RISK ASSESSMENT TOOL TO IDENTIFY MEDICATION NONCOMPLIANCE IN CONGESTIVE HEART FAILURE PATIENTS IN AMBULATORY CARE

Scholarly Project for the Degree of M. S. N.

MICHIGAN STATE UNIVERSITY

PATRICIA D. KONING

1999

THESIS

LIBRARY
Michigan State
University

PLACE IN RETURN BOX to remove this checkout from your record.
TO AVOID FINES return on or before date due.
MAY BE RECALLED with earlier due date if requested.

DATE DUE	DATE DUE	DATE DUE

6/01 c:/CIRC/DateDue.p65-p.15

Risk Assessment Tool to Identify Medication Noncompliance in Congestive Heart Failure Patients in Ambulatory Care

By

Patricia D. Koning

A SCHOLARLY PROJECT

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE IN NURSING

College of Nursing

1999

ABSTRACT

Risk Assessment Tool to Identify
Medication Noncompliance in Congestive
Heart Failure Patients in Ambulatory Care

By

Patricia D. Koning

Congestive heart failure (CHF) is a fatal disease syndrome that has an increased incidence rate in persons over the age of 65. This syndrome is associated with a high morbidity and mortality rate that has continued to increase over the past four decades while rates for coronary artery disease and cardiovascular accident have declined dramatically.

Congestive heart failure has a major negative impact on the older adult, the family, society as a whole, and the health care industry. The older adult's quality of life declines with the decline in functional status; limitations become part of daily life. The family may have to take on a new role as caregiver which places an increased burden on the involved members. The economic burden that falls on all parties, including society and the health care industry, is astronomical.

The major concern with congestive heart failure is the repeated exacerbations. Causes of these exacerbations vary; however, a repeated theme in the literature is medication noncompliance (Dracup, 1996; Dracup et al., 1994; Chin & Goldman, 1997; Bennett et al., 1998; Montamat, Cusack, & Vestal, 1989). The issue of noncompliance must be addressed

upon initial diagnosis with patients and families in order to prevent the exacerbations; reduce the readmission rates; and preserve quality of life for this specific population.

The focus of this scholarly project is the development of a tool to assess for barriers that contribute to noncompliance with medications in the older adult diagnosed with congestive heart failure. With the initial assessment by the Advanced Practice Nurse (APN), barriers would be identified with the patient. The goal of this project will be risk reduction of medication noncompliance based on the elimination of the barriers.

The Health Belief Model provides the basis for identification of the perceived barriers and perceived benefits of compliance with the prescribed therapeutic regimen. The focus of this project will be the perceived barriers. The tool will identify areas of education that should be a part of the routine care of the older adult with CHF and his/her support network. The roles of the APN within this defined environment will also be discussed, as well as implications for further research.

ACKNOWLEDGMENTS

I want to express my sincere gratitude to the members of my committee who helped guide me through this process. Thanks to Laura Struble, PhD, RN, who was very supportive and always available to offer encouragement. Thanks to Patty Peek, MSN, RN and Brigid Warren, MSN, RN, who provided insight and words of encouragement and kindness.

I want to also express my sincere appreciation to my husband, Don, for his words of encouragement. I could not have achieved my goals without his support and dedication.

TABLE OF CONTENTS

Page

LIST OF FIGURES vi

INTRODUCTION 1

Problem Statement 6

Purpose 6

Conceptual Framework 7

Review of Literature 21

Project Development 39

Procedure for Using Tool 42

Evaluation of Tool 43

Implications for Advanced Nursing Practice 45

Implications for Education 49

Implications for Research 51

Conclusion 52

LIST OF REFERENCES 54

Appendices

Appendix A 60

Appendix B 66

Appendix C 67

LIST OF FIGURES

Page

Figure 1: Health Belief Model Components and Linkages . . 11

Figure 2: Barriers and Health Belief Model for the CHF Patient 22

INTRODUCTION

Congestive heart failure (CHF) is a highly lethal, progressive disease process; the number of deaths related to CHF has dramatically increased over the past four decades, the same period during which coronary artery disease and stroke deaths have declined by 50%. The unadjusted mortality rates rose by 82.5% from 1979 to 1992, fourfold since 1968, and sixfold since 1955. Overall, 92% of deaths from CHF occur in individuals 65 years of age and older (Massie & Shah, 1997) which makes CHF a significant problem in the elderly population.

Heart disease is the leading cause of death in the United States and congestive heart failure is a common form of heart disease that contributes to the morbidity and mortality rates. Congestive heart failure is one of the fastest growing cardiovascular problems in the United States and it primarily affects the older adult 65 years of age and older. The readmission rate for patients with CHF is extremely costly and the decline in functional status affects their quality of life. With the aging of the population, the economic burden will continue to increase in terms of health care dollar expenditures. In addition, quality of life issues for this large segment of the population with CHF will also need to be addressed.

Congestive heart failure affects an estimated four million persons in the United States with 400,000 new cases

diagnosed annually, resulting in an average mortality rate of 10 percent at one year and 50 percent after five years (Dracup, 1996; AHCPR, 1994). This syndrome is responsible for over 11 million primary care visits and over 3.5 million hospitalizations annually, making it the leading cause of admission for the older adult (Packer & Cohn, 1999). Chin and Goldman (1997) report that CHF is currently the most common reason for patients in the Medicare program to be admitted to a hospital and "readmissions, as opposed to long lengths of stay, appear to be the main contributor to increased costs in the heart-failure population" (p. 643). Results from the Framingham Study (McKee, Castelli, & McNamara, 1971), which is a very important prospective long-term cohort study designed to determine risk factors for the development of cardiovascular disease, estimate that the prevalence of CHF increases progressively with age--from approximately 1% in persons aged 50 to 59 years to a prevalence of approximately 10% in those aged 80 to 89 years. The prevalence doubles with each decade of life in that age range (McKee et al., 1971).

Congestive heart failure is a progressive disease and places an economic burden on society. Packer and Cohn (1999) estimate the annual direct expenditures for CHF to range from $20 to $40 billion; these figures include primary care cost delivery, hospital and nursing home expenses, and costs of medications, home health care, and other medical durables. Indirect costs are not accounted for in these

figures which would be the cost of lost productivity. Even with advancement in treatments, the prevalence of CHF has not shown any major decline and this is a concern with the aging of the population.

Problem Statement

The treatment of CHF is essential in primary care. Guidelines developed by the Agency for Health Care Policy and Research (AHCPR, 1994) are available to the primary health care provider that offer recommendations in specific patient management areas. Some management areas include: primary prevention of heart failure in the patient with asymptomatic left-ventricular systolic function; initial evaluation and diagnosis of CHF; pharmacological management of CHF; patient education and counseling; and the importance of close patient monitoring and follow-up. These are only a few of the important aspects that need to be addressed in the management of patients with heart failure. The major problem with this population of patients is the high morbidity and mortality rates and the frequent readmission rates due to exacerbations of the congestive heart failure.

The important question is why such a high rate of treatment failure and readmission rate? A common and seemingly preventable reason is patient noncompliance with medication regimens. Happ and colleagues (1997) found that reported rates of noncompliance with medications ranged from 20-58%. Other research has documented similar rates (Dracup et al., 1994; Dracup, 1996; Chin & Goldman, 1997; Bennett et

al., 1998; Monane, Bohn, Gurwitz, Glynn, & Avorn, 1994; Reed, 1997; Montamat, Cusack, & Vestal, 1989).

Medication compliance in the elderly population with CHF is an important issue in promoting and maintaining quality of life. The elderly population is the largest consumer of medications, accounting for 30% of prescription medications and 40% of over-the-counter (OTC) medications (Salom & Davis, 1995). The average older adult takes an average of 7.5 medications per day and an individual 75 years of age and older takes threefold more drugs than younger persons (Murray, Birt, Manatunga, & Darnell, 1993; Rajaei-Dehkordi & McPherson, 1997). One-third of the 1.5 billion prescriptions filled annually are for people 65 years of age and older (Esposito, 1995).

Multiple issues have to be taken into consideration when prescribing medications to the older adult. The increased incidence of chronic illness and the altered process of drug metabolism and absorption are essential considerations that if disregarded in the older adult can produce detrimental outcomes. Another major issue that is neglected, although not purposefully, is the assessment of barriers to medication compliance. Barriers related to medication noncompliance that have been documented in the literature include: access to care, visual and cognitive impairment, functional impairments, cultural and language differences, poor understanding of purpose and importance of the medication, lack of family and social support,

depression, packaging of the medication, financial constraints, adverse effects, and polypharmacy (Wallsten et al., 1995; Murray et al., 1993; Monane et al., 1994; Corlett, 1996; Conn, Taylor, & Miller, 1994; Kelly, 1996).

Drug therapy in the older adult is complicated by multiple physiological factors, but the compliance versus noncompliance factor also has to be addressed by the primary care provider. According to Montamat and co-researchers (1989), one-third to one-half of the elderly population are noncompliant with their medications; ninety percent of these are undertaking and seventy percent are altering how they take their medications. An inverse relationship exists between medication and compliance--as the number of prescription medications increase, compliance decreases. In a research study by Monane and co-researchers (1994), more than 7000 elderly patients who needed daily Digoxin for their heart failure, on average, refilled their prescription often enough to have Digoxin available 111 days of the year or 30% of the time. Another study of 249 elderly male veterans enrolled in a general medicine clinic reported a medication compliance rate of 73% (Graveley & Oseasohn, 1991). Drug-related morbidity and mortality is also important with noncompliance. Johnson and Bootman (1995) reported drug-related morbidity and mortality in the ambulatory setting as estimated to cost $76.6 billion per year in the United States.

The projected growth rate of the elderly population is 35 million Americans 65 years of age and older by the year 2000 and an increase of 64 million by 2030 (Esposito, 1995). When assessing these projected figures, there is cause for concern. With the limited resources, rising cost of health care, and the demand for quality care, there needs to be a mandate toward preventive care, health promotion, and education programs to improve self-care skills.

Advanced practice nurses (APNs) play an important role in the care and management of elderly patients with CHF. The APN is able to address the needs of the older adult by utilizing her/his clinical knowledge and skills to arrest the continuous cyclical pattern of frequent emergency room presentations and rehospitalizations. APNs have the ability to individually assess each patient, address the potential barriers and other influencing circumstances, and assist the older adult to find resources to minimize the barriers. With the increasing number of older adults with limited incomes, access, medical coverage, and the rising costs of health care, the incidence of complications and related costs due to medication noncompliance is likely to be on the increase (Conn et al., 1994).

Purpose

The purpose of this scholarly project is to develop an assessment tool to determine medication compliance in patients with CHF in ambulatory care. The tool will aid the health care provider in assessing for barriers that

contribute to noncompliance. Risk assessment will be derived through the use of a series of open-ended, non-threatening questions. The tool will also document the medications a patient is concurrently taking, including prescription, OTC, vitamins, and herbal products. The tool will help the health care provider identify whether the patient understands and complies with the dietary sodium restriction, monitoring of daily weights, schedule of immunizations (pneumococcal and influenza), regular exercise program, and signs and symptoms indicative of exacerbation of CHF. The use of recreational drugs, alcohol use, tobacco use, and caffeine intake will be documented with the tool, since these may have detrimental effects on the cardiovascular system as well as other organ systems. The scope of the assessment tool will be to encompass the broad issue of noncompliance with the prescribed therapeutic regimen in the CHF patient, while focusing on the barriers that contribute to medication noncompliance.

Conceptual Framework

The Health Belief Model (HBM) provides the framework for this project because it has been used in studying compliance with therapeutic regimens in people with chronic illness, which may include a majority of older adults. The HBM is a psychosocial causal model developed in the 1950s as an attempt to explain failure of people's participation in disease prevention and detection programs. In the late 1960s and early 1970s, the model was expanded to apply to

people's responses to symptoms and their behaviors in response to diagnosed illness; this model places a strong focus on people's compliance with medical regimens (Strecher & Rosenstock, 1997). According to Strecher and Rosenstock (1997), the Health Belief Model (HBM) has been a widely used framework in health behavior and the overall premise follows:

"In general, it is believed that individuals will take action to ward off, to screen for, or to control an ill-health condition if they regard themselves as susceptible to the condition, if they believe it to have potentially serious consequences, if they believe that a course of action available to them would be beneficial in reducing either their susceptibility to or the severity of the condition, and if they believe that the anticipated barriers to (or costs of) taking the action are outweighed by its benefits" (p. 44). The constructs of perceived benefits and barriers provide a guide for studying health behaviors such as compliance with medications. Benefits are the perceived positive aspects of performing health behaviors and barriers are perceived negative aspects or costs of performing health behaviors. Interventions based upon the HBM have been shown to be effective in changing and improving compliance with health-promoting activities (Strecher & Rosenstock, 1997).

The major concepts of the Health Belief Model will be briefly summarized to provide a basic understanding of its application to screening behaviors, preventive actions,

illness behaviors, and sick-role behaviors. The concept of perceived susceptibility relates to a person's perception of his/her risk of acquiring an illness or disease process. In this proposal, the patients have already been diagnosed with CHF; therefore, this concept will be reformulated to include the patient's acceptance of the diagnosis and perception of potential severity of exacerbations of the syndrome based upon compliance with medication and diet regimens. Strecher and Rosenstock (1997) do note that reformulation of this concept for cases of medically established diagnoses is acceptable and has been done in other studies.

Perceived severity identifies consequences of contracting an illness and the sequelae associated with the diagnosis. Perceived severity includes evaluation of clinical, medical, and potential social consequences of an illness.

Perceived severity and perceived susceptibility have been combined and identified as the perceived threat. The perceived threat is an important postulate of the HBM because the patient must perceive his/her health as threatened in order to consider action to change behavior.

Perceived benefits may be defined as taking a particular action to reduce the threat of the disease or the severity of the disease once diagnosed. The specific action that is taken will depend upon one's belief's regarding the efficaciousness of the advised action. The positive effects of the action must be accentuated.

Perceived barriers are the perceived negative consequences or costs related to taking an action. The barrier is the obstacle preventing the patient from undertaking the suggested health behavior (Strecher & Rosenstock, 1997).

Cues to action are the stimuli that the HBM propose must occur to trigger the appropriate behavior. The trigger can be internal, such as perception of a bodily symptom of illness, or external, such as an environmental event--media information or an educational program. Also, a person's past experience may play a role as a trigger to action.

Other variables that may have an influence on an individual's perception and influence health-related behavior choices are demographics, sociopsychological factors, and structural factors. Sociopsychological factors may include social support and resources and self-esteem issues. Structural factors include duration of the prescribed regimens and costs of regimens.

Self-efficacy is an important perception of the patient. Self-efficacy can be defined as the confidence a patient has in him/herself to undertake the desired action and produce the desired outcome. The patient must have guidance through this process with progressive goal setting and positive verbal reinforcement to help reduce anxiety and promote an environment of change (See Figure 1: HBM).

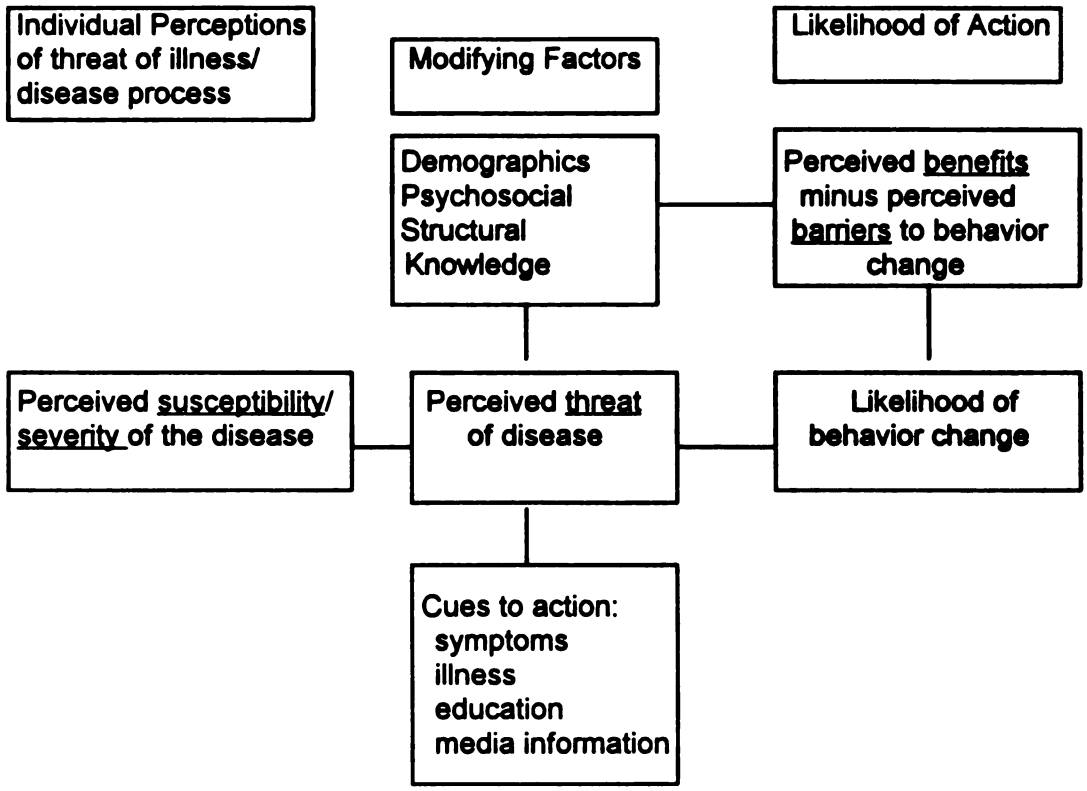

Figure 1: Health Belief Model components and linkages (adapted from Strecher & Rosenstock, 1997)

Definition of Terms

This section will define a number of important terms relative to CHF and the conceptual framework that will be used throughout this project. This will provide the reader with a better understanding of these specified concepts.

Congestive heart failure is the inability of the heart to pump blood at a rate sufficient to meet the metabolic demands of the body; cardiac output is reduced resulting in decreased perfusion to the tissues. It is not a specific disease but rather a clinical syndrome that may be caused by numerous cardiac disorders (Johnson & Lalonde, 1997). Heart failure, as a syndrome, is characterized by the following: signs and symptoms of intravascular and interstitial volume overload including shortness of breath, edema--especially of the lower extremities, and rales auscultated in the lungs; and manifestations of inadequate tissue perfusion including fatigue, poor exercise tolerance, and decreased oxygen saturation (AHCPR, 1994).

Congestive heart failure is the result of systolic dysfunction, diastolic dysfunction, or a combination of both; therefore, many patients develop heart failure as a result of reduced myocardial contractility and reduced ventricular filling. Causes of heart failure related to systolic dysfunction include: ventricular hypertrophy resulting from pressure overload or volume overload; dilated cardiomyopathies; and reduced muscle mass possibly resulting from a myocardial infarction. Diastolic dysfunction may be

caused by the following: mitral or tricuspid stenosis; pericardial disease; and increased ventricular stiffness related to ventricular hypertrophy, infiltrative myocardial diseases, or myocardial ischemia and infarction. According to the most recent update on the Framingham study (Ho, Pinsky, Kannel, & Levy, 1993), ischemic heart disease is the underlying etiology in 59% of males and 47% of females with heart failure; hypertension is the second leading cause in 30% of males and 37% of females. Less common etiologies include the cardiomyopathies and valvular heart disease.

Older adult will be the term used in this project to define the population of persons aged 65 years of age and older. In areas where the term "population" is more appropriate, the phrase "elderly population" may be used to define the same cohort. The number of people over the age of 65 is growing rapidly in the United States. According to Moody (1994), four percent of the population was over 65 years of age in 1900, and in 1994, the figure was up to 13%, with a predicted increase to 20% by the year 2030.

Noncompliance is defined as failure to follow or divergence from a prescribed regimen (Cargill, 1992). With the elderly population using approximately 30% of the prescription drugs and 40% of non-prescription drugs per year, it is not surprising that older adults are more likely to have difficulties with medication compliance (Ennis & Reichard, 1997). Compliance is inversely related to the

number of medications that a patient is concurrently taking; the simpler the regimen, the better (Murray et al., 1993).

Three common forms of medication noncompliance are seen in the older adult population: overuse, underuse, and alterations of dosages and schedules. Overuse is sometimes related to forgetfulness or the frame of mind that more will speed recovery. Underuse is related to forgetfulness or cognitive changes, but can also be related to medication side effects, adverse drug reactions, drug interactions, resolve of symptoms, and costs of the medications. Alterations of dosages and schedules can be related to any reasons mentioned in the preceding sentences and due to medication response interfering in the patient's activities, especially seen with diuretics. Salzman (1995) describes the characteristics of noncompliance in the older adult: taking someone else's medication accounted for 10%; inappropriate discontinuation, up to 40%; continuing to take previously discontinued medication, more than 20%.

Noncompliance leads to poor clinical outcomes which in turn adds to health care costs. Noncompliance can reduce life expectancy and is a cause of readmissions (AHCPR, 1994). The length of stay is not usually an issue, it is the repeated admissions for exacerbation of congestive heart failure. Farley (1986) reported that the National Council on Patient Information and Education estimated that approximately 125,000 persons in the United States die each year as a result of drug misuse and that up to one-half of

the 1.6 billion prescriptions dispensed yearly are taken incorrectly, which results in prolonged illness, avoidable side effects, drug interactions, increased hospitalizations, and overuse of health care services. The council estimated that 25 to 30 percent of these prescriptions are taken by the older adult and that this number will increase to nearly 50 percent by the year 2000.

A barrier can be defined as any obstacle that interferes with compliance of the prescribed medication and therapeutic regimen for the treatment of CHF. The American Heritage Dictionary (1991, p. 159) defines barrier as "something that acts to hinder or restrict." The barrier can be any factor that the patient and/or health care provider identifies as impeding the implementation of the prescribed therapy. Barriers can be any of the factors already mentioned such as access, financial constraints, polypharmacy, insufficient social support, and adverse drug reactions; however, a barrier can also be a patient's belief or perception. When a patient identifies a barrier to compliance with the medication regimen, this barrier must be removed in order for compliance to begin or resume. Barriers or perceived barriers have to be addressed early with the older adult diagnosed with CHF in order to prevent exacerbations. The barriers identified within this project will be expounded upon under the literature review; these include: access, visual impairment, cognitive impairment, lack of understanding by the patient and health care

provider, cultural and language differences, lack of support, depression, packaging of medications, financial constraints, adverse drug reactions, and polypharmacy.

Risk reduction is the reduction or elimination of the modifiable factors that place a person at risk for a specific disease entity (Fleury, 1992). "Nursing is concerned with helping individuals to understand, adopt, and maintain lifestyle practices that will reduce their risk of disease and disability" (Fleury, 1992, p. 229). Individual risk reduction through initiation and maintenance of cardiovascular health behaviors includes substance abuse cessation, hypertensive management, regular regimen of physical exercise, dietary modification, and compliance with the prescribed medication regimen for symptom management. Perceived barriers are believed to influence motivation to health behavior change in cardiovascular risk reduction (Biggs & Fleury, 1994).

Barriers, Health Belief Model, and CHF

The HBM presents a framework to examine the barriers to medication compliance in older adults diagnosed with CHF which will be the focus of this project. Barriers and perceived barriers have been identified as the most powerful HBM dimension; however, they are the dimension frequently left unmeasured in empirical research (Fleury, 1992; Hill & Berk, 1995). A literature search did produce articles that examined the issue of compliant behaviors with therapeutic regimens for several diagnoses including: hypertension,

diabetes, and cancer. The theme recurrent in the literature was the importance of the patient's perceptions of perceived severity of the disease, perceived benefits of the prescribed therapy, and the perception that the barriers to the successful implementation of the prescribed behaviors could be surmounted (Given & Given, 1983; Given & Given, 1984; Given, Given, Gallin, & Condon, 1983; Given, Given, & Simoni, 1978; Nyamathi & Shuler, 1989). When using the HBM, patients must acquire certain beliefs, knowledge, and behaviors in order to successfully manage their chronic disease. In essence, the patient must be aware of his/her beliefs; recognize the barriers to and the benefits of complying with the prescribed therapeutic regimen; know how to integrate the prescribed behaviors into his/her daily lifestyle; know how to secure support for these prescribed behaviors from his/her support network, including family members and friends; and, ultimately, how to self-monitor needed behaviors (Given & Given, 1983).

Patients diagnosed with CHF can be a major challenge to the health care provider due to their complex health problems. Successful management of CHF requires major lifestyle changes and adjustments not only by the patient but also by their families and other support network. Medication regimens may consist of multiple medications that have to be taken once to possibly three times a day. Dietary habits and activities may have to be modified which can create conflicts with the patient's desires, traditions,

and culture. Signs and symptoms of reoccurring CHF must be monitored to promote prompt treatment and to prevent severe deterioration requiring readmission to the acute care setting.

There are psychological adjustments that the patient must face which include the burden of living with new limitations and the acknowledgment that life expectancy may be shortened (Dracup et al., 1994). Thus, the patient may experience the grieving process as a result of the associated realities of the disease process. Health care providers need to be aware of the barriers encountered by the older adult and their family as they attempt to follow the prescribed therapeutic regimen that will enable them to function at a level of "normalcy".

Congestive heart failure is complex and patients have to be educated about the disease process and the prescribed therapeutic regimen including medications, dietary restrictions, and activities. Patients should be educated about the symptoms associated with the disease and understand when to notify their health care provider regarding the worsening of symptoms. For example, the patient should understand that he/she will experience increased fatigue and dyspnea with exertion but an increase in these symptoms should alert him/her to notify the health care provider. Patient education should be an ongoing process and the patient's understanding should be evaluated. Education at the time of discharge from the acute care

setting may not always be the best time for education; patients are worried about going home and the stress level may be higher which is not conducive to learning. Education should be repeated with each outpatient visit and should include family members or other support persons. It is also important to be aware of and sensitive to differences in patients' levels of learning, language, and culture, which may impact the degree of understanding and compliance.

Thus, the HBM could be used by the Advanced Practice Nurse (APN) as a guide to determine barriers and to assess risk of noncompliance with medication regimens in the older adult with CHF. Compliance with other prescribed therapeutic regimens (dietary restrictions and activity) could also be assessed using this model and are just as pertinent to care of the CHF patient; however, the focus of this project will be based upon noncompliance with the medication regimen.

Following initial diagnosis, the APN would evaluate the medications that the patient is concurrently taking and address the importance of compliance with the prescribed regimen. The benefits of complying with the regimen would be explained to the patient and family member or support person. Questions relative to potential barriers would be addressed at this time to prevent early complications from noncompliance. The patient would be encouraged to verbalize any questions or concerns relative to the prescribed therapeutic regimen.

With the HBM as a guide, the APN would identify the patient's perceptions of susceptibility/severity of the disease and the acceptance of the diagnosis along with the patient's understanding of causes of exacerbations. The influence of modifying factors such as demographics, psychosocial, structural, and knowledge, would be addressed on an individual basis. An assessment of cues to action is critical to determine the triggers necessary to stimulate the appropriate healthy behavior. The modifying factors mentioned above and the cues to action impact the perceived threat of the chronic disease process. Perceived threats that may accompany a diagnosis of CHF include: increased mortality and morbidity; increased rates of readmission into the acute care setting; increased costs; decreased functional status; and decreased quality of life.

The APN would address the patient's perception of barriers to treatment and benefits relative to treatment as they relate to the issue of compliance. Strategies to intervene and decrease the barriers would be a mutual process between the older adult and the APN. Risk assessment and goal setting would be a repetitive process to reinforce successful problem-solving strategies to promote compliance with medication regimens. Goal setting with the patient is important to increase knowledge related to the disease process; increase awareness of potential barriers and address ways to overcome the barriers; increase awareness of benefits to compliance with the medication

regimen; and to assist him/her in identifying and using social support (Given & Given, 1983). Support and education are important to the guidelines utilized by the APN to address the issue of noncompliance with this specified population. See Figure 2 for the modified HBM developed for this project with emphasis on barriers and compliance.

Review of Literature

In this section relevant literature pertaining to the treatment of CHF, compliance issues, and treatment barriers will be further discussed. The discussion will include literature concerned with the prevalence of CHF in the elderly population and the increasing burden placed upon patients, families, and the health care industry. Causes of treatment failure will be discussed as well as a detailed discussion on barriers that have been identified to promote noncompliance. The discussion will include recent research findings and expert opinion applicable to these issues.

Overview

A review of the literature produces a multitude of articles addressing the issue of compliance with medications in the elder CHF population. The Agency for Health Care Policy and Research (AHCPR) has addressed CHF as a major public health concern and has developed a clinical guideline to assist health care practitioners in the prevention and treatment of this chronic illness syndrome (AHCPR, 1994). Multiple research has been conducted on incidence, prevalence, causes of CHF, and effective treatment regimens

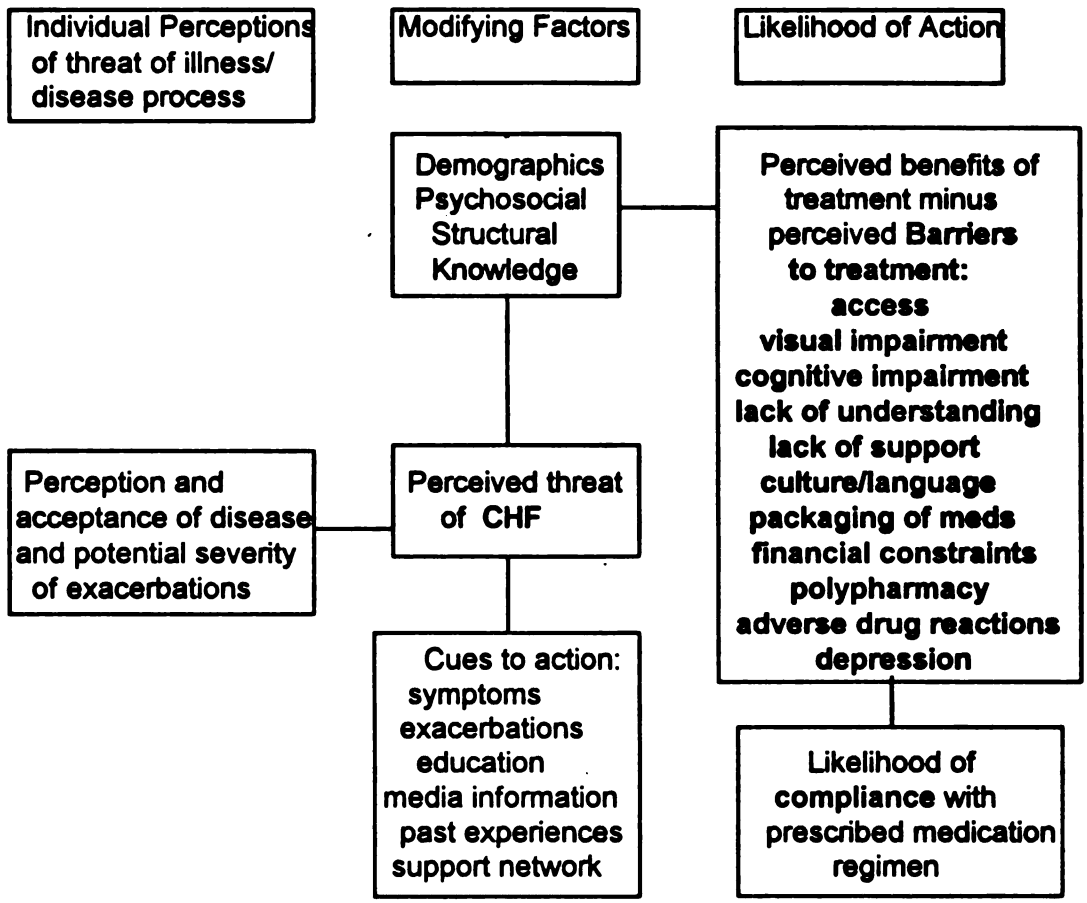

Figure 2: Barriers and HBM Model for the CHF Patient
(bolded boxes are the focus)

(Massie & Shah, 1997; Dracup et al., 1994; Rich et al., 1995; Seager, 1995; Dracup, 1996; Monane et al., 1994; Rich, Baldus Gray, Beckman, Wittenberg, & Luther, 1996; Happ et al., 1997; Chin & Goldman, 1997; Deedwania, 1997; Bennett et al., 1998). The most recent article relative to the care of the CHF patient advocates prescribing a drug regimen, consisting of at least two to four different types of medications, as soon as Stage II of the New York Heart Association Classification (NYHA Classification) (Appendix B) (Packer & Cohn, 1999).

Numerous articles, research and descriptive, also exist devoted to describing potential causes of the frequent occurrence of treatment failure. Some of these articles describe underutilization of angiotensin-converting enzyme inhibitors (ACE-I) of health care providers; however, a major theme identified in this literature is noncompliance with medications and dietary restrictions, specifically sodium restriction (Deedwania, 1997; Bennett et al., 1998; Bennett, Milgrom, Champion, & Huster, 1997; Kegel, 1995; Brass-Mynderse, 1996; Massie & Shah, 1997; Dracup, 1996; Rich et al., 1995; Rich et al., 1996; Happ et al., 1997; Monane et al., 1994; Col, Fanale, & Kronholm, 1990).

Treatment Failure

Studies have focused on treatment failure because of the economic burden that is placed upon society and individuals and their families. Medicare estimates for hospital costs related to care of CHF patients in 1991 was

$5.5 billion which exceeded the $3.2 billion spent on hospitalizations for myocardial infarctions and was twice the Medicare hospital expenditures for all forms of cancer that same year (Massie & Shah, 1997). Total treatment costs for hospitalizations alone are estimated to be $8 to $15 billion and this is considered a conservative estimate (Packer & Cohn, 1999). With the prevalence of CHF being diagnosed in the elderly population, the incidence will continue to increase with the predicted aging of the population. A major dilemma has been created between the rising costs of high quality health care in a managed care and capitated environment and the cyclical treatment failures associated with care of the older adult with CHF.

Medication Noncompliance

Medication noncompliance, as mentioned above, has played a major role in treatment failure with the older adult. Reported rates of noncompliance range from 20-58% (Happ et al., 1997; Dracup 1996; Dracup et al., 1994). Older adults may have more problems with compliance because of their multiple chronic illnesses; decreased functional status, especially mobility issues; isolated living situations; limited, fixed income; and out-of-pocket expense for medications.

Col and co-researchers (1990) found significant higher rates of history of noncompliance with medications associated with older adults living alone, using two or more medications on an as needed basis, using two or more

pharmacies, without assistance taking their medications, and having multiple health care providers. This study also reported the most common form of noncompliance was underuse which accounted for 81% of all noncompliance. Overuse accounted for 17% and 2% was misuse. "Fifty-four percent of all noncompliance was reported as being intentional, and 46% as being unintentional" (p. 842).

Noncompliance with medications and therapeutic regimens have been blamed for the high readmission rate of the older adult with CHF. Rates of readmission range from 29-47% within three to six months following initial discharge and reasons for readmission are thought to be preventable (Rich et al., 1995). The main factor identified in the high readmissions are behavioral factors such as the noncompliance issues, but social factors have also been documented including social isolation and poor support networks. In the previous mentioned research article by Col and associates (1990), factors were identified that were associated with a higher risk of hospitalization resulting from noncompliance; these included: poor recall of medication regimen; having numerous health care providers; being female; medium income category (defined in this study $10,000 to $15,000 per year); prescribed multiple medications; and having the opinion that medications are expensive. Col and colleagues also reported that in their study, patients with cardiac conditions tended to have the highest rate of history of noncompliance (31.1%) and the

proportion of patients whose admission was directly related to noncompliance was highest among cardiac admissions (47.6%).

Hospitalization Rates Associated with CHF

Massie and Shah (1997) report in 1993, there were 875,000 hospital discharges with CHF as the primary diagnosis and approximately 2.5 million discharges with CHF listed as an associated problem. The number of hospital days for CHF was 6.5 million in 1993. Massie and Shah also note that hospitalization rates increase with age, from 12 per 10,000 persons under 65 years of age to 328 per 10,000 over 74 years of age. They report that hospital rates are 15% higher in women and African-Americans.

Happ and colleagues (1997) reported that older adults with CHF have the highest rehospitalization rate of all adult patient groups; ranging from 29-47%. In their article, Happ and co-researchers report associated factors contributing to the preventable hospitalizations to include inadequate patient and caregiver education; poor symptom control; inadequate discharge planning; noncompliance with medications and diet; lack of sufficient social support; and insufficient hospital discharge follow-up.

Barriers to Compliance with Treatment

Barriers to compliance with prescribed medication and therapeutic regimens are discussed throughout the literature relative to the elderly population and CHF. As can be inferred from previous discussion, identification of

barriers promoting noncompliance is critical to reduce health care costs, early readmissions to hospitals, mortality and morbidity, and to improve the quality of life and functional status of the affected older adult. Barriers to be addressed include: polypharmacy; access to health care; visual and cognitive impairment; functional impairment; poor understanding of medications and therapeutic regimens; cultural and language differences; lack of social support; depression; packaging of medications; financial constraints; and side effects of prescribed medications or adverse drug reactions.

Polypharmacy

Polypharmacy is common in the older adult due to treatment of their chronic disease states. The older adult has, on average, more than three chronic medical conditions that require treatment with several medications and this results in this population consuming approximately threefold the amount of medication of the younger population (Murray et al., 1993). Polypharmacy is also common with patients seeing more than one health care provider because medications usually are added to an already complex regimen; the multiple providers usually do not have a complete list of the current medications that the older adult is already taking and most are not in the habit of carrying their "bag" of medications to their office visit. Some older adults do not report OTC medications, vitamins, and herbal products as part of their medication regimen which can create problems

with drug interactions also. If each provider is not fully informed of each patient's full medical history and each medication that he/she is taking, the result can be mismanagement and fragmented care. Another issue pertinent to this discussion is the use of multiple pharmacies. Using one pharmacy to obtain all medications can be important. If the pharmacy is equipped with a computer, as most are these days, medications are easily tracked and this helps the pharmacist be more alert to potential medication interactions and duplications.

Polypharmacy is not consistently defined in the literature. Hsia Der and colleagues (1997) and Murray and colleagues (1993) consider three or more medications to be polypharmacy, while another does not define a specific number, but reports polypharmacy as taking "several" medications (Rajaei-Dehkordi & McPherson, 1997). Hanlon and colleagues (1996) define polypharmacy as taking five or more medications. However, all articles concerning polypharmacy do note its related possible adverse consequences. Adverse consequences related to polypharmacy include the risks of adverse drug reactions, drug interactions, noncompliance, and morbidity and mortality (Johnson & Bootman, 1995; Rajaei-Dehkordi & McPherson, 1997; Murray et al., 1993; Hsia Der et al., 1997; Happ et al., 1997; Wallsten et al., 1995; Wilcox, Himmelstein, & Woolhandler, 1994). Hanlon and co-researchers also report polypharmacy associated with inappropriate prescribing in the older adult. They report

that approximately 51% of medications for the elderly are overused and that up to 90% are misused which creates unnecessary medication-related complications in the elderly population. Wilcox and colleagues (1994) discuss the issue of inappropriate prescribing and polypharmacy to report that many associated symptoms such as sedation and cognitive impairment may easily go unrecognized and many times result in falls or other complications.

Johnson and Bootman (1995) address the issue of medication-related morbidity and mortality. Morbidity and mortality can both be a result of overuse, underuse, or misuse of medications. The authors associate noncompliance with a major economic burden. They estimate that the cost of health expenditures for prescription drugs in 1994 was over $73 billion. According to their research and their quotes from The Task Force for Compliance of 1993 that was involved in the push for health care reform, the direct costs related to noncompliance exceeded more than $50 billion. These costs are related to the hospitalizations secondary to noncompliance and adverse drug reactions from inappropriate prescribing. Johnson and Bootman make reference to the older adult as being high risk for medication-related complications and negative therapeutic outcomes based upon physiological effects of aging on the disposition of medications; multiple disease processes; multiple, concurrent medication regimens; and issues of noncompliance.

Access to Care

Access to health care can be a factor relevant to the area of noncompliance also. Access to health care can be limited due to geographical location and /or constraints related to managed care issues and third-party payers. Noncompliance can be an issue when there are limited providers in an area, especially in rural areas; patients may not be able to make appropriate appointments to maintain proper management of their disease processes. Transportation to the primary care visit may also create an access problem. Access to too many providers can also create noncompliant issues as seen in research articles by Col and co-researchers (1993) and Cargill (1992), especially with prescribing multiple medications.

Lack of Understanding

Poor patient-provider relationships may also promote noncompliance. If patients do not understand the reason for prescribed medications and the therapeutic effects that should result from their use, they may not take them as prescribed. Poor communication can be the root of a major problem between the patient and the provider according to an article by Montamat and colleagues (1989). Assumptions by the health care provider can also contribute to poor understanding. For example, if the provider assumes the patient understands the reasons for the medications and potential side effects without assessing the patient's level of understanding, a situation can be created that promotes

noncompliance with the prescribed therapeutic regimen based on a knowledge deficit by both the patient and the provider.

Cargill (1992) states that a high percentage of older adults misunderstand prescribed medications and feel that they are being over-medicated. When a patient is noncompliant with a prescribed therapeutic regimen, the health care provider may feel anger or guilt and place blame on the patient for wrongdoing; this scenario has negative effects on the patient-provider relationship. Basically, the end result is anger on both sides resulting in increased patient noncompliance with the provider's medical advice and possibly with the patient changing providers.

Cultural and Language Differences

Cultural and language differences can play a role in poor communication and lack of understanding (Dracup et al., 1994; Esposito, 1995; Kegel, 1995). Monane and colleagues (1994) documented a higher noncompliance rate with Hispanics suggesting a cultural or language barrier between patient and provider. Therefore, the health care provider needs to make certain that the patient has a clear understanding of the prescribed therapeutic regimen. However, it is also of utmost importance that the provider make certain that he/she understands the patient.

Financial Constraints

Economic burden placed upon the older adult resulting from multiple medications is a major barrier to medication compliance. Patients with CHF may be concurrently taking

multiple medications. The most up to date evidence from the Steering Committee and Membership of the Advisory Council to Improve Outcomes Nationwide in Heart Failure suggest that CHF be managed with up to four categories of medications including ACE-I, diuretics, beta-blockers, and an inotropic agent--Digoxin (Packer & Cohn, 1999). Therefore, just for the diagnosis of CHF with a functional class of stage II (Appendix), the patient could be on at least four medications.

With a fixed, limited income, the older adult is under financial constraints. Medicare is an older adult's primary insurance and it does not pay for medications. Most older adults do not meet the requirements to have Medicaid; therefore, the medications are a monthly out-of-pocket expense. According to Ennis and Reichard (1997), the typical older adult averages 33 prescriptions annually; this includes refills as well as new prescriptions. The estimated average out-of-pocket expense for these medications was approximately $1,125 in this study. The most common form of noncompliance associated with financial burden is underuse of medications which leads to exacerbations of CHF and the economic burden of repeated hospitalizations.

Functional Impairments

As a person ages, multiple physical changes start to occur. Alterations in functional status may cause problems with independence related to activities of daily living

(ADLs) and instrumental ADLs (IADLs). Functional limitations that affect medication use may include visual disturbances, sensory impairment in the hands, and disorders that affect manual dexterity (Ennis & Reichard, 1997). Mobility may be limited and the older adult may find it difficult to move about. Joints may become stiff due to arthritis which may make it difficult to open medication containers (Farley, 1986; Whyte Mphil, 1994). Child-proof caps on medication bottles and other packaging of medications may cause noncompliance due to the older adult being unable to open the container and visual disturbances may be an issue with opening medication containers also. Atkin, Finnegan, Ogle, and Shenfield (1994) looked at the ability of a sample of geriatric patients in opening standard medication packages and removing the tablet. The standard packaging included a screw-top bottle, a blister platform, a foil sheet, a `push and turn' child-resistant bottle, a flip-top bottle, and a compartmentalized 7-day medication organizer. Atkin and co-researchers found that 78.3% of the 111 patients were unable to break a tablet or open one or more of the containers and of the 111 patients taking medications upon entry into the study, 46 (41.4%) were unable to perform one or more tasks necessary to gain access to medications in their own treatment regimen. Factors that were associated with inability to open containers were poor vision, impaired general cognitive function, and female gender.

Visual Impairments

Visual impairments may make it difficult to read the small print on labels; therefore, noncompliance with medications may occur. Commonly occurring visual problems in the older adult are presbyopia, iatrogenic drug side effects, macular degeneration, cataracts, glaucoma, and ocular manifestations of systemic disease such as arteriosclerosis and diabetes mellitus. The prevalence of visual impairment among community-dwelling older adults range from 10% for those age 65 to 74 and 26% over the age of 85 (Kelly, 1996). Misuse may be the end result due to visual disturbances. As stated earlier, misuse is a form of noncompliance and even though it may not be intentional, the results can be deleterious.

Cognitive Impairments

Cognitive changes are a concern in the elderly population. Estimates of prevalence of cognitive impairment in community-dwelling older adults range from 3-20% of the population (Conn et al., 1994). Conn and co-researchers (1994) report "forgetting" as the most frequent reason given for noncompliance (60.2%). Other reasons reported by Conn and colleagues to cause noncompliance was that the medication was not perceived as helpful, the time the medication was to be taken did not fit into their routine, and the medication caused undesired side effects. Of interest, Conn and co-researchers (1994) looked at MMSE scores relative to cognitive function and the rate of

noncompliance. In this study, lower MMSE scores were not associated with higher rates of noncompliance. Conn and her associates report that patients with lower MMSE scores were more likely to have an adult child or other caregiver assisting with medication administration. Other studies also report similar results with forgetfulness being the main cognitive impairment and patients with dementia-type impairments having assistance with medications from caregivers whether community-dwellers or institutionalized (Reed, 1997; Ennis & Reichard, 1997; Conn, Taylor, & Messina, 1995).

Lack of Social Support

Another influencing factor found in the literature relative to noncompliance is lack of social support. Support from family, friends, and/or a support group has been described as important to the issue of compliance. Fleury, Peter, and Thomas (1996), found that support from family and friends is one of the few variables consistently associated with success in compliance to cardiovascular health behaviors. Rich and co-researchers (1996) reported that noncompliance in the older adult CHF patient was higher when the patient lived alone; living alone was found to be a significant independent predictor of reduced compliance. Dracup and colleagues (1994) also reported that patients diagnosed with CHF were more compliant when their family members supported the required therapeutic changes. Dracup (1996) reports that "family support is almost as critical as

the patient's commitment to making the lifestyle adjustments necessitated by a diagnosis of CHF" (p. 65). Positive social relationships may be essential to compliance with medication and therapeutic regimens in the older adult.

Depression

An issue that may be closely related to lack of social support is depression, and there is documented research that depression affects compliance. Depression has been documented in the elderly population and it has been documented in patients with cardiovascular disease. Freedland, Carney, and Rich (1991) reported 17% of older adult inpatients with CHF and 15-22% of older adult inpatients with coronary artery disease meet the criteria for the diagnosis of depression. A research study by Carney and co-researchers (1995) reported a 45% compliance rate with medications in the depressed elderly patients with cardiovascular disease. These researchers concluded that the poor compliance rate to the prescribed medication rate could be at least partially responsible for the higher rates of medical morbidity and mortality reported in older adult, depressed cardiac patients. Carney and colleagues (1995) associated depression in the older adult with poor social support; functional impairment; heightened sensitivity to physical discomforts including side effects related to medications; and cognitive impairment of attention, concentration, and memory. Each of these factors, solely,

has been associated with noncompliance in the elderly population.

Adverse Drug Reactions

Adverse drug reactions or associated side effects of medications influences compliance with medications in the elderly population. An adverse drug reaction may be defined as "any adverse event associated with a drug as normally used or in abuse, overdosage, or in withdrawal of the drug" (Lamy, 1990, p. 293). Adverse drug reactions are a main contributor to noncompliance. The older adult may be more susceptible to adverse reactions since the metabolism of medications is altered; older adults may respond unpredictably to medications due to age-related diseases and alterations in physiology (Kegel, 1995). Polypharmacy is also associated with increased risk of adverse drug reactions especially due to drug interactions.

Montamat and colleagues (1989) describe adverse drug reactions as all too common in the older adult; overall incidence of adverse drug reactions is said to be two to threefold that found in the younger population. It is also thought that the incidence is underestimated since adverse reactions are not easily recognized by the older adult and the reactions could be mistaken for characteristics of a disease process. The cost of adverse drug reactions is documented throughout the literature as extremely high due to the rate of hospitalizations that occur as a result of the noncompliance (Johnson & Bootman, 1995). Hospital

admissions related to adverse drug reactions is estimated to account for 10-16% of all hospitalizations of the elderly (Rajaei-Dehkordi & McPherson, 1997; Col et al., 1990; Botelho & Dudrak, 1992).

Col and colleagues (1990) found that 16.8% of hospitalizations among the older adults they included in their study to be a direct result of an adverse drug reaction. The types of adverse drug reactions described included: side effects related to the medications; toxic reactions; allergic reactions, and idiosyncratic reactions. They found that there was an increased risk of adverse drug reactions related to polypharmacy, which they defined as taking two or more medications and patients using two or more pharmacies to purchase prescriptions.

In summary, the literature supports the premise that noncompliance in the older adult with CHF is a very common problem and needs to be acknowledged early by all health care providers that provide care to this population to decrease the possibility of occurrence. Proactive treatment of the older adult with CHF could decrease morbidity and mortality and improve functional status and quality of life. Multiple barriers to medication compliance in the CHF population have been discussed. Health care providers need to become more aware of issues relative to noncompliance and the potential deleterious consequences associated with this population. Action must be taken on the part of the provider in order to improve the quality of health care

provided to these patients; reduce hospital readmission rates which should help decrease costs incurred by the patient and family, society, as a whole, and the health care industry; and improve the quality of life for the older adult diagnosed with CHF.

Project Development

The focus of this project is to develop a tool to identify the risk of noncompliance with the prescribed medication regimen of the older adult with CHF. The assessment tool would be used in an ambulatory care setting by an APN and the initial administration time would be approximately fifteen minutes. The initial assessment and information-gathering appointment would take the longest amount of time, but subsequent visits would be updating the information in the event that a change occurred in the data, which may only take five to ten minutes.

Initially, the first part of the tool would address data that the patient would be able to answer ahead of the scheduled appointment time and would include data relative to patient demographics, medical diagnoses/problems, names of physicians seen by the patient, and information regarding dates of preventive care exams, such as vision exam, auditory exam, and immunizations. The tool would elicit complete information relative to concurrent medications being taken by the patient and would also include information regarding dietary restrictions, and a weight range.

The second part of the tool contains the specified barriers discussed within this project. Each barrier is categorized with bullet questions/statements to guide the APN in her/his assessment of the patient's risk of medication noncompliance. would place the patient at risk for noncompliance. To assess for barriers relative to noncompliance, the APN would have to ask non-threatening, open-ended questions that would elicit the information. Examples of questions that have been used to address medication noncompliance in the older adult with CHF based upon the constructs of the HBM are found in the literature (Conn et al., 1994; Bennett et al., 1997). Each barrier that has been identified within the review of literature in this project has two or more bullet questions/statements prompting a response that would ascertain the older adult's risk of noncompliance. Most responses to the questions/statements would be either "yes" or "no"; however, many do require detailed explanations from the patient. The responses would assist the APN in addressing areas of knowledge deficit with the patient. Patient demonstration is also included in specific categories of barriers because it is important when assessing functional and visual impairments; the APN will be able to assess for any difficulties related to these categories.

The risk of noncompliance would be determined based upon the information gathered, and then the specific barriers could be mutually identified by the patient and the

APN. The risk assessment of barriers contributing to noncompliance would identify older adults that are "at risk" or "not at risk". Identification of barriers that have a greater negative impact on compliance have not been established in the literature; therefore, these limitations are noted within the scope of this project. To date, research does not exist that would determine the degree of influential importance of specific barriers to medication noncompliance; therefore, a scale of the level of risk ("low", "medium", and "high") cannot be calculated at this time.

In general, an older adult would be placed in one of two categories--"at risk" or "not at risk". Older adults that fall into the "not at risk" category would be the patients who did not have any identifiable barriers and those who may have only one identifiable barrier but have the means to problem-solve and eliminate the barrier. All other older adults with CHF would fall into the "at risk" category. Being "at risk" would set the next steps in motion of establishing mutual interventions and goals to eliminate the barriers (the details of this discussion is out of the scope of this project). With barriers eliminated, compliance with the prescribed medication regimen would be possible and the older adult would have some control over the clinical syndrome which may promote a more independent functional status and a higher quality of life.

Procedure for Using Tool

This tool is intended to be administered to the older adult diagnosed with CHF in the ambulatory care setting. As previously described, the first part of the tool can be filled out by the patient without or with assistance from family, friends, or office personnel. The basic information in this part should already be documented within the patient's medical record and at subsequent visits would only require an update if a change had occurred. The first part of the tool would alert the APN to the number of chronic illnesses/problems, names of health care providers, concurrent medication use, and health habits relative to preventive care. This information would provide the APN with a quick assessment of potential risk-related barriers to medication compliance which could be addressed initially and may provide the APN with more insight prior to the subsequent questions on the second part of the tool. The APN may even gain answers to some of the questions/statements on the second part of the tool which could minimize time asking questions.

The APN would complete the second part of the tool with the patient which would consist of the open-ended, non-threatening questions aimed at identifying risk-related barriers that contribute to medication noncompliance. The time intended for this second part would be approximately fifteen minutes. A space is provided to the left of each barrier category for the APN to place a check indicating

that she/he discussed this category with the patient. There are spaces to the right of the questions/statements under each barrier category for the APN to place a check or write "yes" if a risk is identified. At the end of the of this second part, a "comments" section is provided for the APN to put any additional notes specific to the patient. A place is included for the APN's and the patient's signature to signify mutual agreement of the gathered information. Upon completion of these questions, the APN would be able to determine if the older adult is "at risk" or "not at risk".

The tool should be updated with each subsequent visit to provide close follow-up and monitoring of changes. The tool would be placed in the front of the patient's chart for easy access and would remain part of the permanent medical record. The tool could also be used in tracking and monitoring of outcomes with the older adult CHF patient once interventions were instituted to reduce risk-related barriers that contribute to medication noncompliance.

Evaluation of Tool

Evaluation of the tool is important to ensure that it is reliable and identifies risk-related barriers that contribute to medication noncompliance in the CHF patient. APNs working in an ambulatory care setting with older adults diagnosed with CHF could review the tool and determine if it assesses for barriers that are relevant to the population of CHF patients seen in their setting. Another method that would assess the usefulness of this tool would be to

perform a chart review on older adults that utilized the tool. The chart review would indicate the older adults "at risk" and the barriers that had been identified. The interventions and education that had been instituted in response to the identified barriers would be documented in the charts. It would be important to look for a decrease in the number of hospitalizations and in the number of primary care visits related to exacerbation and symptom relief of CHF in comparison to the numbers prior to use of the risk assessment tool. Another area of interest would be to determine if the health care provider was providing closer monitoring and follow-up of the older adult "at risk" which may positively impact the medication compliance rate also.

The main outcome with this risk assessment tool is to reduce barriers that contribute to medication noncompliance in older adults with CHF. If the risks of barriers are reduced, compliance with medications will be optimized. Medication compliance should result in: the older adult's perception of some control over the disease process, improved symptom management, maintenance and/or improvement in functional status and quality of life, and decreased costs to the patient, family, society, and the health care industry. Outcomes would be measured by the decrease in number of hospital readmissions and emergency room visits due to less occurrence of exacerbations; and improved symptom management, including daily weight monitoring and patient's report of less incidence of edema, orthopnea,

dyspnea on exertion, and paroxysmal nocturnal dyspnea, measurable with the use of the NYHA classification. Another outcome that would be important to measure would be patient satisfaction with the treatment process and the patient's knowledge of CHF and prescribed medications (Spertus, 1997). The AHCPR (1994) guidelines for CHF also suggest measuring quality of life with the Health-Related Quality of Life (HRQOL) scale.

Implications for Advanced Nursing Practice

The diagnosis of CHF is associated with dramatic lifestyle modifications. The success of the prescribed therapeutic regimen requires patient compliance with medications, as well as dietary restrictions and regular exercise schedules. The diagnosis alone can be devastating to the older adult, but he/she is faced with the stress of having to modify a "set lifestyle", take multiple medications that may alter daily schedules, and accept the change in functional status related to fatigue, dyspnea, and other symptoms associated with CHF.

Management of the older adult with CHF can be a challenge for any health care provider, but someone must play a key role in assisting the older adult and their family and/or support person(s) adapt to and understand the required changes. The APN's role in the care of the older adult with CHF is documented throughout the literature (Dracup, 1996; Dracup et al., 1994; Fleury et al., 1996; Brass-Mynderse, 1996; Happ et al., 1997; Kegel, 1995; Packer

& Cohn, 1999). The APN can play multiple roles in the care of the older adult including: clinician, collaborator, counselor, educator, evaluator, advocate, consultant, and change agent. Although, all of these roles are important, a select few will be discussed within the scope of this project.

The older adult with CHF requires close monitoring and assessment for early signs of exacerbations. With a strong clinical base in cardiology and CHF, the APN is capable of providing quality care that incorporates advanced assessment, diagnostic, and management skills (Kegel, 1995). The APN can assess the patient's response to treatment and "implement educational, psychosocial, and physiological interventions that lead to physiological stability "(Kegel, 1995, p. 78).

The APN, as educator, is involved in ongoing education with the patient and the family. Education is always part of the plan of care with a thorough assessment of the patient's and family's level of understanding. Patients and families should receive written instructions regarding medications and other prescribed therapeutic regimens and they should receive brochures or pamphlets that explain the course of CHF and management strategies. Without the understanding of the disease process, purpose of medications, and other important strategies to manage CHF, patient compliance is at risk. Knowledge deficit is a major barrier and one that can be eliminated by the APN. A list

of suggested topics for patient, family, and caregiver education and counseling is included in Appendix III.

As counselor, the APN provides support to the older adult and family and allows for expression of concerns and fears relative to the diagnosis and management of CHF. The APN may assist the patient and family with problem-solving skills and interventions to eliminate barriers that contribute to medication noncompliance. Assessment of coping behaviors in adjusting to the lifestyle modifications is also an area for the counselor.

As consultants and collaborators, APNs have an important role in the shift to prevention as health promotion educators, community leaders, and caregivers (Fleury et al., 1996). The APN can provide cost-effective high quality health care that addresses the needs of the older adult and the family. The APN can monitor and track outcomes and effectiveness of care delivery.

The APN can function in a collaborative role with other health care team members to provide a holistic approach to the care of the older adult with CHF. Rich and co-researchers (1995) concluded that a "nurse-directed, multidisciplinary treatment strategy could significantly reduce hospital admissions and improve the quality of life for elderly patients with CHF" (p. 1194). DeBusk (1997) also supports the role of the APN in the management of the care of the CHF patient. Dr. DeBusk is involved in a program, MULTIFIT, which is a physician-supervised, nurse-

mediated, home-based system for managing care of patients with chronic diseases. This comprehensive program relies "heavily on patient education, reinforced by nurse-mediated phone contact with patients to provide feedback based on patient's reports of symptoms, weight, and other clinical and functional information" (p. 2). There is an emphasis placed on compliance to treatment regimens. This program has tracked two types of outcomes to monitor progress with the CHF patients: primary outcomes which include hospitalization rates, emergency room visits, and clinic visit; secondary outcomes which include following functional status as measured by NYHA classification and self-reports of symptom control, dietary sodium intake, weight diaries. The evaluation of the program demonstrated that the interventions were effective; Dr. DeBusk reported that the outcomes exceeded the expectations of the investigators and he credits the improvements to the nurse-managed part of the program.

Another setting where the APN is functioning is in nurse-managed CHF clinics. The nurse-managed clinic provides a continuum of care and patients' needs are a main part of the focus. Areas of focus include pharmacological management, nutritional management, exercise training through referrals to the system's cardiac rehabilitation program, and educational and counseling programs (Brass-Mynderse, 1996). The clinic receives patients from referrals from physicians, including cardiologists, and any

patient admitted to the hospital with CHF is seen by the APN. Patients are followed closely for the first 6 months with a preset schedule of clinic appointments. After 6 months with continual progress, the patients are mainly monitored by phone. The clinic strives to provide high quality care through control and avoidance of high-cost chronic disease (Brass-Mynderse, 1996).

In summary, the APN has the capability of effectively providing high quality, cost-effective care to the older adult with CHF. With the tracking and monitoring of outcomes, APNs can validate their worth to the patient, society, peers, and the health care industry. The APN who has the skills and knowledge to care for the older adult with CHF can educate, provide support, assess, and intervene to help the patient decrease noncompliant behaviors and maintain quality of life.

Implications for Education

With the projected increase of the aging of the population, the incidence of CHF will not abate and disappear from the list of chronic diseases. Therefore, it is essential that education be a priority. Academic settings that provide education to prepare APNs to practice in the primary care setting, as well as the acute care setting, must include CHF as a chronic and fatal syndrome. The APN must have a complete understanding of CHF in order to provide quality care to the affected patient. The care

must be holistic since CHF requires major life modifications.

Education must focus on risk reduction of CHF. Risk reduction would emphasize prevention and control of hypertension, smoking cessation, management of blood lipid levels, and tight control of blood glucose levels in diabetics. Education related to well-balanced dietary regimens to limit intake of fats and cholesterol and a regular exercise program would also be accentuated. A goal of a risk reduction program would be to decrease the incidence of ischemic heart disease which is the primary cause of CHF and to prevent or control hypertension, as stated above, since it is the secondary cause. APNs must be able to provide primary preventive care as well as secondary care in order to effect the continuous increase in the incidence of CHF.

Education of the APN must include management of the CHF patient. Management should include symptom management and reduction with improved functional status and quality of life. All academic settings involved in the education of master-prepared APNs must emphasize management of the CHF patient that is grounded on evidence-based outcomes. APNs must also understand the importance of monitoring and tracking outcomes. Tracking outcomes is significant to the future of the APN; it can be a "value-added" component that may secure a position for the APN in the primary care environment.

Education of the multidisciplinary team that cares for the older adult with CHF is of utmost importance. The APN is capable of providing education to her/his peers and coworkers. Health care providers need to understand what CHF means to the patient. Care that is provided with a sincere and empathic attitude is much more effective with chronic diseases. Risk reduction in cardiac diseases must start with education; primary prevention is the key to successful aging.

Implications for Research

Current research abounds with information relative to CHF and its management. The research indicates that the prevalence of CHF will continue to increase with the aging of the population. There is much discussion on treatment and treatment failure; however, the research that deals with the problem-solving of decreasing treatment failure is limited. There are a few articles discussed within this project that denote the success of multidisciplinary teams and this seems to be a successful and practical approach. However, much more research is needed regarding prevention of treatment failure.

More research is needed to understand the barriers to compliance. For example, a research question that looked at barriers and their influence on compliance would be important in determining if one type of barrier has a greater impact on compliance as compared to another barrier. Interventions need to be identified and researched to

discover which ones are effective to promote compliant behaviors. For example, an experimental research design could be used to observe for differences between a treatment group that receives specific interventions to improve medication compliance versus a control group. Possible outcomes to address in the experimental study would be decreased hospitalizations and readmission rates, improved symptom management, and the patient's perception of quality of life. It would also be relevant to document what type of follow-up--frequent office visits, frequent phone follow-ups, or a combination of both--provides the most successful outcome of medication compliance in the older adult with CHF. Research is important to determine factors that facilitate medication compliance as well as factors that do not facilitate compliance. In summary, more research studies are needed to guide the care of the older adult with CHF toward compliance with prescribed regimens which will produce effective outcomes.

Conclusion

Management of CHF in the older adult can be a challenge. The therapeutic regimen guidelines are well documented by the AHCPR as well as throughout the research literature; however, treatment failures are common in this population. Noncompliance has been discussed throughout this project as being a major contributor to failure of treatment. Barriers that contribute to noncompliance must be addressed with the initial diagnosis of CHF. Patients

must be included as the primary participant in the plan of care, and goals and interventions must be mutually decided upon by all participants. The APN can play a proactive role in the care of these patients and assist them in being successful in the management of a clinical syndrome that knows no cure. As providers of health care, we have an obligation to work with our patients to achieve mutual goals and form a partnership with our patients that will promote an environment of mutual respect, understanding, and compliance.

LIST OF REFERENCES

LIST OF REFERENCES

Atkin, P. A., Finnegan, T. P., Ogle, S. J., & Shenfield, G. M. (1994). Functional ability of patients to manage medication packaging: A survey of geriatric inpatients. Age and Aging 23, 113-116.

Bennett, S. J., Huster, G. A., Baker, S. L., Milgrom, L. B., Kirchgassner, A., Birt, J., & Pressler, M. L. (1998). Characterization of the precipitants of hospitalization for heart failure decompensation. American Journal of Critical Care, 7(3), 168-174.

Bennett, S. J., Milgrom, L. B., Champion, V., & Huster, G. A. (1997). Beliefs about medication and dietary compliance in people with heart failure: An instrument development study. Heart & Lung, 26(4), 273-279.

Berube, M. S. (Ed.). (1991). The american heritage dictionary (2nd ed.). Boston: Houghton Mifflin.

Biggs, J. & Fleury, J. (1994). An exploration of perceived barriers to cardiovascular risk reduction. Cardiovascular Nursing, 30(6), 41-46.

Botelho, R. J. & Dudrak, R. 91992). Home assessment of adherence to long-term medications in the elderly. Journal of Family Practice, 35(1), 61-65.

Brass-Mynderse, N. J. (1996). Disease management for chronic congestive heart failure. Journal of Cardiovascular Nursing, 11(1), 54-62.

Cargill, J. M. (1992). Medication compliance in elderly people: Influencing variables and interventions. Journal of Advanced Nursing, 17, 422-426.

Carney, R. M., Freedland, K. E., Eisen, S. A., Rich, M. W., & Jaffe, A. S. (1995). Major depression and medication adherence in elderly patients with coronary artery disease. Health Psychology, 14(1), 88-90.

Chin, M. H. & Goldman, L. (1997). Factors contributing to the hospitalization of patients with congestive heart failure. American Journal of Public Health, 87(4), 643-648.

Col, N., Fanale, J. E., & Kronholm, P. (1990). The role of medication noncompliance and adverse drug reactions in hospitalizations of the elderly. Archives of Internal Medicine, 150, 841-845.

Conn, V. S., Taylor, S. G., & Messina, C. J. (1995). Older adults and their caregivers: The transition to medication assistance. Journal of Gerontological Nursing, 21(5), 33-38.

Conn, V. S., Taylor, S. G., & Miller, R. (1994). Cognitive impairment and medication adherence. Journal of Gerontological Nursing, 20(7), 41-47.

Corlett, A. J. (1996). Aids to compliance with medication. British Medical Journal, 313, 926-929.

DeBusk, R. F. (1997). MULTIFIT: A patient/clinician parternship for managing heart failure. Monitor, 2(2), 2,6.

Deedwania, P. C. (1997). Underutilization of evidence-based therapy in heart failure (Editorial). Archives of Internal Medicine, 157, 2409-2412.

Dracup, K. (1996). Heart failure secondary to left ventricular systolic dysfunction. Nurse Practitioner, 21(9), 56-68.

Dracup, K., Baker, D. W., Dunbar, S. B., Dacey, R. A., Brooks, N. H., Johnson, J. C., Oken, C., & Massie, B. M. (1994). Management of heart failure: Counseling, education, and lifestyle modification. Journal American Medical Association, 272(18), 1442-1446.

Ennis, K. J. & Reichard, R. A. (1997). Maximizing drug compliance in the elderly. Postgraduate Medicine, 102(3), 211-223.

Eraker, S. A., Kirscht, J. P., & Becker, M. H. (1984). Understanding and improving patient compliance. Annals of Internal Medicine, 100, 258-268.

Esposito, L. (1995). The effects of medication education on adherence to medication regimens in an elderly population. Journal of Advanced Nursing, 21, 935-943.

Farley, D. (1986, October). Protecting the elderly from medication misuse. FDA Consumer, p.28-31.

Fleury, J. (1992). The application of motivational theory to cardiovascular risk reduction. Image: Journal of Nursing Scholarship, 24(3), 229-239.

Fleury, J., Peter, M. A., & Thomas, T. (1996). Health promotion across the continuum: Challenges for the future of cardiovascular nursing. Journal of Cardiovascular Nursing, 11(1), 14-26.

Freedland, K. E., Carney, R. M., & Rich, M. W. (1991). Depression in elderly patients with congestive heart failure. Journal of Geriatric Psychiatry, 24, 59-71.

Given, B. & Given, C. W. (1983). Adherence to hypertensive therapy. Geriatric Nursing, 4(3), 172-175.

Given, B. & Given, C. W. (1984). Creating a climate for compliance. Cancer Nursing, 7(2), 139-147.

Given, C. W., Given, B., Gallin, R. S., & Condon, J. W. (1983). Development of scales to measure beliefs of diabetic patients. Research in Nursing and Health, 6(3), 127-141.

Given, C. W., Given, B., & Simoni, L. E. (1978). The association of knowledge and perseption of medications with compliance and health states among hypertensive patients: A prospective study. Research in Nursing and Health, 1(2), 76-84.

Graveley, E. A. & Oseasohn, C. S. (1991). Multiple drug regimens: Medication compliance among veterans 65 years and older. Research in Nursing and Health, 14, 51-58.

Hanlon, J. T., Weinberger, M., Samsa, G. P., Schmader, K. E., Uttech, K. M., Lewis, I. K., Cowper, P. A., Landsman, P. B., Cohen, H. J., & Feussner, J. R. (1996). A randomized, controlled trial of a clinical pharmacist intervention to improve inappropriate prescribing in elderly outpatients with polypharmacy. American Journal of Medicine, 100(4), 428-437.

Happ, M. B., Naylor, M. D., & Roe-Prior, P. (1997). Factors contributing to rehospitalization of elderly patients with heart failure. Journal of Cardiovascular Nursing, 11(4), 75-84.

Hill, M. N. & Berk, R. A. (1995). Psychological barriers to hypertension therapy adherence: Instrumental development and preliminary psychometric evidence. Cardiovascular Nursing, 31(6), 37-42.

Ho, K. K. L., Pinsky, J. L., Kannel, W. B., & Levy, D. (1993). The epidemiology of heart failure: The Framingham study. Journal of American College of Cardiology, 22(supp A), 6A-13A.

Hsia Der, E., Rubenstein, L. Z., & Choy, G. S. (1997). The benefits of in-home pharmacy evaluation for older persons. Journal of the American Geriatrics Society, 45(2), 211-214.

Johnson, J. A. & Bootman, L. (1995). Drug-related morbidity and mortality. Archives of Internal Medicine, 155, 1949-1956.

Johnson, J. A. & Lalonde, R. L. (1997). Congestive heart failure. In J. T. DiPiro, R.L. Talbert, G. C. Yee, G. R. Matzke, B. G. Wells, & L. M. Posey (Eds.), Pharmacotherapy: A Pathophysiologic Approach (pp. 219-252). Stamford: Appleton & Lange.

Kegel, L. M. (1995). Advanced practice nurses can refine the management of heart failure. Clinical Nurse Specialist, 9(2), 76-81.

Kelly, M. (1996). Medications and the visually impaired elderly. Geriatric Nursing, 17(2), 60-62.

Lamy, P. (1982). Effects of diet and nutrition on drug therapy. Journal of the American Geriatrics Society, 30(11), 99-112.

Massie, B. M. & Shah, N. B. (1997). Evolving trends in the epidemiologic factors of heart failure: Rationale for preventive strategies and comprehensive disease management. American Heart Journal, 133(6), 703-712.

McKee, P. A., Castelli, W. P., & McNamara, P. M. (1971). The natural history of congestive heart failure: the Framingham Study. New England Journal of Medicine, 26, 1441-1446.

Monane, M., Bohn, R. L., Gurwitz, J. H., Glynn, R. J., & Avorn, J. (1994). Noncompliance with congestive heart failure therapy in the elderly. Archives of Internal Medicine, 154, 433-437.

Montamat, S. C., Cusack, B. J., & Vestal, R. E. (1989). Management of drug therapy in the elderly. New England Journal of Medicine, 321(5), 303-308.

Moody, H. R. (1994). Aging: Concepts and controversies. Thousand Oaks, CA: Pine Forge Press.

Murray, M. D., Birt, J. A., Manatunga, A. K., & Darnell, J. C. (1993). Medication compliance in elderly outpatients using twice-daily dosing and unit-of-dose packaging. Annals of Pharmacotherapy, 27, 616-621.

Nyamathi, A. & Shuler, P. (1989). Factors affecting prescribed medication compliance of the urban homeless adult. Nurse Practitioner, 14(8), 47-54.

Packer, M. & Cohn, J. N. (Eds.). (1999). Consensus recommendations for the management of chronic heart failure. American Journal of Cardiology, 83 (Suppl. 2A), 1A-30A.

Rajaei-Dehkordi, Z. & McPherson, G. (1997). The effects of multiple medication in the elderly. Nursing Times, 93(27), 56-58.

Reed, A. (1997). Simple strategies that improve compliance. RN, 60(9), 35-37.

Rich, M. W., Baldus Gray, D., Beckman, V. Wittenberg, C., & Luther, P. (1996). Effect of a multidisciplinary intervention on medication compliance in elderly patients with congestive heart failure. American Journal of Medicine, 101, 270-276.

Rich, M. W., Beckman, V., Wittenberg, C., Leven, C. L., Freedland, K. E., & Carney, R. M. (1995). A multidisciplinary intervention to prevent the readmission of elderly patients with congestive heart failure. New England Journal of Medicine, 333(18), 1190-1195.

Salom, I. L. & Davis, K. (1995). Prescribing for older patients: How to avoid toxic drug reactions. Geriatrics, 50(10), 37-43.

Salzman, C. (1995). Medication compliance in the elderly. Journal of Clinical Psychiatry, 56, 18-22.

Seager, L. H. (1995). Congestive heart failure: Consideration for primary care physicians. Postgraduate Medicine, 98(5), 127-137.

Spertus, J. (1997). Evaluating outcomes of congestive heart failure. Monitor, 2(2), 1, 6.

Strecher, V. J. & Rosenstock, I. M. (1997). The health belief model. In K. Glanz, F.M. Lewis, & B. K. Rimer (Eds.), Health behavior and health education (pp. 41-59). San Francisco: Jossey-Bass Publishers.

U. S. Department of Health and Human Services. (1994). Heart Failure: Evaluation and Care of Patients with Left-Ventricular Systolic Dysfunction. Clinical Practice Guideline No. 11. (AHCPR Publication No. 94-0612). Rockville MD: Author.

Vivian, B. G. (1996). Reconceptualizing compliance in home health care. Nursing Forum, 31(2), 5-13.

Wallsten, S. M., Sullivan, R. J., Hanlon, J. T., Blazer, D. G., Tyrey, M. J., & Westlund, R. (1995). Medication taking behaviors in the high- and low-functioning elderly: MacArthur field studies of successful aging. Annals of Pharmacotherapy, 29, 359-364.

Whyte Mphil, L. A. (1994). Medication cards for elderly people: A study. Nursing Standard, 8(48), 25-28.

Wilcox, S. M., Himmelstein, D. U., & Woolhandler, S. (1994). Inappropriate drug prescribing for the community-dwelling elderly. Journal of the American Medical Association, 272(4), 292-296.

APPENDICES

APPENDIX A

RISK ASSESSMENT TOOL

Instructions to the APN:

1. The first part of the Risk Assessment Tool can be filled out by the patient prior to the appointment with the APN. This can be mailed to the patient by the office staff accompanied by instructions to assist in the completion of the form and to remind him/her to bring all medications to the appointment. If a mailing is not feasible, the patient can be instructed to come about 15 minutes prior to the appointment time. Always remind the patient to bring all their medications with them.
2. If the patient had any questions regarding filling out the papers, the front office staff would be able to answer questions.
3. The APN would review the first part of the assessment tool at the appointment and clarify any missing information with the patient.
4. In the second part of the Risk Assessment Tool, the APN would ask the patient (or family member or caregiver) questions specific to listed categories that would identify risks for potential barriers. The APN would place a check in the space provided to the left of the category indicating that it was addressed with the patient.
5. The responses to the questions/statements would indicate the patient's risk of medication noncompliance. If risks are present, the APN could identify the specific areas by placing a check or a "yes" in the space provided to the right of the questions/statements.
6. If barriers are mutually identified by the APN and the patient, then the patient is considered to be "at risk".
7. If no barriers are identified, then the patient is considered "not at risk".
8. A patient could also be considered "not at risk" in the following scenario: if there was identification of a potential barrier but interventions were in place at this time that negated the risk.
9. If a patient is considered to be "at risk", interventions must be put in place to minimize the barriers, thus decreasing the risk and safeguarding medication compliance.
10. Comments section is provided for any additional information that the APN considers pertinent to the patient's situation.
11. A space is provided for the APN and the patient to sign showing mutual agreement of information elicited through the Risk Assessment Tool.
12. Information in the Risk Assessment Tool should be updated with any changes at follow-up appointments. It is important for the APN to be aware of any changes that may increase the risk of medication noncompliance. (ALWAYS ASK ABOUT CHANGES!)

RISK ASSESSMENT TOOL (Part I)

Instructions to the patient:

1. Please fill out the enclosed Risk Assessment Tool before your scheduled appointment.

2. If you need assistance filling out the forms, ask a family member, friend, or call our office and someone will be able to assist you. Phone #_____

3. If more space is needed in order to provide the information, you may use the backside of the form or a separate sheet of paper.

4. The second page of the Risk Assessment Tool asks for a listing of **ALL** your medications, including over-the-counter medications such as vitamins, aspirin, Tylenol, and herbal products. Please complete this page, but we also ask that you **BRING ALL YOUR MEDICATIONS TO YOUR APPOINTMENT**. It is extremely important that we are aware of **ALL** your medications because of potential drug interactions.

5. We encourage all our patients to keep a medication list with them at all times. If you do not have one, we will be happy to photocopy this completed list for you at your appointment.

6. Please call if you have any questions.

RISK ASSESSMENT TOOL (Part I)

NAME_____DATE OF BIRTH_____SEX_____

PHONE (HOME):_____(OTHER):_____MARITAL STATUS_____

OCCUPATION_____EDUCATION _____

DO YOU LIVE ALONE?_____WITH SPOUSE?_____OTHER?_____ (check one)

INSURANCE (1)_____

(2)_____

MEDICAL DIAGNOSES/PROBLEMS:

(1)_____ (7) _____

(2)_____ (8) _____

(3)_____ (9)_____

(4)_____ (10)_____

(5)_____ (11)_____

(6)_____ (12)_____

HEALTH CARE PROVIDERS:_____

_____

PREVENTIVE CARE: DATE LAST EYE EXAM:_____HEARING EXAM:_____

TYPE OF DIET:_____DO YOU FOLLOW IT?_____

EXERCISE (TYPE & FREQUENCY):_____

DO YOU WEIGH YOURSELF DAILY?_____WEIGHT RANGE:(PAST WEEK)_____

USE OF (AMOUNTS): TOBACCO_____ALCOHOL_____
CAFFEINE_____DRUGS_____

NAME OF PHARMACY:_____

MEDICATIONS-- prescription (include pills, patches, eyedrops, ointments, liquids)

NAME	DOSE	HOW TAKEN	PURPOSE	DOCTOR	COLOR/ SHAPE

OVER-THE-COUNTER MEDS: (include vitamins, herbal products)

NAME	DOSE	HOW TAKEN	PURPOSE	DOCTOR	COLOR/ SHAPE

RISK ASSESSMENT TOOL (Part II)

The APN will ask questions specific to the following areas:

Risk Identified

____ Social Support
- needs assistance taking medications ____
- lives alone ____
- family/friends able to assist; other support ____
- feels has adequate support ____
- any history of Depression ____

____ Polypharmacy
- taking multiple medications (>3) ____
- multiple chronic illnesses ____
- uses more than one pharmacy ____
- system to help you remember to take medications ____
- schedule of daily medications (QD vs. TID or QID) ____

____ Cognitive / Understanding
- able to recall names of medications ____
- able to explain purpose of medications ____
- able to explain CHF ____
- believes medication is effective ____
- forgets to take medications (how many times/week?) ____

____ Financial
- has insurance to help pay for medications ____
- has problems purchasing medications ____
- ever had a prescription unable to get filled ____

____ Access
- difficulty getting to pharmacy to pick up prescriptions ____
- difficulty getting appointment to see Health Care Provider ____
- sees multiple providers ____
- insurance constraints ____
- transportation ____

____ Functional / Visual

patient is able to demonstrate the following:
- able to read medication bottle label ____
- able to open medication container ____
- do any medications have to be broken for correct dosing ____

____ Adverse Drug Reactions
- experience problems with taking medications (side effects / drug reactions or interactions) ____
- quit taking medication related to adverse reaction (notified Health Care Provider?) ____

____ **Cultural / Language**

- **beliefs that influence health care** **(example)** ____
- **language barriers** ____

COMMENTS:_____

_____

_____

_____

_____

_____

APN signature_____Date_____

Patient signature_____Date_____

APPENDIX B

NEW YORK HEART ASSOCIATION FUNCTIONAL CLASSIFICATION
(adapted from New York Heart Association)

Functional class:

I Patients with cardiac disease but without limitations of physical activity. Ordinary physical activity does not cause undue fatigue, dyspnea, or palpitation.

II Patients with cardiac disease that results in slight limitations of physical activity. Ordinary physical activity results in fatigue, palpitation, dyspnea, or angina.

III Patients with cardiac disease that results in marked limitation of physical activity. Although patients are comfortable at rest, less than ordinary activity will lead to symptoms.

IV Patients with cardiac disease that results in an inability to carry on physical activity without discomfort. Symptoms of congestive heart failure are present even at rest. With any physical activity, increased discomfort is experienced.

APPENDIX C

Suggested Topics for Patient, Family, and Caregiver Education and Counseling
(adapted from AHCPR No. 11: Heart Failure)

General Counseling
- Explanation of heart failure and the reason for symptoms
- The cause or probable cause of heart failure
- Expected symptoms
- Symptoms of worsening heart failure
- What to do if symptoms worsen
- Self-monitoring with daily weights
- Explanation of treatment/care plan
- The role of family members or other caregivers in the treatment/care plan
- The availability and value of qualified local support groups
- Clarification of patient and family responsibilities
- Importance of tobacco cessation

Dietary Recommendations
- Sodium restriction
- Avoidance of excessive fluid intake
- Fluid restriction (if required)
- Alcohol restriction/abstinence

Activity Recommendations
- Recreational, leisure, and work activity
- Exercise
- Sexual difficulties and coping strategies

Medications
- The benefits of medications for quality of life and survival
- Dosing
- Adverse effects and what to do if they occur
- Coping mechanisms for complicated therapeutic regimens
- Availability of lower-cost medications or financial assistance

Prognosis
- Life expectancy
- Advance directives
- Advice for family members in the event of sudden death

MICHIGAN STATE UNIVERSITY LIBRARIES
3 1293 02356 2071