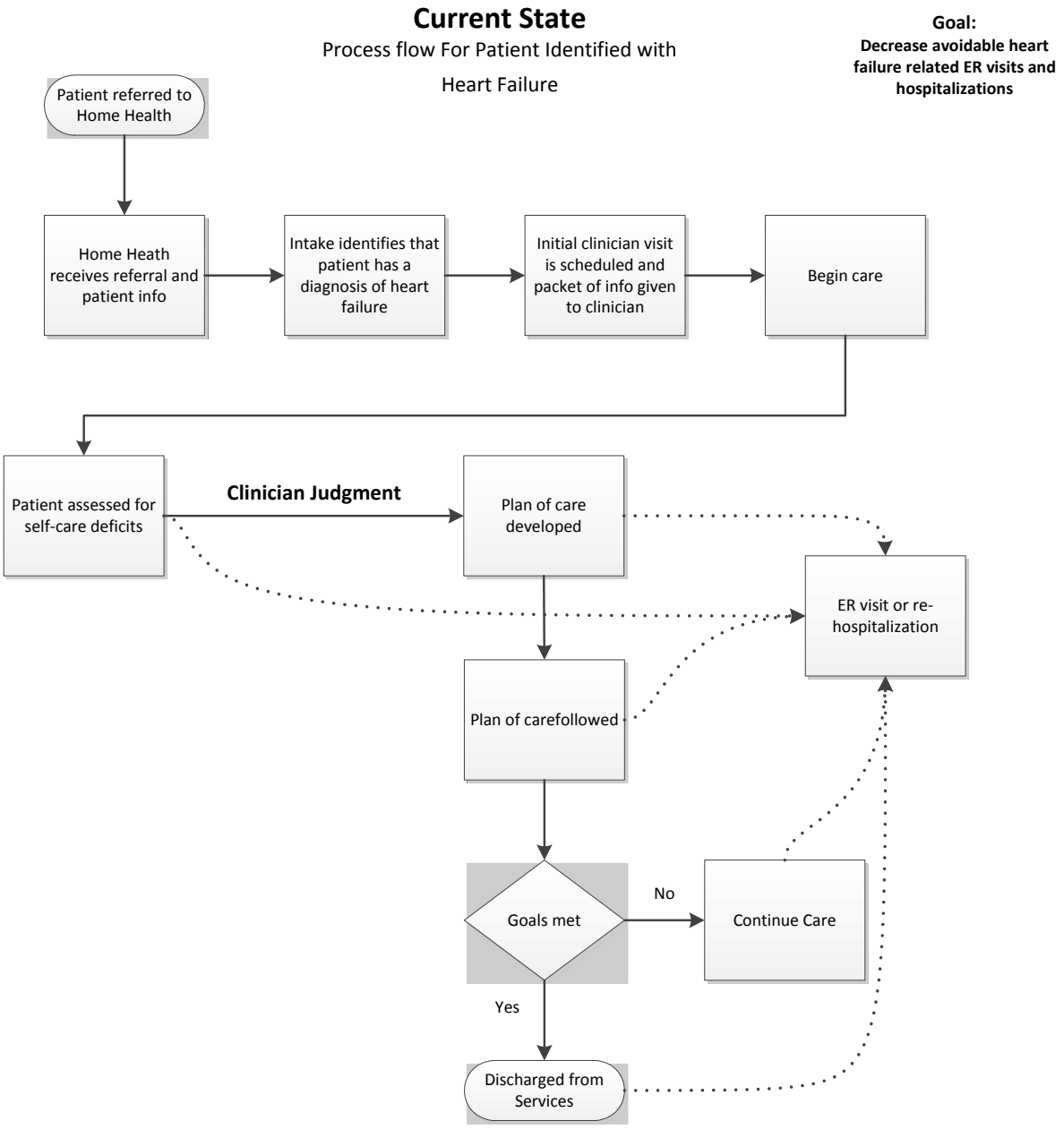
For year 2011: There were 116 patients admitted to home health with a primary or other diagnosis of heart failure. 24 were re-hospitalized for "any cause" 14 re-hospitalized specifically for heart failure exacerbation.

Providers. The staff that provide care to home health heart failure patients include nurses, physical therapists, occupational therapists, speech therapists, and/or social

workers. This home health agency has a total of 26 FTEs. The breakdown is as follows: Nursing = 7.6, Administration = 3, Physical Therapy = 5.8, Occupational Therapy = 3.6, Speech Therapy = .6, Secretaries = 5. The nurses also rotate a call schedule. There is one nurse on call every night and two on the weekends.

Process. Figure 1 displays the current process used to admit patients to services and deliver care through discharge. As can be seen in figure one, the patient is referred to home health, home health receives the referral, intake identifies what diagnosis the patients has (including heart failure), the initial clinician visit is scheduled and a packet of patient information is given to the clinicians who are scheduled. The clinicians then conduct an initial visit and assessment of patient needs. This assessment and creation of the plan of care is based off of clinician judgment. The plan of care is then developed and followed. Before the patient is discharged from home health the clinician reassesses the patient to determine is goals have been met. If goals have been met, the patient is discharged from home health services. If goals have not been met, the clinician extends the plan of care. The patient may experience an emergency room visit or hospitalization at any point during a home health episode (See Figure 1).

Figure 1. Current Care Management of a Patient with Heart Failure, 2013



As can be seen in Figure 1, current management of patients (including heart failure patients), what self-care deficits the patient is assessed for and what is included in the plan of care are left to individual clinician judgment and lack standardization.

Patterns. How many heart failure patients are admitted to home health and how many of them have emergency room visits and hospitalizations related to heart failure are patterns that home health agencies track. Team meetings are held every Monday, Wednesday, and Friday to discuss newly admitted patients and concerns.

Clinicians will also consult with each other regarding patients in common either face to face or via telephone. At this time further patient problems are discussed and care recommendations are made.

Statement of the Problem

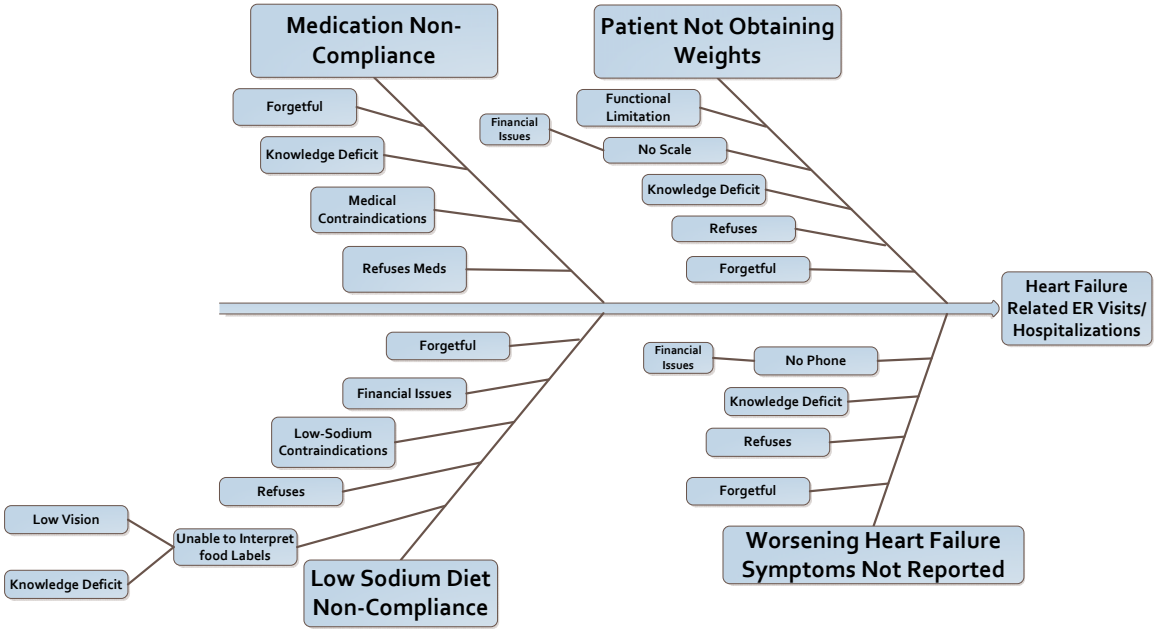
Evidence-based management of home health heart failure patients will improve self-care and decrease readmission and admission rates. Currently there is no standardized heart failure specific needs assessment tool for use in the target home health agency. Visiting clinicians need a tool to identify patient/caregiver self-care deficits in order to appropriately provide education and interventions.

Purpose

The purpose of this project is to utilize an existing guideline to create a heart failure needs assessment tool. This tool will be piloted by clinicians to assess patients and/or their caregivers for self-care deficits. The overall goal is to improve outcomes through the identification of self-care deficits and potential interventions. The long term goal is to improve clinical outcomes and reduce hospital readmission and emergency room visits for patients with heart failure. A root cause analysis was conducted to identify

self-care deficits that may lead to a hospitalization or emergency room visit (Figure 2). The fishbone diagram shows the potential causes of readmission. This information was collected by reviewing guidelines that recommend heart failure management strategies.

Figure 2. Root Cause Analysis (RCA) of Heart Failure ER Visits/Hospitalizations Related to Self-Care Deficits, 2013



Inquiry Questions

The following question was formulated to assist in the design of the project: On admission, what self-care components of an established clinical guideline are home health heart failure patients currently meeting to prevent worsening of their condition?

Conceptual Framework

Orem's Self-Care Deficit Theory of Nursing was used to guide this project because this framework supports the idea of a needs assessment tool. This theory explains self-care agency as the ability of a mature person to care for him/herself. This includes identifying needs and following treatment plans. If this person is unable to provide this self-care, a dependent-care agent, or caregiver, may do so. If a patient or their caregiver is unaware of the patient's needs or how to meet them, a self-care deficit occurs (Britz and Dunn, 2010).

The heart failure needs assessment tool was designed to assist providers and patient in identifying self-care deficits. The tool assesses the patient and/or caregiver's ability or knowledge in meeting standardized heart failure guidelines. If a self-care deficit is found, the nursing agency (or clinician) can provide interventions and education to assist with development of their self-care agency (Tomey and Alligood, 1998).

Significance of the Study to Nursing

Creating a heart failure needs assessment tool for use in home health is important in the identification of self-care needs of the home health heart failure population. This tool was built upon evidence based guidelines to aid clinicians in the development of a treatment plan. When needs are adequately assessed, patients can benefit from appropriate interventions.

Self-care and disease management have a cascading effect. When a patient/caregiver is knowledgeable and compliant with managing a disease at home,

emergency room visits and re-hospitalization rates go down. This in turn decreases healthcare costs. It also increases a patient's quality of life by decreasing worsening signs and symptoms of heart failure.

Nursing prides itself on patient care. This needs assessment tool benefits the profession of nursing by identifying needs in the home health heart failure population and facilitating the opportunity for nurses to better care for these patients. It gives nurses the credibility they deserve by integrating evidence based knowledge into practice.

Operational Definition of Terms

Heart Failure: A syndrome caused by cardiac dysfunction. Cardiac dysfunction has many etiologies including hypertension and ischemic disease (Heart Failure Society of America (HFSA), 2010).

Heart failure is diagnosed as left ventricular systolic dysfunction, left ventricular diastolic dysfunction, or right sided heart failure. The American Heart Association (2012) describes the different types of heart failure as follows:

Left Sided Systolic failure: The left ventricle loses its ability to contract normally. The heart can't pump with enough force to push enough blood into circulation.

Left Sided Diastolic failure: (also called diastolic dysfunction)**:** The left ventricle loses its ability to relax normally (because the muscle has become stiff). The heart can't properly fill with blood during the resting period between each beat.

Right-sided heart failure: The heart's pumping action moves "used" blood that returns to the heart through the veins through the right atrium into the right ventricle. The right ventricle then pumps the blood back out of the heart into the lungs to be replenished with oxygen.

Right-sided or right ventricular (RV) heart failure usually occurs as a result of left-sided failure. When the left ventricle fails, increased fluid pressure is, in effect,

transferred back through the lungs, ultimately damaging the heart's right side. When the right side loses pumping power, blood backs up in the body's veins. This usually causes swelling in the legs and ankles.

Along with the different types of heart failure, come classes of heart failure. A patient's type of heart failure is classified based on his/her presenting signs and symptoms of heart failure upon exertion and/or rest. The New York Heart Association Classification of Heart Failure is the classification system that will be used during this project. This system classifies heart failure as I, II, III, or IV. The American Heart Association (2012) defines the different classes as follows:

Class I: Patients with cardiac disease but resulting in no limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, dyspnea or anginal pain.

Class II: Patients with cardiac disease resulting in slight limitation of physical activity. They are comfortable at rest. Ordinary physical activity results in fatigue, palpitation, dyspnea or anginal pain.

Class III: Patients with cardiac disease resulting in marked limitation of physical activity. They are comfortable at rest. Less than ordinary activity causes fatigue, palpitation, dyspnea or anginal pain.

Class IV: Patients with cardiac disease resulting in inability to carry on any physical activity without discomfort. Symptoms of heart failure or the anginal syndrome may be present even at rest. If any physical activity is undertaken, discomfort increases.

Visiting Clinician: A home health nurse, physical therapist, occupational therapist, or a speech therapist.

Dyspnea: Shortness of breath.

Orthopnea: Shortness of breath worsens while laying down but is relieved by sitting up.

Edema: The collection of fluid outside of the vasculature. Also called third spacing of fluid. May be noted by swollen extremities and pitting marks when pressure is applied.

Beta-Blockers: "A class of heart drugs that block the effect of adrenaline on the heart. Then the heart rate will not increase during stress, and the workload of the heart will be reduced (The Noninvasive Heart Center, 2012)."

ACE Inhibitors: "Angiotensin converting enzyme inhibitors. A class of drug that lowers blood pressure by blocking the formation of a neurohormone known as angiotensin (The Noninvasive Heart Center, 2012)."

Self-Care Agency: Ability to care for oneself.

Assumptions and Limitations

Upon development of the home health heart failure needs assessment tool, it was assumed that patients and their caregivers would convey honesty while answering the assessment questions. If a patient is unable to care for self, it was assumed they had a caregiver available. Patient/caregiver literacy, ability to understand, and mental competency was also assumed. Correct documentation and diagnosis of the type of heart failure and physician knowledge of the medication recommendations was also assumed.

Organization of the Remainder of the Study

Chapter two is a review of the literature regarding evidence based management of the heart failure patient. Included are the search methods, results and topics which include heart failure guidelines, self-care, beta-blocker and ACE inhibitor use, and sodium intake and weight management. Chapter three introduces the methods used to design the assessment tool. The setting, sample, and population are discussed. Protection

of human subjects is included along with procedures, measures, and data analysis. Chapter four presents the results of the project. This includes the aggregated data from the assessment tools. Tool components are analyzed and include weight management, medications, diet, history of smoking, and signs and symptoms of heart failure. Chapter five discusses the results and makes recommendations for future use of the tool. Included are ideas for intervention and evaluation tools and an electronic means of collecting and storing data for quality improvement initiatives.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

Literature was reviewed for evidence to support development of a home health heart failure needs assessment tool. The author reviewed studies and guidelines relevant to the care of the heart failure patient in their own home. Among these were the heart failure Guidelines from ICSI (2011) and HFSA (2010). Other literature emphasized patient self-care, Beta-blocker and ACE Inhibitor use, and sodium intake and weight management.

Search Methods/Results

The Cumulative Index to Nursing and Allied Health Literature (CINAHL) with full text was used to find most of the literature. One article was found using the Google search engine. A chapter on conceptual framework from a book was also reviewed.

Search terms used consisted of: heart failure guidelines, home health and heart failure, history of heart failure, heart failure and self-care, heart failure and Orem, beta-blocker use and heart failure, heart failure and cost, heart failure and weight management, heart failure outcomes, heart failure and patient knowledge, heart failure signs and symptoms, cardiac drugs and heart failure, heart failure and sodium, reading food labels, and heart failure and gender.

While conducting a search in CINAHL, many articles were found but only the most relevant were reviewed. Evidence that supported home health interventions with the heart failure population was given priority. However, equally important articles were related to the guidelines developed by ICSI (2011) and HFSA (2010).

Topics

Heart Failure Guidelines

The heart failure Guidelines from ICSI (2011) and HFSA (2010) were reviewed for home health applicability and used to assist in the development of a home health heart failure needs assessment tool. Both of the above agencies reviewed literature to develop their heart failure guideline. They also used an evidence grading system to determine the strength of the evidence reviewed.

The evidence grading system used by ICSI (2011) was Grading of Recommendations Assessment, Development and Evaluation (GRADE) system. The GRADE system categorized evidence based on high, moderate, and low quality. High quality indicated that further research is very unlikely to change confidence in the estimate of effect. Studies with moderate quality are not as strong and further research is likely to have an important impact on confidence in the estimate of effect and may change the estimate. Evidence with low quality is very likely to be influenced by future research.

The HFSA (2010) used the Hierarchy of Types of Evidence to determine the type of evidence available to support their guideline. This hierarchy is divided into three levels: level A, level B, and level C.

> *Level A*: Randomized, Controlled, Clinical Trials. May be assigned based on results of a single trial.
>
> *Level B*: Cohort and Case-Control Studies, post hoc, subgroup analysis, and meta-analysis, prospective observational studies or registries.
>
> *Level C*: Expert opinion, observational studies-epidemiologic findings, safety reporting from large-scale use in practice.

Both the ICSI (2011) and HFSA (2010) recommend implementation of the following: education of patient/caregiver on self-management strategies including diet, weight monitoring, medications, signs/symptoms of worsening heart failure and physician notification. Other literature regarding these guidelines was further reviewed and categorized into aspects of self-care, beta-blocker and ACE inhibitor use, and sodium intake and weight management.

Self-Care

Britz and Dunn (2010) conducted a cross-sectional descriptive study to determine self-care deficits among HF patients at the time of discharge from an acute care facility. The study sought to find a connection between self-care deficit and decreased quality of life. The authors concluded that patient confidence with self-care has a lot to do with the ability of the patient to care for oneself and that confidence increases quality of life. Based on this study's findings, the authors recommend that clinicians assess for lack of

patient confidence in caring for their condition at home and focus interventions to improve this confidence prior to discharge from the acute care facility.

Riegel, Vaughan Dickson, Cameron, et al. (2010) conducted a cross-sectional mixed methods study to assess patient ability to detect and interpret symptoms of heart failure. Twenty-nine people who had a diagnosis of heart failure for at least six months were divided into two groups. One group consisted of HF patients younger than seventy-three and the other group contained HF participants that were seventy-three years of age or older. Findings showed that "older patients had more difficulty in detecting and interpreting shortness of breath than younger patients (p.92)." The authors concluded that there is an age related decline in the early detection of symptoms. They recommended interventions to help patients better identify signs of HF and how to interpret them.

Beta-blocker and ACE Inhibitor Use

Richardson, Bain, Diamond, et al. (2010) conducted a retrospective, survey-weighted, cohort analysis of the 2002 Medicare Current Beneficiary Survey and Cost and Use files to determine the effectiveness of ACE inhibitors, angiotensin receptor blockers (ARB) and beta-blockers in reducing mortality in the elderly Medicare heart failure (HF) population. Their review found that 1062 Medicare beneficiaries during this time had a diagnosis of heart failure and that 577 were eligible to receive these drugs.
The mortality rate among the 577 eligible beneficiaries with HF was 9.7%. The mortality rate for those receiving an ACE inhibitor or ARB alone, a beta-blocker alone, or both an ACE inhibitor or ARB and a beta-blocker, was 6.1%, 5.9% and 5.3% respectively; in the absence of any of the three cardiac drugs, the mortality rate was 20% (p.845).

The authors concluded that use of Ace inhibitors, ARBs, and beta-blockers is associated with reduced mortality in this population. This study supports the use of these guideline-recommended cardiac drugs in the treatment of heart failure in the elderly.

Another study assessed the use of home telemonitoring on patient compliance with beta-blocker use. Antonicelli, Mazzanti, Abbatecola, and Parati (2010) explored whether the use of a telemonitoring system reduced mortality and rate of re-admission to the hospital in elderly HF patients compared to HF patients under normal care without a telemonitor. A total of 57 patients with HF were broken down into the NYHA classes. Thirty-one were class II, Twenty-three were class III, and three were class IV. These patients were randomized into either the control group or intervention group. The control group received standard HF care. The intervention group received HF care plus a telemonitor. The study found that compared to the control group, the telemonitor group had a significant increase in the use of beta-blockers. It was also shown that the twelve month mortality and hospital re-admission rate for HF was substantially lower in the telemonitor group than the control group (Antonicelli, Mazzanti, Abbatecola, & Parati, 2010).

Klapholz (2009) conducted a systematic review of studies that identified the role of beta-blockers in each class of HF. PubMed was searched for articles between the years 1980 to 2008. The author concluded that beta-blockers have been shown to reduce the progression of HF and recommends that patients with asymptomatic HF add a beta-blocker to their medication regimen to prevent symptomatic HF. These recommendations were based on studies with well-designed outcomes trials.

Sodium Intake and Weight Management

Morbidity and Mortality Weekly Report (MMWR) (2012) released an article discussing food categories consumed in the United States (US) that contribute to high sodium consumption. Data was reviewed from the What We Eat in America survey taken from 2007-2008. There were 7,227 participants in the survey.

It was found that the mean daily intake of sodium was 3,266 mg. The top foods contributing to this excess consumption of sodium consisted of: breads, cold cuts, pizza, poultry, soups, sandwiches, cheese, pasta dishes, meat dishes, and snacks.

Due to excessive sodium consumption (over 2,300 mg), it was recommended that food manufacturers and restaurants reduce sodium added to foods. Policies also need to be created and enforced to reduce sodium in foods served in institutional settings. MMWR (2012) recommends that, "Clinicians [should] counsel most patients to check food labels and select foods lower in sodium (p. 92)."

Decker (2002) discussed how to read food and dietary supplement labels. She defined the following: Recommended daily allowance (RDA), Reference daily intakes (RDIs), Daily reference values (DRVs), Dietary reference intakes (DRIs), Percent Daily Value (%DV), and Upper Tolerable Limit (UTL) or Upper Limit (UL).

The author also answered these questions: What is a dietary supplement?, What is a serving size?, How many servings are in a container?, What dose is provided in each capsule or tablet?, How can I tell if a capsule or tablet contains natural or synthetic ingredients?, What does percent daily value mean?, What does the information at the bottom of a nutrition label mean?, and How can I compare products? Due to the guideline

recommending that heart failure patients monitor their sodium intake, the above questions are important when educating these patients on how to read and interpret food labels.

Lennie, Worrall-Carter, Hammash, et al. (2008) studied the relationship of heart failure patients' knowledge, perceived barriers, and attitudes regarding low-sodium diet recommendations to adherence. The study contained 246 patients with heart failure. The authors found that only 80% of these patients reported low sodium diet education and that their recall of that education was poor. Of the above 80%, only 18% stated that they always followed the low sodium recommendations. Some patients claimed it was very hard to follow the low sodium recommendation (n=34), while others found it very easy (n=23). The perception of the rest fell between these two.

The authors stated that, "Instructions aimed at identifying sodium content in processed and packaged foods will have a greater impact on sodium intake (p.10)." They recommend this over targeting discretionary sodium intake like use of table salt. Clinicians also need to educate patients on how to order food in restaurants as this was seen as a main barrier by the patients.

Albert (2012) explained how hypervolemia is a common cause of heart failure exacerbation and hospitalization. She emphasized how important fluid management is in the hospitalized patient due to the Medicare performance measure known as the risk-standardized 30-day all-cause readmission rate. If a patient admitted with hypervolemia due to heart failure is readmitted during the first 30 days after hospital discharge, the hospital loses reimbursement.

The author described the five signs of hypervolemia as: orthopnea, peripheral edema, weight gain, need to increase baseline diuretic dose, and jugular venous distension. Diuretic, ACE inhibitor and Beta-blocker use was encouraged to bring the patient back into a normal blood volume.

Education before hospital discharge, counseling, and follow-up programs after discharge, including transition-to-home, telephone, and other forms of remote monitoring programs, were associated with adherence to prescribed therapies and fewer re-hospitalizations after discharge (p. 26). The author reemphasized the need for nurses to follow up with patients post-discharge from the hospital to focus on disease management.

CHAPTER 3

METHODS

Introduction

Heart failure is a costly and debilitating condition for our country. “In the USA, the estimated annual cost of HF in 2010 is estimated to be $39.2 billion or ~2% of the total US health-care budget” (Braunschweig, Cowie, & Auricchio, 2011). Home health agencies are in a unique position to affect change in the heart failure population. However, there is no standardized disease focused assessment tool available for clinicians to use to be able to assess for heart failure specific needs on discharge from acute care to admission to home health. The purpose of this project is to design a needs assessment tool to focus assessment and data collection efforts on disease specific needs.

Design Overview

The design of the tool was guided by the literature reviewed and customized to the home health setting. Age, gender, and race were included on the tool to capture basic demographic information. Other data that needed to be analyzed was also incorporated and consists of differentiating heart failure type and class.

The tool was then divided into eight assessment areas. In the first area, the patient is assessed for whether or not they are weighing themselves every day. This is answered yes or no. If the answer is no, the clinician must assess if the patient is weighing about every other day, every week, or not at all. Then, it needs to be determined why the patient

is not weighing daily. The options are: knowledge deficit, forgetful, functional limitation, no scale, forgetful, and refuses to weigh. If the patient refuses to weigh daily, a short statement regarding the reason why will be provided.

The second area assesses the patient/caregiver's knowledge of reporting a weight gain. They must be familiar with notifying the physician of a >2lb weight gain over night or >5lb weight gain in one week. If they are not, it needs to be determined why. The options are: knowledge deficit, no phone, forgetful, or refuses to notify provider. Again, statement explaining patient's refusal will be provided.

The third and fourth areas are based on a guideline of recommended medications. Literature reviewed indicated that all patients should be taking a beta-blocker unless contraindicated (Institute for Clinical Systems Improvement, 2011). Also, patients with left ventricular systolic dysfunction should be on an angiotensin converting enzyme (ACE) inhibitor or angiotensin receptor blocker (ARB). If the patient meets the guideline recommendation and is not on one of these medications, it needs to be determined why. The options are: contraindicated, forgetful, not prescribed, or refuses. If the patient verbally indicates that they refuse to take the above medication, it is assessed as a refusal and the patient's reasons are documented. If the recommended medication is not prescribed, a phone call will be made to the provider to investigate possible contraindications. It is assumed that the prescribing practitioner is knowledgeable regarding these recommendations and has prescribed accordingly.

Areas five and six are related to sodium intake. Assessment should be made to find out if the patient/caregiver are knowledgeable of keeping daily sodium intake to no

more than 2,000mg every day. If they are not, the reason needs to be identified. Options are: contraindicated, knowledge deficit, forgetful, or refuses to comply. Patient reasons for refusal will be documented. The patient/caregiver also needs to be independent with interpreting food labels in order to identify sodium intake.

Area seven assesses the patient's smoking history. If they do smoke, the tool is used to determine if the individual smokes more or less than a pack a day. If the patient has a history of smoking but is not currently smoking, it needs to be determined how long ago they quit.

Finally, area eight addresses the patient/caregiver's independence with identifying signs and symptoms of worsening heart failure. Conditions include: dyspnea, orthopnea, cough, edema, fatigue, and weakness.

Setting/Sample and Population

The first thirty patients with a diagnosis of heart failure that are admitted to home health services starting May 1, 2013 will be assessed in their home. The Heart Failure Needs Assessment Tool will be used to gather data as part of regular admission activities.

Protection of Human Subjects

No patient identifying information will be collected on the assessment tool. Patient names and identification numbers are stored separately.

Procedures/Measures

The author will present the Heart Failure Needs Assessment Tool to the interprofessional home health team. The tool will be explained to the clinicians. This will

include how to interpret each question and how to assess the patient to obtain an accurate result. For example, question two assesses the patient/caregiver's independence with notifying their provider of a weight gain. Clinicians will be given a verbal example of how to ask this question. It will be explained that they don't want to give the patient the answer to the question in their question. A sample question to the patient regarding weight gain may be, "If you were to gain weight overnight, how much weight would that be in order to alert you that you need to notify your provider of the weight gain?"

Each clinician will be given information describing the different types and classes of heart failure (American Heart Association, 2012). Clinicians will also be provided with a list of beta-blockers, ACE inhibitors, and ARBs to assist in the identification of these medications upon admit (The Noninvasive Heart Center, n.d.). A copy of a nutrition label will also be provided as a tool the clinicians can use to evaluate the patient/caregiver's ability to interpret a food label. The author will reassure the clinicians that she will assist in any investigation that needs to be done in order to find information or answers to any of the tool components.

Once the clinicians are comfortable with the assessment tool and all questions and concerns have been addressed, implementation of the tool may begin. During the initial home health visit, the clinician will go over the assessment tool with the patient and/or their caregiver and data will be collected at this time. The clinicians will include interventions in their plan of care that address any needs found during the assessment.

The tool will be returned to the author upon completion. The author will be able to track the location of the tool through the use of a tracking number. This number will

correspond to the patient's home health identification number and the clinician implementing the tool. Once the tool is returned to the author, a check mark will be placed next to the tracking number to indicate completion. The author will follow up with the clinicians for any outstanding assessment tools.

Data Analysis

The Heart Failure Needs Assessment Tool forms will be collected over a six month period of time. At the end of this time period, the data will be aggregated and analyzed. It will be determined what percentage of patients weigh themselves daily, every other day, or not at all. For the percentage of patients who do not weigh daily, data will show the reason(s) why.

Data will also show the percentage of patient/caregivers who verbalize independence with notifying the physician of the designated weight gain and the percentage who are not. For those who are not, the reasons why will be analyzed.

Analysis will reveal the percentage of patients who are on a beta-blocker. It will also be determined how many patients with left ventricular systolic dysfunction are taking an ACE inhibitor or an ARB. Data will be analyzed to determine the amount of patient/caregivers who are knowledgeable of keeping daily sodium intake to no more than the recommended amount and how many accurately demonstrate interpreting food labels.

It will be determined how many of these patients currently smoke or have a history of smoking. Data will also show what percentage of smokers smoke a pack a day or more and how many of them smoke less than a pack a day. Data analysis will also

show which of the signs and symptoms of worsening heart failure patients are able to identify. If the patient refuses to comply with guidelines one through five, a qualitative analysis will be done to identify the patient's reasons for refusal.

Summary

In an effort to decrease the burden of heart failure on our society, systems need to be in place to address the self-care aspects of disease management. The Quality Improvement Heart Failure Needs assessment Tool: On Admit to Home Health is an endeavor to address such a necessity. The outcomes of this pilot project will help determine the future use of the tool for management of patients admitted to home health with a primary or secondary diagnosis of heart failure.

CHAPTER 4

RESULTS

Introduction

The purpose of this project was to create and pilot a heart failure assessment tool developed from the Institute for Clinical Systems Improvement (ICSI) guideline. After tool development and approval from the Montana State University (MSU) Institutional Review Board, data collection using the Heart Failure Needs Assessment Tool took place with 30 patients admitted to Home Health between May 1, 2013 and May 31, 2013 with a primary or secondary diagnosis of heart failure. The results of this project consist of the information gathered on the Heart Failure Needs Assessment Tool. Thirty different patients were assessed with the heart failure tool within a month's period of time. The data collected consisted of the following: Demographic data including age, Gender, Race, HF Class, HF Type and clinical data including weight management, medications, and diet, history of smoking, and signs and symptoms of worsening heart failure. This information was gathered by clinicians that were trained in use of the tool. The collection of this data took place in the patient's home environment.

Sample Characteristics

The characteristics of the 30 patients assessed were typical of home health patients. Home health serves patients of both sexes and of a primarily elderly population. See Tables 3 and 4.

Table 3. *Patient Gender*

	n/N	%
Male	15/30	50
Female	15/30	50

Table 4. *Patient Age*

	Age
Youngest	50
Oldest	93
Average	78

The races that were screened were also indicative of the area. Whites made up the majority while other races were also served. See Table 5.

Table 5. *Patient Race*

	n/N	%
White	27/30	90
Native American	2/30	6
Asian	1/30	3

Heart failure class consisted of what is typically seen in the community of home health patients. See Table 6. However, it is surprising that there were not more class four heart failure patients. Before the results of this project were calculated, class four (end stage heart failure) was believed to be the major class in the agency's heart failure population.

Table 6. *Heart Failure Class*

	n/N	%
One	7/30	23.3
Two	3/30	10.0
Three	13/30	43.3
Four	0/30	0.0
Not Specified	1/30	3.0

The major type of heart failure found consisted of left diastolic while right sided heart failure was the least prevalent. See Table 7.

Table 7. *Heart Failure Type*

	n/N	%
Left Diastolic	13/30	43.3
Left Systolic	7/30	23.3
Left Diastolic and Systolic	5/30	16.6
Right Sided HF	2/30	06.6
Not Specified	3/30	10.0

Heart Failure Assessment Tool Components

Weight Management

While assessing whether or not patients were weighing every day, it was found that few were in fact weighing daily while the majority were not. (see Figure 3). Of the

majority of patients that were not weighing daily, few weighed every other day, some were weighing weekly, but most were not weighing at all. (see Figure 4). For patients who were not weighing daily, the following reasons were identified: most had a knowledge deficit, some had functional limitations, many did not have a scale, one was forgetful, and some refused (see Figure 5). Reasons for refusing to weigh included: “has never done it”, “doesn’t feel the need”, and “states weight never changed so quit weighing”. Patients and/or their caregivers were also assessed for the ability to notify their provider of a 2lb or more weight gain over night or a 5lb or more weight gain in one week. (see Figure 6). It was found that a few were independent with this task but the majority may need assistance in knowing when and how to notify their provider. Of the majority that were not independent with notification of the specified weight gain, the following reasons were identified: most had a knowledge deficit and one was not-specified. Not having a phone, being forgetful and refusing were not seen as reasons for not meeting the guideline. (see Figure 7).

Figure 3. Patients and Daily Weights

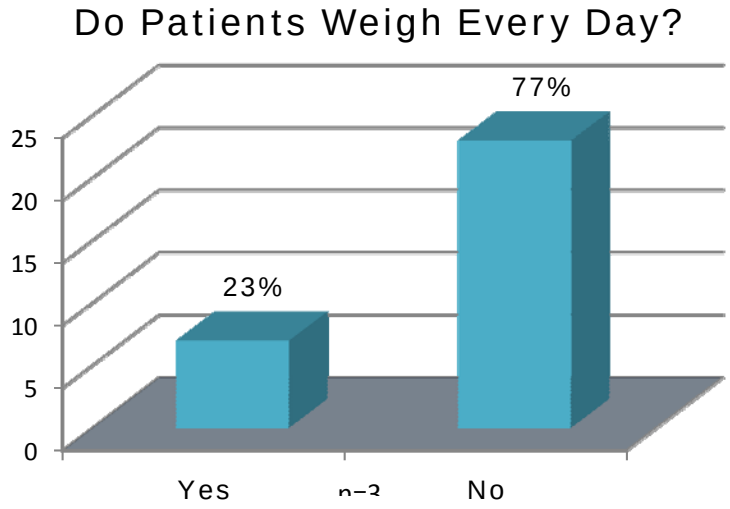


Figure 4. Frequency of Weights.

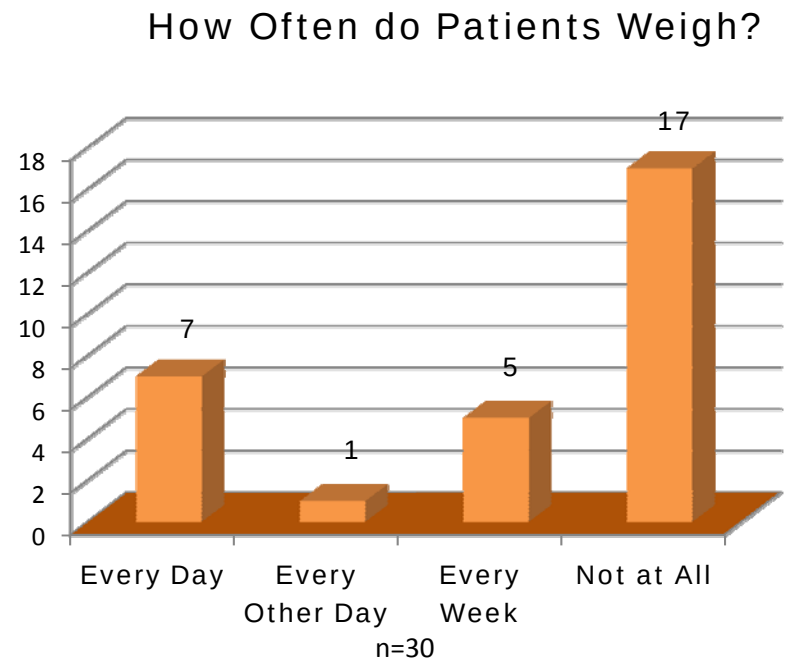


Figure 5. Reasons for not weighing daily.

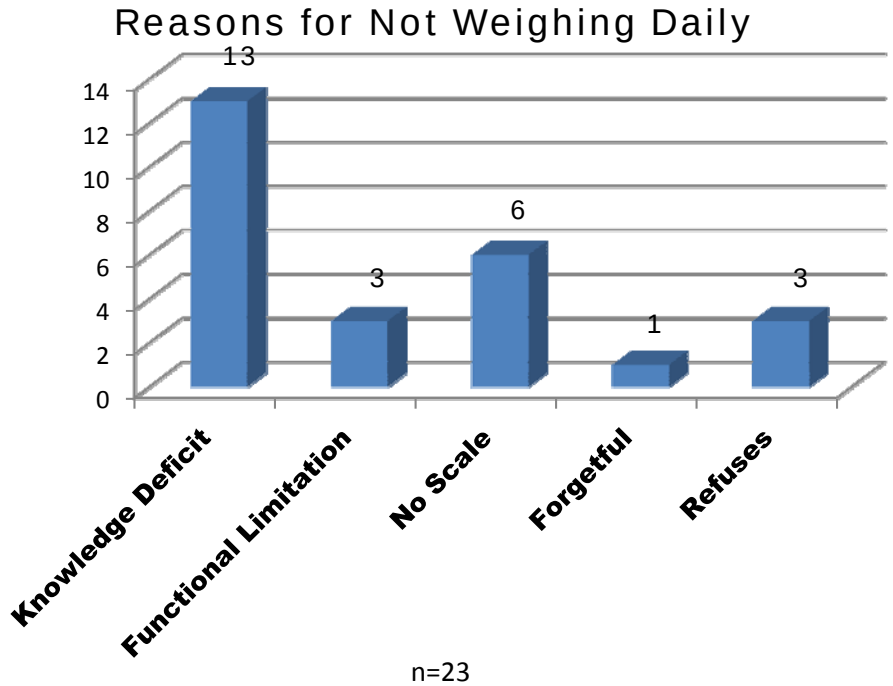


Figure 6. Patient/Caregiver Independence with Notifying Provider of Weight Gain.

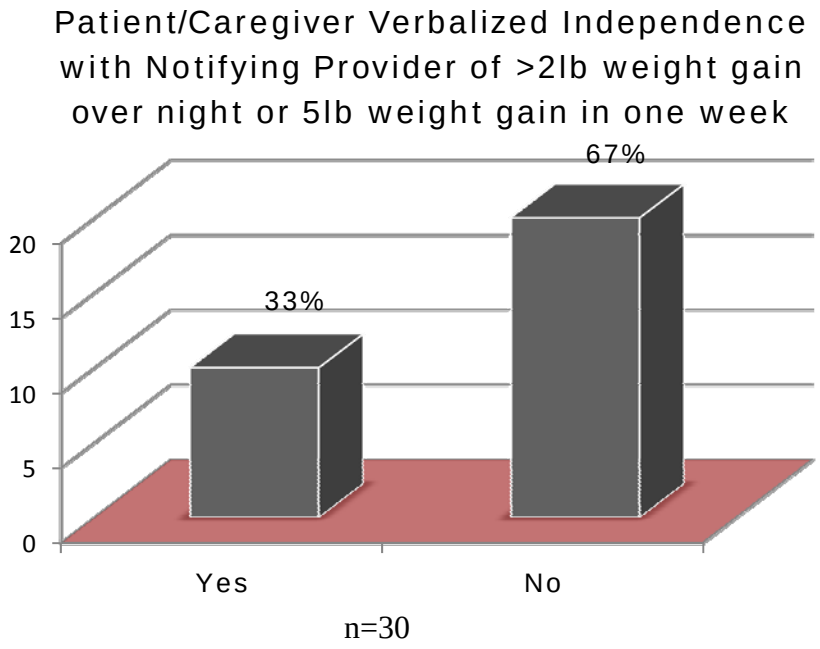
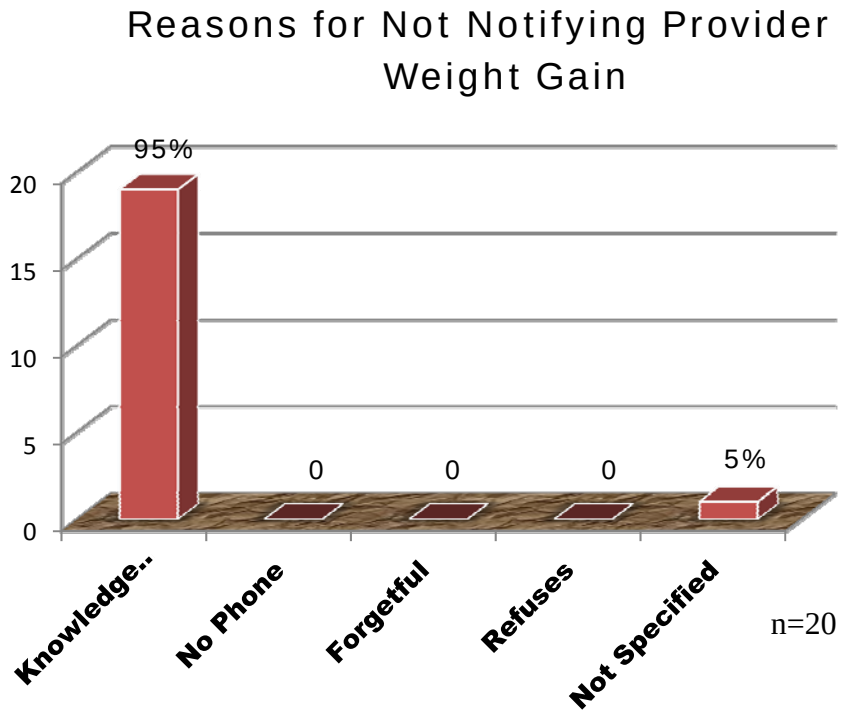


Figure 7. Reasons for Not Notifying Provider of Weight Gain.



Medications

The guideline states that all patients with heart failure should be taking a beta-blocker unless otherwise indicated. It was found that most patients were taking a beta-blocker and only a few were not. (see Figure 8). Of the few patients identified as not taking a beta-blocker, some had contraindications for it but most were just not prescribed the medication. Patient/caregiver forgetfulness and refusal were not indicated as reasons for not taking a beta-blocker. (see Figure 9). Almost half of the thirty patients were identified as having left ventricular systolic dysfunction (LVSD). According to the guideline, these patients should be either taking an ACE inhibitor or an ARB. It was found that only a fourth of these patients were on one of these medications while an astonishing three fourths were not. The reasons for most of these patients not taking one of the above medications were identified. Only one was contraindicated while most of them just were not prescribed the medication. Prompt provider notification by the assessing clinician was indicated for patients who were not prescribed the above medication. Forgetfulness and refusal were not indicators of this medication not being taken. (see Figures 10 and 11).

Figure 8. Patients Taking beta-blockers.

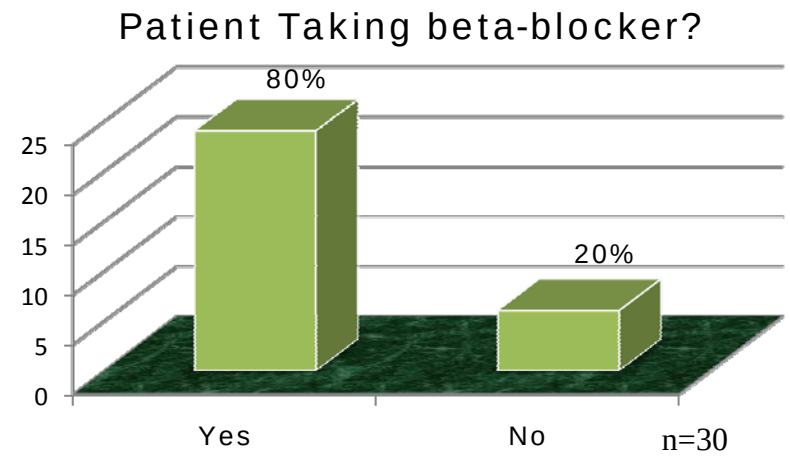


Figure 9. Reasons For Not Taking a beta-blocker.

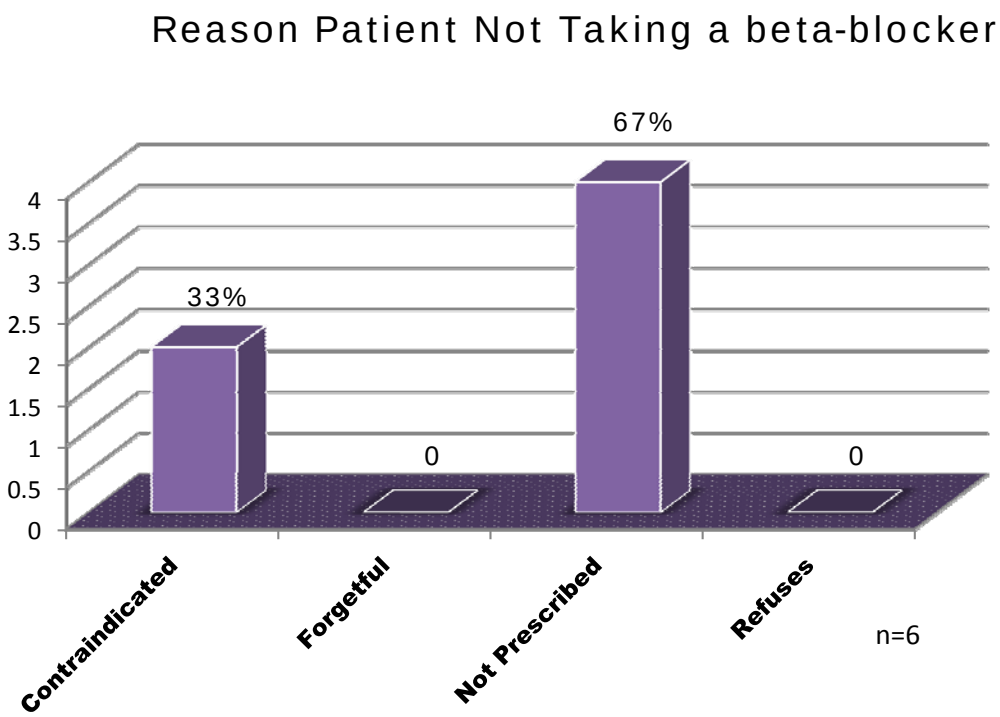


Figure 10. Patients With LVSD Taking an ACE Inhibitor or an ARB.

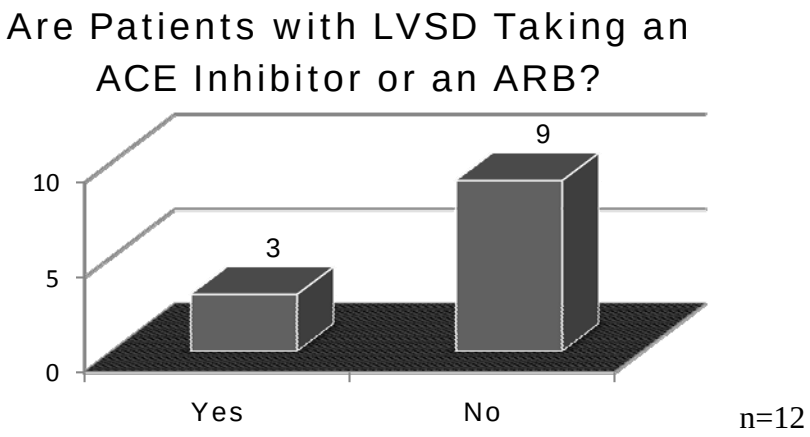
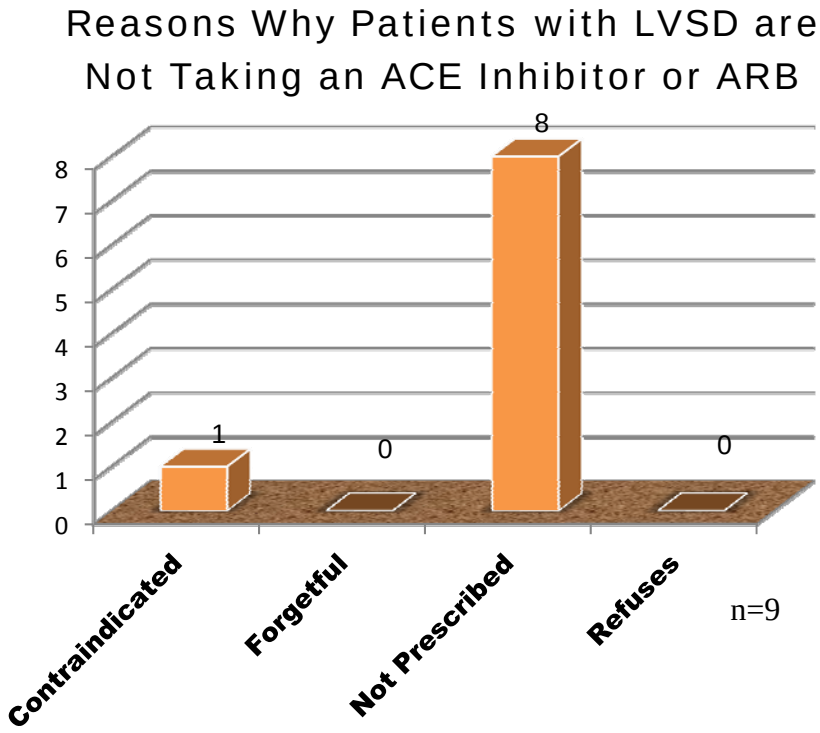


Figure 11. Reasons For Patients With LVSD Not Taking an ACE Inhibitor or ARB



Diet

Patients and/or their caregivers were assessed regarding their knowledge of keeping daily sodium intake to no more than the recommended 2,000 mg every day. It was found that almost half were and a little over half were not. The following reasons for sodium non-compliance are as follows: most had a knowledge deficit regarding the recommended amount, a couple were forgetful with adherence, and a few refused to comply. Reasons for refusal include: “patient chooses not to”, “patient chooses to eat quick, delivered, and fast food”, and “I don’t add salt to anything”. Contraindications were not identified as non-compliance issues. See Figures 12 and 13. Patients and/or their caregivers were also assessed for if they could accurately interpret sodium content and serving size on a food label. It was found that over half could and less than half could not. See Figure 14.

Figure 12. Sodium Compliance Knowledge

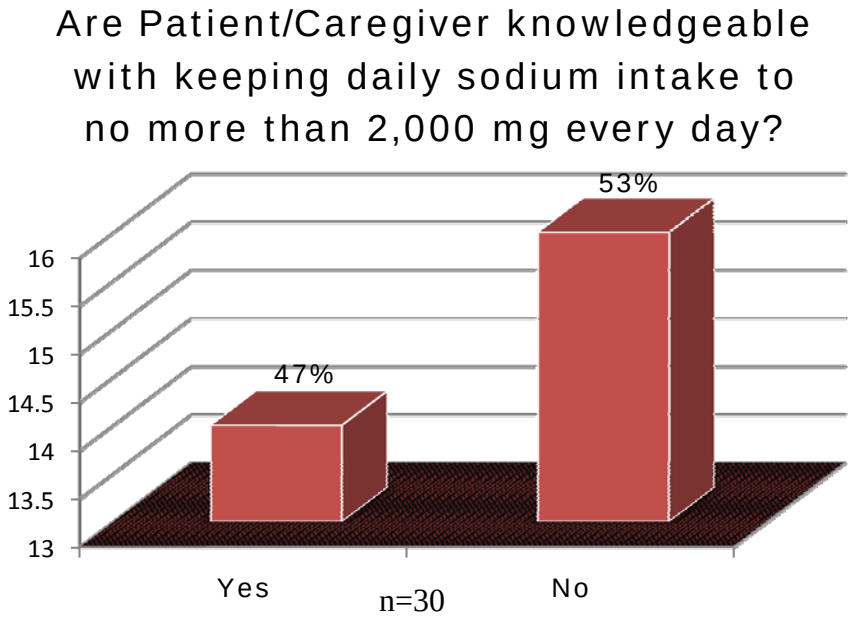


Figure 13. Sodium Non-Adherence Reasons

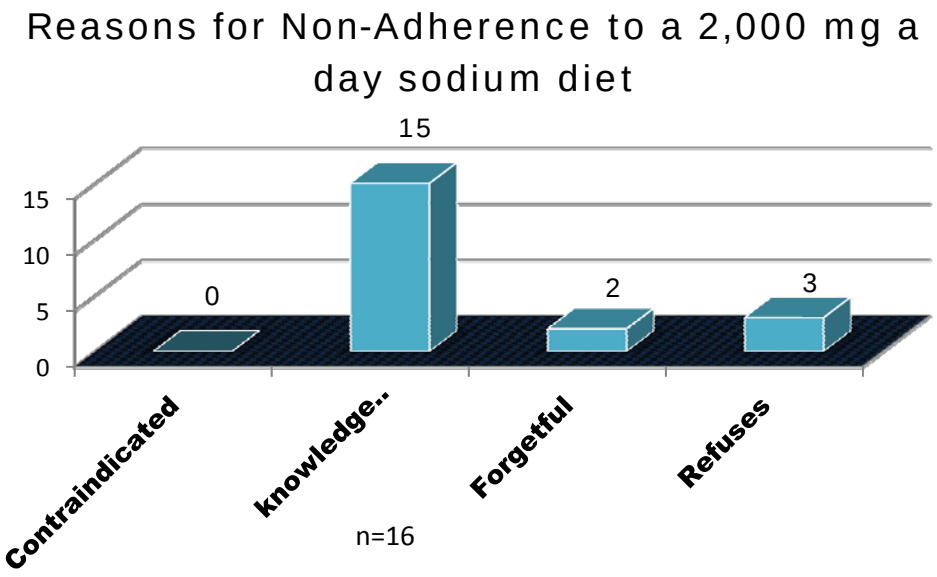
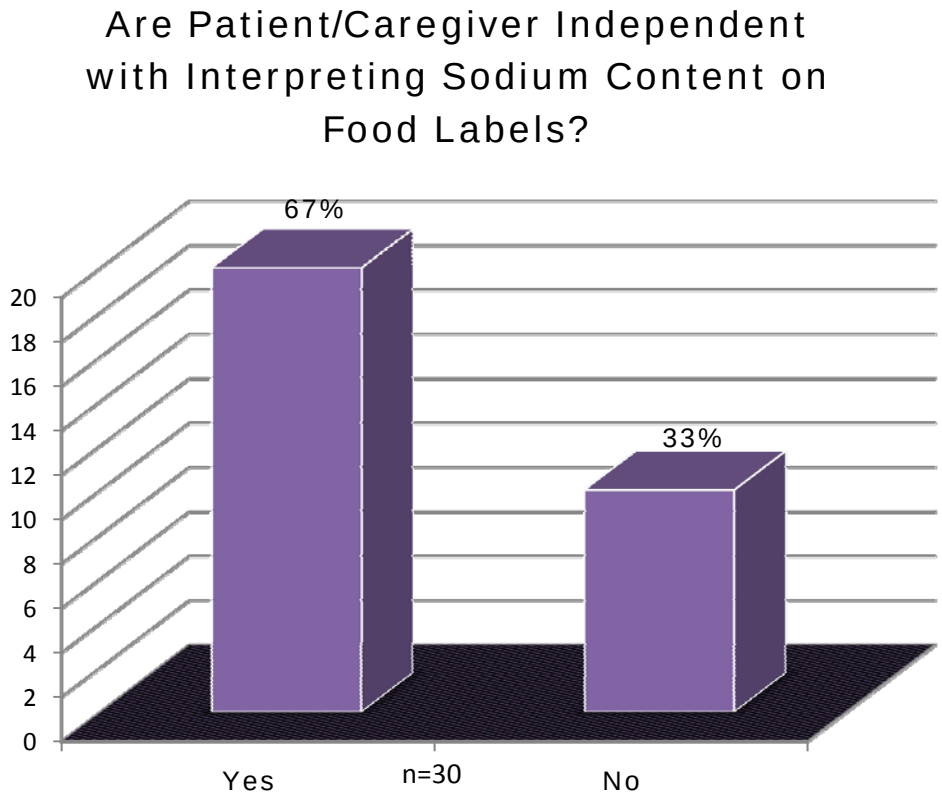


Figure 14. Sodium Interpretation on a Food Label



History of Smoking

Patients were assessed for a history of smoking. It was found that the majority had a history of smoking while only some did not. See Figure 15. Of the majority of patients identified as having a history of smoking, a couple quit a year or less ago, a few quit 2-10 years ago, a few quit 11-20 years ago, but most quit 21 or more years ago. One was not-specified, one currently smoked a pack a day or more, and a couple currently smoked less than a pack a day. See Figure 16. This is typical of the home health population. Most home health patients have a history of smoking but do not currently smoke.

Figure 15. Patient History of Smoking

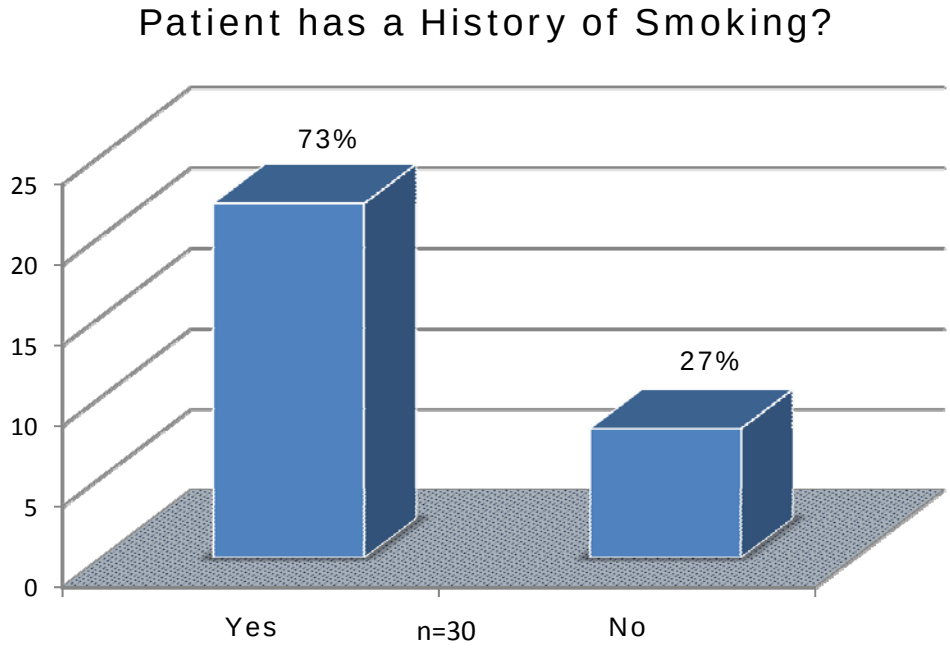
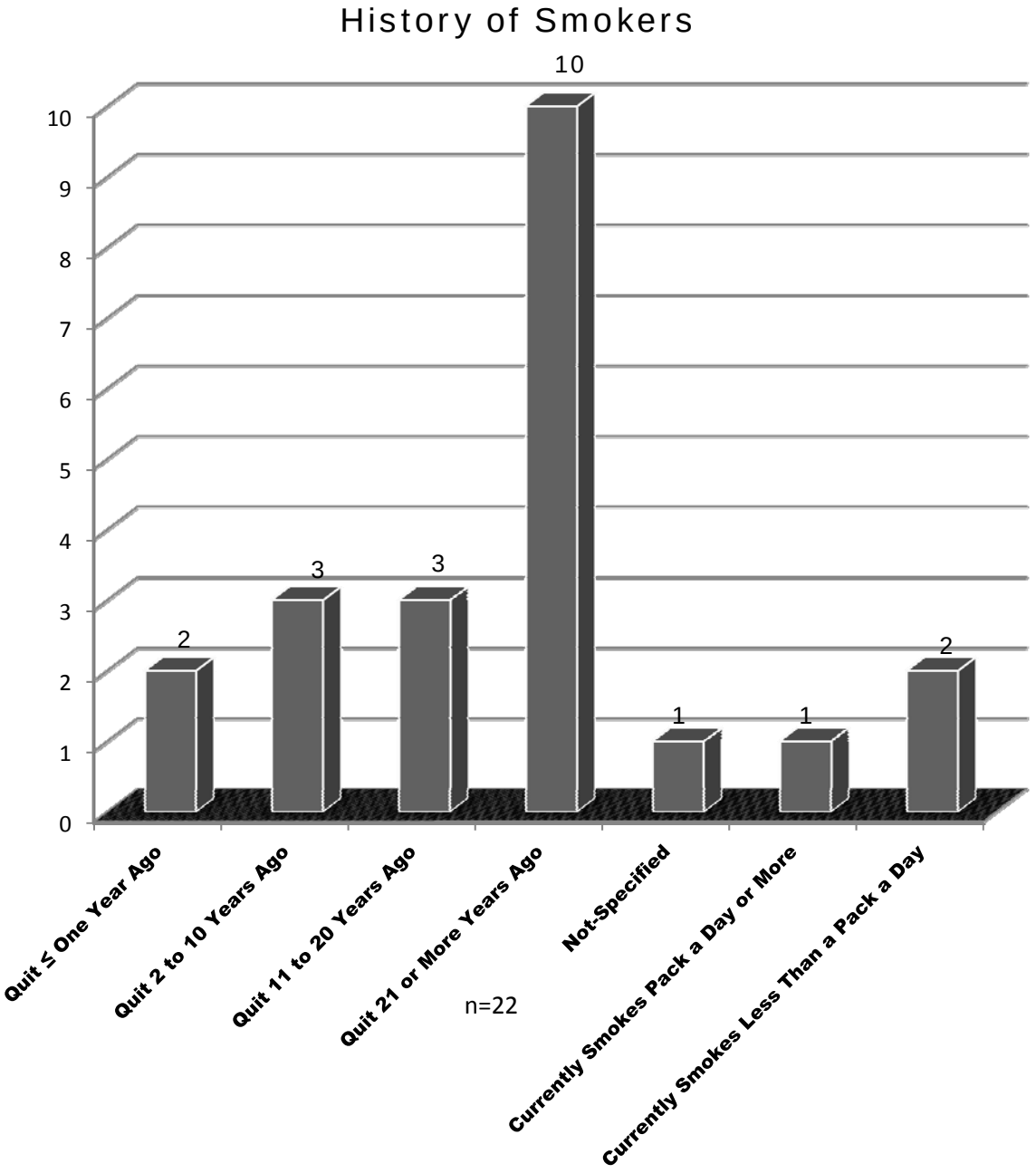


Figure 16. Patient's Smoking Status

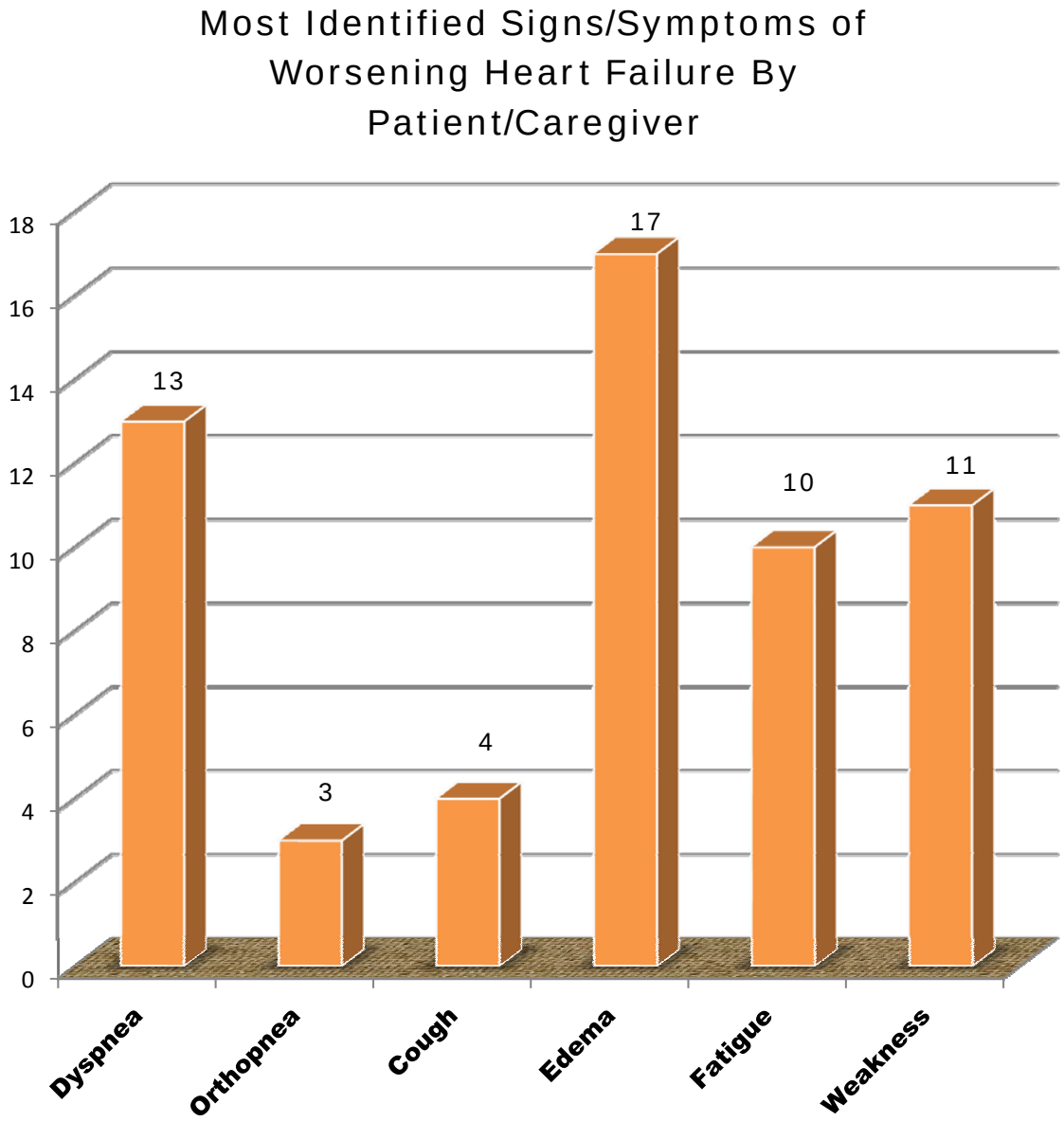


Signs and Symptoms

The ability of the patient and/or their caregiver to identify signs and symptoms of worsening heart failure was assessed. The options consisted of dyspnea, orthopnea, cough

edema, fatigue, and weakness. Less than half were able to identify dyspnea while some were able to verbalize orthopnea and cough as indicators of worsening heart failure. Over half of the patients assessed were able to identify edema as a sign of heart failure and less than half reported fatigue, and weakness as signs of heart failure. See figure 17.

Figure 17. Signs and Symptoms of Worsening Heart Failure Identified



Summary

The aggregated results provide evidence that further patient/caregiver education is needed. Interventions to address the results found include further patient/caregiver instruction on weighing daily, notifying the primary provider of a weight gain and worsening signs and symptoms of HF. Education must also consist of dietary sodium intake along with reading food labels and smoking cessation as indicated. Finally, the primary provider needs to be made aware of guideline indicated medication needs.

CHAPTER 5

DISCUSSION AND RECOMMENDATIONS

Introduction

Heart failure is a chronic illness that left unmanaged, results in progressive, debilitating, and costly outcomes. Improvement of quality of life and costly re-admissions to acute care facilities requires patient/caregiver engagement and provider oversight. Home health is a post-acute care service that provides care to heart failure patients. The scope and practice of home health clinicians assures that patients and their caregivers are able to manage heart failure. Unfortunately, there is no standardized assessment tool to guide the clinician in determining the disease specific needs of the heart failure patient and/or their caregiver.

A microsystem assessment provided evidence of a local home health agency's heart failure population including re-admissions and emergency room use. In conducting this assessment, the five P's were analyzed regarding the agency's purpose, professionals, patients, processes, and patterns. The home health agency's staff was interviewed regarding what their perspective was of the purpose of home health. Results showed that staff believed it was the purpose of home health to help keep patients safe and independent in their own homes and prevent acute care re-admissions.

The professionals that were interviewed consisted of office staff, nurses, physical therapists, occupational therapists, a social worker, and a speech therapist. Heart failure patients admitted to home health totaled 181 with a primary or other diagnosis of heart

failure. Eleven of these patients had emergency room visits and thirteen were hospitalized.

The process that was analyzed was the admission of the heart failure patient. This assessment found that there is not standardized method of screening or evaluating heart failure specific needs of the patient/caregiver. What is assessed is left to individual clinician judgment and may vary from patient to patient. The patterns of this agency include tracking ER visits and hospital admissions. Another significant pattern is the Monday, Wednesday, Friday team meetings that occur to discuss patients.

Literature was also reviewed regarding heart failure guidelines, self-care, beta-blocker and ACE inhibitor use, and sodium intake and weight management. The evidence supported the patient weighing daily and notifying the provider of a weight gain. It was also found that all patients with a diagnosis of heart failure should be taking a beta-blocker and that patients with a diagnosis of left ventricular systolic dysfunction add either an ACE inhibitor or ARB to their medication regimen. The literature also provided evidence that patients should be limiting their sodium intake unless contraindicated. In order to do this they or their caregivers need to be independent with interpreting food labels in order to determine sodium content. Smoking was also shown to be a risk factor in developing progressive heart failure. Literature supported assessing the patient's current and past status. The evidence provided guidance regarding signs and symptoms of heart failure that patients need to be aware of including dyspnea, orthopnea, cough, edema, fatigue, and weakness.

Based on this information, a screening tool was developed to assess the needs of heart failure patients and/or their caregivers upon admission to home health. The categories included weight management, medications, diet, history of smoking, and signs and symptoms of heart failure. A patient demographic area was also incorporated as was heart failure class and type. Home health clinicians were educated on the use of the tool and then sent out to implement it. This education consisted of coaching clinicians on how to obtain accurate answers to each question on the assessment tool. There was also a review of the different heart failure classes and types. Heart failure medications were also discussed and questions/concerns were answered. Patients with either a primary or secondary diagnosis of some type and class of heart failure were screened with use of the tool.

Discussion

The results of the completed assessment tools identified some interesting issues. Some of the information found was expected. For example, an equal number of males and females in the convenience sample of patients admitted to home health was not surprising. This is because the female population is just barely over half (62.3% in 2012). Also, the age spread of 50 to 93 with the average age being 78 seemed to be indicative of this population. This is due to the majority of this agency's patient population qualifying for Medicare under disability or age requirements. It was found that white was the predominate race which was also expected due to the area and patients served.

One of the most surprising results was found in heart failure class. Many of this agency's home health clinicians were under the impression that services were provided to primarily end stage heart failure patients or stage four. The concern of clinicians has been that end stage heart failure patients should be on hospice services and not home health. The results of this study indicated that there was not even one class four heart failure patient out of the thirty that were assessed. These results indicate that heart failure patients are admitted to home health services with less disease severity. This information provides home health with a foundation for the opportunity for intervention and education before the patient reaches end stage disease. The earlier stages or classes of heart failure are where self-care interventions will be of most benefit in improving patient/caregiver quality of life and preventing acute care re-admissions and costly ER visits.

The type of heart failure was found to be poorly documented. The results of this study show that three patients had heart failure with unspecified type. These results show that documentation in the patient's health record only indicated that they had a diagnosis of heart failure but failed to mention the type. Poor documentation is detrimental to the appropriate treatment of heart failure if the type of heart failure is not identified. The ICD-10 will help alleviate this problem by requiring a more detailed coding and therefore documentation of disease.

Results showed the majority of heart failure patients did not weigh daily and that in fact most of them didn't weigh at all. The reasons why these patients are not weighing indicates areas where clinical interventions may improve this outcome. In the patient with

a knowledge deficit, education may be of value. Patients with functional limitations may benefit from physical therapy to be able to get on and off the scale safely. Some patients have financial issues and may not be able to afford to buy a scale. This type of situation is where social services may be indicated to assist with obtaining needed equipment. Patients who have cognitive deficits and are forgetful may benefit from occupational therapy for cognitive strategies to improve memory and compliance with obtaining weights. The most concerning finding is that the patient refuses to weigh self. Patients have the right to refuse care and have the choice to care for themselves or not. Coaching and counseling may be of benefit in this type of patient.

Most patients and/or their caregivers were not independent with notifying their provider of the recommended weight gain. Reasons for this were shown to be due to a knowledge deficit. Patients and/or their caregivers did not know they were supposed to or they didn't know how much weight they had to gain until the provider was notified. One assessment tool did not indicate an answer to this question. This result can be interpreted that the question was missed and therefore not assessed. This problem could be resolved by continuing clinician education to make sure all areas are assessed but mostly by an electronic system that requires an answer before moving on to the next question.

Findings from the literature indicate that all patients who have a diagnosis of heart failure (any type or class) should be taking a beta-blocker unless contraindicated. Results showed that out of the 20% of patients that were not taking a beta-blocker, 67% did not have a prescription for one. This finding is a major area for nursing intervention. At this point, the clinician should contact the patient's provider and inquire about the medication.

Documentation should be clear on why the patient is not taking this particular medication.

The evidence also supports that patients with a specific diagnosis of left systolic ventricular dysfunction take either an ACE inhibitor or ARB. Of the thirty patients assessed, twelve were identified with such a diagnosis. Findings showed that 75% were not taking either prescribed medication with the main reason being that it just wasn't prescribed. This is another red flag area that demands nursing intervention to determine with the provider if the patient should be on either of the above medications. The assessment tool assists in identifying patients who may be falling through the cracks and not managed appropriately.

Nursing education is also indicated in nutritional management. Almost half of the patients assessed were non-compliant with the recommended daily amount of sodium intake. This was found in large part to be a knowledge deficit. The patient or their caregiver's were unaware that 2,000mg a day was the maximum amount of sodium that should be consumed. These results show that the clinician needs to provide education regarding sodium restriction. However, the majority of patients or their caregivers were independent with appropriately reading and interpreting food labels. This information provides reassurance that as long as they know what the sodium restriction is; they will be able to keep track of it.

Most of the patients assessed had a history of smoking but very few were still currently smoking. For the few patients that were still smoking, smoking cessation education should be provided. Smoking has been shown to increase heart failure

problems and should be discontinued if at all possible. Counseling may be indicated and the appropriate referrals made.

Edema was the most identified sign and symptom of heart failure with orthopnea being the least. Again, educating patients and their caregivers on the signs and symptoms of heart failure is an area in need of intervention. After clinicians provide education, patients and/or their caregivers should be able to identify all signs and symptoms of heart failure.

Recommendations

The Quality Improvement Heart Failure Needs Assessment Tool should be used to screen every patient with a primary or secondary diagnosis of heart failure that is admitted to home health. The needs identified by the assessment will indicate interventions to be include in the plan of care. Interventions will need to be developed to address each need found. The interventions should also be measured to assure they are being completed. These may be considered process measures. After the interventions have been performed, the assessment tool should be implemented again to evaluate the outcomes of the interventions. Each numbered question on the tool can be considered an outcome measure. Goals should be made to attain a certain percentage improvement for each outcome measure and at least once a year a data analysis should be performed to identify areas in need of improvement.

By using the plan, do, study, act method, improvement projects can be designed and implemented to continuously improve outcomes. It is also recommended that this

tool serve as a template for other disease processes and used in the management of any chronic illness.

Ideally the tool should be incorporated electronically into the patient's electronic health record. A database should be designed for easy storage, retrieval, and aggregation of this information per patient and cohort. For timeliness and efficiency, patient demographics and diagnosis should automatically populate all indicated fields. Artificial intelligence should be able to identify a patient's specific diagnosis and link it to indicated medications and send the clinician an alert if there is an inconsistency. In order to assure completeness of assessment and documentation, a question should be answered and documented before the assessment can continue.

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APPENDIX A

ASSESSMENT TOOL

Tracking #_____

Quality Improvement Heart Failure Needs Assessment Tool
On Admit to Home Health

Age_____ Gender_____ Race_____ HF Class_____ HF Type_____

1. Patient weighs every day. **Yes / No**
If No, Why not? (Circle all that apply) AND **If No**, How often?

-Knowledge deficit -About every other day
-Functional limitation -About every week
-No scale -Not at all
-Forgetful
-Refuses to weigh (provide reason):

2. Patient/Caregiver verbalizes independence with notifying provider of >2lb weight gain over night or >5lb weight gain
in one week. **Yes / No**
If No, Why? (Circle all that apply)
-Knowledge deficit
-No phone
-Forgetful
-Refuses to notify provider (provide reason):

3. Patient taking beta-blocker. **Yes / No**
If No, Why? (Circle all that apply)
-Contraindicated
-Forgetful
-Not prescribed
-Refuses beta-blocker (provide reason):

4. For **Left Ventricular Systolic Dysfunction ONLY**, patient taking ACE inhibitor or ARB.
If No, Why? (Circle all that apply) **Yes / No / NA**
-Contraindicated
-Forgetful
-Not prescribed
-Refuses ACE inhibitor and/or ARB (provide reason):

5. Patient/Caregiver knowledgeable of keeping daily Na+ intake to no more than 2,000mg every day.

If no, Why? (Circle all that apply) **Yes / No**
-Contraindicated -Knowledge deficit -Forgetful -Refuses to comply (provide reason):

6. Patient/Caregiver accurately demonstrates interpreting Na+ content and serving size on food labels.
Yes / No

7. Patient has history of smoking? **Yes / No**
-If patient quit smoking, how long ago? _____
-Patient currently smokes pack a day or more
-Patient currently smokes less than pack a day

8. Patient/Caregiver independent with identifying the following signs and symptoms of worsening HF.
-Dyspnea -Orthopnea -Cough -Edema -Fatigue -Weakness

Class of Heart Failure

Class I: No symptoms and limitation in ordinary physical activity, e.g. shortness of breath (SOB) when walking, climbing stairs etc.

Class II: Mild symptoms (mild SOB and/or angina) and slight limitation during ordinary activity.

Class III: Marked limitation in activity due to symptoms, even during less-than-ordinary activity, e.g. walking short distances (20-100 m).

Class IV: Severe limitations. Experiences symptoms even while **at rest.** Mostly bedbound patients.

Heart Failure Types

Left-sided heart failure
The heart's pumping action moves oxygen-rich blood as it travels from the lungs to the left atrium, then on to the left ventricle, which pumps it to the rest of the body. The left ventricle supplies most of the heart's pumping power, so it's larger than the other chambers and essential for normal function. In left-sided or left ventricular (LV) heart failure, the left side of the heart must work harder to pump the same amount of blood.

Systolic failure (also called systolic dysfunction): The left ventricle loses its ability to contract normally. The heart can't pump with enough force to push enough blood into circulation.
Diastolic failure (also called diastolic dysfunction)**:** The left ventricle loses its ability to relax normally (because the muscle has become stiff). The heart can't properly fill with blood during the resting period between each beat.

Right-sided heart failure
The heart's pumping action moves "used" blood that returns to the heart through the veins through the right atrium into the right ventricle. The right ventricle then pumps the blood back out of the heart into the lungs to be replenished with oxygen.
Right-sided or right ventricular (RV) heart failure usually occurs as a result of left-sided failure. When the left ventricle fails, increased fluid pressure is, in effect, transferred back through the lungs, ultimately damaging the heart's right side. When the right side loses pumping power, blood backs up in the body's veins. This usually causes swelling in the legs and ankles.

Beta Blockers

Generic	Brand Name
acebutolol	(Sectral®)
atenolol	(Tenormin®)
betaxolol	(Kerlone®, Betoptic®)
bisoprolol	***(Zebeta®) ******
esmolol	(Brevibloc®)
nebivolol	(Bystolic®)
metoprolol	(Lopressor®, Toprol-XL®).
acebutolol	(Sectral®)
carteolol	(Ocupress®)
penbutolol	(Levatol®)
pindolol	(Visken®).

Ace Inhibitors

Generic	Brand Name
benazepril	(Lotensin)
captopril	(Capoten)
enalapril	(Vasotec)
fosinopril	(Monopril)

Angiotensin Receptor Blockers (ARB's)

Brand	Generic
Cozaar	losartan
Hyzaar	losartan/hydrochlorothiazide
Avapro	irbesartan
Avalide	irbesartan/hydrochlorothiazide
Diovan	valsartan
Diovan HCT	valsartan/hydrochlorothiazide