What Women Want to Know: Assessing the Value, Relevance, And Efficacy of a Self-Management Intervention for Rural Women with Coronary Heart Disease

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WHAT WOMEN WANT TO KNOW: ASSESSING THE VALUE, RELEVANCE, AND EFFICACY OF A SELF-MANAGEMENT INTERVENTION FOR RURAL WOMEN WITH CORONARY HEART DISEASE

A Dissertation Presented

By

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Dedication

To my daughters, Laura and Paige

To my brother, Peter

And, in memory of my parents, Joan and Peter Evans.
ACKNOWLEDGEMENTS

I would like to thank my advisor, Cynthia S. Jacelon; her faith in me and this project made this endeavor possible. I have valued her kindness, encouragement, knowledge, suggestions, and support. She is truly an outstanding nurse, educator, and scholar and will forever be my role model.

I would also like to acknowledge the members of my committee for their work on my behalf; their input and knowledge have been invaluable. Genevieve E. Chandler has a passion for education and a belief in its power to transform lives. Daniel S. Gerber has expanded my world as both a student and an educator.

I owe a debt of gratitude to all the wonderful educators I have encountered at the University of Massachusetts, in particular: Donna Zucker, Eileen Breslin, and Eleanor Vanetzian.

The Beta Zeta Chapter of Sigma Theta Tau has provided funding for this research and I thank the members for that privilege.

I’d like to thank my friends, colleagues, and students who have encouraged me throughout the process. I am especially grateful to Chia-Huan Ho’s assistance with statistics and Patty Ryan for her efforts in recruiting participants.

Finally, I wish to express my deep appreciation to all the women who participated in this study. Thank you for sharing your thoughts, personal stories, heartaches, and triumphs. I am the wiser for listening to you.
ABSTRACT

WHAT WOMEN WANT TO KNOW: ASSESSING THE VALUE, RELEVANCE, AND EFFICACY OF A SELF-MANAGEMENT INTERVENTION FOR RURAL WOMEN WITH CORONARY HEART DISEASE.

SEPTEMBER 2010

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Background: Women have experienced increased mortality from coronary heart disease over the last two decades, while men’s rate has declined. This suggests that current treatment and prevention strategies are less effective for women. Furthermore, since most women don’t participate in cardiac rehabilitation, alternatives to these programs must be explored.

Purpose: This study sought to refine an intervention for rural women with coronary heart disease designed to promote self-management and provide pilot data evaluating the efficacy of the intervention.

Design and Methods: The study design was mixed methods. Focused qualitative interviews provided data regarding the self-management program. In-depth interviews determined the efficacy of the intervention including adoption of health promoting behaviors, self-awareness, and self-efficacy. The Self-efficacy for Managing Chronic Disease 6-Item Scale provided additional efficacy data and was administered over the
course of the study. Ten women from rural New England, diagnosed with coronary heart
disease within the last year, comprised the purposeful sample.

Findings: The self-learning program met the women’s needs; however they provided
suggestions for improvement. While the women reported varying degrees of self-
awareness, many believed the self-learning program influenced their adoption of health-
promoting behaviors. In the interviews, the women expressed confidence in their ability
to manage their disease; a finding that was congruent with the findings of the self-
efficacy scale. Improvement was seen in five of six items on the self-efficacy scale from
pre- to post intervention. The women’s confidence in managing other symptoms or
health problems and management of problems related to heart disease saw a statistically
($p > .05$) significant increase post intervention, and that increase persisted. One item,
emotional distress, was flat over the series of administrations.

Conclusions: Since women differ from men in the development, expression, and
treatment outcomes for coronary heart disease, educational programs that address those
differences and meet their needs must be developed. This study demonstrated that a
paper-based, holistic, self-management program is a viable alternative or supplement to
traditional cardiac rehabilitation programs. Using the self-and family management
framework, this intervention enabled women to learn how to care for themselves.

Key words: coronary heart disease (CHD), women, self-management, self-efficacy
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CHAPTER 1
INTRODUCTION

Coronary heart disease (CHD) poses a serious threat to the health of many American women. During their lifetime, one in four women will be diagnosed with this, the most common type of cardiac disease. Although cardiac disease remains the leading cause of death in the United States, the mortality rate for men has decreased over the last two decades while during the same period it has increased for women (American Heart Association, 2010). This trend indicates that current treatment and prevention strategies are less effective for women and that there needs to be further research surrounding the development and treatment of coronary heart disease in women.

Background

Until recently, the majority of the research concerning coronary heart disease has been focused on the disease in men, not women (McSweeney et al., 2003; Thomas, & Braus, 1998). The lack of female participation in clinical trials has been made more problematic in light of recent findings that suggest that there are some fundamental differences between the genders related to coronary heart disease. These differences occur in every aspect of the disease including: disease development, prodromal symptoms and diagnosis, treatment, and long term outcomes (Gleeson, & Crabbe, 2009; Espnes, & Byrne, 2008; Godfrey, & Manson, 2008; Mehner et al. 2008; Polin et al., 2008; O’Keefe-McCarthy, 2008; Shaw et al. 2008; Yang, Kuper, & Weiderpass, 2008; Hellwig, 2007; Ryan et al., 2007; Elsaessar, & Hamm, 2004; Pai et al. 2004; McSweeney, et al.; Mosca, Ferris, Fabunmi, & Robertson, 2004; Rosenfeld, 2004; Wenger, 2004; DeVon, & Zerwic, 2003; Gallagher, McKinley, & Dracup, 2003; King,
2002; Tuttle, Short, & Johnson, 2001; Vaccarino, Krumboltz, Yarzebski, Gore, & Goldberg, 2001; King, 2000; Kuehn, McMahon, & Creekmore, 1999; Naimark, Tate, & Turner, 1999; Thomas, & Braus).

**Statement of the Problem**

Outpatient cardiac rehabilitation programs are the usual treatment for individuals with coronary heart disease. However, these programs had been designed to meet the needs of male patients, the original consumers of these programs. With fewer than 33% of eligible females enrolling, participation in a cardiac rehabilitation program is an option rejected by most eligible women in the United States. The reasons for the lack of female participation in cardiac rehabilitation programs include: doubting the benefit, too time intensive, lack of transportation, family responsibilities, comorbidities, and lack of appeal of programs that are focused on the use of exercise equipment in group settings with a predominantly male population (Budnick et al., 2009; Grace et al., 2009; Lavie, & Milani, 2009; Pullin, Povey, & Grogan, 2009; Dolansky, Moore, & Visovsky, 2006; Sanderson, & Bittner, 2005; Witt et al. 2004; Harris et al., 2003).

The environment and socioeconomic status are factors that influence many aspects of people’s lives, including health behaviors. Rural individuals tend to have more chronic diseases, including cardiovascular disease, than their urban counterparts. They are more likely to have a lower socioeconomic status and both these factors contribute to making them less likely to adopt health protective behaviors. Additionally, access to health care providers and services are more difficult for rural residents to obtain (Folta et al., 2009; Shaw et al., 2008, Hill, Wienert, & Cudney, 2006; Chyun, Amend, Newlin, Langerman, & Melkus, 2003). Therefore, a program designed specifically for rural
dwelling women to complete in their own homes that facilitates empowering them to
manage their disease through knowledge of risks, cardiac anatomy and physiology,
promotion of self-awareness, and information regarding healthy behaviors may provide a
viable alternative to traditional cardiac rehabilitation programs for this demographic.

Specific Aims

The specific aims of this study were to: I) refine an intervention for rural women
with coronary heart disease (CHD) designed to promote self-management of the disease
and II) provide pilot data evaluating the efficacy of the intervention.

Research Questions

The research questions for this study were: Do older, rural women, who have
been diagnosed with coronary heart disease (CHD), report that the educational
intervention:

1. promotes self-management of coronary heart disease by providing information
   that the women find relevant and useful (Aim I);
2. influences their adoption of health promoting behaviors (Aim II);
3. affects self-awareness of their unique physical and psychological responses to
   health and disease (Aim II);
4. affects self-efficacy related to their ability to manage cardiac disease (Aim II).

Definitions

- Women – The rural women in this study have been diagnosed with coronary
  heart disease within the past year and are age 60 or older. These women may
  have had a cardiac event, such as a myocardial infarction (MI) or have been
diagnosed through other means as having coronary heart disease.
• Coronary heart disease/coronary artery disease (CHD/CAD) – This disease is caused by atherosclerotic narrowing of the coronary arteries likely to produce angina pectoris or heart attack. It is the most common type of cardiac disease (American Heart Association, 2010).

• Empowerment – “Empowerment is the growing capacity of individuals and groups to exercise their will, to have their voices heard, and to claim their full human potential; addressing and changing conditions to remove barriers that thwart an individual or group’s ability to claim their full potential” (Chinn, & Kramer, 2008, p. 297). Empowerment has been gauged by the women reporting that they have taken responsibility for their health.

• Rural – Communities having less than 20,000 residents or fewer than 99 people persons per square mile (Center for Disease Control, 2001). Rural residents, while experiencing more chronic diseases than their urban counterparts, are less like to adopt preventive health behaviors. In addition, lack of health services plagues rural individuals (Folta et al., 2009; Hill et al., 2006). The study has been conducted in rural southern Vermont and a neighboring New York county.

• Self-awareness – Self-awareness is, “the way people know the world through their bodies, particularly through movement in space, time, language, sexuality, & perception” (Wilde, 2003, p. 171). It is awareness of salient body cues (Fleury, & Sedikides, 2007; Hernandez, Hume, & Wilson, 2003). Self-awareness has been measured by the women expressing that they “know themselves, their bodies, and are aware of their bodily cues.”
• Self-efficacy – Self-efficacy relates to an individual’s level of perceived competence and is a component of social cognitive theory. Self-efficacy can be enhanced through mastery experiences, observations of others, social persuasion, and interpretations of psychological arousal with mastery experiences (Bandura, 1997). Self-efficacy has been measured by a quantitative self-efficacy instrument, Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001) and qualitative in-depth interviews.

• Self-learning programs – Self-learning programs are instructional activities that guide the learner in independently achieving the objectives of learning at the learners own pace (Bastable, 2003). In this study, the self-management learning modules consisted of four learning modules contained in a loose-leaf booklet.

• Self-management - “Self-management is dynamic means of maximizing health rather than the submission to prescribed orders implied by the term compliance” (Grey, Knafl, & McCorkle, 2006, p. 279). Self-management involves the daily assessment of self and behaviors which support health and acting on that assessment (Glasgow, & Anderson, 1999). Self-management has been measured by the women describing what they do to care for themselves.

Overview of Method

This study used a mixed methods approach to determine the relevancy and effectiveness of a series of four educational modules designed for women to assist them in the self-management of their coronary heart disease (CHD). Mixed methods is a
research strategy that uses more than one research methodology in a single study. The advantage of using mixed methods over either qualitative or quantitative methods alone is that it provides clarity regarding the phenomena of interest by adding completeness and confirmation of findings (Tashakkori, & Teddlie, 2003).

Qualitative research methods, in the form of focused qualitative interviews, explored the women’s understanding of the content, perception of the relevancy and usefulness of the modules with regards to meeting their information needs, and provided data that led to the refinement of the self-learning modules. In addition, the women’s self-management of coronary heart disease, adoption of health promoting behaviors, and self-awareness was explored using the qualitative method of in-depth interviews. Finally, a quantitative self-efficacy instrument, Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al. 2001), was used to determine the women’s belief in their ability to manage the disease. Self-efficacy is seen as an integral component of the self-management framework and its principles have been used in the design of the modules. In addition, increased self-efficacy has been shown to be a predictor of the adoption of health promotion behaviors (Bandura, 1997).

Focused Qualitative Interviews

The qualitative method used to refine the intervention was focused qualitative interviews. In this study, focused qualitative interviews have been used to obtain information about a text-based self-management intervention. Through the use of these focused qualitative interviews, the investigator dialoged with the participants about their understanding and thoughts concerning the modules. These interviews provided feedback from the participants regarding the content of the modules and this information
provided data for revision of the modules, allowing the researcher to design an intervention that best meets the needs of this population.

In-depth Interviews

In order to gauge the effectiveness of the self-learning modules two methods were used; the qualitative method of in-depth interviews and a quantitative self-efficacy scale. In-depth interviews were conducted at enrollment and one month post intervention. The initial interviews allowed the researcher to establish a relationship with the participants, assess their belief in their ability to manage coronary heart disease (self-management), knowledge of coronary heart disease and its treatment, self-awareness, health practices, and adoption of health promoting behaviors. Interviews conducted one month post intervention provided closure for the participants, allowed the participant to dialog about the experience, discuss what they learned as a result of the experience, make final recommendations regarding the content of the modules, and share their plans for self-management and health promotion.

Quantitative Measure of Self-efficacy

The efficacy of the intervention was also determined through a measurement of self-efficacy. Pilot data was obtained by using the instrument, Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001). The instrument was administered at enrollment, at the completion of the intervention, and one month post completion of the intervention.

Description of the Intervention

The educational intervention, self-management learning modules, was developed to provide women with the information needed to manage their coronary heart disease
The self-management learning modules included a discussion of coronary heart disease and impact on functioning, information about reduction of risk factors including those related to nutrition, physical activity, and mental health, and activities designed to enhance self-awareness.

**Modules**

The self-learning modules for this study are entitled: Caring for Yourself. The four modules include:

- Module I – Heart Basics: A Description of How the Heart Works
- Module II: Coronary Heart Disease and Risk Factors
- Module III - Nutrition and Physical Activity
- Module IV - Psycho-Social Considerations

**Theoretical Framework**

Self-management is a concept that has emerged as a means of enabling individuals to live with a variety of chronic illnesses, including heart disease. The self-management framework for this study comes from one developed at Yale School of Nursing’s Exploratory Center for Self Management Interventions for Populations at Risk. Self-management is defined as, “a dynamic means of maximizing health rather than the submission to prescribed orders implied by the term compliance” (Grey et al., 2006, p. 279). Self-management involves the daily assessment of self and behaviors which support health and acting on that assessment (Glasgow, & Anderson, 1999).

Educational programs that foster self-management are based on the individual’s perception of disease-related problems and provide knowledge of the disease, foster self-awareness, assist them to problem-solve concerning their care, and instill a belief in
individuals that they can manage their illness. Collaborative between the healthcare provider and individual, and recognition that the individual is the expert in the disease, are essential component of self-management educational programs (Lorig, Ritter, & Gonzales, 2003; Bodenheimer, Lorig, Holman, & Grumbach, 2002).

Assumptions

Several assumptions underlie the research study.

- Coronary heart disease (CHD) is a chronic illness and strategies that promote self-management of the disease will result in better outcomes for individuals.
- Self-awareness is a necessary component of self-management.
- Adoption of a healthy lifestyle is an important function of self-management and includes proper nutrition and exercise.
- Individuals are experts in their own disease and interventions designed to affect behavior change must be based on this belief.
- Empowerment can be enhanced through education.
- Geographic location and socioeconomic status dictates the opportunities available for patients. Rural individuals, particularly women, face barriers to care.
- Giving voice to women through focused qualitative interviews aided in the refinement of the intervention.

Summary

This study was designed to refine and test the efficacy of a self-management educational program for rural women who had been diagnosed with coronary heart disease entitled, “Caring for Yourself”. The researcher used focused qualitative interviews to evaluate the content of the modules. In-depth interviews and a measure of
Since Nightingale (1859/1946) wrote *Notes on Nursing: What it is and what it is not*, nurses have been instrumental in health education and promotion. The National Institute of Nursing Research (NINR) has identified interventions that target the management of chronic diseases as a research priority. Prior research has demonstrated that self-management interventions can improve individuals’ ability to manage their disease and positively affect outcomes (Lorig et al., 2003; Bodenheimer et al.). Given that coronary heart disease (CHD) remains the number one cause of mortality and a significant cause of morbidity for American women (AHA, 2010); this study addressed a goal of Healthy People 2010 (Healthy People 2010); to increase the quality and years of healthy life through an educational intervention. It also sought to achieve the other Healthy People goal by reducing health disparities experienced by rural, older women, who comprise a vulnerable population. In addition, this study contributes knowledge of the experience of older, rural women with coronary heart disease (CHD), provided a better understanding of their informational needs, and assessed the efficacy of an educational intervention based upon a self-management framework.
CHAPTER 2
REVIEW OF THE LITERATURE

The premise of this study was that coronary heart disease is different in women than men and therefore women need specialized educational interventions. This chapter provides a review of literature concerning coronary heart disease and gender differences. In addition, the theoretical framework that underpins the study, the self-management framework (Grey et al., 2006), and constructs used in this study are explored through pertinent research.

Women and Coronary Heart Disease

Research regarding women and heart disease is a relatively recent phenomena. This is due, in part, to the erroneous assumption made by researchers that findings from males could be generalized to females (Crane, Letvak, Lewallen, Hu, & Jones, 2004). The result was that researchers ignored the affect of gender on the development and treatment of many diseases, including coronary heart disease.

As researchers began exploring the relationship between gender and coronary heart disease, differences have been found to occur with regards to development of the disease, prodromal symptoms and diagnosis, treatment, and short and long term outcomes (Gleeson, & Crabbe, 2009; Espnes, & Byrne, 2008; Godfrey, & Manson, 2008; Mehner et al. 2008; Pollin et al., 2008; O’Keefe-McCarthy, 2008; Shaw et al. 2008; Yang et al., 2008; Hellwig, 2007; Ryan et al., 2007; Lukkarinen, & Hentinen, 2006; Hart, 2005; Elsaessar, & Hamm, 2004; Pai et al. 2004; McSweeney, et al.; Mosca et al., 2004; Rosenfeld, 2004; Wenger, 2004; DeVon, & Zerwic, 2003; Gallagher et al., 2003; King, 2002; Tuttle et al., 2001; Vaccarino et al., 2001; Arsianian-Engoren, 2000; King, 2000;
Kuehn et al., 1999; Naimark et al., 1999; Thomas, & Braus, 1998). In addition, differences between the genders related to the need for information, participation in cardiac rehabilitation, and psychosocial responses to diagnosis have also been identified (Burdnick et al. 2009; Folta et al. 2009; Grace et al., 2009; Lavie, & Milani, 2009; Pullen et al., 2009; Davidson et al. 2008, Kristofferzon, Lofmark, & Carlsson, 2005; Gavin et al., 2003; Plach, & Stevens, 2001; Jackson et al., 2000; Depsey, Dracup, & Moser, 1995).

The review of the literature that follows is organized to present the state of the science exploring women’s manifestation and response to treatment of coronary heart disease (CHD). In addition, research regarding the rehabilitation of individuals with coronary heart disease, specifically women, will be analyzed. This will be followed by a discussion of an overview of self-management as the theoretical framework for the proposed research. The chapter will conclude with research on self-management for a variety of chronic diseases and how empowerment, self-awareness, and self-efficacy may affect a person’s ability to manage disease.

**Coronary Heart Disease**

Despite substantial advances in interventions, knowledge of causality, and enormous resources invested in treatment and research, cardiovascular disease continues to be the number one cause of mortality for both American men and women since the early twentieth century. The most prevalent type of cardiovascular disease is coronary heart disease (American Heart Association, 2010). Researchers have demonstrated a link between coronary heart disease and certain factors.

These factors, termed risk factors, contribute to the development of coronary heart disease. Modifiable risk factors speak to lifestyle choices and include: hypertension,
elevated serum cholesterol, cigarette smoking, sedentary lifestyle, diabetes, and being overweight or obese. In addition, the American Heart Association (2010) has identified three additional factors that may influence the development of coronary heart disease. They are: alcohol, stress, and diet. Although medical intervention may be needed to reduce risk factors for coronary heart disease, the onus remains on individuals to reduce their risk through lifestyle changes (Gleeson, & Crabbe, 2009; Godfrey, & Manson, 2008; Chyun et al., 2003; Vale et al., 2003; King, Rowe, & Zerwic, 2000). Research regarding the development of coronary heart disease and its expression in women provides a foundation for the development of interventions specifically designed for women.

Research Regarding Women with Coronary Heart Disease

Evidence for the management of individuals with coronary heart disease has been amassed, synthesized, and clinical guidelines have been developed by such organizations as the American Heart Association (AHA) and National Heart, Lung, and Blood Institute. The findings have been distributed to both providers and the public by such organizations. More recently, responding to evidence that exists regarding gender differences in cardiac disease, they have specifically developed educational material targeting women such as the “Wear Red Campaign” by the AHA “the Health Heart Handbook for Women” by the National Heart, Lung, and Blood Institute. Some examples of the research in the area of coronary heart disease demonstrating gender differences will be used as exemplars. These exemplars include all phases of the disease process; its development, prodromal symptoms and diagnosis, treatment, and short and long term outcomes.
Development of the Disease

While risk factors have been identified that affect the development of coronary heart disease (CHD), there are differences between genders on how these risk factors are expressed. In a large-scale ($N=149,650$), longitudinal study spanning 15 years, Ulmer, Kellereher, Diem, and Concin (2004) sought to assess the affect of gender specific patterns in cholesterol levels on all-cause and cardiovascular mortality. The relationship between variables including blood pressure, height, weight, and cholesterol, and risk of death were analyzed using multivariate analysis. While average cholesterol level was consistently predicative of risk of coronary heart disease in men of all ages, it was not a predictor in women over age 50. It was found however, that triglyceride levels continue to rise in women over age 50, while men have no such pattern. Limitations of this study include being unable to determine causality due to study design, especially since there is no data concerning the affect of interventions regarding risks factors. What this study suggests is that total cholesterol level in women over 50 is not a good indicator for the development of coronary heart disease and that more research must be conducted on the effects of triglycerides in the development of the disease, particularly in women (Ulmer et al.).

Prodromal Symptoms and Diagnosis

Gender differences in the development of the coronary heart disease indicate a need for further exploration regarding its expression and the treatment of women. While chest pain or pressure is the most common presenting symptom for coronary artery disease; other symptoms, such as fatigue, dizziness and vertigo, and shortness of breath are not uncommon, especially in specific populations such as the elderly, diabetics, and
women. These other presenting symptoms have been labeled as “atypical” symptoms. Since most women are unaware that they are more likely to present with atypical symptoms for coronary heart disease (CHD), they are less likely to seek treatment in a timely manner. Furthermore, once women seek treatment, diagnosis is often further delayed due to these atypical symptoms. McSweeney, Lefler, and Crowder (2005), conducted a secondary analysis of qualitative interviews and explored women’s experiences regarding their diagnosis with coronary heart disease. Through content analysis and the constant comparison method, five themes emerged: awareness, seeking treatment, frustration, treatment decisions, and anger. Limitations of this study include that since it was a secondary analysis, the responses of the participants may have been different if the focus of the study had been the diagnostic experience. This study indicates further research is needed to promote early symptom recognition by the lay public and healthcare practitioners that result in timely diagnosis and efficacious treatment which are essential to improved outcomes for women with coronary heart disease.

Treatment

As demonstrated by the McSweeney et al. (2005) study, since women are more likely to have atypical symptoms they are at greater risk than men of not receiving timely screening and diagnosis for coronary heart disease (CHD). Therefore, Hollenbeak, Weisman, Rossi, and Ettinger (2006) sought to determine whether there were gender disparities in the use of percutaneous coronary interventions (PCI) in the treatment of acute myocardial infarction (AMI), and if so, whether outcomes were affected. In this retrospective study, data was obtained from 10,170 individuals treated with PCI and
21,181 individuals managed medically. Multivariate analyses were performed using logistic regression to estimate the impact of gender on PCI. In addition, retrospective matching on propensity scores were used to compare outcomes for women who were treated with PCI to comparable groups of women and men. After controlling for age, race/ethnicity, severity at admission, location of infarct, and source of admission, they found women had 24% lower odds than men of receiving PCI with \( p < 0.0001 \). In a propensity score-matched sample of 3023 women who received PCI compared to 3023 women who did not, women who received PCI were significantly less likely to die (2.3% vs. 10.4%, \( p < 0.0001 \)). In a second propensity score-matched sample of 3329 women and 3329 men who received PCI, the difference in mortality was not statistically significant (1.59% vs. 1.92%, \( p = 0.39 \)). Weaknesses of this study include it was conducted in one geographic area and the design of the study does not permit causal relations to be determined. However, the results of this study suggest that the morbidity and mortality associated with AMI in women could be reduced by increased use of PCI, that women do not have an increased untoward effect from the therapy, and that more women admitted for AMI should be evaluation for PCI.

Outcomes: Short and Long Term

Given that women may not receive comparable treatment for coronary heart disease, it is important to assess their short and long term outcomes. As part of a randomized control trial, Price (2006) sought to determine whether a program of education, physical activity, and social activities for people with coronary heart disease (CHD) reduce depressive symptoms. Data was collected on 251 community dwelling residents, diagnosed with coronary heart disease, aged 65 and older, who had moderate or
high depressive symptoms at baseline (measured by the Zung Self-rating Depression Scale), over a period of 1½ years. The intervention was a structured activity program consisting of 16 lectures, eight group discussions, six light exercise sessions, and three social events. Sessions aimed to increase awareness of the prevention and treatment of coronary heart disease, social activity and support, and physical activity. The findings for this study indicate that men with moderate or high depressive symptoms at baseline, those men in the structured activity program experienced improved symptoms to a greater extent than those who receive usual care (median ZSDS score change: -1.0 with activity program vs. +3.0 with usual care, \( p = 0.015 \)). However, in women with moderate or high depressive symptoms at baseline, symptoms improved with both the structured activity program and usual care, with no significant difference between groups (median ZSDS score change: -2.0 vs. -3.0, \( p = 0.95 \)). Therefore, the program demonstrated no extra benefit for the female participants. This finding indicates the need to develop interventions that are gender specific to improve the psychosocial health of women with coronary heart disease.

**Cardiac Rehabilitation**

The traditional way that individuals with coronary heart disease (CHD) are educated about their disease has been through cardiac rehabilitation (CR) programs (Balady et al., 2001). Formal cardiac rehabilitation programs were developed in the 1960s in an effort to provide supervised exercise to clients who had suffered a myocardial infarction (MI) and had experienced deconditioning as a result of prolonged bed rest. While the initial population targeted for these programs were middle-aged males, over time the service has been expanded to include women, individuals from all age groups,
individuals who had procedures such as bypass surgery and angioplasty, and those diagnosed with heart failure (Harris et al., 2003). Additionally, as evidence increasingly pointed to the need for management of cardiac risk factors, education became an important component of cardiac rehabilitation (Budnick et al., 2009; Davidson et al., 2008; Mehta, 2002; Walsh, & Shaw, 2000; Mullen, Maine, & Velez, 1992).

Barriers to Attendance in Cardiac Rehabilitation (CR) Programs

Researchers have demonstrated the effectiveness of cardiac rehabilitation programs in modifying cardiac risk factors, improving the psychological state, and reducing the progression of the disease (Davidson et al., 2008; Dalal, Evans, & Campbell, 2004; Mullen et al., 1992). However, several problems have plagued cardiac rehabilitation programs over time. They include low enrollment, high dropout rate, and an inability to affect long-term changes. It is estimated that only between 10 and 33% of eligible people enroll in cardiac rehabilitation programs, a figure that is even lower for women (Grace et al., 2009; Beckie, 2006). To better understand barriers to attending cardiac rehabilitation, Clark, Whelan, Balbour, and MacIntyre (2005) used focus groups to uncover the reasons some individuals took advantage of CR, while others did not. In addition to some of the traditionally identified reasons for not taking advantage of cardiac rehabilitation (conflicts in schedule and transportation issues), one especially important finding of this study was that nonparticipants vocalized embarrassment about group or public exercise. This qualitative study identified some considerations that should be incorporated into the development of alternatives to traditional cardiac rehabilitation programs.
Another study that examined barriers to attendance in cardiac rehabilitation (CR) was conducted by Grace et al. (2009). In a study that sought to quantify the sex differences in cardiac rehabilitation barriers by participant status, cardiac outpatients were surveyed (1496, 430 female, 28.7%). While there were no significant differences ($p = <0.05$) in the number of barriers to CR by sexes, differences between the sexes were found. The barriers women identified as greater than men were: transportation ($p = 0.025$), family responsibilities ($p = 0.039$), lack of CR awareness ($p = 0.036$), experiencing exercise as tiring or painful ($p = 0.002$) and comorbidities ($p = 0.009$). This study identifies areas that can be addressed with women so that barriers can be overcome.

**Strategies Used to Increase Participation in Cardiac Rehabilitation (CR) Programs**

Strategies used to increase participation in cardiac rehabilitation programs include providing programs that are home-based, shortened, and interventions that use technology for information and support. In one such study, Brennan et al. (2001) sought to use technology to both deliver information and provide support to individuals who experienced coronary artery bypass grafting. The basis for this study was HeartCare, a computerized, internet-based information and support system. An ongoing, randomized control study is underway to evaluate the clinical outcomes of client’s use and the efficacy of the HeartCare system.

A cardiac rehabilitation program with case management monitored by nurses using telephone follow-up was the basis of a nonrandomized, retrospective, descriptive study using two cohort groups by Harris et al. (2003). The intervention emphasized patient education, emotional support, early symptom recognition, medication adherence, and provided ongoing interaction with the patient’s primary physician. In addition, the
case managers sought to assist the individual in achieving the American Heart Association’s guidelines for secondary prevention with respect to eating, exercise, smoking, lipids, and blood pressure. Researchers found that the intervention yielded improved participation rates, from 11% in the control group to 22% in the case managed group. They were able to demonstrate that this approach overcame the barriers of distance from the hospital and domestic isolation. Furthermore, participation in the rehabilitation program translated into improved risk management for individuals, a finding consistent with research regarding the benefits of cardiac rehabilitation such as blood lipid levels ($p < 0.05$) (Dalal et al., 2004; Mullen et al., 1992). However, they saw no increase in the number of elderly individuals accessing cardiac rehabilitation with the initial cardiac rehabilitation participants being 7.4 years younger than nonparticipants in the initial cohort and 8.6 years younger than nonparticipants in the intervention group. Since women are often older than men at the time of diagnosis, this finding translated into fewer women accessing cardiac rehabilitation and speak to the need to design alternatives to traditional programs for elderly women.

**Outcome Assessment for Cardiac Rehabilitation (CR)**

Self-efficacy, psychosocial factors, and exercise behavior was assessed in a modified CR program by Carlson et al. (2001). In this randomized clinical trial they compared a traditional CR program with one that emphasized independent exercise and group support and education. They found, using a repeated-measure analysis of variance, that individuals in the shorter supervised rehabilitation increased exercise self-efficacy ($p < .05$) over those in the traditional program. Other findings include that self-efficacy was the only significant predictor of exercise over six months ($R^2=.28$, adjusted
R2=.22, p<.01) and that social support was not a predictor of exercise behavior. Therefore, this study indicates that providing an exercise experience outside of a formal rehabilitation program may increase exercise self-efficacy and foster the long-term continuation of exercise.

During phase I of the Heart Awareness Program (Davidison et al., 2008), a cardiac rehabilitation program was developed through consultation with women and experts. Phase II involved an action research approach with 54 women. A mixed method approach that employed questionnaires, interviews, and interviews assessed the effect of the intervention. The focus of this study was on the psychological and social aspects of the women as they recovered from a cardiac event. The results revealed that the women relished the opportunity to discuss the effect of their cardiac disease on their lives and find support among peers. Although the women were able to articulate risk factor modification, no statistically significant changes in depression, anxiety, stress, cardiac control, role integration, or perceived social support was found. Descriptive and qualitative analysis revealed that the women experienced a decrease in anxiety and increased sense of social support as a result of the intervention. While this intervention appears to have some affect on the women’s perception, further examination of the efficacy of the intervention needs to be done with a larger population and the affect of the intervention has measured over time.

As these studies demonstrate, in an effort to enact behavior change, creative strategies designed to modify the traditional cardiac rehabilitation programs can yield increased enrolment and improved outcomes. Alternatives to traditional programs must be developed to meet the needs of populations that are difficult to access such as women,
older persons, and rural-dwelling individuals (Burdnick et al., 2009; Grace et al., 2009; Dolansky et al., 2006; Sanderson, & Bittner, 2005; Witt et al., 2004 Harris et al., 2003; Czar, & Engler, 1997).

**Theoretical Framework**

Self-management is a concept that has emerged as a means of enabling patients to live with a variety of chronic illnesses, including heart disease. Self-management is defined as, “a dynamic means of maximizing health rather than the submission to prescribed orders implied by the term compliance” (Grey et al., 2006, p. 279). For self-management to occur, certain behaviors are performed on a daily basis by individuals and families to manage their disease. Therefore, self-management involves the daily assessment of self and behaviors which support health and acting on that assessment (Kralik, Koch, Price, & Howard, 2004; Shilling, Grey, & Knafl, 2002; Glasgow, & Anderson, 1999).

**Historical Background for Self-Management**

The concept of self-management emerged from the self-care movement of the 1970s (Nichols, 2000; Shoor, & Lorig, 2002). The publication of the book, *Our bodies, ourselves* (1972), by the Boston’s Women’s Health Book Collective the Boston’s Women’s Health Book Collective symbolized this movement to self-care and sparked interest in women’s health. During the same period, self-care programs for individuals with chronic diseases were being developed, implemented, and evaluated throughout the country (Shoor & Lorig).

One such program was developed in 1975 at Stanford University, with self-care principles underpinning the treatment approach. Increased emphasis on home care,
judicious use of diagnostic testing, accessibility of healthcare professionals via telephone, and an emphasis on health education were the hallmarks of this clinic (Shoor, & Lorig, 2002). Shortly thereafter, practitioners at the Stanford clinic identified the need for programs specifically designed for individuals with chronic illnesses. In response, the first chronic disease self-management program was developed for medical students and clients with arthritis, diabetes, and hypertension. This was one of the first patient education programs to target the adoption of health behaviors, health status, and health care use as study outcomes (Shoor et al., 1979). A central concept of those at the clinic was that with the proper education and support, clients with chronic disease could become effective participants in their own care (Shoor, & Lorig).

In an effort to provide a framework for future researchers to explore the relationship between variables and test interventions Yale School of Nursing’s Exploratory Center for Self Management Interventions for Populations at Risk published a self- and family management framework (Grey et al., 2006). It is an adaptation of this framework that is used as the foundation of this study.

The self-care movement, combined with changes in the structure of the delivery of healthcare in the United States and changing demography of the population resulting in an increased incidence of chronic diseases, has created a need for increased personal responsibility for health. Self-management theory is based on the concept that individual’s health behaviors are complex processes that involve both cognitive and psychological factors (Lorig et al., 2001; Ruggiero et al.,1997).
Framework

Figure 2.1
Adaptation of the self- and family management framework for this study (Grey, et al., 2006).

**Self and Family**

**Management Behaviors**

<table>
<thead>
<tr>
<th>Risk and Protective Factors</th>
<th>Outcomes</th>
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<tbody>
<tr>
<td><strong>Health Status</strong></td>
<td><strong>Health Status</strong></td>
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<tr>
<td>• Regime</td>
<td>• Control</td>
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<td>• Disease Trajectory</td>
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<td><strong>Individual Factors</strong></td>
<td><strong>Individual Outcomes</strong></td>
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<tr>
<td>• Gender</td>
<td>• Psychosocial Characteristics</td>
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<tr>
<td>• Psychosocial Characteristics</td>
<td>Self-efficacy</td>
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<tr>
<td>• Diversity/Culture</td>
<td>Self-Awareness</td>
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<tr>
<td><strong>Family Factors</strong></td>
<td><strong>Family Outcomes</strong></td>
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<tr>
<td>Not addressed in this study</td>
<td>Not addressed in this study</td>
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<tr>
<td><strong>Environmental Context</strong></td>
<td><strong>Environmental Context</strong></td>
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<td>• Utilization</td>
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<td></td>
<td>• Provider Relationships</td>
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</table>

Self- and family management framework provided the basis for this study.

Theory provides context to content, it makes sense of what may appear to be random bits of data. The self-and family self-management theory has two distinct parts. The first part is the risk and protective factors. These factors are what the person or family possess. The second part is the outcomes, or the result of action. In this study health factors and outcomes, individual factors and outcomes, and environmental context are examined. This framework provides an approach for researchers to explore the
relationship between and among the variables and outcomes identified for self- and family management behaviors. The framework is a dynamic one and affects and is affected by components of the system (Grey et al., 2006).

**Risk and Protective Factors**

Risk and protective factors and behaviors have been identified within the framework. Health status, individual factors, and environmental context are explored in this study.

**Outcomes**

The outcomes identified in this framework provide a basis for interventions and can be used to measure the efficacy of these interventions. A primary goal for self-management has been improvement of health outcomes. Therefore, it is vital to measure variables that address the health of the individual, including factors that relate to the control of disease, modification of disease trajectory, functional status, health care utilization, and mortality. Interventions used to enhance self-management may target risk or protective factors such as psychosocial factors, family functioning, or enhancement of self-management capabilities. These interventions can focus on the individual, family, or both (Grey et al., 2006).

**Health Status**

The health status factors identified in the framework that influence the need for self- and family management that have been identified as salient to health status are disease trajectory and treatment regime. While coronary heart disease is a chronic, progressive disease there are opportunities to alter the trajectory through adoption of health promoting lifestyle behaviors and managing the treatment regime.
Individual Factors

Individual factors play a role in how individuals and families manage a chronic condition. Age, gender, psychosocial characteristics, and cultural background all influence the ability to self-manage disease. Included in the psychosocial factors that affect an individual’s ability to self-manage their disease include: depression, coping, and self-efficacy. In addition, self-awareness by the individual has been shown to be integral for effective self-management for a number of chronic conditions (Grey et al., 2006; Lorig et al., 2003). The participants of this study will be older (age), women (gender), who live in a rural environment (diversity/culture). The psychosocial factors that will be explored include self-efficacy and self-awareness.

Environmental Context

Self-management occurs in the context of family and community, the individuals’ social network. For this study, family factors or outcomes are not explored, however environmental factors are examined. The final factor, the environment, provides a context for self- and family management to occur. An environment that fosters empowerment of individuals and families to manage health provides a strong basis for self-management (Grey et al., 2006). Outcomes regarding environmental context is explored in this study include access and utilization. Access and utilization of traditional cardiac rehabilitation services is limited for rural, older women, therefore, they are the focus of this investigation. Provider relationships have been identified as an area that needs investigation in this framework. Fostering empowerment of the women in this study, through knowledge, enables them to dialogue more effectively with their provider, which affects the dynamics of provider relationships. Self-management implies that there
is collaborative between the client and practitioner, and an acknowledgement that the client is the expert in their disease (Bodenheimer et al., 2002).

**Educational Programs in Self-management**

Learning can be defined as a change in a way of thinking, emotions, and/or behavior as a result of an experience, thus learning is a dynamic process that occurs over the course of a lifetime (Bastable, 2003). Knowledge forms an important foundation for successful self-management, however numerous studies have indicated that knowledge alone does not change behavior (Carter, & Kulbok, 2002).

The purpose of self-management education is to provide individuals with the skills to live an active and satisfying life with chronic disease (Lorig et al., 2003). Educational programs that foster self-management are based on the client’s perception of disease-related problems, assist them to problem-solve, provide information regarding the disease, promote self-awareness, and instill confidence that they can manage their illness. Goal setting by the client, an important component of self-management education, is congruent with increasing the client’s self-efficacy. The purpose of goal setting is that clients are given some experience and confidence in managing their disease which enhances their internal motivation (Lorig et al.; Bodenheimer, et al., 2002).

Corbin and Strauss (1988) have identified three tasks faced by people with chronic conditions: 1) medical management of the condition; 2) creating and maintaining new meaningful life roles; 3) coping with anger, fear, frustration, and sadness over having a chronic condition. Therefore, effective education must target these 3 aspects of chronic illness: the medical, social, and emotional aspects of the disease.
While a variety of approaches have been used to increase self-management in individuals with chronic diseases, often they involve a series of educational sessions over a period of time (Lorig et al., 2002; Funnell, & Haas, 1995). This presents one of the same barriers that rural women face regarding cardiac rehabilitation, access. Self-learning modules, such as the ones used in this study, can be done at home, thereby increasing access for a population that mobility and transportation present barriers.

**Self-management Research**

Research into self-management has demonstrated the applicability of the concept over a broad range of diseases (arthritis, diabetes, cardiovascular disease, HIV and AIDS, back pain, and lung disease); cultural, ethnic (African-American and Hispanic populations) (Lorig et al., 1999; Lorig, Gonzalez, Ritter, & Nacif De Brey, 1997), and environmental situations and has yielded a variety of positive health outcomes (Bodenheimer et al., 2002). Outcomes examined included the adoption of health behaviors, health status, and health care utilization (Fisher et al., 2001; Lorig et al. 1999). These variables remain important in contemporary research regarding self-management. In addition, researchers have sought to understand principles that underpin behavioral change. Consequently, self-efficacy has emerged as an important tool for evaluating the efficacy of many studies regarding self-management.

A randomized trial of a self-management intervention developed with the principles of self-efficacy for individuals with chronic diseases, including heart disease, demonstrated feasibility and had a beneficial effect in measured outcomes (Lorig, Sobel et al., 1999). The outcomes studied include behaviors, health status, and health service utilization. The primary analysis compared 6-month outcomes between treatment and
control groups for each outcome variable using analysis of covariance. The secondary analysis utilized two-way analysis of variance and determined the intervention did not have different outcomes for those with different diseases. Weaknesses of the study may be the self-selection of the intervention group, however, since the control group were people that were wait-listed for the intervention, they do provide a comparable control group for the determining the efficacy of the intervention. Strengths of this study included study design (randomized trial), length of follow-up (six months post intervention), high completion rate (83%), and the number of outcome variables studied. Overall, the intervention was successful in increasing healthful behaviors, maintaining or improving health promoting behaviors, and decreasing rates of hospitalization (Lorig et al.). Therefore, this study made an important contribution to our knowledge of the efficacy of self-management interventions.

In 2001, Lorig et al. conducted a follow-up of the Lorig, Sobel et al., 1999 study. The participant group had been assessed at entry and six months in the initial study and at one and two years for this study. The three broad categories of outcomes: health status, health services utilization, and perceived self-efficacy to manage different aspects of one’s health and functioning were again used. Retention in the one year follow-up was eighty-two percent while seventy-six percent of the eligible subjects completed the two year study. It was found that compared to their baseline status, participants demonstrated a significant reduction in health distress, increases in self-efficacy ($p<0.05$), and made fewer visits to physician/ERs at each follow-up period ($p<0.05$). Self-rated health and energy/fatigue were slightly improved at the second-year assessment. An increase in disability was observed at one year. There were no significant changes in other variables.
Since there was no control group for this study, the researchers sought to examine data from similar studies as a source of comparison for such outcomes as healthcare utilization. Comparing the expected utilization and actual utilization, the researchers were able to project that the intervention would result in cost savings, an important factor for the continuation of self-management interventions. In addition, the participants increased self-efficacy to manage their health condition and decreased health distress demonstrate the efficacy of the intervention on a population of individuals with chronic illnesses, however no competing hypothesis was offered for the findings and no suggestion if follow-up could have had any benefit.

In an effort to determine if self-management strategies can prove effective to reduce health disparities, Lorig et al. (2003) developed a community-based program for Spanish-speaking individuals. Utilizing their previous work in self-management and a qualitative study of Latino patients which indicated that self-efficacy was critical to successful disease management, a program was developed. The 327 treatment participants, who had one of three chronic conditions: heart disease, lung disease, or diabetes, engaged in a six week peer-led program. At four months the treatment group was compared to the wait-listed control group. The outcomes for all treatment participants were assessed at one year, as compared with baseline scores using t-tests. At four months the control group demonstrated improved health status, health behavior, and self efficacy ($p > 0.05$). They also had fewer emergency room visits ($p < 0.1$). The changes noted were maintained and were significantly different from baseline. Although the dropout rate of 20 % was slightly higher than in other self-management studies (Lorig, Sobel et al., 1999), this study is significant in that it demonstrates that the concept
of self-management is applicable and relevant to the cardiac population who respond favorably to this intervention.

Although many studies promoting self-management still include several diseases, there has emerged a body of evidence from studies that target single diseases such as diabetes, osteoarthritis, or back pain (Lorig et al., 2001). While the principles underlying self-management are universal, greater efficacy has been found in single disease studies (Felson et al. 2000).

**Self-management of Cardiac Disease Research**

Three reports were generated from one study on a self-management program for older women with heart disease. One report (Janz et al., 1999) examined the symptom experience, another functional status (Clark et al., 2000), and the third cost savings associated with the program (Wheeler, 2003).

In the Wheeler (2003) report of a self-management program for older women with heart disease, the focus was on use of hospital services, estimate cost savings, and to compare the potential cost savings with the cost of the program. In this randomized controlled study design, data was collected from hospital billing records during a 36 month period. Multivariate models were used to compare health use with cost between treatment and control groups. The results indicated that there were no significant differences between the groups in emergency department utilization. However, the intervention group had 46% fewer in-patient days ($p<0.05$) and 49% lower in-patient costs ($p<0.10$) than women in the control group. This resulted in hospital cost savings of approximately 5-to-1. It is important that the cost benefits of programs such as this one are analyzed so that these programs may receive support for their activities.
As with other chronic diseases, it is crucial that the individual with coronary heart disease assume responsibility for the management of the disease. Self-management for cardiac disease includes management of risk factors, monitoring responses to medications and activities, and seeking care when appropriate. Research that employs self-management strategies to address the totality of coronary heart disease and accesses a population that is underrepresented is needed to further our understanding of self-management.

Social Cognitive Theory

Social cognitive theory seeks to explain learning in relation to behavior change. While social cognitive theory is based on behaviorist principles, the self-regulation and control the individual exhibits in the learning process are critical for learning to occur and reflect cognitive principles. Social cognitive theory is based on triadic reciprocity between behavior, cognitive and other personal factors, and environmental influences. Which of these factors will be in the forefront depends on the individual and situation. Social cognitive theory proposes that individuals process the following capabilities: symbolization (transforming experiences onto models that guide future actions), forethought (anticipating likely consequences of prospective actions), vicarious learning (learning from the experiences of theirs), self-regulation (using internal standards and self-evaluation reactions to motivate and regulate behavior) and self-reflection (thinking about one’s own thoughts processes and actively modifying them) (Bandura, 1986).

Components of Self-efficacy

The concept of self-efficacy is grounded in social cognitive theory. Bandura (1997) describes self-efficacy as, “belief in one’s capacities to organize and execute the
course of action required to produce given attainments” (p.3). A key assumption of social cognitive theory is that psychological interventions result in behavior change through the alteration of the individuals’ self-efficacy expectations. Proponents of social cognitive theory view the human mind as generative, creative, reflective, and capable of change. This capacity for change provides the basis of health teaching. In an effort to understand what determines health behavior and how to best help individuals adopt a healthy lifestyle, this concept of self-efficacy has been shown to play a significant role in the adoption of health practices.

**Self-efficacy Processes**

Bandura (1997) has suggested that individuals’ perception of themselves in relation to behaviors is developed through four different processes: 1) enactive attainment 2) vicarious experiences; 3) verbal persuasion; and 4) physiological feedback. The cognitive appraisal of these factors results in an individual believing that they can successfully accomplish the task.

Enactive attainment is the result of direct evidence of the effects produced by previous actions. It is considered the most important source of efficacy information (Bandura, 1997). One strategy to promote enactive attainment in a learning situation is to use simulations, where the individual has the opportunity to practice the desired behavior or to use discreet steps during which the person can develop mastery.

Self-efficacy expectations are also influenced by vicarious experiences. The experience of witnessing someone successfully completing a task will have an effect on the observer’s self-efficacy, especially if that person has not had a great deal of experience with the activity (Bandura, 1997). Vicarious experience can occur when an
individual with whom the person relates to shares his/her success regarding the experience.

Verbal persuasion includes judgments voiced by others (Bandura, 1997). Studies using a person of authority have successfully demonstrated that they can influence the adoption of health-promoting behaviors; therefore it is important that health professionals maintain a positive attitude and provide encouragement and support for clients.

Physiological feedback consists of derivation of further knowledge of what someone already knows by using rules of influence. Physiological indicators are used by individuals to judge their abilities (Bandura, 1997). Interventions can be used to alter the interpretation of physiological feedback and coping with how they are feeling. While this may appear to be contradictory to self-awareness, it is a matter of permitting different interpretations of the physiological feedback.

Using principles of social learning theory, health professionals seek to encourage client’s feelings of competency and empowerment and promote adoption of positive health behaviors rather than fostering dependency, helplessness, and feeling of low self-worth. Social learning theory extends the learning process beyond the educator-learner relationship and the learner’s direct experience to the larger social world. With social learning theory there is recognition of the affect of social messages in the production of behavior and an attempt is made to provide a positive environment for behavior change (Bandura, 1997).

Many studies that use self-management as a theoretical construct use a self-efficacy instrument to measure the effectiveness of the intervention. In this study,
principles of self-efficacy theory were used in the development of the modules. In addition, a quantitative instrument is used to measure self-efficacy.

Self-awareness

The concept that thought, language, and human bodily existence is integrated comes from the work of Merleau-Ponty (1962). Merleau-Ponty believed that language enables us to explore our primary perceptual and emotional experiences to find understanding and create a meaningful interpretation of our existence. He challenged the idea that thought and language can be understood as independent of and disconnected from human bodily existence. His work provides a foundation for understanding of self-awareness through his beliefs regarding embodiment (Polkinghorne, 1988).

Self-awareness and Self- and Family Management Theory

In the self- and family framework, self-awareness is considered a psychosocial characteristic of individual factors in the risk and protective factors. While it is a widely held belief that self-awareness is an important component of self-management, little research has been conducted on the concept outside of the area of diabetes management. Diabetic researchers have suggested that clients can best care for themselves, enhance their quality of life, and risk short and long-term complications if they are aware of the abnormalities in blood sugar levels. It is believed that these strategies, such as self-awareness of salient body cues, can be taught. A fundamental concept in self-awareness is that while health professionals are experts in diabetes, individuals are expert in their particular disease (Hernandez et al., 2003).

Redman (2004) states that, “to deal effectively with chronic illness patients must learn bodily cues, emotional triggers, and their own unique response patterns and must
match their decisions with their own desired quality of life, rather than one predetermined by the healthcare system (p. 2).” Individuals with chronic cardiovascular disease must constantly assess their bodies and understand their bodies’ responses to stimuli in the form of medications, food, and exercise. Self-awareness permits a person to link activities and outcomes, so they develop a greater understanding of how their body responds to a variety of stimuli. Therefore, bodily self-awareness is an integral part of self-management with knowledge providing the necessary foundation for the self-management process (Artinian, Magan, Sloan, & Lange, 2002).

Benefits of Self-awareness

Self-awareness enhances the management of disease by recognizing that something is amiss and the individual is able to seek appropriate medical attention (Hernandez et al., 2003). In the case of cardiovascular disease, self-awareness can have a profound effect on the individual’s outcome. Swift recognition that leads to treatment of a myocardial infarction may significantly affect the size of infarction and be a determining factor in a successful outcome (Rosenfeld, 2004).

Another aspect of self-awareness is to acknowledge the disease. This acknowledgement can make the disease easier to cope with and individuals will achieve a greater understanding of both themselves and the illness. Women who successfully cope with their illness become competent in predicting how they will respond to the demands of daily living. Women who “know themselves well”, have more freedom to pursue the activities that they want to engage in because they are able to plan and predict their activities according to their anticipated responses (Schaefer, 1995).
Self-awareness Research

Components of programs that foster self-awareness such as those in the Hernandez et al. (2003) study includes the formation of an alliance between practitioner and individual, introduction of the concept, and group and individual activities such as self-learning logs where they would document their experiences. In this pilot study of 25 adults, self-monitoring of blood glucose levels which permitted individuals to correlate feelings and beliefs with objective results was used throughout the intervention. At the conclusion of the study, individuals could identify more cues for normal blood glucose ($p<.05$). In addition, while not statistically significant, there was a decrease in Hemoglobin A1c. A larger group may have yielded statically significant results. This self-awareness intervention represents a theory-based approach for clients with Type 1 diabetes and hypoglycemia to achieve positive health outcomes.

One study that examined the concept of self-awareness unrelated to diabetes was conducted by Wilde (1999). In this phenomenological study, Wilde chose to use Merleau-Ponty’s term of embodiment rather than self-awareness to describe the findings in of individuals with long-term indwelling catheters. Wilde was able to uncover connections between the individual’s perception of urinary flow and infection rates. In this study, the individual as expert has lead to further understanding of disease and the development of strategies for health promotion and provided a basis for subsequent studies (Wilde, 2003).

It has been postulated that illness and injury causes some people to experience a sense of disembodiment or of feeling not connected to the body while other people become totally immersed in their bodily experience (Wilde, 2003). For optimum self-
management, the individual needs to attend to their body and to be able to communicate their bodily responses to healthcare providers. Therefore, it would be important for educational programs that stressed self-management to incorporate strategies to enhance self-awareness.

Empowerment

Empowerment is “the capacity of individuals and groups to exercise their will, to have their voices heard, and to claim their full human potential; addressing and changing conditions to remove barriers that thwart an individual or group's ability to claim their full potential” (Chinn, & Kramer, 2008, p. 297).

Paulo Freire (1970) put forth the notion that education can be an empowering experience. He believed that equality, accessibility, and self-determination were the tenets of empowerment. The Freirian concept of “conscientizaco” is based on the premise that the process of increasing awareness and praxis is empowering (Freire). Empowerment is a component of the self-management framework; specifically as a factor in health status outcome: control.

The recognition of the importance of the concept of empowerment in health care can be traced to the emergence of primary health care in the World Health Organization’s Alma Ata Declaration of 1977. In that document, health was identified as an issue of social justice; not only was it declared as a fundamental human right, but also people’s right to participate in the planning and implementation of their health care was articulated (Falk-Rafael, 2001). As a result of this declaration, the concept of empowerment has been included in the discourse of health disciplines, including nursing. Common to all disciplines is an understanding that empowerment involves enabling people to gain some
measure of power in their own lives, whether it is as community citizens, health care consumers, or self-care agents (Falk-Rafael).

The process of empowerment occurs when individuals accept responsibility to manage their health. Healthcare professionals can facilitate this process by providing individuals with information, encouraging them to solve problems related to their health, promoting self-efficacy, and self-management (Porr, Drummond, & Richter, 2006; Toofany, 2006; Powers, 2002; Bodenheimer et al., 2002).

**Empowerment Research**

Falk-Rafael (2001), in a two-phase qualitative study, explored public health nurses and their client’s understanding of empowerment and what strategies they used to foster empowerment in individuals, groups and communities. During the first phase of the study Falk-Rafael used nominal group technique (NGT) in the focus groups to obtain the thoughts of these nurses regarding empowerment and how to support it. These nurses defined empowerment and asserted it involved active participation of the client and their role was to facilitate this process. Developing a trusting relationship, advocacy, providing information and developing skills and capacity building (in the form of support and encouragement) were the strategies they identified.

In the second phase of the Falk-Rafael (2001) study, the clients were interviewed and asked to identify how the nurse was able to affect change in their healthcare. The narratives of these clients revealed that the type of nursing actions identified by the nurses as empowering had positive and enabling affects on their health. A weakness of this study include that there were no specific examples regarding how empowering nursing actions had affected their behavior. This study indicates that the same type of
activities identified by both nurses and clients can be viewed as empowering and positively affecting health. Therefore, these concepts can provide a basis for designing educational programs that empower clients.

Romero et al. (2006), in a mixed method study, used empowerment and popular education to prevent HIV in women at risk. They sought to: 1) test the feasibility of providing an HIV prevention program; 2) develop and validate an instrument for assessing women’s cognitive empowerment constructs; 3) to identify the impacts of these variables on women’s cognitive variables and behaviors. Participants in this study consisted of rural and urban women (N = 308) who were followed over three years. In the qualitative analysis, the themes which emerged included communication, equity/gender roles/economic dependence, education/skills, and support. The qualitative results were triangulated with the quantitative findings. They found that 21 out of 38 empowerment-based cognitive questions had statistical significance. The topic areas for this scale included sexual communication, perceived control, sense of community, collective efficacy, and self-efficacy. A seven factor paired t-test supports the interpretation that the women gained a sense of power, skills, confidence, and support at posttest. Since there was not a control group, the authors were unable to make a definitive statement regarding the effectiveness of the intervention. They were able to develop and provide a valid instrument to gage women’s self of empowerment regarding protecting themselves in a safe-sex environment.

In McKinney’s (2006) qualitative study of women using the Bradley method of childbirth education themes that emerged include relaxation and preparation as essential components of empowerment. This study used an email questionnaire and links to the
women’s personal web pages for their birth stories and philosophies to collect data from the fifteen participants. To enhance the validity of this study the researcher used member checks. The participants in this study defined personal empowerment as the chance to ask questions, to have the right to accept routine treatments, and to make educated choices. This study provides an understanding of the effect a particular educational strategy can have on promoting feelings of empowerment in women.

One strategy that has been used to empower the client is coaching (Hughes, 2003). In the Vale et al. (2003) study, health care practitioners without prescription privileges were trained to coach clients to train clients to aggressively pursue target levels for their particular coronary risk factors. To achieve this aim, clients were instructed to work in partnership with their own practitioner. Clients, as a result of the intervention, were able to demonstrate significant improvement in a wide array of coronary risk factors when compared to usual care.

Empowerment is a concept central to self-management, which directs both content and method in this research, because an empowered individual takes responsibility for his/her health. In addition, empowerment of the individual was a basic tenet included of the modules; the women were educated and encouraged to work in a collaborative manner with their healthcare providers to achieve the desired outcome.
Framework for the Modules

Figure 2.2

The self-management framework and selected components form the basis for the *Caring for Yourself* modules.

<table>
<thead>
<tr>
<th>Concepts</th>
<th>Research Question</th>
<th>Interventions</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of disease and risk factors</td>
<td>Question 1: Promotes self-management of coronary heart disease by providing</td>
<td>Module I – Heart Basics: A Description of How the Heart Works and Module II:</td>
<td>Modules promote a dialogue with practitioner by providing questions to ask. The women report that they are able to assess their risk factors and make a plan to act on the information.</td>
</tr>
<tr>
<td></td>
<td>information that the women find relevant and useful</td>
<td>Coronary Heart Disease and Risk Factors provide knowledge of the disease.</td>
<td></td>
</tr>
<tr>
<td>Healthy promoting behaviors</td>
<td>Question 2: Influences their adoption of health promoting behaviors</td>
<td>In addition to Module II, Modules III Nutrition and Physical Activity and IV,</td>
<td>Women report that they have adopted health promoting behaviors.</td>
</tr>
<tr>
<td>Self-knowledge and Mind/body/spirit Connection</td>
<td>Question 3: Affects self-awareness of their unique physical and psychological responses to health and disease.</td>
<td>Activities in the modules promote self-knowledge and mind/body/spirit connection.</td>
<td>Women report that they “know themselves” and acknowledge the mind, body spirit connection.</td>
</tr>
<tr>
<td>Empowerment</td>
<td>Question 4: Affects self-efficacy related to their ability to manage cardiac disease</td>
<td>All Modules</td>
<td>Women report that they can exercise their will to reach their human potential.</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Question 4: Affects self-efficacy related to their ability to manage cardiac disease</td>
<td>Ways to promote self efficacy through enactive attainment, verbal persuasion, and physiological feedback are included in the modules.</td>
<td>Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001)</td>
</tr>
</tbody>
</table>

Summary

Coronary heart disease (CHD) affects women differently than men. These differences can be found occurring from the onset of the disease, through to how women present with symptoms and are diagnosed, respond to treatment, and ultimately their
prognosis.

One treatment option, Cardiac Rehabilitation (CR), provides effective education and training for individuals with CHD. However, cardiac rehabilitation suffers from low levels of participation especially among the elderly, rural dwelling individuals, and women. Therefore, it is important to uncover reasons for low rates of participation (Grace et al., 2009; Pullen et al., 2009; Clark et al., 2004) and address them with innovative strategies. Another issue facing traditional cardiac rehabilitation programs has been their inability to affect long term behavior change. A home-based cardiac rehabilitation program was able to demonstrate the efficacy of the intervention through continued exercise behavior at six months (Carlson et al., 2001). Therefore, these findings suggest that innovative programs that are tailored to the needs of specific populations and allow the individuals to work at their own pace and in their home environment show the most promise of meeting the needs of elderly, rural women.

Educational programs designed to promote the concept of self-management have proved valuable for individual and families with chronic diseases. While a variety of approaches have been used to increase self-management in individuals with chronic diseases, often they involve a series of educational sessions over a period of time (Lorig et al., 2002; Funnell, & Haas, 1995).

Concepts that have been shown to affect self-management include self-awareness, and self-efficacy. Recently, researchers have been able to support the notion that education and an egalitarian relationship with healthcare providers creates a climate where empowerment can flourish (Fisher et al., 1999; Lorig et al., 1999).
Researchers have sought to study the effectiveness of self-management strategies for a variety of chronic diseases across cultural and ethnic populations (Lorig et al., 2003; Lorig et al., 1999). While many studies of self-management include several diseases, there is evidence that greater efficacy and improved outcomes occur when the focus of the intervention is a single disease (Lorig et al., 2001; Felson et al., 2000).

Outcomes identified in studies of self-management include the adoption of health behaviors, health status, and health care utilization. In addition, researchers have sought to understand principles that underpin behavior change and self-efficacy has emerged as an important variable in the prediction of these changes (Fisher et al., 1999; Lorig et al., 1999).

While much of the research on self-management has been focused on the commonalities among individuals with chronic diseases, some research has been devoted to women with coronary heart disease (CHD). The findings include that the benefits of the program include a decrease in symptoms, improved sleep and rest, improvement of functional status, and cost-savings as a result of a self-management intervention (Wheeler, 2003; Clark et al., 2000; Janz et al., 1999). However, these studies could not demonstrate that the intervention impacted the psychosocial functioning of the individuals (Clark, et al.).

Conclusion

The National Institute of Nursing Research (NINR, 2004) has called for research that involves changing lifestyle behaviors for better health and managing the effects of chronic illness to improve quality of life. Self-management has emerged as a method to support those with chronic illnesses. Researchers have demonstrated that self-
management interventions can result in positive outcomes, including the adoption of health behaviors, improved health status, and decreased health care use for individuals with chronic diseases (Fisher et al., 1999; Lorig et al., 1999). The self- and family framework that has been used as the theoretical framework for this study provided a basis for further exploring the variables of this model, testing interventions, and providing a greater understanding of the usefulness of the framework for this population (Grey et al., 2006).

Nursing has a historical tradition of meeting the health needs of the underserved and educating the public on how to care for themselves (Nightingale, 1851/1946). Women with coronary heart disease (CHD) require interventions that have been developed to meet their needs. Women’s voice regarding their needs for rehabilitation post diagnosis for coronary heart disease has not been well articulated and traditional approaches for rehabilitation have proved to be ineffective for this population. This study refined a self-management intervention and explored the efficacy of it for older, rural women with coronary heart disease in an effort to promote health and reduce health disparities.
CHAPTER 3

METHOD

The purpose of this study was to determine the relevance, usefulness, and effectiveness of a series of four educational modules designed for women to assist them in self-management of coronary heart disease (CHD). The following will include an overview of the design, discussion of the specific aims and research questions, and methods used to answer the research questions. Details regarding the sample, including eligibility, recruitment, and procedure for the protection of human participants will be provided. In addition, details regarding the intervention, instrument, data collection, management, and analysis will be discussed.

Overview of Design

A mixed methods approach was used to answer the research questions. Mixed methods is a research strategy that uses more than one research methodology in a single study. Using more than one method provides different lens for viewing the phenomena, increases depth and breadth of data, and allows for a more complete understanding of phenomena (Williamson, 2005; Polit, & Beck, 2004; Morse, 2003; Risjord, Dunbar, & Moloney, 2002; Streubert, & Carpenter, 1999; Berman, Ford-Gilboe, & Campbell, 1998; Sandelowski, 1995). Additionally, an advantage of using mixed methods over either qualitative or quantitative methods is that it can provide clarity regarding the phenomena of interest by adding completeness and confirmation of findings (Tashakkori, & Teddlie, 2003).

In this mixed methods study, a self-management framework (Grey et al., 2006) provided the structure for development of the modules as well as to explore the relevance
of self-learning modules on women’s ability to manage their heart disease, affect on their self-efficacy, adoption of health-promoting behaviors, and knowledge of psychological and physiological self-awareness of their unique responses to health and disease.

Two types of qualitative interviews and a quantitative instrument were used in this mixed methods study. The first qualitative research method, focused qualitative interviews, explored the women’s perception of the relevance and usefulness of the modules with regards to meeting their information needs. The data collected in these interviews led to the refinement of the self-management modules. The second qualitative method, in-depth interviews, explored the women’s beliefs regarding self-management of coronary heart disease. Finally, quantitative pilot data was obtained through the use of a self-efficacy instrument, Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al. 2001). This scale provided a way to determine the women’s belief in their ability to manage the disease and how the intervention affected their beliefs over time. Self-efficacy is seen as an integral component of the self-management framework and its principles have been used in the design of the modules. Furthermore, increased self-efficacy has been shown to be a predictor of the adoption of health promotion behaviors (Bandura, 1997).

**Specific Aims**

The specific aims of this study are to:

I) refine an intervention for rural women with coronary heart disease designed to promote self-management of the disease and

II) provide pilot data evaluating the efficacy of the intervention.
Research Questions

The research questions were: Do older, rural women, who have been diagnosed with coronary heart disease, report that the educational intervention:

1) promotes self-management of coronary heart disease by providing information that the women find relevant and useful (Aim I);

2) influences their adoption of health promoting behaviors (Aim II);

3) affects self-awareness of their unique physical and psychological responses to health and disease (Aim II);

4) affects self-efficacy related to their ability to manage cardiac disease (Aim II).
Table 3.1

Data Collection Related to Specific Aims

<table>
<thead>
<tr>
<th>Specific Aim</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Focused qualitative interviews for each woman (4 per woman); one after each module</td>
</tr>
<tr>
<td>II</td>
<td>In-depth interviews (2 per woman); 1) Prior to providing the intervention; 2) one month after the completion of the intervention</td>
</tr>
<tr>
<td>II</td>
<td>Self-efficacy for Managing Chronic Disease 6-Item Scale (3 per woman); 1) Prior to providing the intervention; 2) at the completion of the intervention; 3) one month after the completion of the intervention</td>
</tr>
</tbody>
</table>

Research Design

This mixed methods study consisted of qualitative and quantitative methods. Focused qualitative interviews and in-depth interviews provided qualitative data. A self-efficacy instrument was used to provide quantitative data.

Focused Qualitative Interviews

Focused qualitative interviews were used to refine the intervention. Using this method, the investigator discussed their understanding and thoughts about the modules with the participants. These interviews provided feedback from the participants regarding the content of the modules and provided data for revision and expansion of the modules. In this way, the researcher could develop an intervention that incorporated the feedback of the users, thereby creating a self-management intervention that best meets the needs of this population.

In-depth Interviews

To gauge the effectiveness of the self-learning modules two methods were used in-depth qualitative interviews and the self-efficacy scale. In-depth interviews were
conducted at enrollment and one month post intervention. The initial interviews gave the nurse researcher a chance to establish a relationship with the participants, provided an opportunity for the nurse researcher to assess the participant’s belief in their ability to manage CHD (self-management), knowledge of CHD and its treatment, self-awareness, health practices, and adoption of health promoting behaviors. In addition, it provided an opportunity for the women to reflect and recount the story of their diagnosis with heart disease. Interviews conducted one month post intervention provided closure for the participants, allowed the participant to dialog about the experience, discuss what they learned as a result of the experience, provide suggestions for improvements of the modules, and share their plans for self-management and health promotion.

Quantitative Instrument

Information regarding the effectiveness of the self-learning modules was provided by the in-depth qualitative interviews and a quantitative instrument, the Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001). The self-efficacy instrument was administered three times: 1) at enrollment, 2) at the end of the intervention phase, 3) and one month after the intervention phase was completed. All 10 participants completed the scale each time it was administered.

Self-efficacy for Managing Chronic Disease 6-Item Scale

Health behavior, self-efficacy (confidence in ability to deal with health problems), health status, and health care utilization have typically been the way self-management behaviors have been measured (Fisher et al., 1999; Lorig et al. 1999). The Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig, et al.) was used to provide quantitative pilot data regarding the efficacy of the intervention. The instrument was
obtained from the Stanford Patient Education Research Center and was available at no cost and was able to be used without permission, due to funding by the National Institute of Nursing Research (NINR). However, the authors request that researchers share the results of the study with them.

The Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001) consisted of six questions that focused on the women’s belief in their ability to manage their chronic illness. The participants were asked how confident were they regarding certain activities. The questions asked included: managing their fatigue, physical discomfort, emotional distress, other symptoms or health problems, management of health problems, and affect of illness. A Likert format with values of 1-10 was used. Higher scores relate to increased self-efficacy to manage the disease. The instrument can be found in Appendix G.

Instrument Reliability and Validity

Instrument reliability and validity was conducted for Self-efficacy for Managing Chronic Disease 6-Item Scale by Lorig et al. (2001). This scale is a shortened version of Self-efficacy for Managing Chronic Disease Scale. The scale consists of six items with an observable range from 1-10. In the initial testing of 605 individuals with chronic disease a mean of 5.17 and standard deviation of 2.22 was found. The Internal Consistency Reliability was found to be .91.

Pilot Testing

Pilot testing of a study enables the investigator to conduct a small scale version of a study to determine its feasibility and whether the approach used shows promise. A pilot study enables the investigator to see if the protocols, interventions, instruments, sample
recruitment, and other aspects of the study are effective. It can provide methodological
guidance, such as determining the appropriate sample size for an adequately powered
study. In addition, a pilot test can provide clues about the likely success of the
intervention and ways in which the intervention can be changed or modified (Polit,&
Beck, 2008, Stein, Sargent, & Rafaels, 2007. The author obtained pilot data of the
efficacy the self-learning intervention through the use of the Self-Efficacy for Managing
Chronic Disease 6-Item Scale (Lorig et al., 2001).

Sample

A purposive sample of rural women who had been diagnosed with coronary artery
disease in the past year participated in the study. Ten women aged from 60 to 93 who
lived in southern Vermont and a neighboring New York county participated in the study.
All of the women who came forward to participate completed the study. The sample size
was realized when saturation plus two was achieved for both the focused qualitative
interviews and in-depth interviews. Saturation refers to a situation in data collection
when the participants’ description of the phenomena of interest becomes redundant and
confirms the data that has been previously collected. Saturation of data provides
evidence that the description of the phenomena has been captured (Gillis & Jackson,
2002).

Of the 10 participants, eight had experienced a myocardial infarction, seven
received stents, and four received bypass surgery, including two whose stents had failed.
Six of the women were married, three were widowed, and one divorced. All participants
were high school graduates, with five of the women having received college degrees
while two more had attended college, but had not graduated. Three of the women were currently employed outside of their homes.

The women received no monetary compensation for their participation in the study, however all participants were given the self-learning modules to keep. In addition, at the completion of the study the participants received a note thanking them for their involvement.

Inclusion Criteria

The inclusion criteria for this study included women who:

- had been diagnosed with coronary heart disease within the past year as either meeting the criterion of a first-time AMI by the Consensus Document of the Joint European Society/American College of Cardiology Committee for the redefinition of Myocardial Infarction (Alpert, Thygesen, Antman, & Bassand, 2000) (see Appendix I) or by the participant’s practitioner
- are age of 60 years or older
- are orientated to person, time, place
- are individuals residing in the community
- demonstrate the ability to speak, read, and write English
- demonstrate hemodynamic stability and are ischemic pain free at time of recruitment
- willing to participate

Exclusion Criteria

The exclusion criterion for this study includes:
• cognitive deficits
• planned discharge to a long term care facility
• other major illness with a terminal prognosis

Procedures for Protection of Human Subjects.

The University of Massachusetts Institutional Review Board (IRB), reviewed and approved the proposal prior to initiation of the study (Appendix F). In addition, a participating institution’s Institutional Review Boards reviewed and approved the proposal. After approval was obtained, practitioners, cardiac rehabilitation program, Critical Care, and Medical/Surgical units from this institution were contacted and flyers were provided for recruitment (Appendix H). Eligible women were given a flyer by their practitioner or nurse that invited them to participate in the study. Contact information for the nurse researcher conducting the interviews was on the flyer.

At the initial telephone contact with the nurse researcher conducting the interviews, information concerning the study, risks and benefits of participation and assurance of anonymity and confidentiality was provided. At the first meeting, participants signed the consent form (Appendix F) after the nurse researcher conducting the interviews answered the participants’ questions. Individuals who demonstrated comprehension of the study and were judged competent were invited to participate in the study. In addition to the written consent, verbal consent was obtained at each contact with the participant. All of the participants completed every interview and all administrations of the instrument.
Voluntary Participation

The women were assured that their participation in the study was entirely voluntary. They were told that their medical treatment would not be affected by whether or not they decided to participate in the study. The women were also made aware that participating in this study did not limit their options regarding other treatments or educational programs designed for people with coronary heart disease, such as cardiac rehabilitation programs. They were informed that if they decided to participate in the study, they had the right to withdraw at any time and that there would be no consequences related to their medical treatment upon withdrawal. The contact information for the guiding faculty, Dr. Jacelon, and nurse researcher, Ms. Madison, as well as the University of Massachusetts’ Human Subjects’ Protection Office, was included on the Informed Consent Form. In addition, an addendum was added to the consent form for participants from the medical center, with contact information regarding their Internal Review Board.

Confidentiality

The information that participants provided was kept confidential and private. Each participant was assigned a number and their interviews and surveys were recorded using that number. Only the nurse researcher conducting the study has a copy of the document that links the women with that number. That document, as well as all computer files, is maintained in a password protected file on her personal computer. Hard copies of all data files are kept in a locked cabinet in the nurse researcher’s home office. When the study is completed the key that can link information to the participant to the study will be destroyed. Transcripts of the interviews have been kept so that future
research questions can be answered. The data obtained in the study will be used for publication in the scientific literature. No real names or identifying data were used to identify a participant. This information was included on the Informed Consent Form (Appendix F).

**Setting**

Participants were recruited from a medical center and its associated healthcare providers in southern Vermont. The Medical Center is a small, community facility located in rural Southern Vermont. This hospital serves people from Vermont, New York, and Massachusetts. No interventional cardiology is performed at this facility. This facility has been awarded Magnet Hospital status by the American Nurses Association. Participants had been recruited from the offices of cardiologists, specialists in internal medicine, general practitioners, and nurse practitioners affiliated with this hospital. In addition, the cardiac rehabilitation programs (CR), critical care, and medical/surgical units were contacted and flyers were provided for recruitment. (Appendix H for letter to practitioners).

The participants were able to choose the time and location for data collection. The field sites used for data collection included the home of the participants, the nurse’s home, or medical center offices.

**Intervention**

The intervention used in this study was self-management learning modules. The following describes the modules, the theoretical premises upon which they were developed, and an overview of the content.
Self-management Learning Modules

Self-management learning modules (Appendix A) designed by Ms. Madison was used as the intervention for this study. This approach is a method used by educators to guide the learner in independently achieving the designated objectives. This method provides an opportunity for the learner to assume responsibility for their learning and is self-directed and self-paced. Inherent in this method of teaching are the advantages of pacing, active learning, and the chance to review and reflect on information. With this process, the learning experience may be an iterative process rather than a one–time activity since participants are able to repeat information as often as needed for mastery (Bastable, 2003). Repetition is an important component in being able to understand and communicate complex information, such as cardiac physiology or the pathophysiology of artherosclerosis. In the modules, learning is not passive but one that requires the participant to engage in activities and to reflect upon what is taught and their experiences. In addition, this method of education has been found to be cost effective and may access a population that is otherwise difficult to reach (Bastable). Finally, these modules provide an opportunity for the client to learn in their home environment, an importance consideration since distance from a facility and transportation provides a barrier for rural women to participate in traditional cardiac rehabilitation programs.

The limitations of this method include reduced applicability for learners with low literacy skills, since low literacy skills would impede their ability to read or comprehend the information presented. Also, learners with visual impairments and low levels of motivation may have difficulty with this method (Bastable, 2003).
Theoretical Principles Underpinning Modules

The principles of social cognitive theory are congruent with this educational method. Principles of social cognitive theory such as symbolization (transforming experiences onto models that guide future actions), forethought (anticipating likely consequences of prospective actions), vicarious learning (learning from the experiences of theirs), self-regulation (using internal standards and self-evaluation reactions to motivate and regulate behavior), and self-reflection (thinking about one’s own thoughts processes and actively modifying them) (Bandura, 1985) have been incorporated into these modules. In addition, the processes of self-efficacy, 1) enactive attainment 2) vicarious experiences; 3) verbal persuasion; and 4) physiological feedback, have been used in these modules (Bandura).

Module Content

The self-management modules that are the intervention in this study are entitled: “Caring for Yourself”. They have been designed to provide information concerning cardiac function, the development of coronary heart disease, self-management strategies, and to enhance self-awareness. The information contained in these modules reflects current evidence regarding coronary heart disease (CHD). Information for the development of the modules was based on evidence in the literature, on information provided by the American Heart Association (2010), National Institutes of Health, National Heart, Lung, and Blood Institute (2005), or government sponsored Dietary Guidelines for Americans (2005). There were a total of four modules:

- Module I – Heart Basics: A Description of How the Heart Works.
- Module II: Coronary Heart Disease and Risk Factors
Module III: Nutrition and Physical Activity

Module IV: Psychosocial Considerations

Knowledge is empowering, therefore the women in this study had been provided with information in an effort to enhance their ability to manage their disease (Schaefer, 1995).

Data Collection

At the first meeting, screening regarding eligibility to participate was conducted. Women who meet the eligibility criteria were invited to participate and written informed consent was obtained. At enrollment, a baseline demographic questionnaire (Appendix D) was obtained. In addition, Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001) was administered and the first in-depth interview was conducted.

In-depth Interviews

Interviews provide a way to measure attitudes and beliefs, understand meanings that people hold, and provide in-depth information regarding phenomena. They allow for probing by the interviewer which provides opportunities for exploration and confirmation (Johnson, & Turner, 2003). To achieve this aim, it is vital to have the participants’ perspective of the phenomena as the participant sees it, rather than how the investigator views it (Marshall, & Rossman, 1999). This can be achieved by the investigator to engage in reflectivity (self-reflection) prior to conducting the interviews to gain insight into what thoughts and beliefs they bring to these interviews (Speziale, & Carpenter, 2007).

During in-depth interviews, the researcher is able to ensure that certain topics are covered in their qualitative interviews. While researchers’ role in the process has some
structure, the participants’ role does not, since they are able to discuss whatever they deem to be appropriate. For in-depth interviews, researchers prepare a written topic guide that provides the areas or specific questions that will be posed to each respondent (Appendix C). The open-ended questions contained in the topic guide are formulated in a logical sequence. Advantages of open-ended questions include the ability for the participant to provide illustrations and explanations for their responses. The topic guide also contains some follow-up questions or probes designed to elicit additional information, if needed. The researcher’s function is to have the participants recount stories, in their own words, about phenomena of interest (Polit, & Beck, 2004).

Since interviews require personal interaction, the establishment of a relationship between the participant and researcher is essential. Mutual respect and trust is essential for a successful interview. The researcher must appreciate that the aim of the interview process is to achieve understanding of the phenomena from the participants’ perspective and their role is to serve as a conduit (Speziale, & Carpenter, 2007). In these in-depth interviews the purpose was to gain an understanding of the women’s perception of health and disease, health behavior practices, ability to manage the disease, self-awareness, and obtain details regarding their diagnosis. The in-depth interviews were recorded and transcribed verbatim. Data collection information for in-depth interviews including topic areas addressed in this study can be found in Appendix D.

Focused Qualitative Interviews.

Focused qualitative interviews of participants were used to explore the relevance and usefulness of the self-learning intervention for rural women with coronary heart disease (CHD). The women were asked to comment on their understanding, the
relevance and the usefulness of the modules. In addition, the participants were encouraged to ask questions, request clarification, and suggest additions to the content.

One week after enrollment, the nurse researcher conducted the first focused qualitative interviews. The interviewer read segments of the modules aloud to the participants, pausing at approximately every paragraph to allow the women to comment on the content. After the completion of this interview, the next module was left with the women to review prior to the next interview. Subsequent Modules were explored on a weekly basis (over a total of four weeks) through the use of the focused qualitative interviews until all four modules are completed. A total of four focused qualitative interviews took place for each participant; each module was discussed separately. The focused qualitative interviews were recorded and transcribed verbatim. Further description of the data collection techniques for the focused qualitative interviews used in this study can be found in Appendix C.

Quantitative Instrument

The Self-Efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001) was administered three times: 1) at enrollment, 2) at the end of the intervention phase, 3) and one month after the completion of the intervention phase. The nurse researcher gave the instrument to the participants and asked that they complete the paper and pencil questionnaire, answering the questions to the best of their ability. When the participant completed the questionnaire, the nurse researcher marked the paper with the number assigned to that participant, noting whether it was the first, second, or third administration of the instrument.
Table 3.2

Data Collection Plan

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrollment</td>
<td>Demographic data</td>
</tr>
<tr>
<td></td>
<td>Screening</td>
</tr>
<tr>
<td></td>
<td>In-depth Interview I: explored beliefs about health and disease,</td>
</tr>
<tr>
<td></td>
<td>health behaviors, ability to manage the disease, and self-awareness</td>
</tr>
<tr>
<td></td>
<td>Self-efficacy instrument - Self-efficacy for Managing Chronic Disease 6-Item scale</td>
</tr>
<tr>
<td>Module Assessment</td>
<td>4 Modules (one per week for a month)</td>
</tr>
<tr>
<td></td>
<td>Focused qualitative interviews (4)</td>
</tr>
<tr>
<td>Post- Module Assessment</td>
<td>Self-efficacy instrument - Self-efficacy for Managing Chronic Disease 6-Item scale</td>
</tr>
<tr>
<td>One Month Post-Module Assessment</td>
<td>In-depth Interview II: explored impact of participating in study, adaption of health behaviors, ability to self manage the disease, and self-awareness</td>
</tr>
<tr>
<td></td>
<td>Self-efficacy instrument - Self-efficacy for Managing Chronic Disease 6-Item scale</td>
</tr>
</tbody>
</table>

Data Treatment

Both the in-depth interviews and cognitive interviews were tape recorded and transcribed verbatim. Participants were assigned numbers and all data was coded using this number. The transcripts of the interviews for each participant have been transcribed verbatim in a Word document. The data for each module from every participant was then transferred to an Excel spreadsheet for data analysis. The data from the in-depth interviews and any comments that the women revealed during the focused qualitative
interviews was transferred to an Excel spreadsheet for data analysis. The Word
documents and Excel spreadsheets are located on the nurse researcher’s personal laptop
which is password protected. Once the study is complete, the tape recordings of the
interviews will be securely destroyed. The data from the questionnaires were compiled
on tables in a Word file in the nurse researcher’s password protected laptop. After she
double-checked the accuracy of the data, a statistician entered the data into SPSS version
14.0 for descriptive and parametric analysis (SPSS, Chicago, Ill.). Once the study is
complete, the original forms will be securely destroyed.

Data Analysis

Data was obtained for this study in the form of qualitative interviews and through
the administration of a quantitative instrument. The following discusses the way the each
type of qualitative interview data was analyzed as well as how the quantitative data was
analyzed.

Qualitative Data Analysis

Data analysis involves bringing order to and interpreting data. In qualitative
research, the researcher is recording and analyzing data simultaneously. Marshall, and
Rossman (1999) have identified six phases of this process: “(a) organizing the data; (b)
generating categories, themes, and patterns; (c) coding the data; (d) testing the emergent
understandings; (e) searching for alternative explanations; (f) writing the report” (p. 152).
During each of these phases the data is reduced and the researcher provides an
interpretation of the data.

The first step of the process, the organization, involves the researcher reading and
rereading the data and making sense of what has been said. In the second phase, the
researcher begins to generate categories, themes, and patterns by looking at the data and identifying recurrent ideas or words, noting patterns of meanings in the words of the participants (Marshall, & Rossman, 1999). In qualitative analysis there occurs a formal representation of analytic thinking through coding. Throughout the research process coding is the method by which the investigator begins to put the concepts that have emerged from the data into patterns (Strauss & Corbin, 1990). As categories and themes are developed and coding has begun, the researcher begins evaluating the codes identified and examines the data for instances of patterns and incorporates them into the constructs. The researcher consults with the participants to make sure that the researcher’s perceptions are accurate. It at this point, that the researcher is able to critically analyze and seek other explanations for the findings. The final step in the process, writing the report, is central to the process of data analysis, as the final words and themes are recorded (Marshall, & Rossman).

**Focused Qualitative Interviews**

Data generated from the focused qualitative interviews have been used to determine the relevance and usefulness of the intervention and provide for revision of the intervention. The unit of analysis was each separate module. The narrative data from the focused qualitative interviews were transcribed in a Word document for each woman. Any suggestions made by the women regarding the content of the modules were transferred to Excel spreadsheets. Each module was placed on a separate spreadsheet. The contents of the module were in the first column. Each woman had a separate column and their comments were aligned with the content of the module. The data was then coded by relevant sentences and phrases. Analysis was focused on the women’s critique.

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of each aspect of the modules. Related codes were clustered in the analysis and provided a basis on which to refine the modules. The nurse researcher checked with the participants to make sure that she was accurately interpreting what was being suggested. Further information regarding data analysis of the focused qualitative interviews can be found in Appendix C.

**Qualitative In-depth Interviews**

Data obtained in this study through qualitative in-depth interviews includes the women’s beliefs regarding health and disease, adoption of health promoting behaviors, belief in their ability to manage their disease, and their self-awareness. The unit of analysis for the in-depth interviews was each woman. Data from the in-depth interviews were moved to an Excel spreadsheet. In addition, any narrative that the women engaged in during the focused qualitative interviews was included as well. Analysis was focused on what the women revealed about themselves during the interviews. Data was coded using a line-by-line analysis of the transcribed interviews. Then the relevant sentences and phases were coded and related codes were clustered. Data were then classified to formulate categories and synthesize themes. The women were consulted to check if their stories were accurately depicted. The women were then paired, so that their stories were told as dyads. Combining the thoughts and experiences of two women made for a more cogent and effective portrayal of the situations that these women faced and allowed for even greater anonymity of the participants. During the final stage of analysis, the themes from these interviews were examined and compared to the findings of the quantitative measure. Information regarding data analysis of the in-depth interviews is contained in Appendix C. In addition to the qualitative data, pilot data was obtained regarding the
efficacy of the intervention through the quantitative scale, Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al. 2001). Information regarding the efficacy of the intervention will be based on the in-depth interviews and quantitative scale.

Quantitative Data Analysis

Data from the self-efficacy instrument, Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al. 2001), were entered into SPSS version 14.0 for descriptive and parametric analysis (SPSS, Chicago, Il.). Descriptive and inferential statistics have been used to examine the data obtained from the self-efficacy instrument.

Descriptive Statistics

A mean, range, and standard deviation of the scores obtained at each of the six items have been calculated for each administration of the instrument. A mean ($M$) is a measure of central tendency. The range and standard deviation (SD) are measures of variability.

Inferential Statistics

Paired $t$ tests were performed for each of the items. The first $t$ tests compared the pre-intervention administration of the instrument with the post intervention administration. The second $t$ tests compared the post intervention administration with the one month post intervention administration. The objective was to obtain pilot data regarding the efficacy of the intervention using the sample from the qualitative interviews as the $N$. Sixty-three participants would be needed for a power of .80, a $\alpha$ value of .05, and a medium effect size (Polit & Beck, 2008).
Assessment of Quality

A fundamental principle related to mixed methods design is that, “the methods should be mixed in a way that has complementary strengths and nonoverlapping weaknesses” (Johnson & Turner, 2003, p. 299). This principle recognizes that each design method has limitations as well as strengths and that for an effective mix, design strengths and limitations should be considered.

Regardless of which types of design are used, valid research needs to be “plausible, credible, trustworthy, and therefore, defensible (Johnson, & Turner, 2003, p. 207)”. Fundamental for the assessment of quality of a study are the inferences made in the report. The inferences are, “based on the investigator’s interpretations and expansion of the results (Tashakkori & Teddlie, 2003, p. 35)” of the study. Since the word inference refers to inductive and deductive conclusions, it is especially appropriate for use to evaluate the quality of mixed methods research. Therefore, inference quality and inference transferability are the terms used to assess the quality of this study.

Inference Quality

Inference quality refers to issues such as internal validity in quantitative research and credibility in qualitative research. It refers to the accuracy which the conclusions have been drawn in a mixed methods study. Inference quality accounts for the both the deductively derived conclusions of quantitative methods and inductively derived ones used in qualitative design (Tashakkori & Teddlie, 2003).

There are two important components of inference quality: design quality and interpretive rigor. Design quality consists of the standard of rigor of the mixed methods research. In mixed methods studies, evaluation of design congruency of questions and
methods selected, participant selection, consistency of intervention, and prolonged and persistent engagement with the participants provide a way to evaluate design quality (Tashakkori & Teddlie, 2003). In this study, the two qualitative interviews provided information about the effectiveness of the modules as well as providing information about the women. The quantitative instrument was related to an important concept in the framework and provided additional data concerning the efficacy of the intervention. The participants were older women who had been diagnosed with coronary heart disease. All of the women were generous with their time and were thoughtful contributors to the refinement of the intervention. To assure consistency, one nurse researcher conducted all of the interviews and she spent a great deal of time with the participants conducting a total of six interviews over the course of two months with each participant and conducted member checks as she was analyzing the data.

Interpretive rigor occurs when the description of the process the researcher has engaged in is assessed. Some questions to consider are; whether the inferences made are consistent with current knowledge related to this phenomenon; are there interpretive agreements among participants; and are the inferences distinctly different from other possible interpretations of the results and have competing explanations been eliminated (Tashakkori & Teddlie, 2003). The findings from this study are supported by other literature that is emerging about the experiences of women with heart disease as well as the themes that emerged from the data. The nurse researcher conducted member checks with the participants during data analysis. In addition, there was congruence between the qualitative in-depth interviews and the quantitative self-efficacy instrument regarding the women’s belief in their ability to self-manage their disease.
Inference Transferability

Inference transferability refers to the generalizability of the results of the study. It encompasses the concept of external validity of quantitative research and qualitative researchers have referred to as transferability of results. This concept seeks to establish the extent that findings can be extrapolated beyond the current study. This transferability can relate to different contexts, individuals or groups, time periods, or methods of measuring or observing the variables or behaviors (Tashakkori & Teddlie, 2003). While this study was conducted in a small area in the Northeastern United States with rural women, the findings are similar to what researchers are uncovering in other countries (Davidson et al. 2008). Therefore, while one should be cautious discussing the results in a context larger than to whom and where the study was conducted, some universal truths about women’s experience with heart disease appear to be evident.

Threats to Validity

There are several threats to the validity of the data obtained in this study. The participants were aware of being studied; therefore, they may have tailored their responses to that rather than the intervention (Hawthorne effect). In addition, they may have responded in what they think is a socially desirable way, rather than truthfully describe how they perceived the intervention, views regarding health and disease, health promotion practices, and self-awareness of how their body responds in health and disease.

In this study, the researcher read the modules aloud and dialogued with the participant about the information in the modules, therefore the interaction between researcher and participant may not gage solitary use of the modules by participants.
However, this method was necessary to evaluate the effectiveness of the modules for this population.

Respondent load was a factor because of the amount of contact and time the researcher spent with the participants; two in-depth interviews, four focused qualitative interviews, administration of the quantitative scale three times, and use of both quantitative and qualitative methods.

Finally, inference transferability of the pilot data regarding the efficacy of the intervention is limited to the population being studied. Addition research with a more diverse population is needed before statements regarding inference transferability can be made.

**Summary**

This study contributes to the advancement of nursing knowledge in several ways. First, it provided information regarding the applicability and effectiveness of an intervention intended to address a major health concern (management of coronary heart disease), in a population that has poor outcomes and is difficult to access (older, rural women). It addressed several themes identified regarding the direction of nursing research by the National Institute of Nursing Research (NINR) (2004) including: changing lifestyle behaviors for better health; managing the effects of chronic illness to improve quality of life; and identifying effective strategies to reduce health disparities.

This study also utilized a newly developed framework for self-management as the basis for investigation (Grey et al., 2006). As a consequence of using this framework, this study provided a greater understanding of the usefulness of the framework and its applicability for this population.
Finally, mixed methods was used to obtain data, increasing the depth and breadth of knowledge about the phenomena of interest. Through the use of mixed methods, this study explored the relevance and usefulness of an intervention for rural women with coronary heart disease (CHD) designed to promote self-management of the disease and provided pilot data that evaluated the efficacy of the intervention.
CHAPTER 4
CARING FOR YOURSELF – THE MODULES

The self-management learning modules were designed to provide information that would assist women in the self-management of their coronary heart disease (CHD). The first research question, “Do older, rural women, who have been diagnosed with coronary heart disease, report that the educational intervention promotes self-management of coronary heart disease by providing information that the women find relevant and useful” was answered by the focused qualitative interviews. Each of the four modules will be discussed separately. This chapter will review what was revealed during these interviews about the content of the self-learning modules and discuss how the women’s thoughts have influenced the refinement of the program.

Procedure

The procedure that was followed was that Module 1: Heart Basics: A Description of How the Heart Works was given to each of the women to review after the first meeting. The interviewer met with the women one week later and read the module aloud, pausing at approximately every paragraph throughout the reading. These pauses gave the women an opportunity to comment on the material that was covered in the module. The women provided feedback about what content they thought was important, what they did not think was of value, any areas that needed clarification, how they would like the material modified, what content they would like to see added, or deleted, and shared their experiences that were raised by the content. While the suggestions of the participants were essential for the refinement of the modules, the women’s sharing of
their experience was also of value. When the women shared their experiences in relation to the content, the relevance and applicability of the material was confirmed.

The pattern of providing the module, allowing a week to elapse so that the women had an opportunity to read the material, and the interviewer reading the modules aloud was performed until each woman completed discussing each of the four modules. Each woman was assigned a number from 416 to 425. The women’s quotes were identified by these numbers. These focused qualitative interviews were tape recorded and transcribed verbatim.

Each module will be considered separately. Each section begins with a list of topics covered, followed by the thoughts of the women. Finally, the decision-making process regarding the refinement of the content is discussed. The first thing that has changed is the use of the word module. Module is a word used in academia and was unfamiliar to the women. Therefore, the Modules have become the Program and each module has become Chapters. The women responded very positively to the title of the modules, “Caring for Yourself”, so that title will remain.

Module I: Heart Basics: A Description of How the Heart Works

The content of the first module included anatomy and physiology, circulation, coronary arteries, heart rhythm, heart’s function in maintaining homeostasis, heart related disorders, and how the functioning of the heart influences selected systems of the body. The systems discussed were the respiratory, nervous, musculoskeletal, and renal systems.

The Anatomy and Physiology of the Heart

While some women thought this content on the anatomy and physiology was essential, a few of the women found that this information was presented in too much
detail. “I think that I would not go into as much detail as you do in parts of this module, some of it may be too much information at first.” (417) The revised self-management program features more illustrations of the heart with its parts labeled and eliminated listing parts of the heart in the narrative.

Circulation

The women were divided on the applicability of the content on circulation. While one woman said, “I think that people should know everything that is covered here” (419), the majority of the women felt that there was too much technical information. “Well, except for the first sentence, I’m not sure someone would need to know that information.” (422) In the revised self-management program, most of the narrative of this content was replaced by illustrations of the body and blood vessels. The women responded positively to visualizations of the content. “I like when you make this something I can imagine like saying the heart is the size of your fist.” (419) Therefore, visuals cues were included as often as possible throughout the revised program.

Coronary Arteries

The women appreciated the information regarding coronary arteries and the development of artherosclerosis. While many of the women had knowledge of the particulars of their heart disease, a few women admitted that they did not know the location of their blockages. Several of the women requested that illustrations of the coronary arteries and the process of atherosclerosis be included with the narrative. “It would be good to have pictures; it makes it real, gives you a perspective. They did that when they told me about the catherization. People might just read this over and say, “OK” and not really understand.” (420) Another woman thought that there was a need
for pictures of artery interiors and plaque buildup. “I think a picture of the artery with plaque would be good. And include a message, “This is going to happen if you don’t watch what you do!” (421) Another participant said:

Pictures are important. After my second angioplasty, I asked Dr. H., “Alright, where is it – show me?” That’s when he drew the kooky looking picture with scribbles. You would want to have diagrams, pictures of the heart, to show where blockages could occur. You could say to the person, “yours is this one”. A little bit of that sort of thing would personalize it. They could show their husband or their family, and say, “This is where my problem is.” Yeah, that would help them to have a more precise idea of where their problem was. (417)

This content was seen as valuable not only to the women, but as something they could share with family. The content of the section that presents coronary arteries and the process of artherosclerosis remain in the revised document along with the addition of several illustrations of the coronary arteries and the formation of plaque inside an artery.

Heart Rhythm

The content regarding heart rhythm was something that was seen as a value to the women. “This is something we need to know. It discusses heart rate, medications, and taking you pulse. And lets people know that it is a major part of your body and you must take care of it.” (424) However, a couple of the women said that the material was difficult and technical. “This is complicated. It is!” (420) The revised self-management program retained the content regarding heart rhythm, but the formatting of it has changed, an illustration has been included with more headings and bullet points to reduce the narrative.

Heart’s Function in Maintaining Homeostasis

The women responded positively to the idea that the body must be in balance and that there were interconnections between body, mind, and spirit. “I liked this part. I
don’t know how to say the word, homeo… Yeah. It’s a balance of everything in your body, I believe that.” (424) This idea of holism and connections between body, mind, and spirit has been expanded upon in the revised self-management program with a chapter devoted to this topic.

Heart Related Disorders

The two heart-related disorders discussed in this section of the module are congestive heart failure (CHF) and arrhythmias. The women felt that this material was important and its significance in light of coronary heart disease (CHD) should be explored further. “The women should be made aware of this – congestive failure – that it could happen”. (416)

If the woman had not been diagnosed with congestive heart failure, they may not know what it was, since the name does not reflect the disease process. This discussion between a participant and the interviewer illustrates this point:

Participant 421: Who knows what rate my heart was at when I was asleep? Could it have stopped?

Interviewer: What do you mean “stopped”?

Participant 421: Well, they said heart failure.

Interviewer: Cardiac arrest means the heart has stopped; heart failure means the pumping ability of the heart is weak.

Participant 421: Oh. (pause) I thought failure meant stopped.

The content of this portion of the module, where congestive heart failure (CHF) is discussed, is included in the revised document and includes an explanation of how
congestive heart failure relates to coronary heart disease. In addition, the discussion of arrhythmias has been preserved in the revised document.

How the Functioning of the Heart Influences Selected Systems of the Body

The women, for the most part, appreciated the content that described how the heart influences and is influenced by other body systems. “Because you can see, when one part is not working right, it affects your heart.” (424) In addition to their critique of the content, the women suggested additions. Topics that they requested adding included: information about the relationship of heart disease to stroke, the digestive system, skin, stress, and diabetes. “Well, maybe because I have diabetes, I think that one should be discussed. I’m just one person – other people may have a different opinion.” (422) Another woman suggested that the gastrointestinal (GI) system be included, her rational was that many of the signs and symptoms of heart disease are similar to of GI dysfunction.

Because with women, the very first thing you hear is, “I don’t feel well, I just don’t feel well.” My husband thought I had indigestion. So I would definitely put that in, to say to somebody, “Well it’s maybe not what you ate last night or this morning but to stress that it could be your heart.” A lot of women have indigestion and pass it off as that, and it’s not (418).

Every system that the women raised as being important was included in the revised document as well as what had been covered in this section of the module. A separate chapter entitled, “How Your Heart Influences Other Body Systems”, appears in the revised document.

The women liked that health promotional information and tips on what signs and symptoms to watch out for were included in the modules. “Here’s some more “health tips” or “what you can do to protect your lungs – I like that.” (425) was one such
In addition to the content covered in the first module, the women were anxious to discuss medications and their reactions to them. There was some mention of medications included in Module 1. Many of the women related untoward reactions to prescribed medications. “That’s good to know – especially since I have to be so careful with medications (425)” Several women also suggested that supplements be included in the revised document. “Now you just mentioned supplements. Do you discuss them anywhere? I don’t take any but people are always saying… (421)” Therefore, a separate section on medications and supplements has been included in the revised self-learning program.

**Module II: Coronary Heart Disease (CHD) and Risk Factors**

Module II provided a description of the process of atherosclerosis (the major cause of CHD), signs and symptoms of angina and myocardial infarctions (MIs), and risk factors related to the development of CHD. It is the modifiable risk factors; elevated serum cholesterol, overweight and obesity, physical inactivity, diabetes, high blood pressure, and cigarette smoking that were the focus of this portion of the module. While the women continued to comment on the content of the module and its presentation, they were anxious to share their experiences and their beliefs about the topics.

**Introduction**

The introduction of this module provides an overview of what is to be covered in the module. In addition, it sets the tone for the module by placing responsibility on the
women for the modifying their risk factors and caring for themselves. This concept of responsibility was well received by the participants. One participant, in response to a discussion regarding how treatment doesn’t cure the disease said, “And people think that it does cure the disease. They don’t think that they need to change anything, worry about anything.” (416) This sentiment was echoed by another woman, “Yes, I agree wholeheartedly and I don’t think that people take that seriously enough.” (420) These comments provided confirmation that the women did ascribe to the belief that their actions were essential in the modifying their risk factors. However, one woman admitted to not knowing she was at risk prior to her diagnosis. “I would have to agree with that – as long as you know what your risks are, in my case, I didn’t know.” (419) It is important that women become aware of what puts them at risk for coronary heart disease.

The women also felt that highlighting the relationship and partnership with the physician was important and vital for their well being. “I always pray for my doctors - that they have wisdom. Between his knowledge and wisdom and listening, he’s gotten to know my body like I know it. What things to prescribe and what not to and how much.” (425) “No, no he micromanages everything about me and we understand each other. We don’t always agree but I follow what he says – because I think that he knows what is best.” (422) Developing a collaboration relationship with a practitioner is an essential component to self-management and has been stressed in the revised document.

Atherosclerosis

A description of the process of atherosclerosis was appreciated by the women. The importance of this content was captured by a participant who said, “People need to know this!” (418) Several women suggested that there needs to be more specific
information about where arteriosclerosis occurs besides the heart. “Where else would it occur? Maybe you should put that in?” (420) “People need to know that the process is not just confined to the heart. That it’s occurring everywhere.” (421) Therefore, this information has been included in the revised program.

Several women requested that pictures accompany the text. “It might help to have a picture here. You know, one of those that show the interior of the artery (419),” was one such suggestion. “There are some pictures I’ve seen of the blood vessels and how that got clogged up, I think that would be good to have (421),” was another. In the revised program, illustrations of the process of arteriosclerosis have been included.

Angina

The discussion of angina elicited a strong response from the women. They expressed their frustration with how difficult it was for them to make the diagnosis of heart disease, to even bring what they were feeling to the attention of their practitioner. “It’s good to discuss all of these possible manifestations of angina (418).” “It’s hard to know that it is angina, if that’s not what you’re expecting (416).” “It’s so hard to tell if it’s anything. I just didn’t know. And you hate to be bothering anyone if it’s nothing.” (419) One woman felt so strongly about the different manifestations of angina she said, “Well, this should be on a billboard!” (421) Another woman, who made notes in the margins of the notebook reported, “This is what I wrote on the side. I had so many of these symptoms. And I did not, that’s what I wrote, I did not know! I did not have chest pain; I had back pain (425).” The comments of these women demonstrate the importance of educating women on all of the possible symptoms of heart disease. In the revised learning program, this information is contained in the third section, entitled,
“Symptoms”. In addition to the content in this portion of the module, one woman suggested that context be added to the content of the modules through the telling of several women’s experiences. “I don’t know if you want to tell someone’s story, well that might add a little personal interest. I might be interested in how they discovered their problem.” (419) Several of the participant’s stories about the diagnosis of their cardiac disease have been included in the revised learning document.

Myocardial infarction (MI)

Not every participant in the study had experienced an MI. The women critiqued the wording and organization of the content. Here is a woman’s comment about the wording of the section; “I think most people know it as a heart attack rather than a myocardial infarction. (pause) I know what it is, but I don’t think most people do.” (416) A couple of the participants said that there should be some reorganization of the content, highlighting the signs and symptoms of a heart attack. “I think that you should highlight this more. Make a list – you want this to jump out at you.” (418) This critique was echoed by another woman, “I don’t know - bold them, enlarge the type, put them in color. Something!” (421) When discussing the signs and symptoms of a heart attack, myocardial infarction (MI) as discussed previously, the common names, medical terminology, and abbreviations have been included in the revised documents. The symptoms of a heart attack, myocardial infarction (MI) have been made into a list so that it has increased prominence and in a different color than the main text.

The content regarding a myocardial infarction was considered to be consistent with the experiences of those participants who had suffered an MI. The discussion of the difficulty of making the diagnosis was confirmed by the stories of the women who
experienced an MI. Some women had no noticeable symptoms of heart disease prior to their MI, while other women had symptoms, although they did not recognize them as such. “Right before I had the heart attack I was having terrible, terrible back pain. But I wondered after I had the heart attack if that wasn’t related to what was happening.” (418)

Other women were able to ascertain that their pain was related to their heart.

I had some heaviness in my chest and also some arm pain. At first I attributed it to stress, you know. I was having some issues with one of my daughters and I thought it was that. Then I started getting it when I was exercising. I was always very active and I started feeling the same thing when I was outside exercising, so I did see my physician. And she sent me to the cardiologist. The stress test indicated that there were some problems. And then I went to the medical center for a cath and some stents. I came home and I started have the chest heaviness and arm pain again. I didn’t know what to do. They made an appointment for me to come in and in the meantime I had more chest pain so my daughter said I should go to the emergency room. And when I got there, they found that I had a heart attack.

These stories illustrate the difficulty women have at diagnosing their own symptoms of heart disease and seeking emergent care. They also validate the importance of the content contained in this part of the module. This content, with minor modifications related to layout, will be a part of the revised document and will be contained in the second and third sections, “Coronary Heart Disease” and “Symptoms”. Because the initial symptoms of angina and a heart attack or myocardial infarction (MI) are the same, both will be discussed in the chapter entitled “Symptoms”.

Risk Factors

This portion of the module generated a great deal of discussion from the women. Several of the women reported that no one had discussed “risk factors” as such with them. “I’ve not heard it said this way, but it makes sense.” (424) “No one ever discussed this with me. Most of what I know about them is what I started reading, like an article or
especially like Dean Ornish. So no, no one sat down with me and explained this.” (421) This content helped the women to see, “why me?” as well as “what can I do?” Practitioners may just approach women who have been diagnosed with coronary artery disease with a discussion about “diet and exercise” without any real discussion of what has been identified as risk factors by the American Heart Association.

Nonmodifiable Risk Factors

With regards to the non-modifiable risk factors several women reported that there was a familial component. While some of the women believed that heredity was a factor in their disease, a couple rejected that notion. “They tried to tell me that my heart disease is inherited, because of my father. But I don’t know about that. The juries out on that one! But I’m following right along, taking all the same medications as him!” (422) Another woman believed the familial connection actually helped her deal with the disease. “I suppose that one thing that keeps me from being quite as upset or alarmed about it is my brother had it. We were pretty surprised when my brother was diagnosed. And, guess what – I’ve got the same thing.” (417) A brief discussion of nonmodifiable risk factors, such as familial history, has been retained in the revised learning program.

Identification of Risk Factors

While most of the women were able to identify what put them at risk, several were not able to believe that their one risk factor could have "caused" their heart disease. Although her cholesterol was high and she was monitoring it, participant 424 said, “I can’t figure out why this happened to me.” “But I’m really surprised by this. I always had such a healthy lifestyle. I ate well; I exercised, so this came as a shock.” (419)
Presenting the material in this way, listing out the risk factors, may make it more clear to the women what makes them at risk.

**Stress as a Risk Factor**

Most of the women believed that stress put them at risk. “I wonder - did stress cause my heart attack? My boss asked, “Did I cause this?” I thought, “This is a crazy thing to ask me.” So I just looked at him and said, “You’re the doctor, you tell me.” (416) “Well, I wasn’t completely surprised by the heart attack; I had been under a lot stress. From my personal perspective, I think it was just plain stress. I don’t deal with stress well, I’m sorry about that.” (422) Stress has now been recognized by the American Heart Association (AHA, 2010) as one of the factors that can be a risk. Given that fact and since a discussion about stress was seen as such a priority by the women, it has been included in the chapter on “Risk Factors” and as a separate chapter entitled, “Stress, Anxiety, and Depression”.

**Self-management**

The women appreciated the discussion of self-responsibility as evidenced by this comment, “Yes, I believe that taking medications are important, but what you do yourself is more important than medications. You have to start with yourself.” (417) “I always say, if you don’t take care of yourself, if you see that something is not right, or you need more exercise, well that’s your problem if you don’t do it. I mean, you’re responsible for yourself.” (425) Therefore, content related to self-management and self-responsibility has been retained in the revised document.
Cholesterol

The section on cholesterol covers the components of cholesterol, self-knowledge, and treatment for elevated cholesterol.

Components of Cholesterol

Of all the risk factors, cholesterol generated the most discussion. The women were knowledgeable about cholesterol and its contribution to the development of coronary heart disease and viewed the content of this part of the module as valuable. Information regarding the components of cholesterol was viewed as essential to treatment. “Everyone should have this information and ask their doctor to do the entire test – not just the serum cholesterol.” (417) Prior to their diagnosis of coronary heart disease several of the women had only their total cholesterol taken and since this was in the normal range, no further exploration of this risk was undertaken. “You know, I went every year for a checkup and had my cholesterol taken and she felt I was so active she wasn’t concerned.” (419) “The total cholesterol test gave me a false sense of security. I thought, “Well it’s alright!” That’s something I would point out – tell them they really need the entire test.” (421) In the revised self-leaning program, additional emphasis has been placed on the entire test, not just total cholesterol.

Self-knowledge

Many of the women knew their cholesterol levels and were monitoring them, along with their physicians. “Now they’re really watching my cholesterol. The total cholesterol wasn’t that high but the ratio was off. And my triglycerides were high.” (419) “I’m on two cholesterol medicines. My bad cholesterol was 110 and that’s down to 48. My good was 35 and now it’s up to 78. Whew! It’s like, gee, take medicine
and see how quickly it changes those numbers!” (424) In addition to the content that was here, a place to record cholesterol levels over time has been included in the revised document.

Treatment for Elevated Cholesterol

The women were conversant about the medical treatment they were receiving for elevated cholesterol. “I was not able to lower my triglycerides. He didn’t want me to take fish oil. He said, “No, I want you to take this.” It seems to be working - my numbers are better since my heart attack.” (418) “I take Lipitor and also I take fish pills, I take them three times a day. And anything else I can learn I’m willing to do. Because I don’t want to go through what I’ve gone through again.” (419) While several of the women alluded to their diet as being “heart healthy” one woman spoke about the affect of diet on cholesterol, “I do have medications that reduce my cholesterol level. And my diet is supposed to help with that too, the South Beach Diet.” (416) In the revised learning program, this material was included and the connection between diet and cholesterol has been emphasized.

Some of the women were not able to tolerate the prescribed medication and reported untoward side effects from it. This sentiment was expressed by 422, “I was taking a statin, but I got very achy with it. I didn’t realize what the problem was until someone asked me, “Are you taking a statin?” So now my doctor is fine tuning me on that.” “I can take Zetia, but not statins. My muscles turn to jelly. Every joint in my body aches. My lipids are fine, my HDL is fine, and it’s my LDL that’s high. We’re not able to get it down.” (425) Information about common medications used to treat heart disease including elevated lipid levels has been included in the revised self-learning
program along with some common side effects and things to watch out for. In addition, a warning regarding the importance of informing their practitioner if they develop any untoward effects has been included in that section. Having current information regarding cholesterol and its treatment is an essential component of the revised module since this is a current area of research and treatment for coronary heart disease.

Overweight and Obesity

All but one of the women reported some angst about their weight. Weight was especially problematic for 424. She said, “I just wish I could lose weight!” Many of the women were veterans of several diet plans. This experience was well articulated by participant 422 who said, “I have lost weight, I have gained weight. Up and down, up and down. I just lost 5 pounds, that’s not very much but…” The BMI scale generated some comment, “I never concerned myself with my BMI before, but I can see that it’s important – it really lets you know where you stand.” (417) In the revised self-management program, strategies for weight have been removed and are covered in the chapter entitled “Nutrition”. The focus of “Risk Factors - Overweight and Obesity”, in the revised document, is on demonstrating why it’s considered a risk factor and the parameters of the risk using the BMI chart, rather than discussing solutions. A brief discussion of metabolic syndrome and abdominal obesity has also been included because of the prominence in the current literature as a risk factor for heart disease.

Physical Inactivity

While all the women acknowledged the importance of physical activity, only two of the women felt that their activity level was such that this did not present a risk for them. Although a couple of the women reported that they did not really enjoy exercise,
only one of the participants had complete distain for any type of physical activity. “I can’t come up with excuses. I work four, 10 hour days. I’m exhausted when I come home. My road sucks, I can’t walk on that, but it comes down to, I just hate it! Hate it!” (416) Women, especially those of a certain age, did not grow up engaging in sports or other strenuous types of physical activities. One participant commented on the content of this portion of the module and suggested, “You may want to “sell” it (physical activity) like you did with me.” (421) Therefore, in “Risk Factors - Physical Inactivity” the focus of the discussion will be about why physical inactivity is a risk. As the case with nutrition, there is an entire chapter dedicated to the topic of physical activity in the revised document entitled, “Fitness”. In this chapter there is an emphasis on movement and a variety of activities, including dancing, have been included so that the women may find something that would appeal to them.

**Diabetes**

This section of Risk Factors provided some basic information about diabetes and what puts people at risk for diabetes. "Oh, this is good information. This is a real problem, you read about it all the time now. It never used to be like that, now it’s a real problem.” (418) Diabetes was a risk factor for two of the participants while several others reported that they had a family history of diabetes. In the revised learning program, this material remains under, “Risk Factors – Diabetes”.

**High Blood Pressure**

The women appreciated the discussion about high blood pressure. In this section of the module the symptoms and treatments for high blood pressure were discussed. The women were knowledgeable about their own blood pressure and several of them
monitored it outside the physician’s office. “You know you say here it is important to monitor your own blood pressure – I think it’s crucial. You need to know if you really are, if you really have high blood pressure.” (421) Several women suggested they would have liked to see even more emphasis on self-monitoring and buying monitors to do this, so that option has been included in the revised self-learning document.

The topic of “white coat” hypertension was debated by the women. “This was interesting -some people’s blood pressure rises at their doctor’s. My doctor told me that your pressure goes up and down depending on your situation. I can sense that when I’m in a situation that’s a little stressful.” (425) Another of the participants felt she suffered from “white coat” hypertension but she was confused over whether or not she actually had high blood pressure. She said, “I don’t know if I had high blood pressure or not - I have it when I go to the doctor’s office, I’m really uncertain whether it was up there all the time. Maybe.” (421) Self monitoring of blood pressure has been emphasized in the revised self-learning program.

Several of the participants commented on the use of medications for the treatment of high blood pressure. “Medication information is important too.” (416) Another woman questioned whether a more thorough discussion of medication was needed, “This is good information. Should you list some of the medications used to treat high blood pressure?” (418) In the revised learning document the content of “Risk Factors – High Blood Pressure” will remain. Additional information about medications will be included in the chapter on “Medications and Supplements”.

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Cigarette Smoking

Two of the women admitted to a history of cigarette smoking although both denied currently smoking. “I’m really not an example of good health because I led a reckless life. I smoked, I drank, I did all the things that are not healthy.” (423) There was some discussion about how our opinions regarding smoking had changed in recent years. One woman recalled her attempt at smoking to calm her nerves. “I thought smoking would calm me. My children tried to teach me to smoke; it was a disaster, I never tried again. Of course now I’m quite glad, but then I thought it would be the just the ticket!” (422) Other women spoke of about how members of her family smoked and of secondhand smoke. One woman recounted this image of her mother, “And my mother was a big smoker. I can kinda of visualize my mother, me being an infant, holding me in one hand and smoking a cigarette in the other. She smoked all my life.” (416) The information contained in the section “Risk Factors – Cigarette Smoking” will remain and there will be additional content on the perils of secondhand smoke.

Module III: Nutrition and Physical Activity

The focus of Module III was nutrition and physical activity. The women were both knowledgeable and had strong opinions about both of these topics.

Nutrition

The information contained in this module that addressed nutrition included: a definition of a healthy diet, caloric intake, fats, grains, vegetables, fruits, milk products, meat, fish, poultry, beans, and eggs, fiber, sodium, alcohol, coffee, specific nutrients, fluids, and diet strategies. This comment characterized the women’s beliefs about nutrition, “I’m certainly interested in learning as much as I can about nutrition. I think I
know a fair amount, but I could learn more.” (419) The women prided themselves about their knowledge about nutrition.

While some women maintained that they had always followed a heart healthy diet, others admitted that since their diagnosis they had made some changes, “This is good because I changed a lot of things about my diet.” (421) Another woman had a different rationale for the changes she made, “I’ve made some changes to my diet over time, because it makes me feel better. But through much of my life I would say that my diet was the opposite of what you have said is the ideal.” (423) In the revised self-management document, nutrition will be explored in a way that conveys that it is never too late to begin a healthy diet and the benefits of a healthy diet on how a person may feel has been discussed.

**Definition of a “Healthy Diet”**

The women supported the contents of this portion of the module with comments such as “This is true for anyone especially someone with heart disease” (417) and “I would agree with this – variety, proportion, moderation - they’re really important.” (420) All of the women said that they ate a “healthy diet”. “I wrote down here that I really do eat well” (425) “I feel as though my diet could be described in that way.” (419) One woman spoke about where she got her information, “To get the most current information, I look at magazines. And sometimes television, books. I very rarely go online.” (418) Another woman said that she gets her information from health-focused newsletters. None of the women said that they got their health information primarily from the web. In the revised document, several sources of high quality print material
were suggested. Web sites have also been included because in the future, more women may turn to it as a source of information.

**Caloric Intake**

Calorie counting was not a popular diet strategy. Regarding weight and being of a desirable weight, the comment of 420 was, “It comes down to eating less – doesn’t it?” Comments ranged from, “I don’t like count calories, I don’t like to obsess about things.” (422) to “I don’t like to calorie count that is why Weight Watchers is better for me.” (425) However, the women said that they did like the chart that told them how much of each type of food they could eat. “This is excellent! I think it’s very helpful. I’ve heard people say, keep it under a certain amount of calories, but not like this. Fruits, 1 ½ cups, vegetables – 2 cups… I’ve never seen it divided out that way. ” (421) These statements are consistent with other comments from the women that verify that they like to be able to visualize things. In the revised document this content will be retained. Also, there is emphasis placed on the pleasure of eating healthy food and proportion and portions of foods consumed.

**Fats**

Comments about this section affirm the women’s belief that this information was essential for a heart healthy diet. “This information is essential, absolutely essential. I’m just not sure how to make so that people will realize its importance. I think it’s key to a heart- healthy diet!” (417) The women were aware that fats contributed to the development of heart disease. All of the women reported that their diets were low in fat. “I try not to eat fried food or really fatty foods of any kind. I’m very careful with the fats I consume. I like olive oil and I try to use it rather than butter, or the artificial
stuff.” (424) The women also saw that the information on the preparation of food was important, too. “I think it’s as important to mention food preparation, as it is to mention food.” (416) “People need to be aware of that. Since this is targeted towards women it is important because most women are the people that prepare the foods. I do try to prepare my own things.” (420) One woman thought that the discussion about transfats was good, but a bit outdated, because New York City, as well as other locations have now banded the use of transfats in the restaurants. “I think New York City and California have banned it. I guess you should update this.” (421) This comment demonstrates the importance of keeping information current. Content related to fats has been expanded in the self-learning document. There is a discussion about all of the macronutrients, including fat. That will enable to women see that any one type of food is not “bad”, but that healthy choices should made within each category of food.

**Grains**

In addition to a discussion of whole grains, this portion of the module contained a discussion regarding the importance of reading labels. Several of the women seized on this and recommended that nutritional information was included in the revised self-learning program. “I think that the nutritional labels are pretty confusing. Alright. I don’t eat a lot of those kinds of foods, but I know some people do,” (417) “I do, I read the labels. Having a label here would be helpful, because it can get confusing. I think that would be good.” (420) “Anything I buy I check the label. I think it’s important for you to have that information because it is women who are doing the shopping!” (425) The women have expressed a desire to have visuals, so a couple of nutritional labels has been
included in the revised learning modules as has the discussion on the importance of whole grains.

**Vegetables**

This section discussed the recommended daily quantity of vegetables consumption as well as the health benefits associated with vegetable consumption. All of the women said that they consumed an adequate amount of vegetables. Comments such as this one were common, “I do eat lots of vegetables.” (422) Most of the women consumed either fresh or frozen vegetables. “I stick to fresh or frozen. I try to stick vegetables in everything I eat. If I go out I have a veggie sub.” (424) However, one woman admitted to not always eating them in the most healthful fashion, “I do eat a good amount of vegetables. I eat fresh vegetables. But I do admit I love sauces! But I do eat a lot of fresh vegetables with nothing.” (425) A discussion about the preparation of vegetables was seen to be beneficial. Therefore, in the revised document, a discussion of preparation of vegetables, along with some visuals, such as a picture of a plate and how much of it should be devoted to vegetables has been included.

**Fruits**

This section contained information about the quantity of fruit needed and suggestions on how to increase fruit consumption. Included was the recommendation that fruit juices be considered only a small portion of the fruit intake because their lack of fiber and high calorie and sugar content. One of the women who have diabetes supported that remark, “No, because of the diabetes, I don’t drink a lot of fruit juice. And I don’t eat a lot of fruit because it upsets my stomach.” (422) One of the women shared a strategy she used with regards to fruit juices, “When I drink juice I dilute it with water.”
This same woman did relate that she needed to make sure that she has access to adequate amounts of fruits. “I need to have more fruit out so I can grab it. You know, I might buy a melon and cut it up into little pieces. Because when I can’t find something quick to grab I get into trouble.” Most of the other women affirmed that they consumed what they thought were adequate amounts of fruit. The revised document contains a section on fruits with some mention of the different nutrients in both fruits and vegetables and contains a recommendation to eat a variety of colored foods each day.

**Milk Products**

The nutritional benefits of milk products their nutrient content was the topic of this section of the module. The women varied quite a bit on their consumption of milk projects. “I went on a milk kick this winter, and drank milk, skim milk, of course! I made a beverage with milk, instant coffee, and sweetener. I’d stick a straw in and it was a wonderful little pick-me-up!” Another woman reported, “I don’t drink milk, I’ll put it in my coffee, my cereal, but that’s about it.” One of the women shared the fact that she was lactose intolerant. “I had diarrhea for about a year. And my doctor didn’t take it seriously, so I pushed to see a gastroenterologist and when I told him my story and the first thing he said was, “You’re lactose intolerant.” Given the risk of osteoporosis in this population, the fact that here was so little consumption of dairy was unexpected. In the revised self-learning program, the title of this section will be changed to “Dairy Products” because of its broader scope. In the revised section that covers dairy products, and creative ways to increase calcium consumption, as in the case of the milk and coffee beverage has been explored. However, a warning to avoid full fat and/or high calorie beverages has been included. In addition, the calcium needs of women were
included as well as other the calcium content of alternatives to dairy products. Finally, the signs and symptoms of lactose intolerance have been discussed.

**Meat, Fish, Poultry, Beans and Eggs**

Protein sources such as meat, fish, beans, and eggs were the topic of this module. Several of the women mentioned portion size. “I have my protein at dinner; I do try to keep the portion to about the size of a deck of cards. I know that from Weight Watches. They teach you about portions.” (425) “Turkey and roast beef are good, but the others! They’re so high in fat! And salt! Avoid them! I learned from my kidney problems is that you can’t have too much protein.” (421) This content has been expanded in the revised document and the title was changed to “Protein”, since this reflects the words the women used in this discussion as well as the macronutrient. There is additional information on other sources of protein, and the inclusion of visuals regarding the size of a serving which the women have repetitively said they valued.

**Fiber**

The importance of fiber in the diet was the topic of this portion of the module. Several of the women reported difficulties with elimination. “Even with all of that I have problems. I eat only whole grains, don’t eat anything that would be considered binding, such as cheese, but still…” (424) “I’ll take a little Metamucil to increase my fiber. That seems to help.” (418) This content has been included in the new document and has been expanded to include the fiber content of several foods.

**Sodium**

Sodium was the topic of this section of the module. The women all reported that they did not consume a great deal of salt and shared their low salt strategies. “I don’t put
salt on the table and I rarely cook with salt. I had to do that because my mom was sick. So I got out of the habit of cooking with salt.” (418) Other comments included a concern for the amount of sodium in processed foods. “This is important; many of our prepared foods contain a lot of sodium. I make everything from scratch, so it’s not an issue. But what about women who work out of the home? What are they going to do?” (420) Providing a visualization for the recommended amount of sodium was requested by a woman. “I think it would be helpful here to have how much that is, a teaspoon or so. And also mention how much is in processed foods – perhaps even give examples.” (419) Therefore, some additional visuals, such as the how many teaspoons of salt daily are recommended, have been included in revised modules. The sodium content of food in the nutritional labels will be discussed as well. In addition, the women will be warned about how much sodium is in things that we don’t even think of as salty. Finally, the DASH diet and its benefits have been explained in more detail.

**Alcohol**

The use of alcohol was discussed in this section of the module. Only two of the women shared that they drink alcohol on a regular basis. This comment echoed the sentiments of many of the women, “I only drink now at special occasions. I drink a little wine, a glass or so. And it seems to affect me more now. So I only drink a very little and only on special occasions.” (420) One woman went further and discussed that she doesn’t drink and the reason for it, “I don’t drink. My husband was an alcoholic and when he gave it up, so did I. It was no big thing for me and when he died, I did not see any reason to resume drinking.” (425) One woman drank to relieve her stress. “In my quiet down time I tend to drink a lot. And it always leads to, “how can I relieve this stress?” (416)
Another woman reported that she had some pressure to drink red wine because of the belief that it is “heart healthy”. “People are telling me now I should drink red wine. But I don’t like red wine. Every now and then I’ll have a zinfandel, but it’s like ugh! I’ll drink some mixed drinks, but I’m really not a drinker.” (424) Alcohol use has been discussed in the revised document in the “Nutrition” chapter under the topic of “Beverages”, as well as the one on “Stress, Anxiety, and Depression”. In the “Nutrition” chapter information regarding the health benefits of red wine has been discussed, while abuse of alcohol is discussed in Stress, Anxiety, and Depression. Additionally, the excessive alcohol consumption has been discussed as one of the possible risk factors for coronary heart disease.

Coffee

The topic of this section of the module was coffee and what is known about the relationship of coffee to heart disease. Many of the women discussed their tea consumption during this section as well. Most of the women reported that they used decaffeinated products – both coffee and tea. “I drink decaffeinated coffee at night. I haven’t drunk regular coffee for a long time because I found it kept me up. And I drink the decaffeinated ice tea. I don’t feel that’s that bad for me.” (424) One woman said that she drank herbal tea and discussed the rituals she associated with tea drinking.

Well, doctor’s order – I drink herbal tea. I drink it on a daily basis. I had an English mother, we did not drink tea, we swilled it! If you had a twisted ankle, we drank a cup of tea. Everything was tea. Every afternoon, about 3 or 4 o’clock, out would come the tea set. And people would stop by and they would want tea too. And I continued this with my daughter. She would come home from school and we would discuss the day over tea. And we would have a little lemon slice floating on top. But now I drink coffee, too. And the coffee I drink is decaf. (422)
This content remains in the revised document included in the chapter entitled “Nutrition, Beverages”. A discussion of different types of tea, the health benefits of tea, and coffee and tea rituals have been included in this chapter as well.

**Specific Nutrients**

This section of the module discusses specific nutrients found in food. Many of the women said they did not look to food for specific nutrients, that they took multivitamins. This was a common response, “No, I don’t look at food for specific nutrients. I take a vitamin C, I take a vitamin B12 and I take a vitamin D and I take a multivitamin.” (422) However, one woman, who was very knowledgeable about her diet said, “Well, I try to have enough vitamin D through my foods. And I feel that I have enough potassium and vitamin C with the fruits I eat.” (419) Another woman expressed her concern about her intake of calcium. “I am concerned with the amount of calcium in my diet. My sister had breast cancer and I won’t eat soy because of that. I don’t like the taste of yogurt, so I don’t eat that.” (418) The section on nutrients has been retained in the revised document and some of the latest research on nutrients was included, especially when there has been found a correlation to the nutrient and heart disease. Supplements, such as vitamins, will be discussed in the chapter, “Medications and Supplements”.

**Fluids**

The importance of the proper amount of fluids is the topic of this section of the module. Some of the women reported that they did not consume enough fluid, “I don’t drink enough fluids. I know with my kidney stones, I should drink a lot.” (421) Only one woman thought that she did consume enough fluids. “I drink a lot of water; hot water
and cold water. When I get up in the morning I’ll have a cup of hot water (424).” In the revised document, this topic is given a new title, “Beverages”, in the chapter on “Nutrition”. In addition to the content that was covered in this section of the module, alcohol, coffee, tea, soda, and juices has been discussed.

**Diet Strategies**

Weight was a concern for many women. “I think I eat well, I just wish I could lose weight (424),” was a thought echoed by many of the women. The psychological aspect of eating was identified by several women.

I have to say, from my own experience that keeping a food diary is very important. When I’m on Weight Watchers, I keep tract of everything I eat and the portion sizes and everything and it really works. But it’s a pain. When you start keeping tract you get shocked. You know, I’m hungry all the time. I’m really hungry. I don’t know if it’s psychological …They tell you in Weight Watchers if you take at least 20 minutes to eat, your brain should tell you that you’re full. But even if I’m full, I still want to eat. And I think that’s a psychological hunger. I enjoy eating. And I really have a problem with that. It’s a self control type of thing. And I understand that, that’s why I go to Weight Watchers. (425)

The need for additional information was expressed by 420, she said, “Most women are going to be interested in losing a pound or two. That is what they’ll want. Don’t leave out the heart healthy material – but if they knew how to lose some weight that would be helpful.” Therefore, this portion of the module has been expanded in the revised self-management program and discusses several of the most common diets.

**Physical Activity**

This portion of the module is devoted to physical activity. The topics covered included: activity level and the types of exercise, aerobic exercise, stretching and strength training. The women did report that they knew this was an important component of heart health. “I know that this is important.” (425)
Activity Level

Many of the participants expressed regret that they were not more active. “I wish I was more active!” (416) was a comment that was echoed by many of the women. Several of the women attended a Phase 3 Cardiac Rehab program two times a week. For many of these women it was the only exercise they engaged in. “No, I don’t have that much activity. I come here twice a week. I do my hour each time. But I don’t do much else.” (421) Some felt that their practitioner would like them to engage in more activity. “My doctor knows what I do. I know he’s like to see me do more too.” (420) One woman would like to do more, but was physically unable. “That’s all I can do. I don’t know if the fatigue is my heart disease, or my age, or my medications. It could be any of those things or a combination of all of them.” (417) Therefore, in the revised document, in addition to a discussion regarding the desired activity level, mention has been made of what a person may be able tolerate. Age, extent of heart disease, and medications have been discussed as affecting a person’s ability to engage in physical activity. Increased emphasis on movement is prominent in the revised document.

Barriers to getting more exercise were brought up by several of the women. “When it’s cold or icy, I don’t walk at home. I have wound up too often in the gutter. That has happened actually, several times.” (422) One other woman expressed her frustration about finding places to exercise: “There needs to be centers in every community where people can come together for very little money and exercise. I’d go to Curves if I had more money but, I don’t have any extra money at this point.” (421) This portion of the module has been retained in the revised document and includes a discussion of the barriers and suggestions for rural women on how to overcome them.
Types of Exercise

The three different types of exercise: aerobic, stretching, and resistance training are discussed in this section.

Aerobic Exercise

This section discusses what constitutes aerobic activity, target heart rate, the importance of monitoring your pulse during activity, other scales of exertion, and training effect. Finally, there is a discussion about different kinds of aerobic activity. The women demonstrated that they valued the content in this section of the module. “Yes, people should know this. I needed to know how much I should do – I was scared of going overboard.” (419) Many of the women did not know their target heart rate and reported that they did not monitor their pulse. “Yes, I certainly monitor my breathing and try not to “overdo” but I don’t take my pulse. He really hasn’t given me a target heart rate.” (422) Participant 420 did what many of the women did, “I haven’t gotten a target rate. I just do the same thing now as what I did in phase 2 when I was monitored.” One woman was the exception to this; she knew her target heart rate and wore a heart monitor while she exercises. “Nancy said she didn’t want my heart rate going above 150. Like walking up into the Hollow, I’ll start out and I’m up into the 130s, and then I’ll be in the mid 140s or even 150s.” (424) Although it appears that the women said they valued the content, most of them did not monitor their heart rate. This information is important for their self-management, therefore it has been retained in the revised document as well an exercise about taking their pulse has been added.

The women did appreciate the information related to seeking help if they had any untoward effects. “OK, it’s important to report if you’re having any pain. I’m glad that
that is emphasized.” (419) “Yes, the warnings are good, some people do behave foolishly.” (417) Warnings about problems that the women may experience while exercising have been included in the revised document. Any warning information has been printed in red.

Regarding the types of activities that constitute aerobic activity 424 commented, “I don’t know if a lot of people would pick up things like snowshoeing or cross-country skiing,” while participant 423 said, “Should you suggest something that is less vigorous for older women?” Since the population for this self-learning program is older women, in the revised document there is a wider assortment of activities, some of which are less strenuous, such as dancing.

Stretching

This portion of the module discussed stretching as a component of a balanced exercise program. The women did not engaged in stretching exercises; their focus was on aerobic exercise. “I don’t really do the stretching.” (425) said one participant. Another woman said, “I actually stopped stretching. I did! They want you to be done in an hour. That was taking up all my time, almost 20 minutes, if I did it faithfully. I decided the weight machine is kinda like stretching.” (421). Although the women did not appear to value stretching, this portion of module has been retrained in the revised program because stretching is an important component of fitness. A discussion of the benefits of stretching and illustrations of some basic stretches that may appeal to older women, have included in the revised document.
Resistance Training

A discussion of the benefits of resistance or strength training, and how to achieve that aim is what has been covered in the last portion of this module. Resistance training was a part of many of the women’s exercise routine, although they may not do as many repetitions as is desirable. “I use the lighter weights, I don’t know if I do that many repetitions, but...And I do it twice a week.” (425) Performing resistance training is optimally done three times a week, and although none of the women achieved that goal, the benefit of these exercises was evidenced by this comment “I don’t do that much. But, when I don’t do them for a week for one reason or another, I can feel it when I begin again.” (423) “Well, that machine out there is really helpful! I can see it’s made a difference for me, I’m definitely stronger. And I definitely have better balance.” (423)

This content will be retained in the revised document, under the heading of “Strength Training” since that term was more commonly used by the women. Reference to the word resistance training will be made so that the women will understand what that means if they see it mentioned in the literature.

Module IV: Psychosocial Considerations

Psychosocial components and their impact on the development of coronary heart disease (CHD) is the topic of Module IV. This was the shortest module of the four, but the women expressed very strong opinions about the content and the need to expand this section. The topics covered in this module included: Psychosocial factors and their influence in the development of coronary heart disease (CHD); stress; approaches to reduce stress (minimizing the amount of stress-inducing situations; increasing your
resistance to stress; counter-conditioning to avoid physiological arousal; engaging in health pleasures), humor, support systems, and depression.

Psychosocial Factors’ Influence in the Development of Coronary Heart Disease (CHD)

The women thought the title was oft-putting. One woman articulated her concern with the title. “The first thing you may want to do is change the title. I don’t know - what maybe something that has the body, psychology, and spiritual. That whole thing. Yes, something holistic.” (425) The word “psychosocial”, with its clinical significance, did not have meaning for these women. In the revised document, there is a chapter devoted to “Body, Mind, and Spirit” and the word psychosocial has not been used in any of the chapter titles, because it is important to have titles that the women can relate to.

Stress

Almost every one of the women identified stress as being a factor in the development of their heart disease. Many of them felt that stress was the primary reason for their heart disease. “I think stress has been a factor in the development of my heart disease.” (424) “I have always been a very stressed person. I’m actually now in much better shape than I was.” (421) And the two women who did not think it was a risk factor for them reported that they believed it to be a factor. “I think stress has a lot to do with it – the development of heart disease.” (417) “I think stress has an effect on heart disease. I think it does. For instance, if you can’t sleep because of stress, it will affect you.” (420) One woman thought that the word anxiety better captured her feelings. “This is personal. Anxiety has been a big issue for me. (laughs) Because there are so many things to be anxious about!” (422) In the revised document, there is an entire section devoted to stress, anxiety and depression.
Approaches to Reduce Stress

Many of the women thought that they were not able to reduce their stress. “That’s what I was thinking – how do I do that?” (laughs) (424)

I have to control my stress. I haven’t found out how yet. I told my primary care that it would probably go away when I retired, in a couple of years. He’s kinda telling me that I need to work out to get my stress out. I would love to wake up in the morning and not feel stressed. I’d love to go to work and not break out in a cold sweat when problems are going on. (416)

One woman made a suggestion about reducing stress, “I would suggest that you include here the recommendation that women, on a day of celebration, ask for a gift of a body massage and that they’ll use at their highest moment of stress.” (418) Another woman shared this strategy: “One of the things I do is I walk the dog. I try to chill out. I might also try to talk to people.” (419) This section, “Approaches to Reduce Stress”, has been included in the revised learning program, with further suggestions included some made by the participants and a further exploration of complementary therapies.

Minimizing the Amount of Stress-inducing Situations

The women shared their personal stories regarding stress. These were tales of loss and being caretakers, and of jobs. One woman shared the loss of her husband, “Prior to my diagnosis of heart disease I was under a lot of stress. My husband was diagnosed with cancer and I was angry; angry that he smoked, angry that he got sick, and angry that he left me.” (419) Another woman described the upheaval she needed to make in her life to be a caretaker. “I needed to be the caretaker of my parents. We moved to Vermont from Maine; put the house on the market. Our house was on the market, furniture was in storage in Massachusetts, and we were living in Vermont.” (422) Several women related how caring for their family was stressful, “I guess that the running around I have to do for
my family is a stressor, too.” (424) “Rushing around a lot can cause a lot of stress. You’re thinking about all the things you got to do, and not thinking about much else. That’s how I feel.” (420) One woman shared how she tried to reduce the stress in her life. “For example, I chose not to drive anymore at night, or if the weather is bad. No, it’s stressful; it’s not a good idea. I think this is a good idea – to think about what things cause your stress” (423) This portion of the module will be included in the new section, “Stress, Anxiety, and Depression”.

**Increasing Your Resistance to Stress**

The content of this part of the module which discusses self-esteem, self-image, assertiveness, and using positive self talk generated a good deal of discussion from the participants. One woman said, “Many women don’t feel good about themselves. They may be told that it is important to be nice, to be pretty… And if you’re not…these are not things that you can be forever, so you feel poorly about yourself.” (418) One woman was challenged to consider the affect of your self-image could have on your health in this portion of the module. “I was shocked that self-image can affect heart disease. But when I thought about it, I could see it as a stressor. I’m always saying I’m heavy, I’m fat – I didn’t realize that it would lead to stress.” Several of the women addressed the topic of assertiveness. “Many women have difficulty with assertiveness. Women who were in the workforce may be better able to be assertive but a lot of women of my generation did not work outside the home.” (423) Another woman thought that it was important to make the distinction between being positive and being truthful.

I wrote this down – positive but truthful. That’s how to increase your resistance to stress! Because I know some people that are positive, try to be positive, but they’re not truthful either about themselves or others. You can look at a situation negatively or you can look at it positively. But I’m a balanced person; you have
to be honest about it. I’d say pull out the positive if you can. But you have to be honest about it. And be truthful about a situation that is not good. Try to avoid it, or if you have to say it, say it. But that’s me. Some people feel that you can make believe that it’s not there, but I don’t believe that helps stress because all you do is push it down (425).

The content that addresses self-esteem and assertiveness has been included in the chapter on “Stress, Anxiety, and Depression”.

**Counter-conditioning to Avoid Physiological Arousal**

Several of the women commented on the title of this section. “I have to say, I wrote down, “What does that mean?” (laughs) but then I saw you explained in the next sentence. I don’t think many people would know what it means if it didn’t say it.” (425) “Say it in English!” (423) In the revised document, this section was titled, Using Relaxation Exercises and contains some examples of relaxation exercises and sources of information for obtaining them.

**Engaging in Health Pleasures**

The women responded to this topic by relating what they did for relaxation. The solitary actsives these women engage in ranged from gardening to jigsaw puzzles to watching old movies. “I love my old movies. Yeah, but sometimes I stay up too late watching them and then I feel uhg in the morning.” (420) Another woman said, “Music! I love listening to music! My husband doesn’t like movies, so I rarely go to a movie. I was just listening to music before I came here.” (422) “It is so important to do the things you want to do and are important for you.” (418). Since the women expressed being perplexed by the title of this section it has been changed in the revised self-management program. “Where did you get these titles?” (423) This content has been included in the chapter on “Sleep, Rest, and Relaxation”.

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Humor

Humor was a topic that the participants responded to and acknowledge the importance of incorporating in their lives. “Depression is not good for your heart. It’s important to love life.” (420) Another woman acknowledged its importance for good health. “Humor is important. My husband is a very serious man; a wonderful man, but he doesn’t have a good sense of humor. When I’m out with the girls and we’re laughing and I’ll think about how good it feels.” (416) A discussion on humor has been included in the revised learning program. It has been included in the section entitled, “Sleep, Rest, and Relaxation”.

Support Systems

Most of the women reported that they had good support systems in place. “I have two really good friends. I go to mass every day. And afterwards we talk. And we pray together and we also share our lives. Any problems that we have…They support me.” (425) Another woman shared that she lost that special friendship. “I had a very good friend that I could tell anything to. But she passed away. A best friend is worth everything, because you can tell anything to your best friend. You can’t always tell everything to your husband.” One woman did not feel that she had good support system. “Dean Ornish says if you don’t have a support system you’re at risk. I really don’t have anything, nor have I ever. I think the problem is with me but I don’t know how to solve it.” (421) This topic has been expanded into a chapter in the revised document entitled, “Family, Friends, and Lovers”. In this section, the importance of a support system and some strategies to develop a support system has been included.
Several of the women shared that while they had a good support system, they also had a family member who was a source of stress. “Families can be a blessing but also a burden. Like my daughter, just one of them. The other one, I have no problem with. But that is the way it is.” (423) The fact that family can be a source of stress has been included in the chapter, “Family, Friends, and Lovers”.

Depression

The women expressed a variety of opinions on the topic of depression. While participant 418 said, “This is true, this is important for women to hear,” participant 425 felt that you had some control over your feelings and strategies for combating it. “I don’t know what this neurochemical imbalance in the brain is, but I’ve heard of it – that people could not help being depressed. But I think that mentally you can make yourself depressed.” (425). “It’s important; women need to know about depression. I haven’t experienced depression. If I’m feeling sad, I put my music on and sing. That helps! I used to sing in Italian with my father - I still do that.” (420) A couple of the women admitted to having sought professional help “I saw a councilor for awhile. It was helpful to talk to an outsider about my problems. But she didn’t have many suggestions. It was nice to talk to someone, but there weren’t really any solutions, so I stopped.” (416) One woman disagreed with the content in this section.

I don’t agree with that, I have to take issue with that. I understand that depression may be an independent risk factor. OK. But there is research that even the most disturbed people, those who get stigmatized, that most do better without medication than with it. I have big issue with prescription medication because of the side effects. I believe that it has nothing to do with a neurochemical imbalance in the brain. And I see that you say that you should go to a practitioner who specializes in this. Well, I haven’t found that. I don’t think these medications really did anything for me. And think that these medications are brain disabling. (421)
The content on depression has remained and includes the best evidence on this topic and its affect on heart disease. This topic has been included in the chapter, “Stress, Anxiety, and Depression”.

Other Comments

The women had comments about the overall approach of the modules as well as what additions they would like to see.

Language

One woman critiqued the wording in the modules, “I think everywhere you say myocardial infarction, you need to say heart attack. Because it may be me, because I didn’t have one, but I wasn’t sure of what it was.” (425) Both the commonly used and the technical names and abbreviations have been included in the revised program.

Additional Content

In addition to the topics raised in the modules, the women contributed to the development of the revised self-learning program by suggesting that new topics be covered. A couple of women had a person who they consulted when they were experiencing symptoms or undergoing treatment.

A woman needs someone who is going to be there. As you’re being diagnosed a lot of things are coming at you at once! You have to make decisions, and if you don’t have someone to be with you, to interpret things for you, to advocate for you, you can make the wrong decisions. (419)

In the section, “Family, Friends, and Lovers”, when support systems are discussed, it has been recommended that women identify a person who they trust to assist them to make health care decisions and that they consider identifying that person as their health care proxy.
Sleep and its relationship to hormones were acknowledged by several women. “What about sleep? Not having enough sleep is stressor. I didn’t sleep for 10 years… My changes affected that. You don’t sleep when you go through the changes. Your whole body goes crazy!” (418). “For much of our lives we’re on a hormone roller coaster. That could give you a heart attack! (laughs) And what about menopause and sleep? I used to sleep. Now, I often get only 4 hours a night.” (424) Therefore, a chapter devoted to hormones has been developed as well as one that addresses sleep, rest, and relaxation.

Several woman made suggestions regarding relaxation, “Make an environment where you can relax. I would say, touch on the environment. Make a room, one room pleasant and relaxing.” (418) Techniques for relaxation have been expanded in the revised document and include topics such as color, aromatherapy, and massage. Spirituality was another topic raised by several of the women. “I have to say that the spiritual was important, I have a deep relationship with god and with Jesus and I believe in such things.” (425) “I’m a spiritual person. I believe that there is a reason for me being here, a purpose for everything. Even if you don’t know it at the time, there was a reason why I had a heart attack.” (418) Given the prominence of spirituality in the lives of these women a component of one section addresses the topic of spirituality, in the chapter “Body, Mind, and Spirit.”

**Conclusion**

The women provided an invaluable critique of the modules which was the basis of the revision of the program. While overall the women supported the content of the modules, generally they requested that more illustrations be included and that the content
would be more direct and less wordy. The most dramatic changes in the revised
document was the expansion of the psychosocial content, information on hormones and
menopause and how they affect the development of heart disease, more information
regarding medications and supplements, and a discussion about the connection between
the body, mind, and spirit.

The women had a real thirst for knowledge and desire to learn. “That’s great -
that’s what I’m interested in knowing. I’ve read all I can, but I’m sure that there is more
to learn.” (419) The women were careful in their appraisal of the modules and thoughtful
in their suggestions and contributions. Although the basis was in place, the women
contributed to the refinement of a self-management program for rural women with
coronary heart disease.
CHAPTER 5

THE WOMEN

The efficacy of the intervention of self-learning modules for rural women with coronary heart disease (CHD) was determined by in-depth interviews conducted prior to and one month after the intervention, what the women reveled about themselves during the focused qualitative interviews that examined the modules, and a pilot study of a quantitative instrument that measures the women’s ability to manage their illness. The research questions that address this portion of the study were: Do older, rural women, who have been diagnosed with coronary heart disease, report that the educational intervention:

- influences their adoption of health promoting behaviors;
- affects self-awareness of their unique physical and psychological responses to health and disease;
- affects self-efficacy related to their ability to manage cardiac disease.

The Women’s Stories

The ten women who participated in the study were paired and their stories combined, so their experiences can be found in the accounts of these five fictitious women. The women were paired based on their most obvious characteristics. Combining the women in this manner allowed for greater anonymity and presents a more effective portrayal of the experiences of these women. Participants 422 and 423 have been combined as Jo, the “Caretaker.” Jo, through her often humorous accounts, described the stress she felt caring for her aging parents. Participants 419 and 424 are called Patty, a woman who has been called the “Athlete” because of her commitment to
physical activity. The “Survivor” represents participants 417 and 425 and was given the name Diana. As a cancer survivor, Diana has faced and conquered serious health issues in the past. Participants 416 and 421 have been combined to create Barbara, a woman who struggles with alcohol abuse and feelings of alienation. Barbara has been given the title the “Outsider”. Finally the “Mothers” of the study were participants 418 and 420. The name given this person was Kelly. Kelly’s life revolved around her family.

Each woman’s account has been broken into the following segments: Cardiac disease, risk and protective factors, psychosocial characteristics, environment, health, self-management, and experience. The topic of experience relates to both their experiences with the disease and their participation in this study.

Jo – the Caretaker (Participants 422 and 423)

Jo, the child of immigrants, grew up between two different cultures; that of her parents and their adopted country. She retains many of the expressions and customs of her British parents and that contributes to her charm. Jo cared for both of her parents until their death. Her father died just three months before her diagnosis of heart disease. Prior to her diagnosis of heart disease, 73 year-old Jo had several health issues. She had suffered a stroke five years ago and has been diagnosed with diabetes. Jo lives with her husband of more than fifty-five years, who recently retired. They are the parents of a daughter who lives nearby, with whom Jo has a good relationship.

Cardiac Disease

Jo did not have any symptoms prior to her heart attack.

I wasn’t completely surprised to get sick, because I had been under a lot stress, but I had no idea what it was! I had put a glass of water on the table and I had an attack of some kind, I didn’t know, I thought I was dying. The only way I can say it, it was similar to fainting - everybody has experienced that. Everything
stopped, and I thought, “This is it!” And I remember I was not scared. I thought “This is it, let it be.” According to me it lasted a few seconds, but my doctor said, “That is not possible, it had to be longer.” I probably lost track of time. And then I felt nausea. I thought it was because I ate lox, some bad fish. I thought maybe if I get rid of it I’ll feel better. So I put my finger down my throat and got rid of it. And I did feel better. Then I remember that I felt very, very weak but I did everything I had to do; I traveled; and I don’t know, I had heart failure for three weeks. I kept feeling terrible and I thought it was from fish poisoning. That’s all I thought. And then, it got worse and worse, I couldn’t breathe, so I sat up at night. I thought maybe it was allergies, because all of a sudden it became very warm outside. Then I started coughing like mad and I thought I had bronchitis. I diagnosed everything! I thought I should see Dr. Paige and she would give me an antibiotic. I got an appointment, I drove over and she took one look at me and said, “How long have you had this?” So I said, “Three weeks”. And I described what I described to you. She said, “You’ve had a heart attack.” I thought, “Stupid young doctor! I’ve lived long enough to know when I have bronchitis, you know”. I was not very nice to her. She was wonderful, she was just wonderful and she said, “Look, I’ll give you the antibiotic, it won’t do a thing, but you do me a favor and have a cardiogram.” I said, “OK.” And 10 minutes later I was in the hospital. Oxygen and everything, echocardiogram, I don’t know all the names, they did the works. I definitely had a heart attack.

Jo’s coronary heart disease was treated with bypass surgery. Since her myocardial infarction, Jo reported that she had no symptoms except for the occasional palpitation. However, she did have incisional pain as a result of the surgery, “I still have great pain from the surgery. I think that they must have cut something and it hasn’t healed. So I can’t change the bed. Because I cannot lift the lower sheets, my husband does it.” Due to the surgery, Jo has not been able to resume all of her activities of daily living and this affects her role in her household.

Risk and Protective Factors

Jo’s risk factors are diabetes, high blood pressure, high serum cholesterol, overweight, stress, and family history. In addition, she admits to overindulging in alcohol in the past.
Diabetes

Currently, Jo’s blood glucose is well controlled by diet alone. “Now I’m diet controlled, I don’t take anything now. I used to take glyburide. But this morning my blood sugar level was 83.” Jo had experienced some incidents of low blood sugar, as well. “I was taking glyburide and I was taking the smallest dose possible, but apparently it must have backed up on me. And I dropped right down. And I went down even farther; I was down to 40 or 41.” As a result of incidents such as this, Jo no longer takes medication for her diabetes. “The doctor took me off, he said, “You don’t need it.” Jo has effectively self-managed her diabetes in collaboration with her physician.

Elevated Blood Pressure

Her high blood pressure is also well managed and she monitors this herself, as well. “I take metoprolol for blood pressure. My doctor likes to keep it low so in addition to the doctor’s office, I do it myself one a week. I take my own blood pressure with one of those wrist things.” Jo indicates that she has made some dietary changes to keep her blood pressure from being elevated. “I’ve made some changes to my habits to keep it low, for instance, I used to consider myself a salt-a-holic, but I’m using less of it now.” The combination of self-monitoring and making dietary changes indicates effective self-management for her blood pressure.

Elevated Serum Cholesterol

Jo has some difficulty tolerating the medication she’s currently taking for her elevated cholesterol. “I was taking a statin, but I got very achy. And I didn’t realize what the problem was until someone said to me, “Are you taking a statin?” So now the doctor is fine tuning me on that.” Jo described strategies she employs to relieve the
discomfort. “I have the aches all day, but it gets worse at night; I use a bed warmer. If it’s really bad I take Tylenol. It doesn’t happen at first with the statins. But gradually, it builds up or something.” Jo recognizes the importance of cholesterol-lowering drugs for her health so she attempts to manage the side effects.

**Overweight and Obesity**

Weight is another risk factor for Jo. She has battled weight all of her adult life and attributes some of her weight problems to her caretaking obligations.

I just started a weight loss thing, because I was “free.” Before, I was never been able to lose weight. My plan is not a diet exactly, just watching what I put in. I don’t really call it a diet. Diet to me is a dirty word, I just don’t use it. Modification is the perfect way of putting it.

With changes in her lifestyle, Jo is hoping to achieve a desirable weight. “I don’t like counting calories; I don’t like to obsess about things. Right now, I’m writing down what I’m eating and I’m not weighing myself all the time. It makes me anxious.” This indicates that Jo has self-awareness of what works for her and what doesn’t and how things make her feel. “I don’t really like to cook. When I was on Weight Watchers I would make breakfast – it would take me 20 minutes to cook it and 2 minutes to eat it! I couldn’t give a rat’s pituty about it.” Hopefully, this increased self-awareness of what she likes will assist Jo in achieving a desirable weigh.

**Stress**

Despite all of her risk factors, Jo attributes her heart disease to stress, especially the stress she experienced caring for her ill and aging parents.

From my personal perspective, I think it was just plain stress. I don’t deal with stress well. For me, personally, I would say that stress was 95% the cause of my heart disease. I don’t think I would have had a heart situation if I hadn’t had two very difficult elderly parents to care for. My mother had Alzheimer’s and she was the easy one compared to my father. My mother - I say she died at 78, but
stopped breathing at 82. Being a caretaker for someone with Alzheimer’s; talk about stress! It’s quite a... I had to put away all knives and scissors. She was trying to smoke, too. And she wasn’t supposed to go upstairs because she was unsteady on her feet so we had bells on all the doors. It was wild! It was four years of pure hell. And my father, who didn’t have it, was worse! I had more stress with him than I did with the Alzheimer’s. It’s hard to believe, but it’s true! He was willful. For instance, he bought a Corvette, but he couldn’t even read the dashboard. And he was so slow in his reactions that if he had to take his foot off the gas to stop, he would have been to Montana before he stopped! He had a hard time getting into it. (pause) He got kicked out of the nursing home. He broke his hip and he needed to go to rehab, but he wouldn’t do it, so the kicked him out. Three months after he died, and he did not go gently into the night, I had my heart attack. I was clearing up the affects of the estate and running around. And that’s what did it!

Jo believes that she never took care of herself because she was too busy caring for others. “I never took care of myself; I was too busy caring for everyone else.” But with her father’s death and her husband’s retirement things changed for Jo. “I’ve never been alone with my husband, till now. I had gotten to the point that I did not like myself. But now, I like myself, I like my life.” However difficult her past life was, Jo expressed satisfaction with her current lifestyle. “It’s like coming out of a long, dark tunnel. But maybe I wouldn’t have appreciated it so much if I hadn’t gone through all these things. But we’re like two little mice in a nest – we’re so happy.” It is hoped that her current lifestyle will reduce the stress in her life and permit her opportunity to better care for herself.

Family History

When the familial risk factor was raised, Jo denied its importance. “They tried to tell me that my heart disease is inherited, because of my father. But I don’t know about that. The juries out on that one! But I’m following right along, taking all the same medications as him.” Perhaps it is best that Jo does not think that the cause of her heart disease is familial, so that she takes advantage of opportunities to reduce her risk factors.
Other

In addition to her caretaking stressors, Jo believed menopause and her experience with it may have contributed to the development of her heart disease. “What about sleep? Not having enough sleep is stressor. I didn’t sleep for 10 years… My changes affected that. You don’t sleep when you go through the changes. You whole body goes crazy!” While there is evidence that lack of sleep is a stressor, little is known regarding the affect of the severity menopausal symptoms on the development of heart disease.

Psychosocial Characteristics

Jo acknowledges the connections between psychosocial factors and physical health. She recounts a story from her early life that illustrates that belief. “I worked with polio patients. What I leaned there was really marvelous. When they’re, literally, flat on their back, there is no place to go but up! That group showed me how important the psychology was; the attitude.” Jo’s recognition of the importance of her psychological health and its affect on her physical health may help her make the necessary changes to cope with heart disease.

Stress, Anxiety, and Depression

Stress and anxiety are what Jo attributes her heart disease. “I don’t think that I have depression as much as anxiety. That would be a better word for my particular situation. Anxiety has been a big issue for me; because there are so many things to be anxious about!” Jo describes the stress she experienced caring for her parents as a juggling act. “I felt as though I’ve been trained to juggle three balls and someone slipped in another two. And I just couldn’t go fast enough.” Jo may feel that her current life circumstances are less anxiety producing.
Social Support

Jo’s social support comes primarily from her family; her husband of over 50 years and her daughter. She also has some social connections through church and a book club. While Jo acknowledges that being a caretaker has affected her health, she assumed that role with her husband as well. “And my big thing is keeping my husband satisfied, making sure he has what he needs. But now I’ve got the time and I’m not spread out in 50 different ways. I get more rest and that helps too.” Although Jo’s husband is well, should he experience an illness, she may fall into the same caretaking behaviors that have caused her so much stress in the past.

Environment

After living in many different places, Jo likes the peacefulness of where she lives. “I used go to church every day but now I don’t go every day. Because I see God everywhere, it’s just so beautiful!” The environment where Jo lives enhances her spirit. “I like the quiet. Sometimes you can just go by people and something is cross-grained about them. I don’t know what it is. But whatever it is, I like to stay in my little mountain kingdom.” She also speaks well of the local hospital and the care she received there. “This hospital and the people who run it are just wonderful! It’s very homey. I’ve been here a number of times for different things and I’ve never had anything but love and care and kind people.” However, the environment, for all its beauty, does present some challenges for Jo ability to maintain her health. “I like to get the fresh air. But the winter… I don’t like the ice. When it’s cold or icy, I don’t walk. I have wound up in the gutter too often. And that has happened actually, several times.” Jo loves where she lives, the beauty of the place as well as the personal care and attention she receives from
the practitioners at her local hospital, but this comes at a price. She and her family needed to travel to receive interventional care while the cold climate and rural location pose a barrier for exercise.

Health

Jo describes health as “A lovely condition and a normal one. If I was to say who was responsible for my health ultimately, it would be god. And then I take over (laughs). She recognizes a higher spiritual power, but then herself, as responsible for her health.

Self–management

The topics covered under self-management include nutrition, exercise, and self-awareness.

Nutrition

Nutrition is an area that Jo views as a struggle. “I have lost weight, I have gained weight. Up and down, up and down. I just lost 5 pounds, that’s not very much but…” Jo doesn’t enjoy food preparation. “I hate to cook! You know, if I never had to cook again, I wouldn’t cry. Fortunately, my husband likes very plain food, either baked or broiled, and we just follow along happily together.” Although Jo doesn’t like to cook, she appreciates the celebratory aspect of food. “It’s more important to have a party and to have fun, it lifts the spirits. The psychology is fine. I think the good outweighs the bad.” Jo values the role that food plays in people’s lives and has maintained some of the food rituals she associated with her parents such as their afternoon tea.

The maintenance of blood sugar is a concern of Jo since there has been a change in her diet. “I have snacks now, because I’ve had a drop in my blood sugar. They have recommended that I have high protein snacks when I start to feel a bit wobbly.” Jo
demonstrates self-awareness when she identifies symptoms of her low blood sugar. “I can tell when it gets low. Very peculiar – that’s how I feel. I start to shake badly.” Jo is challenged to meet her dietary needs and achieve her desired weight especially with diabetes. Although she doesn’t enjoy food preparation, she recognizes the need for people to come together around food and drink.

**Exercise**

Jo doesn’t enjoy exercise and only does the minimum amount at the Phase 3 cardiac rehabilitation program which she attends twice a week. “I do the treadmill. I have a treadmill in the basement and I should go do it more but I really don’t.” While she demonstrates self-awareness when she monitors her breathing she doesn’t, however, check her pulse. “I monitor my breathing and try not to “overdo”. I don’t take my pulse. He hasn’t given me a target heart rate. I can come in here and exercise and break a sweat and my pulse doesn’t go anywhere.” She also shows some self-awareness when she discusses how her heart responds to exercise, though optimally monitoring of her pulse rate would be best.

**Self-awareness**

Jo had put the more pressing needs of her parents before her own for a long time and did not consider her own.

One thing I’ve done is not to eat what I don’t really like. I think I found this out last month; I was eating a meal that my husband loves. And I looked at it and thought to myself, “I don’t like any of this!” Boiled potatoes, ughh! Boiled peas and overdone hamburgers. He loves it – it’s one of his favorite meals! It’s fine for him but why am I eating this stuff? (laughs) And I thought, “Why am I eating this awful stuff for?” That’s what started me on it! Why I am eating this? I’m 73 years old, why should I be eating this stuff? So, no, I’m not going to! It’s my declaration of independence!
This experience illustrates that Jo needs to reflect on her own needs and desires, something she has not attended to for a long time.

Experience

The section on experience includes a discussion on mortality and experience participating in the study.

Mortality

Jo doesn’t like to “obsess” (her word for paying too much attention to one thing) about taking care of herself. She is concerned about her future and what that may hold for her, given her experience with her parents.

I think being in my 70s has made a difference. If I was in my 40s I would be much different. This way, my dear, I don’t give a damn! (laughs) I really don’t. It’s really fine; I had a lovely life, whatever. Now watch me live to 104 or something! Well, I just hope that I’m not too much of a burden. I have a darling daughter, who’s taking care of me now, really; she watches over things. I don’t want to be a burden of any sort. But there’s nothing I can do right now, so I can’t worry about it. I don’t know if I’ve learned anything except that I’m extraordinarily tough to have survived it all.

Being a burden is something that many people fear, but for Jo it is especially troubling given her family history.

Participating in the Study

While Jo says that she not interested in the “medical aspects of things” and lets her physician make important decisions. “My doctor fine tunes me, he’s quite a guy. So I don’t pay attention much to anything. If he gives me a pill, okay, I’ll take it. The total medical spectrum of things I’m totally uninterested in.” But she did comment on material throughout the modules and asked questions. Here is such an example: “I have a question; I was told the corner of my heart couldn’t be fixed. I don’t think the heart has a corner. I have no idea what he meant. I remember thinking; “The heart doesn’t have a
corner!” This indicates that Jo is interested in knowing what is going on with her health, but must be comfortable enough with the person to ask questions.

Jo also had strong feelings about what other women would need to know and the challenges that face younger generations of women, including her daughter.

But if I was writing this I would tell women not to put themselves at the bottom of the list all the time. Sometimes it’s impossible not to, you just have to. Somebody’s got to be at the bottom of the list. But don’t take on too much and try to be Wonder Woman. It’s one of the things I see in younger women, not me, is that they are trying to be all things to all people. There was a terrible ad on the TV several years ago about some chick who could cook the bacon, and she walked like this and come on! And she was in a little business suit – it was really horrible! For heaven sakes, get real! But that’s what everybody’s trying to do of course. Sometimes you have to work, because of financial reasons. And children have to be juggled and the house gets a little bit messy, and you just can’t do everything. That’s not my generation, but I see it in the younger ones, I think, “Stop being Super Woman!” I feel sorry for this generation. They’re trying to take care of the very young and they’re taking care of the very old and maintaining a job, and keeping a perfect home. It ain’t gonna work! (laughs)

Jo recognizes the challenges facing women today and the affect on their health. She believes that they need to be educated and about how to care for themselves. Jo is a bit of a rebel and has strong opinions of what she’ll do and what she won’t do to maintain her health. “Because, no, I don’t follow all the rules and all the guidelines and all that. I just like to live.” The affect of the diagnosis and the changes she recently experienced in her life may make it easier for Jo to make healthy changes.

Patty - the Athlete (Participants 418 and 424)

Patty strides the room, her sandy hair framing her face, and gives you a shy smile. Her eyes are bright and her cheeks have a rosy glow. She is dressed in athletic gear that is both functional and stylish. She looks more like an advertisement for healthy and vital aging than one about the risks of coronary heart disease. Patty, 60 years old, she lives in a home on 10 acres in a mountainous section of rural Vermont with her second husband.
and youngest child, a son. Her two older children, both daughters from a previous marriage, live independently. Her younger daughter lives in another state, while her eldest lives locally. However, it is her eldest daughter who she considers a source of considerable stress. Patty’s aging parents live nearby and Patty has a close relationship with them and has provided support including doing much of their chores.

**Cardiac Disease**

Patty experienced a number of symptoms prior to her myocardial infarction. It was Patty’s mother who suggested that the symptoms she was having may be heart related.

“When I was having the heart attack, I was talking to my mother and I said, “My reflux, it’s killing me, it’s really bad.” And she said, “It could be heart related.” I was never thinking I was going to have a heart attack, you know. It, it was weird because my reflux had been killing me and I’m on medication and it was getting worse and worse. I was thinking, “I’m not eating spicy things, overeating.” But at night I couldn’t lay on my left side because of the pressure. I had wicked pressure dead center in the chest and then around the back, squeezing me. And then I started getting arm pain, it felt like I had pulled a muscle, like I had just turned my arm wrong. I had pressure all night and I still didn’t think “heart attack.” Um, I was up all night long and I had to go for an outpatient procedure. So my husband took me and I called my sister and said, “I think I’m having a gall bladder attack.” Of course you don’t think you’re having a heart attack! I had my outpatient procedure and the doctor said, “You need to go see your doctor if you are still having this pain.” So I went my doctor and she hooked me up and she’s like, “Are you still having pain? Here, let me try a nitro,” and I’m like, “Oh, wow! That took away the pain!” Yeah, like, “This is good!” (laughs) She’s like, “That’s not good.”

Over the course of several months prior to her myocardial infarction (MI), Patty had seen a few different physicians for a variety of symptoms that appear now to be related to her heart disease, including one who performed an outpatient procedure on her during her myocardial infarction. Given her relative youth, active lifestyle, sound dietary
practices, and normal total serum cholesterol levels, Patty was not seen as high risk by her physicians nor did she suspect she may have heart disease.

The impact of the diagnosis took Patty some time to process. In the course of a day she went from being an active, vital middle-aged wife and mother to someone with heart disease.

I was in the emergency room all day waiting to go to the Medical Center. When they took me over, I still didn’t believe it was my heart. I said to the rescue guy, “I really don’t think it’s a heart attack.” And he said, “Yeah it was. Your things are elevated, you had a heart attack.” So it really didn’t hit home for a while.”

Continued dialog with the woman experiencing a heart attack is important for their adjustment since the diagnosis and its implications may take time to integrate into their self-image.

Stents were placed in two of Patty’s arteries during her admission for her myocardial infarction (MI). However, that was not the end of her symptoms. When Patty returned home she continued to experience chest and arm pain.

I came home and I started have the chest heaviness and arm pain again. I didn’t know what to do. I called the cardiologist and they made an appointment for me to come in but in the mean time I had more chest pain so mother said I should go to the emergency room. And when I got there, they found that I was at risk for another heart attack. They took me back to the Medical Center and I had the surgery and here I am! The stents didn’t work. It all happened so fast. It was so difficult. One thing happened after another.

Patty saw her mother, the person who initially suspected her symptoms to be heart disease, as the “gatekeeper” for her health. She consulted her mother when she experienced symptoms and it was her mother who made decisions about whether she should or should not seek treatment. The surgery was not the end of Patty’s symptoms. She continued to experience some chest and arm pain upon occasion. “I noticed when I first started here and I was having some stressful times with my daughter, I instantly got
the chest and arm pain. So it was like, I can’t I can’t do that. You know, suppress stuff.”

The recurrent symptoms made Patty fearful; she did not know what heart was related as opposed to another etiology. Prior to her diagnosis Patty believed that every symptom she experienced was something else, acid reflux, migraines, etc. now every symptom could be heart related and cause for alarm.

But I’m better. I had been having a bit of chest pain..so I was concerned. But I went to my doctor and he checked me out and said that it’s nothing, so I feel a lot better. This time it started when I was cleaning my cabinets, I started having chest pain. And I thought, oh no, is this the way it’s going to be? I can’t do anything – I can’t even wash the outside of my cabinets. But he had me have an EKG and an echo and saw nothing. He thought that maybe I was having some muscle pain due to my activities, such as doing the weights here.

It will take time for Patty to ascertain whether her symptoms are a result of her heart disease or something else. She will be living with a certain amount of uncertainty about her health and now continues to rely on her mother for her input.

Risk and Protective Factors

When Patty reviewed the American Heart Association’s risk factors, the only one risk she saw that pertained to her was high serum cholesterol. There was some disbelief that this one risk factor would be the cause of her heart disease. On further examination, stress and hormone replacement therapy may have contributed to the development of Patty’s heart disease.

Elevated Serum Cholesterol

“I can’t figure out why this happened. I have done the best I could. Every year, the doctor would say, “Your cholesterol is perfect!” But after the heart attack, I find out it’s not. My ratios are off.” Patty felt that the physician did her a disservice by only looking at the total cholesterol. “My doctor couldn’t believe that this was happening to
me. I always had such a healthy lifestyle. I ate well; I exercised, so this came as a shock. Now they’re really watching my cholesterol.” Patty’s risk could have been identified with further screening.

Patty was interested in knowing as much as possible about the risk factor of elevated cholesterol. “Well, I was interested in everything about cholesterol, since that seems to be my risk factor. For instance, I didn’t know about alcohol affecting your triglycerides.” She welcomed any new information and was eager to discuss the results of any new study she heard about or what she learned in the modules.

Stress

Although stress has only been recognized as a possible contributor to the development of coronary heart disease by the American Heart Association, Patty felt that it contributed to hers. “I think stress has been a factor in the development of my heart disease.” Patty identified her biggest stressor as being her relationship with one of her daughters.

I’ve had a lot of stress with my daughter. And I’m the type of person who doesn’t like to make a fuss. If someone does something wrong, I wouldn’t say anything. And then with the stress with my daughter I was just like, keeping it inside and keeping it inside and – I’m not going to do that anymore! If I’ve got an opinion, I’ll give it. If you don’t like it, it’s too bad. After my heart attack, a friend gave me a plaque and it says, “It’s all about me” (laughs) And I thought, “It is all about me!” (laughs).”

Patty plans to address how she responds to some of her family issues in an effort to reduce her stress.

Other

Patty recognized that hormone replacement therapy (HRT) she was placed on could have contributed to her heart disease. “And I think another thing that helped
contribute to my heart disease was that with menopause I was having all these symptoms, so my doctor put me on these hormones.” Researchers have found that hormone replacement therapy (HRT) did not provide protection from heart disease for women, as originally thought. Rather, hormone replacement therapy may increase risk slightly. The current guidelines support the use of short term hormone replacement therapy that is what had been prescribed for Patty.

Psychosocial Characteristics

Patty could be described as an optimistic person who is sensitive to the feelings of others. She said, “I try to see the glass as half full. I don’t think I get depressed. I think I’m an optimist. But sometimes an optimist gets sad. (laughs)” The stress of coping with her diagnosis may have caused Patty to feel some sadness.

Stress, Anxiety and Depression

Patty’s kindness and generosity has created problems in her personal life. Her eldest daughter created stress by Patty feeling that she had taken advantage of her. Therefore, she has resolved to avoid her daughter in an effort to reduce the feelings that contact with her daughter elicits. “Negativity – that’s a trigger. I’m stressed when I’m around my one daughter, so I do that less. I didn’t have a life when I was doing all those things for her. I think I’m deserving of my own life.” It remains to be seen whether Patty is going to be successful in putting herself first and see if this assists her in better managing stress. However, she does believe that the stress associated with her daughter contributed to the development of her heart disease.

Social Support

Patty found comfort in the support of other members of her family.
I think that I needed someone who is going to see me through it. Because as you’re being diagnosed there are a lot of things that are coming at you at once and you have to make decisions, and if you don’t have someone to be with you, to interpret things for you, to advocate for you, you can make the wrong decisions. And that can get you into trouble. (pause) I had my mother and husband. They were wonderful! I relied on them. They were there when I went through my tests; my mother went home with me after I had surgery. I know I can call on my mother if I think something is wrong.

Patty’s family also experienced fear and needed time adjust to her diagnosis. “My son’s reaction was, “Mom had a heart attack, well, that’s a freak thing!” Although when he saw me all hooked up, he was pretty shook up. For my husband, it shook him up, too.” A serious illness such as what Patty experienced and subsequent surgery can be upsetting for the family and changes her role in the household.

Environment

The rural environment where Patty lives has some health benefits but also presents some challenges with regards to accessing care and maintaining her health. In the previous description of her treatment, it should be noted that Patty needed to be transported to a tertiary care center on 2 occasions for treatment. That is one of the perils of living in a rural environment; the local hospital does not provide interventional cardiac care.

Another barrier relates to Patty’s access to rehabilitation. Patty does not believe that she will return to cardiac rehab, Phase 3, because, “It’s such a long trip.” She also relates some of the perils of exercising out-of-doors when living in a rural environment. “Sometimes walking gets boring. I have an IPod, but I have to hear the cars, because some people drive too quickly. One lady wants to see how close she can get; I have to literally jump in the ditch.” She also says that she has acquired a lot of exercise equipment in her home and believes that’s the result of where she lives. “That’s what
happens when you live in the boonies and everyplace is a hike.” While it appears that Patty has adapted to her rural environment, it does present challenges.

Health

The things that Patty views as health protecting behaviors are eating a prudent diet and exercise, both of which she reports always having done. “Exercise is who I am!” Patty defined heath as, “Basically looking after yourself and eating right and exercising. (pause) Like for me – I’ve always exercised so now, since I’ve had the heart attack, it’s like this is for me! I’m not putting others first.” She had felt that prior to her heart attack, she put the needs of others, such as her children, before her own.

While Patty believed in the connection between the mind and body, she was surprised by a discussion about self-image.

You know what really surprised me was that your self-image can affect the development of heart disease. I was shocked by that. But then when I thought about it, I thought I could see that it would be a stressor. A lot of people don’t have a good image of themselves. I’m always saying I’m heavy, I’m fat, like that – but don’t realize that it would lead to stress. (pause) Well, I actually learned that I must think positively about myself. I can be my biggest critic, I need to stop that, you know. It was a big surprise when I read that, the more and more I thought about it, the more it made sense for me.”

The power of the connection between the mind and the body was an important lesson that Patty learned as a result of this experience. This statement verifies that belief, “I’ve learned that you have to take time for yourself. Yes, you need to exercise and eat right, but you have to be happy too.”

Self-management

The topics discussed in relation to self-management include nutrition, exercise, self-awareness, and alcohol.
Nutrition

Patty endeavors to care for herself through her diet. She is knowledgeable on the subject of heart-healthy eating. She eats the right food, in the right amount, and prepares it in the most heart healthy way. “I don’t put salt in my cooking, I don’t have it on the table. Nothing! If I buy chicken broth it’s low sodium. I pepper everything and use Mrs. Dash.” She has also decided to keep a food journal to help with weight maintenance and awareness of food. “This week I started to write everything down. I need to get a notebook; I just put it down on a pad of paper. (pause) At the workshop they said, “You can’t lose weight unless you do that!” She relates that she is aware of importance of portion size. “I know portion size, like your meat should be the size of a deck of cards.” However, while her diet could now be called exemplary, one of Patty’s hobbies, baking, has gone by the wayside. “One change I made was not to bake too much. I was going to make a coffee cake with some rhubarb but I said, “I don’t need that! I’ll eat it!” Now it’s sitting in my refrigerator.” This statement attests to Patty’s willingness to make changes in her lifestyle to reduce her risk of heart disease.

Exercise

Exercise, while always a vital component of Patty’s life, has taken on even more importance since her myocardial infarction. “Before I had my heart attack if I was real tired, I’d say, “I won’t exercise, I have too much work.” But I’m exercising longer and I’m more consistent now.” Patty recognizes that exercise is something that she must do to protect her health. However, there was fear about resuming activity. Patty was fearful of harming herself when she resumed exercise. “Yes, I needed to know how much I should do – I was scared of going overboard.” She also feared living a diminished life.
“I had been so discouraged; it’s starting to get warmer and I thought, “Am I going to be able to do the things I like to do? To garden; I can’t live without gardening; it’s something I love to do.” Finding the right balance between engaging in activity and not overdoing is something that a woman who has been diagnosed with coronary heart disease must reconcile.

Self-awareness

Patty did not exhibit bodily self-awareness prior to her diagnosis of heart disease. Since her surgery, she’s still in the process of learning which symptoms are heart related and what are not. She recently experienced some recurrences of chest and arm pain that her physician believes to be of a musculoskeletal nature. Since her surgery she has not experienced much “reflux”, which she now believes is a symptom of her heart disease. She said, “Being diagnosed with heart disease, it takes a while to process it. It took me days. Perhaps I’m still working through it. I have begun to see my headaches or my reflux could have been my heart disease.” It is yet to be determined whether Patty will become more attuned to her bodily cues and respond to them appropriately and rely less on her mother as the “gatekeeper” for her care.

Alcohol

Patty has received conflicting information about the health benefits of alcohol. “People are telling me now I should drink red wine. But I don’t like red wine. Every now and then I’ll have a zinfandel, but it’s like, ugh! I’ll drink some mixed drinks, but I’m really not a drinker. Patty’s family of addiction factors into her decision. “I have a brother who’s an alcoholic. And my father, his father used to drink. When he was a teen he used to wait outside the bars and drive his father home. So, I don’t like to do it.”
While the use of alcohol in moderation has been found to be beneficial, people need to be aware that it does present risks and that people must be comfortable about their consumption.

Experience

While Patty did not feel that she changed any behaviors as a result of reading the modules, she said that it confirmed what she believed to be true. “I think that it has confirmed what I know – that I have to take care of myself.” From the outset, Patty said she was interested in learning how to care for herself.

Now I want to learn as much as I can so that I can do well. But I’m not sure how much else I can do. I know that I can beat this. I do need my cardiologist and his expertise, but I feel that I can do this! I’ve managed so many things in my life; this is just one more.

This statement demonstrates the Patty does believe she can care for herself. Patty also did learn from the modules and was prepared to make changes in her life based on what she learned. For instance, she learned the importance of immunization for people who had been diagnosed with heart disease. “Wheeling me in, they tried to give me a pneumonia shot. I said, “No, thanks!” After reading this I know why they were trying to give it to me. And now I’m going to need to do this.” Patty was able to benefit from the experience of participating in this study by applying health promotion strategies suggested in the modules.

Diana – the Survivor (Participants 417 and 425)

Diana, a petite woman, carries herself with dignity and grace that belies her years. At 85, she has been widowed for 2 years and a survivor of breast cancer. Diana was diagnosed with coronary heart disease after she sought treatment for a number of atypical symptoms. She was treated by stent placement. Diana lives in a private home in a
village in Southern Vermont, her families’ former summer home. She considers herself fortunate, having the means to employ assistance to keep her in her home. Her three loving children are scattered throughout the United States. They visit her when their schedules permit and she travels to visit them, as well. When speaking with Diana, her zest for life is apparent. Her passions are cooking, gardening, and reading, including health related material. Diana has a strong social network with two very close friends and is active in the affairs of her Church and community.

Cardiac Disease

Diana felt that her symptoms were not indicative of heart disease, making both self- and medical diagnosis difficult. “I guess that my first symptom was that I had some difficulty breathing when I went out for my walk when it was cold. It’s hard to know that it’s angina, if that’s not what you’re expecting.” Her later symptoms were no more indicative of heart disease.

But you see; my symptoms were so different from what you would think was heart related. I didn’t know. I had pains in my back. And I thought, “I’m just doing too much.” If you have a pain in your chest you say, “Oh, maybe it’s my heart.” I had a few other little things that, I think were also attributed to that like; I had them look at my teeth. First I went because I had this pain, in my ear. And it (the pain) was going down my neck and I thought that there was something wrong with my ear. So my ear doctor said, “No, the ear is fine. But I’m going to send you to the dentist because it could be something with your jaw.” So I went to the dentist and the dentist said, “Well your jaw is really not that bad. It’s a little off center there but it’s really nothing.” And that is also, I learned afterwards, is one of the symptoms – jaw pain. I was out of breath and I was tired and something didn’t seem right. So I went back to the doctor and said, “Something’s wrong. I don’t know what it is.” I told her all my symptoms, and she sent me to see the cardiologist and I had a stress test that was abnormal. Then I had the cath and he said that I had 90% blockage. And I did not, that’s what I wrote here, I did not know. I did not have chest pain.
Diana also shared her medical record. It verifies that the physician also had difficulty making the diagnosis for Diana. She produced a chart containing her medical record and read from it:

It says here, “Discussed at some length the patient’s symptoms. Several different types of chest symptoms, it’s very hard to sort out. Some of her chest pain is completely atypical and I would not describe it as angina, however. The exertional dyspnea, led me to order her treadmill and echo since starting the beta blocker and calcium blocker.” But I guess there were enough things that she suggested that I go over and have a catherization.

Given the number of women that have atypical presentations of coronary heart disease, both women and their practitioners need to be aware of the number of atypical symptoms.

Diana, a person used to being in charge of herself, reported how she felt during the catherization and stent placement, which is when she received the definitive diagnosis of coronary heart disease.

When I went through the whole thing I was in shock. I didn’t ask questions. Because it was so fast and I was so groggy with all the stuff I didn’t even ask questions. One of my daughters is a nurse and although she lives far way she says, “I will go with you!” or, “Have somebody go with you.” Because she knows that when you’re going through something like this, you don’t remember what happened. You know, I don’t know the doctor who did the stents or anything. They gave me that medication and I don’t remember a thing. I kept saying, “I don’t remember a thing!” Even when they let me go, I wasn’t even sure of what was going on.

The upheaval and disorientation associated with the diagnosis, medications administered, and procedure was demonstrated in this statement.

After her stent placement, Diana did not have a return of her symptoms. She did, however, have problems in response to medications for her heart disease and treatment of her risk factors. Diana said with regards to medication for heart disease, “When he first put me on beta blockers, I couldn’t get my heart rate above 42. He said, “Oh, you can’t
take those!” “Right! I couldn’t even walk around. Forty-two was the highest I could get my heart rate!” In addition, she had difficulty tolerating the medications used to treat her elevated cholesterol. “I can’t take statins for cholesterol. My legs turn to rubber. It was terrible, every joint in my body ached. He tried me on all of them. I think I tried six or seven different things. That’s my body!” This indicates that Diana collaborated with her physician in the treatment of her elevated cholesterol and demonstrated self-awareness of her body’s response to medication.

Risk and Protective Factors

The risk factors that Diana identified were her elevated blood pressure and serum cholesterol, and that she was slightly over her optimal weight. In addition, she has a family history of heart disease, her brother having succumbed to the disease.

Elevated Blood Pressure

Several medications were used before ones were found to treat Diana’s elevated blood pressure. As mentioned previously, Diana was not able to tolerate beta blockers. She demonstrated her knowledge of elevated blood pressure. “But it seems that now they found what works for my heart rate and my blood pressure. (pause) I guess it’s one of those things that just go up as you get older.” Diana knew her blood pressure and the medications used to treat it.

Right now, I’m pretty steady between 120/80 and 140/90. Before, they tried all kinds of things. I was a total yoyo. Sometimes the upper number was high sometimes the lower number was high. Every time it was totally different. But now I’m on the benazepril. I took the Norvasc before and they tried a diuretic with it, but I was always swollen. It didn’t work from me. The capillaries in my legs would break. He took me off Norvasc for a while, and then he started me on benazepril and very, very low doses of Norvasc. And I have no swelling. He finally found something that works for me!
Diana exhibits knowledge of how she responds to medications and demonstrates awareness of the need to work collaboratively with her physician to find the right medications for her.

**Elevated Serum Cholesterol**

Diana was knowledgeable about elevated cholesterol being a risk factor. She reported that it was elevated when she was first diagnosed, “Well, I was startled by how high it was when I was first was diagnosed. When all this started, that was one of the things that came to light.” Although she has been successful in lowering her cholesterol levels, she has not been able to get her cholesterol in the target range due to her intolerance of statins.

My lipids are fine, my HDL is fine, and it’s my LDL that’s high. I can take Zetia, but I can’t take the statins. We’re not able to get it down. I went into menopause at 59 and before that my cholesterol was 189, and right before I got the stents my cholesterol was 347 and had been higher than that. I don’t smoke or drink and it seems that weight doesn’t affect my cholesterol. I’m on Weight Watchers. Every year I go and lose the weight I gained that year. That’s the only way I keep myself from getting real heavy. And when I lost the weight, it didn’t make one iota of difference in my cholesterol. So I know that it’s not so much what I eat as my body.

**Overweight and Obesity**

Finally, Diana does believe that her weight is a risk factor, “I don’t have the self-control to stay at an ideal weight all the time. I would not be happy dieting all the time. I go to Weight Watchers, lose my weight and I enjoy the rest of the year.” Diana’s struggle with weight is a common one for many women. Though not an ideal option, Diana did find a way to manage her weight.
Family History

Diana’s brother died from coronary heart disease. “He was terrified, scared to death, from the beginning. He hated doctors and hospitals, although our father was a doctor. He had two heart attacks and then bypass surgery; apparently had a third during surgery and died from it.” Diana believed that her brother’s lifestyle lead to his death. “They didn’t eat the way they should. And certainly not the way I eat. There was a lot more hamburgers, and I don’t know what all. They didn’t stick to a cardiac diet; they did too little too late.” In addition to his diet, Diana thought that his attitude may have been a factor in his death. “I don’t think the apprehension helped him in the least.” This discussion illustrates Diana’s approach to her heart disease; she makes appropriate lifestyle choices and deals with the psychological ramifications of cardiac disease.

Psychosocial Characteristics

The psychosocial characteristics identified in this section are stress, anxiety and depression and social support.

Stress, Anxiety, and Depression

Diana recognized that stress could affect her physical health; therefore she strives to maintain a positive attitude. “It’s not going to help me to be anxious; I realize the more calm and relaxed I can stay all the time, the better off I’m going to be. I really try not to get too stressed.” When asked what where her biggest stressors, Diana spoke about doing all the things she wanted to do. “I can’t do everything I want. That’s my biggest stress. It annoys me tremendously that I can’t do all the things I used to do.” Dealing with a body that has been affected by age and disease is a source of frustration for Diana.
Diana spoke about the loss of her husband of more than 60 years. “I don’t cry any more. I thought my heart disease was a broken heart. I know that you can die from a broken heart and thought that’s what would happen. Now I see, I’m probably that much stronger.” This resiliency and mental toughness is how Diana copes with difficult situations.

**Social Support**

Close ties with family are a source of support for Diana. “I have a wonderful family; my kids are wonderful to me, just marvelous! My parents came from the old country; they worked hard. I think that it instilled something in us; and we in our children.” She discussed how she relies on her daughter, the nurse. “Yes, that’s what I do when something’s going on, I call my daughter. It’s hard when you’re alone. It’s a hard thing to decide to call the doctor. She works in a hospital and I depend on her.”

Diana’s daughter provides support for her mother at all times, especially when illness occurs.

Besides her family, Diana spoke about her closest friendships and the spiritual connection she share with them.

I have two really good friends. We go to mass every day and afterwards we talk. And we pray together and also share our lives; any problems that we have. We really do share that. They’re my really good friends, my really good friends. They support me. It’s really good to have someone that you can pour you heart out to and ask, ‘What do you think?’ One of them is married and the other one is an ex nun and she’s single and I’m a widow. We’re all different. But that’s what so good about the three of us. That we are different and have different input yet we have this feeling of unity. I feel so blessed to be able to have that. It’s a very good feeling. And we pray also, which is a very big thing for all of us.
Diana has a social network in her town and church community, “I am fortunate, I have very good friends and neighbors who always help me.” Though living alone, far from her family at her advanced age, Diana is able to manage living independently.

Environment

Diana chose to live in rural Vermont despite some drawbacks regarding access to care. “It changed my whole life, when I moved here permanently. I love Vermont. I used to vacation here and would bring home a piece of Vermont with me. I’ve been all over the States and there’s nothing like it.” Like all the women in the study, Diana needed to have her interventional cardiology performed in medical center more than an hour away and in a different state.

Health

Diana felt that health was an active process on her part. It means that I take care of myself. Well, I watch my diet. I exercise four days a week. You may say, “Oh that’s old lady exercise – but what can you do?” That’s what I am! I used to go to another one, but that became too strenuous. Although I take my medications as I’m supposed to, I think that is less important than my diet and exercise. I believe that taking medications are important, but what you do yourself is more important than medications. You have to start with yourself. I think that there is more than just physical health. I think it is physical, and psychological, and spiritual.

This holistic view of being an active participant in her health had served Diana well. It has enabled her to live an active and productive life.

Diana has said that she believes that health is more than physical and discusses what she does to maintain her mind and her spirit. “I do some deep breathing. I make a real effort to completely relax, whether I’m sitting or lying down. I think about it from my head to toe. Not really yoga or anything like that. I just let go.” She also feels that it’s important to live in the moment.
I think that you need to have a little zest for living. A couple of years ago, at church, one of the men had a motorcycle, so I asked him to give me a ride. I had always wanted to ride on a motorcycle and never have. So I went on a motorcycle ride! I don’t know if anyone thought, “that crazy old woman or not?” I just think that you just plain have to have a positive attitude and deal with things as they come.

Diana also commented on her spiritual self. “I agree that we need to stop and think. That is one thing that church provides for me; some reflective time.” Combining care for her body with doing things for her mind and spirit provides the basis of Diana’s life.

Self-management

The topics discussed related to self-management include nutrition, exercise, self-awareness, and relationship with physician.

Nutrition

Diana believes that diet is central to maintaining her health.

Diet is so important. For instance, tonight I’ll have something with no meat in it. I try to cut down eating meat more and more and more. When I was diagnosed I said, “Darn, I, I like to cook gourmet meals! What am I going to do?” “Well, I’m going to cook healthy gourmet meals!” I still want to eat well; I just need to eat healthily. I am very conscious of, “What am I going to have for dinner tonight?” And, “What did I have to eat today?” And yes, I cheat some of the time. But I don’t cheat, unless I’m rationalizing, I don’t cheat terribly often. For the most part I only have a small dessert, if any. I’m just fine when I have one of those little squares of chocolate, and that’s dessert. I rationalize that because of all the antioxidants that are in chocolate.

Diana is very knowledgeable about a heart healthy diet and makes every attempt to eat nutritious meals.
Exercise

Physical activity has always been a competent of Diana’s life. She says, “I have always been physically active.” However, age, arthritis, and heart disease has slowed Diana down.

I just wish I could do more. I used to, but now I just can’t keep up. It exhausts me. I don’t know if it’s the heart disease or my age. I don’t like that, but I can’t help it. Sometimes I do too much, and it’s overwhelming! Sometimes I forget how old I am! I’m full of energy in the morning and I have too hectic a schedule for the day. And when it’s noon, I’m exhausted. Then I’m angry with myself.

Diana is understands the limitations that her illness places on her and although it doesn’t always make her happy, she does what is necessary for her well-being. “There are certain things I don’t do any more. I don’t drive at night anymore. I don’t drive long distances anymore.” She lives her life as fully as possible but does respect her limitations.

Self-awareness

Diana exhibits self-awareness of her physical self. “I’ve learned if something’s not right, look into it. Because of that, I didn’t have a heart attack. He (the doctor) said I was just this close to a heart attack, so I listened to my body.” Self-awareness, responsibility for health and maintaining a collaborative relationship with a physician is essential for self-management and are things Diana values.

Relationship with Physician

Diana has a strong sense of her role in her care. “What I do for is most important; my health is in my hands. I told my doctor that, he said most people come in and say “take care of me”. I said that, “no”, it was up to me.” Diana spoke about her relationship to her physician and how her intolerance of medications was handled.
Collaboration between her practitioner and Diana makes for effective self-management.

Experience

The topics explored under experience include mortality and participating in the study.

Mortality

Diana faced her diagnosis of coronary artery disease, the same way she does everything – directly.

Particularly for somebody like me – who - I don’t want to be put off – I want to plain out tell me what’s wrong. Like, “you’re in terrible condition and the chances you’re going to die in the next six months is a great possibility.” Doesn’t say it’s going to happen. But I’d much rather have it out straight than just somebody telling me a bunch of stuff that’s supposed to pacify me.

She spoke about her experience with having a diagnosis of coronary heart disease and awareness of her morality. “Seeing the doctor doesn’t put me completely at ease but I haven’t been that apprehensive. Anything can happen anytime. I’m not planning on it, thank you. But if you read an obituary pretty soon, don’t let it surprise you.” She appreciates that this diagnosis, at her age is serious but does not focus on it.

Now if after you leave here I have a nice big heart attack, I’m not going to like that. But I’m certainly not sitting around, moping about it. I sit around and mope more because I’m stiff and I can’t move than I am concerned about when I’m
going to die of a heart attack. And if there are times or things that are going to upset me around here, whatever it is, I’ll find I’ll talk to myself and say, “Cut that out!” Because that’s not doing yourself any good and you can’t do anything about it anyway, so relax. Sometimes it works and sometimes it doesn’t work. But I’m certainly not in a panic over this whole thing.

Given her age and her cardiac status, Diana is realistic about her life; however, she tries to live as fully as possible.

**Participating in the Study**

Diana expressed that she enjoyed participating in the study. “The more you know about something, the more you get out of it. I’ve learned a lot – all kinds of things! I’ve learned how it influences the rest of body, homeostasis. (laughs) I like that word!”

Diana thought that the modules provided a basis for self-management of coronary heart disease. “I’ve enjoyed talking and thinking about how I’ll live with heart disease. With my cancer, I wasn’t worried about how I was going to live with it. I wasn’t supposed to live. But this I need to live with.” When asked what women need to know, Diana drew on her own atypical symptoms, advocating for knowledge about the variety of symptoms that could be heart related. “And other women, I think they need to know when a symptom is not just a glitch.”

**Barbara – the Outsider (Participants 416 and 421)**

When you first meet her, Barbara makes only fleeting eye contact. She darts about, a bundle of nervous energy, her speech as rapid as her movements. Barbara lives alone, a divorcee. She has limited contact with her son and daughter; they just two more unsatisfying relationships in a life filled with unsatisfying relationships. At 64, Barbara works in a job she detests and says that it is currently the most significant cause of stress.
in her life, a life that has been filled with stress. There is no denying Barbara’s intelligence, but her conversation is peppered self-deprecating comments.

Cardiac Disease.

Barbara tells the story of her transport to the hospital with her diagnosis of a myocardial infarction (MI).

I was getting ready for work and then I had the pain. “Holy shit!” I thought, “I’m having a heart attack!” I’m not involved in clinical care, but I did know what was going on. So I called 911 and it took them forever to get there. In the meantime the pain was going away and I’m thinking “heartburn”. But then they got there and there were two little old ladies in the ambulance. I have a long driveway and I have steps and they couldn’t lift the stretcher up the steps. So they had to call for backup. Another 20 minutes, at least, goes by, and a fire truck gets here. They finally get me in the ambulance and the two women, of course I didn’t know this at the time, were not qualified to transport a heart attack victim. So they had to be intercepted along the way. They called another ambulance to meet us at a gas station. But the communication between the two of them got mixed up. They thought it was somewhere else. When they finally got that together another ½ hour had passed. You have to understand that I live maybe 15 minutes from the hospital, so we’re talking an hour and ½ later. When I got to the hospital they wanted to transport me by helicopter to the Medical Center. That’s when I knew it was pretty serious. But we went by ambulance. They did the cath, and they did the 2 stents. I spent almost a week – 5 days there. I left the Medical Center on Friday and I was back in the office working on Saturday. There was so much to do!

While Barbara symptoms were of classic chest pain and she sought treatment immediately, living in a rural area delayed her treatment. And once she arrived at the hospital, she needed to be transported one hour away, for further diagnosis and interventional care.

Prior to her myocardial infarction, Barbara explored whether the symptoms she was experiencing could be heart related. “I had an EKG, a stress test, and an echo within the year because I was having a lot of heartburn.” As was the case for Barbara, many women to experience false negative stress tests.
The specter of another heart attack is always present for Barbara.

Then a month later I started having chest pain again, and they kept me overnight, but it was nothing. But now I feel good, I feel good. But psychologically I worry that it’s going to happen again. That’s the part I have to figure out - the stress part. Am I going to have another heart attack? It’s always there, I’m just waiting, and that causes my anxiety. Because it can happen at any time.

Additionally, since then she had experienced some pain of unknown etiology.

“It’s hard to determine what it is but I think gastric. I could be sitting, I could be walking, I could be sleeping, it is very brief – in 30 seconds and it goes away. Just enough to scare me.” Fear and anxiety about her health are constants in Barbara’s life.

Risk and Protective Factors

Barbara is not completely clear about her risk factors. She knows that her cholesterol is elevated and she is being treated for it. She had been diagnosed with high blood pressure several years ago and had been treated for it, but she is unconvinced that she actually has high blood pressure. Barbara, in addition, admitted to never exercising, therefore physical inactivity is a risk. Barbara admits that she has a very stressful life and that she always has been an anxious person. This poses an additional risk as does her consumption of alcohol to relieve stress.

Elevated Serum Cholesterol

Barbara believes that is her only real risk factor is elevated and she’s not convinced that that factor alone should be responsible for her heart disease. “I don’t understand why I had a heart attack. My cholesterol is good now; I feel good about that. My cholesterol was always high; I didn’t take my meds daily like I should have. Now my cholesterol is down.” It took having a myocardial infarction for Barbara to take her elevated cholesterol seriously and the medications appropriately.
Elevated Blood Pressure

Barbara is unsure whether she has high blood pressure. Hypertension had been diagnosed several years ago and was treated with medication. However, she attributes her elevated blood pressure to “white coat” hypertension.

I don’t know if I had high blood pressure or not. I know I have it when I go to the doctor’s office. I definitely have white coat syndrome. But I am really uncertain whether it was up there all the time. Maybe. That’s one thing that I think these doctors need to look at, does the person really have high blood pressure? You know you say here it is important to monitor your own blood pressure – I think it’s crucial. You need to know if you really have high blood pressure.

Furthermore, Barbara believes that the medication she took for several years affected her health, creating kidney stones. To complicate matters, she had untoward response to the medication she was given for her blood pressure after her myocardial infarction and stopped taking it.

Physical Inactivity

Barbara doesn’t acknowledge that her inactive lifestyle is a risk, although she does admit that she doesn’t exercise. “I don’t exercise. That’s one of my biggest hang-ups. I need to get into that; I keep putting it off. That’s the only thing I need to do. So what? If I really wanted to, I would do it.” Choosing to not engage in physical activity has serious physical and mental health repercussions for Barbara.

Stress

Barbara believes that stress is a risk factor for her and may be responsible for the disease. “I consider this a risk factor for me. (pause) You can lower your cholesterol through diet and medication, but you can’t really get a handle on stress.” Barbara does not think that there are things she can do to reduce stress, except to leave her job, “I’m
retiring in 2 years, 5 months. And that would get rid of my stress. Absolutely! The workload is tough, but that is not the stressful part. It’s managing people; I’ve never been management before, never wanted to.” She believes that stress is an inherent personality trait. “There’s not much you can do about stress; it’s part of a person’s personality. It’s easier said than done to relieve everyday stress; that scares me. If I thought more positively it may help. But it’s difficult to do.” Barbara is conflicted about treatment for stress. On the one hand, she believes that all her stress will be alleviated when she leaves her job. However, she believes that it is a “personality trait” and can’t be changed.

Alcohol

Excessive use of alcohol has been added to the list of risks that may be associated with cardiovascular disease. Excessive consumption of alcohol can raise blood pressure, cause heart failure, and leads to stroke. In addition, it contributes to the development of a component of high cholesterol by raising triglycerides (AHA, 2010). Barbara admits to using alcohol to relieve stress. “In my quiet down time I tend to drink a lot. And it always leads to, “how can I relieve this stress?” Barbara uses alcohol to medicate herself and treat her stress.

I will say for this study, and this is confidential, that unfortunately, the only thing that relaxes me, when I get home from work, is to get a drink. It’s a problem and I know it’s a problem. I know it’s a problem because I get to the evening and I try to relax and I can’t relax. So I’ll have a drink, and it is a problem. It’s another area that eventually I have to control. I’d say I drink anywhere from one drink to 3 drinks a night. It’s not just wine. It could be a highball, whatever. It’s not one particular type. This entire year, except for my heart attack, I have not missed one day of work. It doesn’t interfere with my job, never has. I just know at this point, it’s the only thing in the evening that relaxes me. On Thursday night, if I want to have more than I should, I don’t have to worry about it. I don’t have to think about getting up the next day. On Thursday night; I just can’t wait to get home. I know that I don’t have to go to work the next day. But on Sunday, that’s when the anxiety comes back. Around seven I start to feel it. I try to focus; I’m not the
only one in this position. There are a lot of people out there that have the same issues, the same problems and are coping with it the best they can.

Barbara does not acknowledge that there may be any other ways of reducing her stress that may be more effective than indulging in alcohol. However, she does admit that alcohol is a problem in her life.

Other

A risk factor that Barbara doesn’t have is cigarette smoking. “I don’t smoke. I never have because if I did I’d probably still be smoking.” With this statement she acknowledges that she is at risk for this type of behavior.

Psychosocial Characteristics

The topics discussed in relation to psychosocial characteristics include stress, anxiety, and depression, and social support.

Stress, Anxiety, and Depression

Barbara revealed her struggles with stress and anxiety. “I start thinking, “why do I have so much stress?” It’s because so and so reacts this way at work. I can’t keep everyone happy. So when I try to relax, it’s very difficult, very difficult.” One of the physicians Barbara works with identified the role he made have played in the development of her heart disease. “One of the doctors that I don’t get along that well with asked if he caused my heart attack. Well, that scared me! Are you serious that stress could cause this? Apparently it does. It’s a factor, I’m sure.” She admits that the only time she feels her stress is manageable is when she is on her annual vacation. “But the stress – I have it all the time except when I have that week of vacation.”

After her myocardial infarction, Barbara sought help for anxiety. “I saw a counselor for awhile. It was helpful to talk to an outsider about my problems. But it
didn’t solve anything. I just knew that it didn’t get to the core of the problem, so I stopped.” Not only did she feel that therapy wasn’t helpful, she felt that anti-anxiety medication was not effective either. “I was on some meds for anxiety right after my heart attack. It may have worked if I had given it a chance, but I didn’t like the side effects; I couldn’t get past 10 days.” Barbara has abandoned conventional treatments to reduce her anxiety and stress although she acknowledges that they’re a factor in the development of her heart disease.

In a discussion about stress management Barbara reported that she would like to find something to relieve her stress. “I’d love to find it, a way to relieve stress, but I haven’t found it yet. You know, all the things we’re talking about, may relieve stress for the moment. But you have to relieve stress every day.” Her physician has also tried to intercede and advocate for stress reduction. “I told my primary care that it would probably go away when I retired - in a couple of years. He’s kinda telling me that I need to work out to get my stress reduced before then.” The diagnosis of heart disease has been another source of stress for Barbara. “I think that being diagnosed with heart disease can be very stressful.” Work and her diagnosis have created an overwhelming amount of stress for Barbara.

Barbara does not find relaxation exercises to be helpful in the reduction of stress. “When I try to relax, my mind tends to wander. It always wanders in a stressful way. It always goes back to, I’ve got to do this, and I’ve got to do that. And it doesn’t let me relax.” Barbara has rejected conventional treatment for stress and anxiety, counseling and medications, as well as some complementary techniques such as relaxation exercises.
Social Support

Barbara’s psychosocial issues affect her social relations. “I feel that I’m not as good as other people. I’m not sure what it is about me; that I don’t present well to people or how to make friends… I don’t really have a support system.” She reads the literature and does realize that social support is important for health. “Dr. Dean Ornish says if you don’t have a support system you’re at risk. I really don’t have anything, nor have I ever. I think the problem is with me but I don’t know how to solve it.” Barbara’s lack of social support and her psychosocial issues present real problems for her physical and mental health.

Environment

Barbara’s discussion about her trip to the hospital when she had her myocardial infarction, illustrates one difficulty that exists living in a rural environment. The ambulance corps in rural areas are generally composed of volunteers. These volunteers have different levels of skill. In addition, while in many urban areas EMTs are able to administer thrombolytics that is not the case in rural areas. Since “time is muscle” regarding care for a person experiencing a myocardial infarction, an individual who lives in a rural environment is at a disadvantage.

Rural individuals have to travel to tertiary care centers for diagnosis and treatment rather than stay in their home environment. Distance from and unfamiliarity with these centers presents a challenge for rural individuals. Upon admission to the local hospital, transportation to a tertiary care center was planned for Barbara. Initially, Barbara requested a change from where the ER physician planned to transport her. “I asked if anything could be done about the transfer and he said, “You need a catherization and we
usually send them to Medical Center 1. I thought, “That’s a black hole! (laughs) I didn’t want to go there.” Due to time constraints regarding transport, Barbara was not able to be transferred to the medical center of her preference.

In addition, the rural environment provides barriers for exercise, “I can’t walk on my road, but I can’t come up with excuses for myself. There is no excuse. My road sucks, I can’t walk on that, but it come down to, I just hate it! (laughs) Hate it!” The rural environment where Barbara lives does present some barriers to her obtaining health care and caring for herself.

Health

When questioned her about health, Barbara responds with a holistic perspective on health. “Well, it’s everything. It’s your body, your mind, your emotions, your spirit. It’s everything. But I’ve had my share of problems. Yes, it’s my responsibility; I do take care of myself as best I can. But I need help.” Cognitively, Barbara is aware of what she needs to do, but she has difficulty carrying out her beliefs.

Self-management

The topics that relate to self-management include nutrition, exercise, and self-awareness.

Nutrition

Barbara believes that diet is central to maintaining her health. “My diet is supposed to help with cholesterol, the South Beach Diet. Last time, my total cholesterol was 155. It was 247 when I had my heart attack. This decrease was the result of medications, fish oil, and diet.” Weight has never been a big concern for Barbara since she has been able to maintain a desirable weight throughout her life. “I never had a
weight problem. But then I started reading about the South Beach Diet. I’ve lost 13 pounds. And it’s not only the weight but knowing it’s a very good, heart healthy diet.” Barbara discussed particulars about her diet. “The diet is heart healthy. I try to eat a salad before dinner because it will fill you up. I’ll eat the veggies, too, before I start on other things. Less fat, less sugar, it’s working for me.” Barbara reports that her thoughts about food have changed since she has been diagnosed with coronary heart disease. “My whole attitude has changed. I’m thinking about keeping those stents open! I cringe now when I go to the grocery store because there is so much there that is not healthy!” Since Barbara sees the value of healthy eating, this could be a starting point for the adoption of a healthy lifestyle.

Exercise

Barbara does not exercise and does not seem to acknowledge that exercise may help reduce several of her risk factors and may help her cope with her stressors. “I’d rather starve than exercise.” Barbara spoke about her past experience with exercise. “I’ve joined Curves; I’ve joined gyms. I have a treadmill, a bike. And after you get through, I feel good, like, wow, I did it. But I’m just not an exercise person. I wish I could change that.” Although Barbara says she wants to change her attitude toward exercise, her behavior contradicts that.

Self-awareness

Barbara is convinced that many medications are dangerous. This viewpoint on medications includes cardiac medications as well as psychotropic medications. “I believe that people underestimate the risks of medications. It really needs to be examined! I don’t know if I’d be alive if I continued on those beta blockers. It was terrible! I was
falling asleep at the wheel!” She took it upon herself to reduce and finally eliminate beta blockers without physician approval. “I wasn’t awake until the afternoon. When I complained to the nurse, she told me that I could take it in the evening. That gave me the idea I could reduce my dosage.” It is extremely dangerous to stop taking beta blockers without medical guidance. “I started reducing my dosage. I did it responsibly, I think. I took my blood pressure regularly, I kept a record and I showed the cardiologist. And he grudgingly agreed to let me stop taking it.” Effective self-management involves working collaboratively with a practitioner. Barbara has a difficult time commutating with her physician, a problem that affects other interpersonal relationships.

The self-monitoring Barbara does involve monitoring her blood pressure with a device that she put on her wrist. While this device also monitors her pulse, Barbara is less concerned about her heart rate. “If you’re using that wrist thing, you’re doing both, blood pressure and heart rate. It’s so easy to do! I’ve been cross-checking with my doctor’s machines.” In addition to taking her blood pressure and pulse, Barbara kept a notebook recording that data. “I also brought, I don’t know if you’d be interested or not, but I brought my notebook, where I have these notes to myself. So you can see the kind of thing I was doing.” Barbara felt that this type of self-monitoring was important for someone who had been diagnosed with coronary heart disease, particularly for those who have an elevated blood pressure. In addition, it may lead to self-awareness. “I think you need to take it on a regular basis. I noted what I was doing – up and around or sitting quietly and also the medications I took. I was trying to figure out what was going on.” While this demonstrates effective self-management through monitoring her blood
pressure regularly and keeping meticulous records, it was dangerous for Barbara to reduce her medications without her cardiologist’s direction and knowledge.

Her aversion to some medications includes psychotropic medications. “There is research that even the most disturbed people, those who get stigmatized, the most do better without medication than with it. I have big issue with prescription medications because of the side effects.” When asked about her experience with psychotropic medications, Barbara dismissed their usefulness. “I don’t think these medications really did anything for me. These medications are brain disabling. You know, they may be seen as a crutch and cause damage to the brain.” Barbara, while rejecting medications to help reduce her stress, is using alcohol, which has the same kind of effects on the brain that she claims for psychotropic medications as well affecting her physical health.

Experience

Barbara expressed interest in learning how to care for herself. “I think the more information you have the better off you are. When the doctor tells me something that affects the heart, I look it up. I think that you’re at a disadvantage if you don’t have that information.” She seeks information from a variety of sources. “I get my information from books mostly. I’ll look for what’s on sale. I do use the internet, too but not often. I don’t have a TV, so I don’t get any information there.” Since sale books may not have the most current information in a rapidly changing area such as cardiac disease, these are not the best sources of information. In this “age of information”, the women need to be shown how to evaluate sources.

Although well read, Barbara had misconceptions related to heart disease. Speaking with a nurse allowed her to clarify things. She had an assumption that heart
failure meant that the heart stopped. “Who knows what rate my heart was at when I was asleep? Could it have stopped?” The nurse was able to discuss heart failure and the difference between that and cardiac arrest.

Barbara had a positive experience participating in the study. “I think this material needs to be presented like this. The question is “How long you want to live?” You don’t want to be the one to find out the hard way. Essentially, that’s what happened to me.” She felt that she benefited by increasing her knowledge of heart disease. “I think that I learned a lot of things; some things that I’ve been wondering about for a while. You would think that given where I work, I would have answers to my questions, but I learned a lot.” Barbara also appreciated the way the material was presented. “You know, no one ever discussed this with me. Most of what I know about risk is what I learned reading, like an article or especially like Dean Ornish.” Barbara felt that the message about caring for herself echoed her belief system. “I think that I’ve been able to confirm some of my own beliefs and suggest you add some things to what you’ve done.” Whether Barbara does use the material presented in these modules to make changes in her life is uncertain. However, she did benefit from the opportunity to discuss cardiac care and that she was able to verbalize her ineffective coping strategies may be an impetus for change.

Kelly – the Mother (Participants 418 and 420)

You are immediately struck by her warmth and ready smile. Kelly moves slowly, her body heavy. What you notice about Kelly is the kindness in her eyes and her ready laugh. She’s very social; she’ll inquire about you and your health, your family, and job. Kelly is 79 years-old and lives with her husband of over 50 years in the home they raised their four children. She was born and raised in this community, a small town in southern
Vermont. All of her children live nearby and she socializes with them frequently. She is a member of her church and has friends of longstanding in her community. She enjoys going on trips with members of her senior group and eating out with friends. But her biggest satisfaction comes from gathering her family, her children, and grandchildren around her.

Cardiac Disease

Kelly’s history of cardiac disease began first with angina and she had several complications along the way. “I was having some chest pain so they put me on nitroglycerine. But when I took it, I got dizzy, so I tried not to take it very often.” Kelly continued to have chest pain and was admitted to the local hospital.

Kelly’s physician decided to conduct an interventional screening. “They transferred me to the Medical Center and put a stent in. When they were putting the stent in, they pushed the plaque into the other vessel. That gave me a heart attack.” With angioplasty and stent placement there is always the potential for an infarction and the need for bypass surgery. “They said it would be alright, but I had more chest pain, so I needed to have bypass. Since I was on blood thinner I waited two weeks there before my surgery.” Kelly’s response to this was a matter of fact, “That’s how it was, you know, I had to do it.”

Fortunately, since the bypass surgery Kelly hasn’t experienced any cardiac symptoms, “I’ve had no pain since then.” Prior to her surgery in addition to the chest pain, she experienced some shortness of breath.
Risk and Protective Factors

Kelly has several risk factors for coronary heart disease. She has elevated cholesterol, diabetes, she is overweight, and her activity level is low due in part to her osteoarthritis and joint replacements.

Elevated Serum Cholesterol

As with many post-menopausal women, Kelly had a high triglyceride level and was not able to lower it by medications alone. “I was not able to lower my triglycerides, but he (physician) didn’t want me to take fish oil. He said, “No, I want you to take this.” And it seems to be working. My numbers are better since my heart attack.” Kelly understood through her reading that fish oil was a popular option for elevated triglycerides, but not her practitioner’s choice for her.

Diabetes

Kelly has had diabetes for several years. “I have sugar, diabetes. I know that I have to cut down on some stuff, but I don’t. For instance, I’ll eat the whole bunch of grapes, rather than just 10. That isn’t good!” Her diabetes is controlled by medication and diet. Kelly does monitor her blood sugar twice a day.

Overweight and Obesity

Kelly’s weight is a risk factor. While she tries to follow the ADA, she is not always successful. In addition, Kelly reveals that she has difficulty becoming satiated.

You know, I’m hungry all the time. I’m really hungry. I don’t know if it’s psychological ...They tell you at Weight Watchers if you take at least 20 minutes to eat, your brain should tell you that you’re full. But even if I’m full, I still want to eat. I think that’s a psychological hunger. But I don’t know why — I’m just not satisfied. Everything just tastes so good to me. When I was a kid; I came from a poor family. And at times I didn’t have stuff to eat. I remember having to go to neighbors and ask them if they had anything I could eat. I don’t know if this has
anything to do with it or not… I do enjoy everything. It’s a self control type of thing. And I understand that, but I can’t help myself.

Kelly recognizes that her response to food may have a basis in her childhood. She does try to watch her weight, but it is difficult given her love of food, cooking, and enjoying gathering her family around her.

**Physical Inactivity**

Kelly admits to not exercising the way she should, “I don’t love exercise. I do some, because I know it’s good for you. If I did more I’d be healthier. When the weather gets warmer, I just have to get out there more; I just have to.” Kelly knows that exercise is important for her health and would make her feel better, but her arthritis and lack of available exercise locations present barriers.

**Alcohol**

Concerning alcohol consumption, Kelly said, “I only drink now at special occasions. I drink a little wine, a glass or so. And it seems to affect me more now. So I only drink a very little and only on special occasions.” Therefore, alcohol use is not a risk factor for Kelly.

**Other**

Although Kelly does not have high blood pressure, she does monitor it closely. “I don’t have high blood pressure. It’s pretty good. It’s 130 over 80. And I take it at home.” Given Kelly’s other risk factors; it is wise for her to monitor her blood pressure closely.

**Psychosocial Characteristics**

The topics covered under psychosocial characteristics include stress, anxiety, and depression and social support.
Stress, Anxiety, and Depression

Kelly maintains a positive attitude and shares her strategy for lifting her spirits. “I’m fortunate, I haven’t experienced depression. If I’m ever feeling sad, I put my music on and I sing - that helps.” She talks her of her life. “I have wonderful kids, so I’m lucky. Although I’ve had a lot of stress, I had many blessings. My husband and I we’re still getting around, so that’s good.” It is through the love of others Kelly copes with the stressors in her life.

The changes that Kelly has had to make to her life due in part to her heart disease and age are a source of stress, “I know that I’m stressed because I can’t do all the things I used to do. But I’m resigned to that, what the heck! I look at my house and I never would have left it like that.” Kelly recognizes the importance of prioritizing what things are most essential.

Social Support

Kelly surrounds herself with her family. “It is important to surround yourself with people that treat you positively. People should know what brings them joy.” Kelly’s family, which consists of two daughters who are nurses, are supportive of her but do not tell her what to do, “My kids always ask me how I feel, but never say, “Ma, you should do this or that.” They leave it up to me; they know how I feel, it’s my responsibility. My family’s wonderful. They never interfere.” Kelly’s family provides the main source of social support.

Environment

The environment Kelly resides does present barriers for her cardiac care. She needed to travel to get interventional care. Since she was on an anticoagulant, she spent
two weeks at the Medical Center before her surgery. That presents a burden not only for Kelly but her family as well.

The ability to engage in outdoor exercises year round is another barrier Kelly experiences. She does not exercise regularly, other than attending Phase III cardiac rehabilitation two days a week. She said, “During the winter I wouldn’t do anything other than here. I live on top of the hill and it is very, very difficult to walk. Even the dog, she only goes out to a little spot.” The long winters and lack of accessible walking areas is a barrier for rural women who would like to exercise out-of-doors.

Health

Kelly, when asked to define health, uses a holistic vision. “I would say that you feel good about your body, you feel good about yourself, and you’re family, because they’re part of your health. It’s part how you live and part how you feel.” Given the prominence of family in Kelly’s life, it was not surprising that she included family in how she defined heath.

Kelly discussed her spirituality and how she sought meaning from her experience with heart disease. “I’m a very spiritual person. I believe there is a reason for me being here. There’s a purpose for everything: even if you don’t know it at the time. There was a reason why I had a heart attack.” Kelly’s spirituality helps her cope with her illness.

Self-management

The topics related to self-management include nutrition, exercise, and self-awareness.
Nutrition

Regarding her diet, Kelly shared her strategies. “I know I weigh more than I should, but my diet is healthy. I eat a lot of vegetables! I’m a big vegetable eater – more so than meat.” This has been her practice for much of her adult life. “I make soups all the time in winter. I just throw everything in; stews as well. When you have a lot of hungry kids, you’re going to need to stretch things. So you put more vegetables in!” She is aware of how to eat a heart healthy diet. “While I don’t really count the fats, I am conscious of it. I want to eat the right things and buy the right things and stuff. Well, I do like to cook, and preparation of foods is key.” Although Kelly prepares most of the foods she eats herself, she exhibits effective self-management when she purchases prepared foods. “If I buy prepared foods, I read the labels. They contain a lot of sodium. Since I make almost everything from scratch, it’s not an issue.” She was also concerned with sodium with her cooking. “I don’t put salt on the table and I rarely cook with salt. I had to do that because my mom was sick. So I got out of the habit of cooking with salt.” Kelly was also knowledgeable about other micronutrients and the use of supplements.

I don’t eat many milk products. I am concerned with the amount of calcium in my diet. I won’t eat any soy products. My sister had breast cancer and I won’t eat soy because of that. And I don’t like yogurt, I don’t like the taste of it, so I don’t eat that, so I take a lot of calcium supplements. And I take vitamin D.

Kelly exhibits knowledge of diet and its importance for her health.

Exercise

While Kelly acknowledges her role in health, she admits that she doesn’t do everything she needs to do to maintain it. “You know, it’s up to me to exercise. I’ve got to put my mind to it. I try. Oh, I say, I’ll do them later, and then they don’t get done.
(laughs)” Kelly realizes that she doesn’t exercise like she should and that it affects her health and wellbeing.

Self-awareness

Bodily self-awareness was demonstrated by Kelly with this statement, "All my tension can be found in my muscles; it’s related to stress. I know when I’m stressed it goes to the muscles. I do like the massage and it relaxes me because of the tension in my muscles.” As evidenced by of this statement, Kelly does exhibit self-awareness and know how to achieve some relief from stress. In addition, she knows that some stretching exercises make her feel better, although she rarely does them. “I could do more to help myself - I could. But I get into a routine, you know. I should do exercises before I get up because I know I feel better when I’ve done it. But I don’t.” Hopefully, Kelly will adopt a healthy routine that will include more exercise including stretching and relaxation exercises.

Experience

The topics covered that relate to experience are mortality and participation in the study.

Mortality

Kelly share that there was a recent death in the family and its implications for her. “My aunt who just died, she left us some money. So I have money to spend!” The death of her aunt and the diagnosis of coronary heart disease have made Kelly consider her own mortality.

And do you know what I’m going to do with some of the money? I’m going to make all my funeral arrangements and pay for it. So the kids don’t have to worry. I think it’s my priority. (pause) I know that they’ll be sorry that we’re gone and
now they don’t have to worry. Well, it’s something that you think of as you get older. It is a fact of life. I haven’t told my husband yet. But I will.

**Participating in the Study**

Kelly appreciated the information that was provided in the modules. “Because when you go to a doctor, and they don’t tell you all this stuff. They don’t go into detail about those things. You know what I mean? They don’t.” When reviewing the modules, she didn’t want anything left out, she said, “Because telling a person and providing information for a person is gold. If you inform somebody, they know what to look for. If you eliminate it, they know nothing.” Kelly also felt strongly that this information should be shared with a population of women who had not yet been diagnosed with heart disease. “But you have to get to a younger audience; an audience who has not developed the disease. You should look at writing articles for magazines, newspapers anywhere.” She did get a great deal of her information from magazines. “When I’m interested in knowing something, I’ll look things up, I use the internet although that is rare; things like, web MD and such. To get the most current information, I look at magazines. And sometimes television, books.” As with all of the women who participated in this study, Kelly did not look to the web as a primary source of information, but relied on print media and television.

When asked about the experience, Kelly said “I don’t think it changed the way I was living my life, managing the disease. But I think that you were able to articulate what was needed, you put it in words. Perhaps I’m able to articulate it better.” An important goal for this intervention was to have the women be able to discuss their disease with others so that they would be able to collaborate with others to achieve the best outcomes.
Discussion

The following is a synthesis of the women’s thoughts related to the topics covered in this section. In addition, the thoughts of the women are discussed in the context of the modules.

Cardiac Disease

Many of the women had a variety of “atypical” symptoms including gastrointestinal upset, ear and jaw pain, arm pain, fatigue, and shortness of breath. For many of them, the practitioners they sought care from did not immediately make the diagnosis based on their symptoms. One woman even had a cardiac workup including an ultrasound and stress test that was negative several months before her myocardial infarction.

After their initial diagnosis of coronary heart disease, two of the women suffered an MI, one during stent placement and the other after she returned home from receiving her stent. Both of these women later underwent bypass surgery. The diagnosis of the women included: eight experienced a myocardial infarction, seven received stents, and four received bypass surgery, including two whose stents had failed.

While the women who had bypass surgery had no further cardiac symptoms, some of them had chest soreness and arm pain. Most of the women who had stents and the one who had no intervention continued to have symptoms and sought treatment for these symptoms. With the exception of the woman who suffered a myocardial infarction after her stent placement, the rest of the follow-ups were negative. However, many of the women had untoward reactions to medication and needed to seek care for that.
The information the women provided concerning their symptoms of heart disease parallels the content of the modules. It is important to educate women on the various signs and symptoms of heart disease and to promote their self-awareness so that they can seek treatment in a timely manner.

Risk and Protective Factors

The only original risk factor (AHA, 2010), for some of the women, was elevated serum cholesterol. Other women had many of the original risk factors. However, no matter how many risk factors the women had, most attributed their heart disease to stress.

Risk factor identification is important for someone diagnosed with coronary heart disease so that they know what they can do to reduce their risk. The feedback from the women, regarding their stress, substantiates the American Heart Association adding stress to their list of possible risk factors.

Psychosocial Characteristics

The women identified the stressors in their lives. For many of the women family was a source of stress. Some of the women had stress as a result as being a caretaker while for other women a discordant relationship with family members was their stressor. Only two women reported that their work was stressful. One of the women went further, saying that anxiety better described her experience. Stress, anxiety, and depression are covered in the new self-leaning program.

Most of the women reported having a good social network. For many of these women, their families were an important source of support. Social support has been found to be an important factor in the maintenance of health, that is why the revised document that content has been expanded and an entire chapter has been devoted to it.
Environment

Although the rural environment that these women lived presented challenges, the women loved where they lived. Half of the women were natives, while the other half moved here some time during their adult lives. The women did not complain about the lack of services at their local hospital or the difficulty imposed by the environment regarding exercise. The discussion regarding environment uncovered the challenge of managing cardiac disease in a rural environment, but the women accepted the limitations imposed.

Health

All of the women said that viewed health holistically; body, mind, and spirit. They identified the responsibility for their health lay within themselves. This approach of self-responsibility for health was in the original modules and has been continued in the revised document. A more holistic approach has been included in the revised self-learning program.

Self-management

The women were of the opinion that diet and exercise were the most important things they could do to maintain their health. Although all of the women thought that they ate a “heart healthy” diet, most of the women were not satisfied with their weight and tried a number of different diets. However, with one exception, the women did not have their diet analyzed by a dietician; therefore their diet could be another risk factor. In the revised self-management program the material on nutrition has been reorganized and expanded to reflect the state of the science regarding nutrition. Included in the new document is the recommendation that the women have a dietary analysis conducted.
Although the women acknowledged the importance of exercise, most of the women reported that they did not exercise as much as they should. Additionally, what exercise they did was focused on the aerobic exercise with some engaging in resistance training and no one doing any formalized stretching routine. Both the original modules and the revised document present a balanced approach to exercise.

Some of the women exhibited self-awareness, at least regarding some aspect of their health, while others struggled with it. Thoughtful reflection was promoted in the original modules and explored further in the revised document since it essential for self-management.

Several of the women had established collaborative relationships with their physician. This is an important component for effective self-management. Although this concept had been in the original modules it has been expanded in the revised document.

Experience

The experience of heart disease made several of the women cognizant of their mortality. In addition to the holistic approach of the revised self-learning program, the topic of making advanced directives has been included.

The women enjoyed participating in the study; they said that learned a lot from the experience. They took advantage of having the nurse researcher available to them and asked questions about their health. Many recognized that they now had to re-evaluate their lives and make changes so that they could care for themselves. Additionally, several of the women were concerned that younger women must be given this “message” and learned to take care of themselves.
Themes

The themes that emerged from the in-depth interviews and what the women revealed about themselves during the focused qualitative interviews include: It’s all about me; Is it my heart? Too many balls in the air; Health promotion - one from column A…; and Facing mortality. The following is a discussion regarding those themes.

It’s All About Me

For the women in this study, their needs and health status had not been a priority. After being mothers, wives, and daughters they had put the desires of others before their own for so long, they had taken their own needs for granted. Therefore, being diagnosed with coronary heart disease (CHD) came as a surprise to many of the women and forced them to reevaluate aspects of their lives. One woman confided that she didn’t even know what she liked to eat; she had prepared meals for so long with the intent of pleasing others. Another woman said that in the past she never disagreed with anyone; and if someone was mean or hurtful to her, she would not respond. This event, being diagnosed with heart disease, forced the women to realize that they needed to take themselves, their needs, and their health seriously.

The first step in the process of caring for themselves was for the women to assume responsibility for their health. All the women expressed that they were willing to do that. This was an important concept for the women to embrace because the self-management framework is based on the premise that the individual or family is the expert and her actions affect the management of health and the trajectory of the disease process (Grey, et.al., 2006). Also, since the modules were based on the assumption of self-
management, they would not have resonated with the women if they did not share that belief.

The women acknowledged that they needed to work with their practitioners to achieve optimum health. However, while they viewed the taking of medications and the monitoring that was provided by their practitioners as important, they reported that they thought what they did for themselves was of greater importance. Several of the women needed to work on developing a collaborative relationship with their practitioner.

The diagnosis of coronary heart disease came at a time when some of the women felt that this was the first time in their lives that they were only responsible for themselves, or themselves and their spouses. Several of the women said that this was the first time in their lives that they were alone with their husbands. They had spent their married lives caring for their children and their aging parents, and in the case of one of the women, her grandchild. Therefore, it was necessary to reconsider their role in the family. Illness, especially such a serious illness such as coronary heart disease, forces people to reconsider their role in the family.

The women in this study will need to make changes in their lives and in their roles in the family if they are going to be successful in managing their disease. The women expressed that they were ready to make these necessary changes in their lives and that they were willing to care for themselves.

Is It My Heart?

Symptoms such as fatigue and shortness of breath are the most common presenting symptom for women. These “atypical symptoms” make recognition of heart disease difficult for both women and their practitioners (McSweeney et al., 2010;
Pearson, 2010). In this study, initial recognition of symptoms of heart disease proved to be difficult for most of the women. Presenting symptoms included such things as gastrointestinal upset, difficulty breathing, jaw pain, and back pain. Additionally, several of the women experienced delay in the diagnosis of heart disease even after they sought care from their practitioners.

Recurrent symptoms made several of the women fearful and had the women question whether they would be able to lead a normal life. Several of the women continued to question whether that pain was heart related or was it a gastrointestinal or muscular pain and went to their practitioner’s office or hospital for further work-up. Their concerns were not unfounded; two of the women who participated in the study suffered a myocardial infarction and needed surgery after their stents failed. Evidence of the fears these women experienced may be found in the literature and often continue for a year or more after the initial diagnosis (Sjostrom-Strand, & Fridlund, 2007). In the self-and family management theory, the symptoms these women experience can be identified under the risk and protective factor of health status and results in the outcomes of control, morbidity, and mortality (Grey et al., 2006).

Once diagnosed with coronary heart disease, the women need to develop their self-awareness to adequately identify untoward reactions and manage their disease. The one woman who exhibited the most self-awareness was someone who had been diagnosed with a life-threatening cancer a decade previously. She said that with the cancer she had ignored it for a period of time and that experience had taught her to “listen to her body.” Perhaps for the other women, for most of whom this was the first serious illness, they will be able to develop the same level of self-awareness over time.
Interestingly, the two women who were the most athletic exhibited the least amount of self-awareness. That raises the question of whether engaging in sports where emphasis is placed on “working through pain” may negatively affect someone’s self-awareness.

Some of the women coped with this the uncertainly of the symptoms by enlisting family members as “gate keepers” for their health. These were the people that they turned to when they were experiencing symptoms. This may be an effective way of coping with the uncertainty of the disease for women, especially if the gate keeper has been educated and is knowledgeable about heart disease. Since the individual performs self-management in the context of the family, inclusion of the family should be an essential component of any learning program (Grey et al., 2006).

Effective treatment of heart disease begins with swift and efficient diagnosis of the disease. Therefore, women, their families, and practitioners must be educated in the range of symptoms that women may present with so that they will be treated quickly and efficiently. Additionally, strategies for developing self-awareness must be explored so that the women adequately assess the symptoms they experience and seek care when appropriate.

Too Many Balls in the Air

In this study, most of the women attributed the development of coronary heart disease to stress. One woman described how she felt as those she had learned to juggle several balls at once and then someone slipped in another two. The two women who did not identify stress as a primary factor for them believed that was an important factor in the development of the disease for many people.
All of the women ascribed to a holistic view of health that consisted of body, mind, and spirit. Most of the women expressed deep spiritual beliefs and acted upon them. In addition, they were confident that a mind-body connection existed. But it appeared that many were incapable of affecting change with regards to their mental health and reducing their stress. While they rejected conventional medical treatment in the form of therapy and medication, they had not explored complementary treatments either.

The women said that the primary sources of stress in their lives were being a caretaker and discordant relationships with members of their family. Only one woman identified work-related stress as a factor. This finding supports the research that women are more distressed by family relations than men.

Women appear to be more vulnerable to psychosocial distress than men (Davidson et al., 2008). Social support is one way that has been found to be effective to reduce distress in women. Therefore, programs that emphasis the psychosocial needs and approach women holistically may be more effective in risk reduction. In the self-and family framework, psychosocial characteristics are identified under risk and protective factors and lead to such outcomes as increased quality of life (Grey, et al., 2006).

The data from this study supports the inclusion of stress as a possible factor in the development of heart disease by the American Heart Association (AHA, 2010) and the acknowledgement that women who have experienced a myocardial infarction perceive stress as a primary cause of their heart disease (Sjostrom-Strand, & Fridlund, 2007). While the lay public overwhelming believes that stress is a primary factor in the development of heart disease, healthcare practitioners have been more reluctant to
substantiate that claim. Perhaps that is because stress is more difficult to measure than something like blood pressure or serum cholesterol. Additionally, stress, may not only be more difficult to quantify, but as this study suggests, more difficult to treat.

Health Promotion - One from Column A…

Although the women in this study ascribed to a holistic view of health, they were selective of what strategies they would use to support their health. All of the women were of the opinion that diet and exercise were the basis for protecting their cardiovascular health. However, even though they identified diet and exercise as being fundamental, only a couple of the women followed both a “heart healthy” diet and exercised effectively. Furthermore, even these practices were circumspect.

Although all of the women ascribed to a “heart healthy” diet, only one of the women had her diet reviewed by a dietician. Additional questions regarding diet are raised by the weight problems of many of the women. Therefore, it would be best if the women had a comprehensive diet analysis soon after their diagnosis, rather than just being presented with “guidelines”.

While the women expressed that exercise was important for heart health, most were not engaging in the recommended level or variety of exercise. The women focused on aerobic exercise, ignoring the benefits of resistance training and stretching. For several of the women, the only exercise they engaged in was the phase 3 of cardiac rehabilitation two times a week. It would be beneficial for the women to get a “fitness plan” after diagnosis that includes things that they could do most days of the week and includes resistance training and stretching.
The women did not promote health through stress reduction exercises. Since many of the women expressed that stress was a factor in the development of their heart disease, health promotion strategies should include ways to reduce their stress. In addition to a “diet plan” and “fitness plan” the women should get a “stress plan” that includes stress reduction exercises.

The women learned some health promotional strategies as a result of reading the modules. One woman remarked that upon admission to the medical center she was asked if she wanted to have a pneumonia shot. She declined the immunization and said that she only after reading the self-learning module did she understand the purpose of it.

There were areas that the women thought were essential to monitor while other areas they were less concerned about. Just as they chose what health promotion strategies they thought were most important, they did the same with self-monitoring. The basis for this assessment may have been the result of what the practitioner paid attended. Most of the women were able to discuss their cholesterol level and many knew their blood pressure, but only one woman knew her resting heart rate and her “target heart range” for aerobic exercise. Given that they had been diagnosed with heart disease, knowing one’s heart rate at rest and during exercise would appear to be a simple and effective self-monitoring activity. This skill could even be taught when the person is still an inpatient.

The women appreciated the opportunity to ask questions about their health and for clarification of what they had heard or read about certain health promotional activities. For many of the women, risk factors or even the concept of a balanced fitness plan was new information. These original modules and the revised document, builds on the
women’s beliefs about holistic health and stresses the importance of reviewing every aspect of their health regime and not just pick and choose what health promotional activities suit them.

Facing Mortality

For many of the women in the study, mortality now exists in their consciousness. The diagnosis of heart disease was the first time that the women’s mortality had become a reality to both them and their families. Several of the women sought to find meaning in their experience and what it meant to live while recognizing that this would, most likely lead to their eventual demise.

Although several of the women alluded to their mortality, only one of the women discussed how declining health may affect her and her family. This woman, who had been a caregiver for her aging parents, voiced a concern about being a burden to her daughter. However, she recognized that there was little she could do about the situation except take care of herself the best she could.

It is important for someone who has been diagnosed with a disease that has such high morbidity and mortality to be able to share their hopes for the future as well as discussing their fears. These conversations identified the need for the self-learning program needs to confront not only the living with cardiac disease, but in a holistic manner, death.

Summary of Themes

The women acknowledged that they had to make changes in their lives based upon their diagnosis and take their health seriously. Furthermore, this indicated that the women felt that they were prepared to assume responsibility for their health (self-
efficacy). The women reported that their initial “atypical” symptoms were difficult for both them and their practitioners to diagnosis. In addition, many continued to have a variety of symptoms and were unsure of whether these symptoms were related to heart disease. It became important for the women to develop self-awareness to best manage their disease. Most of the women believed that stress was their primary risk factor for the development of heart disease, although they reported having little knowledge of how to reduce the risk. With regards to health promotion, the women picked and choose what health promotional activities to adopt and what things to monitor, rather than looking holistically and approach health promotion in that manner. Finally, the diagnosis of heart disease had many women considering their mortality although they remained optimistic that they would be able to manage their disease.

Summary

The focus of these interviews were to uncover whether the self-leaning modules influenced the women’s adoption of health promoting behaviors, affected their self-awareness of their unique physical and psychological responses to health and disease, and affected their self-efficacy related to their ability to manage cardiac disease. While the women in this study were very different in personality, life situation, and manifestations of heart disease, they shared one important commonality; they were interested in knowing as much as possible about heart disease and its management. Although their approach was different and not every woman achieved an optimal level of self-management, they were interested in knowing the “state of the science” regarding heart disease. The women in this study had recently been diagnosed with coronary heart disease and were eager to learn as much as possible. This presents a critical period where
the women are eager to learn and may adopt health promoting behaviors; therefore this provides an opportunity to present the most current and best evidence to these women.

**Quantitative Instrument**

Information regarding the effectiveness of the self-learning modules was provided by the in-depth qualitative interviews and a quantitative instrument, the Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001). The self-efficacy instrument was administered three times:

1) at enrollment

2) at the end of the intervention phase and

3) one month after the intervention was completed.

All 10 participants completed the scale each time it was administered.

**Self-efficacy for Managing Chronic Disease 6-Item Scale**

Health behavior, self-efficacy (confidence in ability to deal with health problems), health status, and health care utilization have typically been the way self-management behaviors have been measured (Fisher, et al., 1999; Lorig, et al. 1999). The Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig, et al.) was used to provide quantitative pilot data regarding the efficacy of the intervention. The instrument was obtained from the Stanford Patient Education Research Center and was available at no cost and was able to be used without permission, due to funding by the National Institute of Nursing Research (NINR). However, the authors request that researchers share the results of the study using the instrument with them.

The Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001) consisted of six questions that focused on the women’s belief in their ability to manage
their chronic illness. The participants were asked how confident were they regarding certain activities. The questions asked were about managing their fatigue, physical discomfort, emotional distress, other symptoms or health problems, management of health problems, and affect of illness. A Likert format with values of 1-10 was used. Higher scores relate to increased self-efficacy to manage the disease. The instrument can be found in Appendix G.

Instrument Reliability and Validity

Instrument reliability and validity was conducted for Self-efficacy for Managing Chronic Disease 6-Item Scale by Lorig et al. (2001). This scale is a shortened version of Self-efficacy for Managing Chronic Disease Scale. The scale consists of 6-Items with an observable range from 1-10. In the initial testing of 605 individuals with chronic disease a mean of 5.17 and standard deviation of 2.22 was found. The Internal Consistency Reliability was found to be .91, while for this study, it was .90.

Pilot Study

Pilot testing of a study enables the investigator to conduct a small scale version of a study to determine its feasibility and whether the approach used shows promise. A pilot study enables the investigator to see if the protocols, interventions, instruments, sample recruitment, and other aspects of the study are effective. It can provide methodological guidance, such as determining the appropriate sample size for an adequately powered study. In addition, a pilot test can provide clues about the likely success of the intervention and ways in which the intervention can be changed or modified (Stein, Sargent, & Rafaels, 2007; Polit, & Beck, 2008). The author obtained pilot data of the efficacy the self-learning intervention through the use of the Self-Efficacy for Managing
Chronic Disease 6-Item Scale (Lorig et al., 2001). The self-efficacy instrument was administered three times: 1) at enrollment, 2) at the end of the intervention phase, 3) and one month after the last time it was measured.

**Data Collection**

The Self-Efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001) was administered three times: 1) at enrollment, 2) at the end of the intervention phase, 3) and one month after the completion of the intervention phase. The nurse researcher gave the instrument to the participants and asked that they complete the paper and pencil questionnaire, answering the questions to the best of their ability. The nurse researcher had marked the paper with the number assigned to that participant, noting whether it was the first, second, or third administration of the instrument for that particular women.

**Data Treatment**

The data from the Self-Efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001) were compiled on tables in a Word file in the nurse researcher’s password protected home computer. After she double-checked the accuracy of the data, a statistician entered the data into SPSS version 14.0 for descriptive and parametric analysis (SPSS, Chicago, Il.).

**Data Analysis**

Data from all questionnaires were entered into SPSS version 14.0 for descriptive and parametric analysis (SPSS, Chicago, Il.). Descriptive and inferential statistics have been used to examine the data obtained from the self-efficacy instrument.
Descriptive Statistics

A mean, range, and standard deviation of the scores obtained for each of the six items have been calculated. A mean (M) is a measure of central tendency. The range and standard deviation (SD) are measures of variability.

Inferential Statistics

Two paired t tests have been used to analyze the data; tests the difference between two means. The first t test was used to determine if there was a difference between the pre-intervention and post intervention administration of the instrument for each item. The second t test determined the difference between the post intervention and one month post intervention administration. A p value had been placed at <0.05. However, since this is a pilot test of the efficacy of the intervention and significant power for testing the intervention has not been obtained, in addition to statistical significance, any trends in data has been examined. Sixty-three participants would be needed for a power of .80, a a value of .05, and a medium effect size (Polit, & Beck, 2008).

Results

The descriptive and inferential statistics will be discussed. The results have been represented in tables as well.

Descriptive Statistics

All 10 women (N = 10) completed the Self-Efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001) each time it was administered. The mean, range, and standard deviation for each question during each administration of the Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig, et al.) can be found in Table
5.1. Raw scores ranged from 36 to 59. The consistency correlation for this study was .90.
Table 5.1

The mean, range and standard deviation for each question during each administration of the Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig, et al.)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre-intervention</th>
<th>Post-intervention</th>
<th>One Month Post-intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>M</em></td>
<td>6.90</td>
<td>7.70</td>
<td>7.60</td>
</tr>
<tr>
<td>Range</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>SD</td>
<td>2.183</td>
<td>1.767</td>
<td>1.713</td>
</tr>
<tr>
<td>Physical discomfort</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>M</em></td>
<td>7.60</td>
<td>8.60</td>
<td>7.80</td>
</tr>
<tr>
<td>Range</td>
<td>5</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>SD</td>
<td>2.119</td>
<td>1.174</td>
<td>1.229</td>
</tr>
<tr>
<td>Emotional distress</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>M</em></td>
<td>7.80</td>
<td>7.80</td>
<td>7.70</td>
</tr>
<tr>
<td>Range</td>
<td>8</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>SD</td>
<td>2.741</td>
<td>2.898</td>
<td>2.312</td>
</tr>
<tr>
<td>Other symptoms or health problems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>M</em></td>
<td>6.50</td>
<td>7.10</td>
<td>7.20</td>
</tr>
<tr>
<td>Range</td>
<td>7</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>SD</td>
<td>2.273</td>
<td>2.558</td>
<td>2.150</td>
</tr>
<tr>
<td>Management of health problems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>M</em></td>
<td>7.40</td>
<td>8.10</td>
<td>8.00</td>
</tr>
<tr>
<td>Range</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>SD</td>
<td>1.578</td>
<td>1.287</td>
<td>1.333</td>
</tr>
<tr>
<td>Affect of illness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>M</em></td>
<td>7.90</td>
<td>8.6</td>
<td>8.20</td>
</tr>
<tr>
<td>Range</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>SD</td>
<td>1.912</td>
<td>1.265</td>
<td>1.135</td>
</tr>
</tbody>
</table>

Inferential Statistics

The first paired *t* test examined the results of the first (pre-intervention) and second (post-intervention) administrations of the instrument. The results of the *t* test for the pre- and post intervention administration of the Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig, et al.) can be found on Table 5.2. The *t* test revealed that there were statistically significant differences between the pre- and post intervention on
four items that indicated increased self-efficacy. They include: managing physical discomfort, pre-intervention (7.60) to post intervention (8.60) $t (9) = -2.53 \ (p = .032)$; other symptoms or health problems, pre-intervention (6.50) to post intervention (7.10) $t (9) = -2.71 \ (p = .024)$; management of health problems, pre-intervention (7.40) to post intervention (8.10) $t (9) = -2.33 \ (p = .045)$; and affect of the illness, pre-intervention (7.90) to post intervention (8.60) $t (9) = -2.68 \ (p = .025)$. The two areas that did not see a statistically significant difference was fatigue, pre-intervention (6.90) and post intervention (7.70) $t (9) = -2.22 \ (p = .053)$; and emotional distress, pre-intervention (7.80) and post intervention (7.80) $t (9) = 0.00 \ (p = 1.000)$. With regards to the items that did not see increased self-efficacy, there was a trend towards increased self-efficacy with fatigue; however there was no change in the emotional distress score between the pre-intervention and post intervention.
Table 5.2

Pre- and Post Intervention Administration of the Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al.)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Paired differences</th>
<th>$T$</th>
<th>$df$</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue</td>
<td>-.800 (1.135)</td>
<td>-2.22</td>
<td>9</td>
<td>.053</td>
</tr>
<tr>
<td>Physical discomfort</td>
<td>-1.000 (1.247)</td>
<td>-2.53</td>
<td>9</td>
<td>.032*</td>
</tr>
<tr>
<td>Emotional distress</td>
<td>.000 (1.633)</td>
<td>.00</td>
<td>9</td>
<td>1.000</td>
</tr>
<tr>
<td>Other symptoms or health problems</td>
<td>-.600 (.699)</td>
<td>-2.71</td>
<td>9</td>
<td>.024*</td>
</tr>
<tr>
<td>Management of health problems</td>
<td>-.700 (.949)</td>
<td>-2.33</td>
<td>9</td>
<td>.045*</td>
</tr>
<tr>
<td>Affect of illness</td>
<td>-.700 (.823)</td>
<td>-2.68</td>
<td>9</td>
<td>.025*</td>
</tr>
</tbody>
</table>

*Statistical significance

The second paired $t$ test examined the results of the second (post intervention) and third (one month post-intervention) administrations of the instrument. The results of the $t$ test for the post intervention administration and one month post-intervention of the Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig, et al.) can be found on Table 5.3. The $t$ test revealed that there were statistically significant differences between the post intervention and one month post-intervention on two items, however these differences indicated decreased self-efficacy. The statistically significant items were: fatigue, post intervention (8.60) to one month post intervention (7.80) $t (9) = 6.00$ ($p = .000$); and affect of the illness, post intervention (8.60) to one month post intervention (8.20) $t (9) = 2.44$ ($p = .037$). None of the other areas had a statically significant difference. These items include: managing physical discomfort, post intervention (7.70)...
to one month post intervention (7.60) $t (9) = .36 (p = .726)$; emotional distress, post intervention (7.80) and one month post intervention (7.70) $t (9) = .36 (p = .726)$; other symptoms or health problems, post intervention (7.10) to one month post intervention (7.20) $t (9) = -.55 (p = .591)$; and management of health problems, post intervention (8.10) to one month post intervention (8.00) $t (9) = .55 (p = .591)$. 
Table 5.3

Post and One Month Post Intervention Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al.)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Paired differences</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue</td>
<td>-.100 (.876)</td>
<td>.361</td>
<td>9</td>
<td>.726</td>
</tr>
<tr>
<td>Physical discomfort</td>
<td>.800 (.422)</td>
<td>6.00</td>
<td>9</td>
<td>.000*</td>
</tr>
<tr>
<td>Emotional distress</td>
<td>.100 (0.876)</td>
<td>.36</td>
<td>9</td>
<td>.726</td>
</tr>
<tr>
<td>Other symptoms or health problems</td>
<td>-.100 (.568)</td>
<td>-.55</td>
<td>9</td>
<td>.591</td>
</tr>
<tr>
<td>Management of health problems</td>
<td>.100 (.568)</td>
<td>.55</td>
<td>9</td>
<td>.591</td>
</tr>
<tr>
<td>Affect of illness</td>
<td>.400 (.516)</td>
<td>2.44</td>
<td>9</td>
<td>.037*</td>
</tr>
</tbody>
</table>

*Statistical significance

Discussion

The Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001) was chosen to provide data regarding the efficacy of the intervention. In addition to this instrument, qualitative in-depth interviews were conducted where the women were able to discuss their beliefs regarding health and disease, adoption of health promoting behaviors, belief in their ability to manage their disease, and their self-awareness. This section will examine the findings from the first paired $t$ test, the second paired $t$ test, and finally there will be a summary during which the limitations of the use of this instrument and implications will be discussed.
Pre- and Post Intervention

The difference between the pre-intervention and post intervention scores were statistically significant for four items. These items include: managing physical discomfort, other symptoms or health problems, management of health problems, and affect of the illness. This data suggests that the women believed that between the time of their initial interview and the completion of the modules that they were more confident in their ability to manage the physical discomfort associated with coronary heart disease. The reasons for that increase include the modules or the women’s experiences during that time. The question regarding other symptoms or health problems has its root in the fact that the Stanford group that developed the scale conducts self-management programs and are of the opinion that teaching someone to self-manage one disease will affect their management of other diseases. Women tend to be older and have more comorbidities when diagnosed with coronary heart disease than men. Therefore, this is important information to consider when planning a self-management program for women with coronary heart disease. Management of health problems is an essential element of any self-management program. The women expressed that they were better able to manage their disease at the completion of the intervention. The women also indicated that they were more confident in not having the disease affect their lives. That indicates that the women are moving forward and incorporating the disease and the management of the disease into their lives.

There were no statistically significant changes in two items, fatigue and emotional distress, between the pre-and post intervention assessments. Fatigue is a factor when someone is diagnosed with heart disease and is often a presenting symptom (AHA,
The term for the fatigue experienced post operatively is “pump slump” because of the use of the heart-lung machine. Therefore it was not surprising that the women saw no change in their ability to tolerate the fatigue. One of the women expressed in a qualitative interviews that she wasn’t sure if her fatigue was because of her heart, her medications, her age, or a combination of all three. Those issues may be a factor for many of the women in the study.

There was no change in the women’s opinion of their ability to manage emotional distress between the pre-intervention and post intervention. This finding reflects some evidence that emotional distress persists for over a year for women who have been diagnosed with heart disease and that overall women experience more difficulty with the psychosocial aspects of their heart disease (Davidson et al., 2008; Espnes, & Byrne, 2008).

Post Intervention and One Month Post Intervention

There was a significant change in two of the items from post intervention to one month post intervention. However, this change indicated that the women were less confident regarding their ability to manage the physical discomfort and the affects of the disease. The reason for this may be that the women had completed a period when they felt the reality of the situation of living with heart disease had occurred.

The two items that did not show statistically significant increases from the pre- to post intervention were basically unchanged one month post intervention. There was no change in the emotional distress item across the three time periods, nor was there any significant change in the women’s ability to manage fatigue.
Two of the items had a statistically significant increase in the pre- and post-intervention $t$ test and this change persisted over the following month. They were: the ability to manage other symptoms or health problems and management of their health problems related to coronary heart disease. Both of these items are important factors in self-management.

**Summary**

Overall, the women that participated in this study, even at the outset, were relatively optimistic about their ability to manage their coronary heart disease. The lowest mean score was 6.5 for any of the items on the scale and that related to their ability to manage their other health issues or problems. That indicated that the women were relatively confident about their chances to manage their heart disease.

Although there was an improvement from the baseline scores in most of the items related to the women’s confidence in their ability to manage the disease, it cannot be assumed that this was due to the intervention. Since a control group was not used, competing hypothesis for this result may be that this change is the result of 1) time from diagnosis and this represents a natural pattern as the person adapts to the disease; and/or 2) the nurse contact and dialogue with the participants may have been responsible for this change. Additionally, given the small sample size, the responses of one or two women can affect the findings; therefore this information is best used as it has been in this study, with other data.

The pilot data obtained using the Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001), along with other data collected in the qualitative
interviews, supports the effectiveness of the intervention of self-management learning intervention for rural women with coronary heart disease.

**Conclusion**

The use of the qualitative in-depth interviews provided data regarding the women’s adoption of health promotional behaviors, self-awareness, and self-efficacy regarding their ability to manage their disease. The quantitative tool, Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001), provided additional data concerning the women’s efficacy in their ability to manage their disease. Together, they afforded and opportunity to evaluate the efficacy of the intervention for this population.
CHAPTER 6
DISCUSSION

The purpose of this chapter is to discuss the key findings, limitations, strengths, and implications of this research. Discussion of the research findings are organized according to the specific aims that were addressed by the research questions. The methods used to provide data have been identified. The theoretical framework for this study is Self- and Family Management (Grey et al., 2006) and findings from this study will be related to the framework within the discussion.

Specific Aim I

The first aim of the study was to refine an intervention for rural women with coronary heart disease (CHD) designed to promote self-management of the disease. This aim was addressed by the first research question, “Do older, rural women, who have been diagnosed with coronary heart disease, report that the educational intervention promotes self-management of coronary heart disease by providing information that the women find relevant and useful?” The focused qualitative interviews provided a critique of the self-management modules that resulted in a refinement of the intervention. The findings of the interviews for each of the modules will be discussed separately followed by a summary of the findings.

Module I: Heart Basics: A Description of How the Heart Works

The first module provided information about the heart, including its anatomy and physiology, circulation, coronary arteries, heart rhythm, heart’s function in maintaining homeostasis, heart related disorders, and how its functioning influences selected systems of the body.
In the revised self-management program, while much of the information contained in Module I has been retained, the content has been broken down into several sections. “Coronary Heart Disease (CHD)”, “How the Heart Works”, and “How Your Heart Influences Other Body Systems”, have become separate chapters. In addition, there was some reordering of the contents of Module 1. The content contained in the section on “Coronary Heart Disease” remained at the beginning of the program, because this content evoked such a positive response from the participants. The remaining content, “How Your Heart Works” and “How Your Heart Influences Other Body Systems”, was put later in the program. This decision was based on the women indicating that this information was not a priority for women initially diagnosed with coronary heart disease (CHD) and the complexity of the information may alienate some women if it was encountered early in the program. Restructuring the content in this manner will permit women to seek out this information as needed. Finally, there were areas that were added to the modules based on feedback from the women. A chapter on “Medications and Supplements” and another on “Body/Mind/Spirit” have been added. Overall, the contents of the first module was well received by the participants and provided a good basis for a self-management program for women with coronary heart disease (CHD).

Module II: Coronary Heart Disease (CHD) and Risk Factors.

Module II provided a description of the process of atherosclerosis (the major cause of CHD), signs and symptoms of angina and myocardial infarctions (MIs), and risk factors related to the development of coronary heart disease.
The participants responded positively to the concept of self-responsibility that underpins the discussion in this module and the self- and family management framework. The participants also found that the material covered in risk factors to be central for their management of coronary heart disease. Several women remarked that the information had never been presented to them this way. The women shared their experiences and beliefs about the content. This dialogue has been interpreted to mean that the material was found to be useful and relevant to the women and that the content captures the key issues these women were confronting.

The information contained in Module II was retained in the revised learning program. Minor revisions of the material were made and included the addition of pictures and illustrations to enhance content contained in the narrative. The contents of the module was divided among three chapters in the revised document; “Coronary Heart Disease,” “Symptoms,” and “Risk Factors”. These chapters were the second, third, and fourth in the revised self-learning program which demonstrates the importance of the content.

Module III: Nutrition and Physical Activity

The focus of Module III was nutrition and physical activity. The information about nutrition included: a definition of a healthy diet, caloric intake, fats, grains, vegetables, fruits, milk products, meat, fish, poultry, beans, and eggs, fiber, sodium, alcohol, coffee, specific nutrients, fluids, and diet strategies.

The women felt that diet was an essential component of self-management of coronary heart disease and valued the information provided in this section of the
module. In the revised document, there has been a reorganization of the material to make it easier to locate information.

Physical activity was the second topic explored in this module. The topics covered included: activity level and the types of exercise, aerobic exercise, stretching, and strength training. When discussing exercise, the women focused on aerobic exercises. While that is understandable, since aerobic exercise is touted as “helping the heart”, a balanced exercise program is most desirable and this information has been retained in the revised document.

Given the importance of the two topics covered in Module III, they have become individual chapters, entitled “Nutrition” and “Fitness” in the revised document. Since there is a great deal of research in the area of diet and exercise, the content has been updated and it reflects the state of the science. The material in this module was seen as valuable and relevant by women experiencing coronary heart disease (CHD).

Module IV: Psychosocial Considerations

Psychosocial considerations and their impact on the development of coronary heart disease (CHD) was the topic of Module IV. The content areas covered in this module included: Psychosocial factors and their influence in the development of coronary heart disease (CHD), stress, approaches to reduce stress (minimizing the amount of stress-inducing situations, increasing your resistance to stress, counter-conditioning to avoid physiological arousal; engaging in health pleasures), humor, support systems, and depression.

The title of the module, “Psychosocial Considerations”, with its clinical significance, did not have meaning for these women. In the revised document, the
chapters are presented in a language that is evocative of the content and concepts with which the women are familiar such as “Stress, Anxiety, and Depression”.

Every participant articulated the belief that addressing psychosocial needs was basic to self-management. The women valued holism and the connection between mind, body, and spirit therefore that was highlighted in the revised self-learning document. In response to the women’s feedback, this section was expanded to include four different chapters, reflecting on the importance the women placed on this content and their request for additional information. The chapters are: “Body, Mind, and Spirit”, “Stress, Anxiety, and Depression”, “Family, Friends, and Lovers”, and “Sleep, Rest, and Relaxation”. While this module provided a basis for a discussion of psychosocial factors, the women requested more information and broader coverage of these topics.
Table 6.1

Revision of Self-Management Program

<table>
<thead>
<tr>
<th>Original Modules</th>
<th>Revised Program</th>
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<tbody>
<tr>
<td>I. Heart Basics: A Description of How the Heart Works</td>
<td>Caring for yourself</td>
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<td></td>
<td>1. Coronary Heart Disease</td>
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<td>11. How the Heart Works</td>
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<td>14. Medications and Supplements*</td>
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<td></td>
<td>15. How Your Heart Influences Other Body Systems</td>
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<tr>
<td>II. Coronary Heart Disease (CHD) and Risk Factors</td>
<td>1. Coronary Heart Disease</td>
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<td></td>
<td>2. Symptoms</td>
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<td></td>
<td>3. Risk Factors*</td>
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<tr>
<td>III: Nutrition and Physical Activity</td>
<td>4. Nutrition*</td>
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<td></td>
<td>5. Fitness</td>
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<tr>
<td>IV: Psychosocial Considerations</td>
<td>6. Body, Mind, and Spirit*</td>
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<td>7. Stress, Anxiety, and Depression*</td>
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<td></td>
<td>8. Family, Friends, and Lovers*</td>
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<td></td>
<td>10. Sleep, Rest, and Relaxation*</td>
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<tr>
<td>Appendix</td>
<td>12. Tests for Coronary Heart Disease</td>
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<td></td>
<td>13. Treatments for Coronary Heart Disease</td>
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<td></td>
<td>16. Glossary</td>
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<tr>
<td>New Content</td>
<td>9. Hormones*</td>
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</table>

* Expanded content

Summary of Specific Aim I

The overall impression of the women was that the information presented in the modules was valuable and relevant. The women requested that some of the content be reorganized. The material was separated; the original four modules became 16 chapters, making content easier to locate. Additionally, the content that the women reported essential for the self management of coronary heart disease was placed in the earlier part of the document, while information that was considered to be more of a reference was placed towards the back of the program.
The women requested some addition information. They wanted visual representations of the material, so illustrations of the content were added whenever possible. In addition, they wanted the content presented in such a way that they could visualize the thoughts presented, such as a serving of meat should be the size of a deck of cards. Therefore, the content was described in that way whenever possible. One participant thought that women would relate to the stories of other women, so several of the women’s experiences regarding their symptoms and diagnosis were used in the revised learning program. Another idea suggested by a participant was to have inspirational quotes scattered throughout the document. Her suggestion of the quote, “This is the first day of the rest of your life” by Charles Dederich, has been placed in the introduction. Other quotes appear throughout the revised program.

As a result of the feedback from the women from both the focused qualitative interviews and in-depth interviews, the psychosocial content has been expanded in the revised document. Most of the women reported that they had experienced severe stress prior to their diagnosis and requested additional strategies for stress reduction, so a variety stress reduction techniques has been included in the revised document including complementary therapies. This data reflects findings from current literature, such as the inclusion of stress by the American Heart Association (AHA, 2010) as one of the possible contributors to the development of heart disease. Additionally, there appears to be some evidence that psychosocial issues affect women to a greater extent than men (Barth et al., 2009; Espnes, & Byrne, 2008; Koertge et al., 2007; Sjostrom-Strand, & Fridlund, 2007).
In addition to the topics raised in the modules, the women contributed to the development of the revised self-learning program by suggesting new topics to be explored. These include additions to the chapter that discusses the affect of heart on other systems of the body, such as stroke, digestive system, skin, and diabetes. Although medications had been discussed in the original modules, the women requested that more information be included since medications are an essential way that coronary heart disease is managed. Supplements, such as fish oil, are often part of a treatment regime; therefore supplements have been included in that chapter as well. Several of the women discussed their experience with menopause. One woman had been placed on hormone replacement therapy (HRT) and given the change in recommendations for hormone replacement; a discussion of menopause was added. All of these additions served to enhance the content of the self-management program.

The women ascribed to a holistic approach to health and since there was no real discussion of spirituality in the original document, spirituality has been included in the revised self-learning program. A more balanced and holistic approach to health and wellness has been integrated into the revised self-learning program.

Since there continues to be a great deal of research on coronary heart disease the self-learning program needs to reflect the most current and best practices. All of the most recent knowledge regarding coronary heart disease and risk factors has been included in the revised program. An example of new knowledge is that the American Heart Association (AHA, 2010) has added three factors as possibly playing a role in the development of coronary heart disease: stress, alcohol, and diet and
nutrition. Discussions of these factors have been added to the revised document and these additions have been supported by the commentary of the women.

This revised document underwent modifications based on the feedback of the women for what they wanted to know to care for themselves with coronary heart disease. Given this experience, it demonstrates how essential it is to have the consumers of the patient education literature to have an opportunity to review and comment on the material, so it is targeted to their learning and informational needs.

Specific Aim II

The second specific aim was “to provide pilot data evaluating the efficacy of the intervention.” This specific aim was addressed by three research questions. They were: “Do older, rural women, who have been diagnosed with coronary heart disease, report that the educational intervention:

- influences their adoption of health promoting behaviors;
- affects self-awareness of their unique physical and psychological responses to health and disease;
- affects self-efficacy related to their ability to manage cardiac disease?

This aim was addressed through the in-depth interviews and what the women revealed about themselves during the focused qualitative interviews. In addition, the final question was addressed by the quantitative self-efficacy instrument, Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001). The following includes a summary of the areas that were discussed in the interviews and the themes that emerged from these interviews.
Cardiac Disease

Most of the women had a variety of “atypical” symptoms that both the participants and their practitioners did not make the diagnosis immediately. Post diagnosis many of the women continued to experience symptoms and one woman suffered a myocardial infarction. Most of the women who participated had experienced a myocardial infarction and treatment included angioplasty and stents, as well as bypass surgery. In addition, many of the women had untoward reactions to medication that necessitated follow-up care.

Risk and Protective Factors

For some of the women, of the original risk factors identified by the American Heart Association (AHA, 2010), the only risk factor they experienced was elevated serum cholesterol. Others had many risk factors. However, no matter what the number of risk factors they had, most women attributed their heart disease to stress.

Psychosocial Characteristics

Stress and anxiety were common problems identified by the women. Most of the women reported having a good social network. For many of these women, their families were an important source of support, while for others their families were a source of stress. The women varied in their self-awareness, with many demonstrating self-awareness in one area, but not in another.

Environment

Although the rural environment that these women lived presented challenges, all of the women loved where they lived. Half of the women were natives, while the other half moved to the area some time in their adult lives. The women did not complain about
the lack of services at their local hospital or the barriers they faced regarding maintaining their health.

Health

All of the women said that viewed health holistically; body, mind, and spirit. They identified the responsibility for their health lay within themselves.

Self-management

The women were of the opinion that diet and exercise were the most important things they could do to maintain their health. Although all of the women thought that they ate a “heart healthy” diet, most of the women were not satisfied with their weight and tried a number of different diets. Most of the women acknowledged that they did not exercise as much as they should. Additionally, what exercise they did was focused on the aerobic exercise with a few engaging in resistance training. None of the women engaged in any true stretching routine.

Experience

Participating in the study was a positive experience for the women; they said that learned a lot from the experience. They took advantage of having the nurse researcher available to them and asked questions about their health and health promotion. Many acknowledged that they now had to re-evaluate their lives and make changes so that they could care for themselves. Additionally, several of the women were concerned that younger women must be given this “message” and learn to care for themselves.

Themes

The themes that emerged from the in-depth interviews and what the women revealed about themselves during the focused qualitative interviews included: It’s all
about me; Is it my heart? Too many balls in the air; Health promotion - one from column A…; and Facing mortality. The following is a discussion regarding those themes.

It’s All About Me

For the women in this study, their needs and health status had not been a priority. They had put the needs of others before their own. The women acknowledged that they needed to make changes in their priorities if they were going to effectively manage the disease. The first step in this process was for the women to acknowledge their role in their health. The women were ready to assume responsibility for their health; in addition they voiced the need to work collaboratively with their practitioners to achieve optimum health. Finally, the women’s role in the family underwent a transformation as a result of the diagnosis. This event, being diagnosed with heart disease, forced the women to realize that they needed to take themselves, their needs, and their health seriously and make their lives “all about me”.

Is It My Heart?

In this study, initial recognition of symptoms of heart disease proved to be difficult for most of the women. The women experienced the same confusion with recurrent symptoms. Recurrent symptoms made several of the women fearful and question whether they would be able to lead a normal life. Self-awareness, or recognition of symptoms, is necessary for effective self-management of the disease. Most of the women interviewed needed to develop that self-awareness.

Some of the women coped with this the uncertainly of the symptoms by enlisting family members as “gatekeepers” for their health. The “gatekeepers” were consulted when the women experienced symptoms, had questions, or sought care. Since
individuals perform self-management in the context of the family, inclusion of the family, especially “gatekeepers” should be included in any learning program (Grey et al., 2006).

Effective treatment of heart disease begins with the swift and efficient diagnosis of the disease. Therefore, women, their families, and practitioners must be educated in the range of symptoms that women may present with so that they will be treated quickly and efficiently and the women would no longer wonder if the symptoms they experience are related to heart disease. Additionally, strategies for developing self-awareness warrant exploration so that the women adequately assess the symptoms they experience and seek care when appropriate.

Too Many Balls in the Air

In this study, most of the women attributed the development of coronary heart disease to stress, or attempting to “juggle too many balls in the air”. The only women who did not identify stress as a primary factor for them believed that was an important factor in the development of the disease for many people. The women identified family situations as a source of stress; either being a caretaker or having a difficult relationship with someone. Women appear to be more vulnerable to psychosocial distress than men (Davidson et al., 2008).

All of the women ascribed to a holistic view of health but it appeared that they were incapable of affecting change with regards to their mental health and reducing their stress. The women in this study rejected conventional medical treatment in the form of therapy and medication, yet had not explored complementary treatments.

The data from this study supports the inclusion of stress as a possible factor in the development of heart disease by the American Heart Association (AHA, 2010) and
others (Sjostrom-Strand, & Fridlund, 2007). Therefore, treatment of stress should be an essential component of any cardiac rehabilitation program.

Health Promotion - One from Column A…

The women in this study selectively chose their health promotion strategies even if they knew what they “should” do. It would be beneficial to perform an objective assessment of the women’s health promotion strategies and make recommendations based upon that. Additionally, the women need to be educated about what was necessary for them to monitor, such as heart rate and blood pressure.

The women learned some health promotional strategies as a result of reading the modules. The women appreciated the opportunity to ask questions about their health and sought clarification for certain health promotional activities that they had heard or read about. However, they continued to pick and choose what health promotion strategies to employ.

Facing Mortality

For many of the women in the study, as a result of their diagnosis, mortality now exists in their consciousness. However, the women, with one exception, did not discuss issues related to morbidity. Therefore, it is important to provide education that explores the morbidity and mortality associated with cardiovascular disease so that they can face the possibilities of both in an informed manner.

Summary of Themes

The women acknowledged that they had to make changes in their lives based upon their diagnosis and take their health seriously. Furthermore, the women indicated that they were prepared to assume responsibility for their health (self-
efficacy). However, the “atypical” symptoms they experienced and continued to experience were difficult for both them and their practitioners to diagnosis. The development of increased self-awareness would aid in their ability to differentiate between symptoms. Most of the women believed that stress was their primary risk factor for the development of heart disease, although they reported having little knowledge of how to reduce the risk. With regards to health promotion, the women were selective about what health promotional activities to adopt and what things to monitor, rather than looking holistically and approaching health promotion in that manner. Finally, the diagnosis of heart disease had many women considering their mortality although they remained optimistic that they would be able to manage their disease.

Summary for Aim II

The second specific aim was “to provide pilot data evaluating the efficacy of the intervention.” That was addressed by three research questions: “Do older, rural women, who have been diagnosed with coronary heart disease (CHD) report that the educational intervention:

- influences their adoption of health promoting behaviors,
- affects self-awareness of their unique physical and psychological responses to health and disease,
- affects self-efficacy related to their ability to manage cardiac disease?”

Data to answer these questions was obtained through the in-depth interviews and what the women revealed about themselves during the focused qualitative interviews. The quantitative instrument, Self-efficacy for Managing Chronic Disease 6-
Item Scale (Lorig et al., 2001), provided additional information regarding the final question. In the following, each research question will be discussed separately.

Adoption of Health Promoting Behaviors

The modules provided structure for the women, having been diagnosed with coronary heart disease, to consider themselves, their beliefs, and their needs. They expressed that they were willing to take responsibility for their health and make modifications in their lifestyle. The modules gave the women an opportunity to examine and reflect on their risks and act upon their assessment of them. It presented the material in a holistic manner that was congruent with the women’s beliefs. The women commented that there was much more information in the self-management modules than what they received from their practitioner. At points throughout the review of the modules, the women would comment about a health promotion strategy and suggest that they may adopt it. The information presented in the modules makes the women more informed consumers and whether or not they chose to adopt the suggestions or not, they were aware of their choices.

Self-awareness

The women appreciated a discussion of the manifestations of heart disease and the opportunity to discuss their experiences. They found it comforting to know that other women with heart disease experienced the same amount of confusion regarding the symptoms.

Little is known about how people become more self-aware. One proposition is that a feedback loop occurs through which symptoms are identified and then their feelings are supported by data. Therefore, it can be hoped that as the women gain more
experience with their coronary heart disease, they will become more self-aware. The women who had been diagnosed with diabetes may be able to translate the skills of self-awareness they developed to their coronary heart disease. Additionally, if the woman develops a collaborative relationship with her practitioner, that also may assist in the process of achieving self-awareness. These modules demonstrated to the women that they need to listen to their bodily cues and to act upon them. They were put in the place as the “expert”.

Self-efficacy

The women responded to the positive tone of the modules, the title, “Caring for Yourself”, and the content contained in the modules. In the interviews, they expressed confidence in their ability to manage the disease and this reflects what the women reported on the self-efficacy instrument. In the self-efficacy instrument, two of the items, the women’s confidence in managing other symptoms or health problems and the management of problems related to heart disease, saw a statistically ($p > .05$) significant increase post intervention, and that increase persisted at one month. Two other items, confidence in managing the physical discomfort and affect of illness, showed a statistically ($p > .05$) significant increase when comparing pre-intervention with post intervention; however, they showed a statistically ($p > .05$) significant decrease from post intervention to one month post intervention. The mean for both items did not reach the pre-intervention baseline. The women’s confidence in their ability to manage the fatigue and emotional distress of the disease did not show any statically ($p > .05$) significant change over the three testing periods. However, there was some improvement in the mean for the fatigue from baseline, while the mean for the item on emotional distress was
flat over the series of administration. This indicates that the instrument detected an overall increase in self-efficacy by the women and that increase persisted over one month.

Summary and Conclusion

The purpose of this section is to summarize the study, including the findings, discuss the study’s limitations and strengths, implications and provide recommendations for future investigation.

Summary

Since women have been found to be different from men in the development, diagnosis, treatment, and outcomes for coronary heart disease (CHD), it is important to design educational material that meets women’s needs. The specific aims of this study were to:

I) refine an intervention for rural women with coronary heart disease (CHD) designed to promote self-management of the disease and

II) to provide pilot data evaluating the efficacy of the intervention.

The questions posed by this study was: Do older, rural women, who have been diagnosed with coronary heart disease (CHD), report that the educational intervention:

1) promotes self-management of coronary heart disease by providing information that the women find relevant and useful (Aim I);

2) influences their adoption of health promoting behaviors (Aim II);

3) affects self-awareness of their unique physical and psychological responses to health and disease (Aim II);
affects self-efficacy related to their ability to manage cardiac disease (Aim II).

The theoretical framework for this study was the self-management framework (Grey et al., 2006). The self-management framework also provided some structure for the development of the modules. Furthermore, one of the psychosocial characteristics, self-efficacy, was used to assess the effectiveness of the intervention.

The study design was mixed methods. Focused qualitative interviews were used to uncover the women’s beliefs regarding the usefulness and relevance of the modules and provide a basis for their revision. The efficacy of the intervention was determined through in-depth qualitative interviews, what the women revealed about themselves during the focused qualitative interviews, and quantitative pilot data through the Self-Efficacy for Chronic Disease 6-Item Scale (Lorig et al., 2001).

The purposive sample for this study consisted of ten women who had been diagnosed with coronary heart disease within the last year. The women ranged in age from 60 to 93. All of these women lived in rural Southern Vermont or a neighboring New York county.

The women provided valuable critique and suggestions for improvement of the self-management learning modules. While the modules were designed to address the holistic needs of the women, the feedback from the women requested that the revised program focus more on their psychosocial needs, especially stress, and spiritual needs. The self-learning program was revised based on the suggestions of the women.

The in-depth interviews and what the women revealed about themselves provided information about the efficacy of the intervention. The themes that emerged from the
interviews include: It’s all about me; Is it my heart? Too many balls in the air; Health promotion - one from column A…; and Facing mortality.

The women felt a responsibility for and ownership of their health. They expressed an appreciation for the quantity and quality of material in the modules, said that the material had never been presented to them in that way, and that they were interested in adopting some of the suggestions for health promotion proposed in the modules.

When the women saw the number and array of symptoms of heart disease, they shared their own experience and were heartened by the subtle manifestations of the disease and that recognition of symptoms and swift treatment were essential. The need to “listen” to their body was a new experience for many of the women, many of whom had never been diagnosed with a life-threatening illness prior to their diagnosis of coronary heart disease. The women were eager to learn as much as they could about managing their heart disease.

A belief that the women were able to care for their heart disease as was evidenced by the attitudes expressed in the interviews and the high scores on the self-efficacy scale. Two of the items, the women’s confidence in managing other symptoms or health problems and the management of problems related to heart disease saw a statistically ($p > .05$) significant increase post intervention, and that increase persisted at one month. Two other items, confidence in managing the physical discomfort and affect of illness, showed a statistically ($p > .05$) significant increase when comparing pre-intervention with post intervention; however, they showed a statistically ($p > .05$) significant decrease from post intervention to one month post intervention. The mean for both items did not reach the
pre-intervention baseline. The women’s confidence in their ability to manage the fatigue and emotional distress of the disease did not show any statically ($p > .05$) significant change over the three testing periods. However, there was some improvement in the mean for the fatigue from baseline while the mean for the item on emotional distress was flat over the series of administration.

Limitations of the Study

This study was designed to test the usefulness and efficacy of modules designed for rural women diagnosed with coronary heart disease (CHD). The modules were designed to be used by the participants independently and since the content was read aloud to the participants, it was not the solitary endeavor as designed; therefore any results must be examined in light of that factor.

Since this study was conducted without a control group, there may be competing hypotheses for the results.

The self-selection of these women was another limitation. These women were well educated, well read, and interested in their health and may not be typical of this population.

The participants in the study were from a very small geographic area, rural Vermont and New York, and these results may not be generalized to rural women from other areas.

Strengths of the Study

A strength of this study was that the nurse researcher spent a great deal of time with each woman and gained their trust. As a consequence of this prolonged exposure,
the women revealed a great deal about themselves and their experience with heart
disease.

This study took place over time with women who had been recently diagnosed
with coronary heart disease therefore this study follows the women as they
make adjustments to the disease.

Mixed methods permit the phenomena of interest to be viewed from more than
one perspective. Using two types of qualitative interviews and the quantitative
instrument provided additional insight into the usefulness, relevance, and efficacy of
the intervention.

**Intervention vs. Usual Treatment**

This study supports findings in the literature that traditional cardiac rehabilitation
(CR) programs do not meet the needs of many women. The women appreciated the
holistic approach that was used in the presentation of the modules. Traditional cardiac
rehabilitation programs use a reductionist approach with a focus on aerobic exercise; yet
several researchers have demonstrated that exercising in public is a primary barrier to
attendance at cardiac rehabilitation programs for many women (Paquet, Boluc,
Xhignesse, & Vanasse, 2005).

As the women in this study revealed, stress is a factor in the development of
coronary heart disease. In traditional cardiac rehabilitation programs only a small
component of the program consists of education and what there is focuses on
nutrition. Little, if any, attention is paid to the emotional component of cardiac disease
which these women identified as the primary cause of their heart disease.
It is important to include family members in the educational process. Some of the women used family members as “gatekeepers”, people with whom they consulted when they experienced symptoms or had questions. Traditional programs are geared only to the person who has been diagnosed with heart disease ignoring the influence of the family in making lifestyle changes or managing their disease.

Access to a program, including transportation, is another barrier for attendance at traditional cardiac rehabilitation programs and this self-management program overcomes that obstacle since the women can access the program at their own convenience. Also, the cost of a traditional cardiac rehabilitation program may be a barrier for some women and the self-management program may provide a viable and cost-effective alternative.

Finally, one of the weaknesses of traditional cardiac rehabilitation programs is that once the funded program is completed, there is little opportunity to perpetuate the behaviors that have been adopted during the program. In a program such as this, where the women adopt health behaviors in their home environment, the behavioral changes may be more sustainable.

Research Methods to Develop and Test Interventions

Two types of qualitative interviews were used in this study, as well as a quantitative instrument to obtain data about the intervention. First, each method will be discussed separately and then viewed in their totality.

Focused Qualitative Interviews

The focused qualitative interviews were an effective way of generating the necessary information regarding the intervention. This method allowed the women to hear the content in addition to reading it. This approach was conductive to the women’s
critiquing the content and provided an opportunity to ask questions. The women were treated as experts and their opinions were valued and they were not made to feel defensive about what they understood. This technique yielded valuable insight into the information the women needed and appreciated. In addition, during the focused qualitative interviews the women revealed a great deal about themselves and this contributed to the data acquired during the in-depth interviews and provided insight into the woman’s experience with heart disease.

**In-depth Interviews**

The in-depth interviews permitted the nurse researcher to establish a relationship at the beginning of the process and provided closure at the end. The women were very candid about their experiences and their fears and hopes. These interviews, which occurred over a period of time, provided information about how women adjust to the diagnosis of coronary heart disease. Here again, the women’s opinions were valued and this yielded rich data about these women, their experiences, and the challenges they face.

**Quantitative Instrument**

The quantitative instrument, the Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001), augmented data obtained during the qualitative interviews. The initial administration of the instrument demonstrated the women were relatively optimistic about their ability to manage the disease. The administration of the instrument post intervention saw a statically significant increase in four of the six items and a positive trend in one more towards increased self-efficacy. That increase persisted for three of the five items one month post
intervention. The one item that was flat over the course of the study was emotional distress caused by the illness.

**Mixed Methods**

The use of mixed methods in this study permitted the viewing of phenomena from several perspectives. The two types of qualitative interviews, focused and in-depth, were synergistic. They provided an opportunity for the women to feel comfortable and develop confidence in their own voice. The quantitative instrument provided additional information regarding the efficacy of the intervention. One example of how these methods complemented each other was one woman selected fives (out of a possible 10) for all her answers pre-intervention. During the course of the interviews she revealed that her diagnosis of heart disease caused her severe stress. When she completed the instrument the second time her answers were more variable and she assessed her emotional distress much lower than pre-intervention. That lower score on emotional distress persisted in the final administration of the instrument. This change can be interpreted as the woman developed a trusting relationship with the researcher and could be more honest in her appraisal of her efficacy coping with emotional distress caused by her cardiac disease.

Another example of how the qualitative interviews complemented the qualitative instrument can be found regarding the emotional distress item. The women’s score on the emotional distress item echoed the findings of the qualitative interviews; they expressed how important psychosocial issues were to their health and many of the women reported that they were distressed by recurrent symptoms.
While the results of the quantitative instrument, the Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001), must be taken in light of the sample size, it does provide an opportunity to review the efficacy beliefs of the women and augments what has been uncovered during the interviews. Together, the qualitative interviews and quantitative instrument provided an accurate appraisal of the value, relevancy, and efficacy of the self-learning modules.

Implications

The clinical, teaching, and research implications for rural women with coronary heart disease presented by this study will be explored in the following section.

Clinical Implications

Knowledge that is being generated regarding women and heart disease has been substantiated by the experiences of the participants in this study. For example, several of the women had been screened annually for cholesterol, and it was only when they were diagnosed did the women have a lipid profile that indicated problems with HDL, LDL, and triglycerides making them at risk for coronary heart disease. Current findings support conducting a full lipid profile in post menopausal women (Ulmer et al., 2004). Timely assessment and intervention for elevated cholesterol has been demonstrated to yield the optimum outcomes.

The women in this study support findings that many women do not suffer the classic crushing chest pain associated with cardiac disease. Their symptoms tend to be more “atypical” in nature (McSweeney et al., 2010; Pearson, 2010; Arsianian-Engoren, 2007). Therefore the public, as well as practitioners, must be educated on the variety of symptoms that are indicative of these “atypical” symptoms.
Another clinical implication that this study revealed is the importance of addressing the psychosocial needs of women, in particular stress. At this time, research is being conducted on the affect of psychosocial factors, particularly stress, on the development of heart disease (Claesson, et al., 2006). This study supports findings that women believe that stress is a significant factor in the development of their heart disease. In light of the findings, as well as support in some current studies, it would be important to screen women for stress. Furthermore, cardiac rehabilitation programs need to address health holistically, especially for female patients and include stress management and relaxation strategies in the program. Current programs place an emphasis on aerobic exercises, while ignoring exercises that promote relaxation.

Social support has been shown to be an important factor for people with cardiac disease. The women benefited from having a nurse researcher speak with them. It would be valuable to incorporate social connections into cardiac rehabilitation programs (Molloy, Perkins-Porras, Strike, & Steptoe, 2008). However, this presents a challenge for rural women. While all of the women in this study drove a car, for some older women, transportation is a barrier. A technological solution, the use of the internet for online conferencing and social networking, was not an option because many of the women did not live in an area that had high speed internet. Therefore, promoting social connections for rural women with coronary heart disease remains a challenge.

**Implications for Teaching**

This study demonstrates the importance of consulting with the participants in the development of patient educational materials (Scheckel, & Hedrickson, 2009). While the original modules met the needs of the women, their suggestions enhanced the material.
For example, the participants in this study were eager to explore the body, mind, and spiritual connections to health. Furthermore, they were articulate about what they wanted and needed to know. This experience demonstrates the value of soliciting the opinion of the consumers of patient educational material during its development.

Several of the women were “active” readers and in addition to the exercises in the modules, wrote alongside of the margins of the notebook. This active learning should be promoted in self-management programs.

Several issues related to teaching rural women with coronary heart disease emerged from this study. The women reported that print media was their most reliable source of health related information. The women accessed books, magazines, and newsletters. Technology presented a challenge for these women. Although almost all of the women owned computers, many of them did not have high speed connections and did not use the computer as a resource for health information. In addition, several of the women said that their computer was “older” and may not have all the most current functions. Other technologies posed barriers as well. Several women confided that they did not know how to use their DVD players. Therefore, many types of technology present a barrier for these rural women. While in the past many people owned inexpensive cassette tape players, now the technical options are numerous. From what the women shared, at this time, print information appears to be the most effective teaching medium for rural women with heart disease. Therefore, this paper text-based intervention is an effective option for these women.
Implications for Research

There were several areas that would merit further exploration through further investigation. It would be helpful to conduct a study that assessed the efficacy of the intervention on a larger group of women to gauge whether the contact with the researcher influenced the outcome. Also, it would be beneficial to use a control group to determine whether the results were based upon the intervention rather than a normal process of acclimating to the disease.

This study provided additional information regarding the self-management framework. The risk and protective factors of health status, individual factors, and social context had a bearing on the outcomes related to health status, individual outcomes, and environmental context. The importance of family in the health of a person was evident and more research is needed in ways that utilize family effectively to promote the most desirable outcomes for individuals with heart disease. Utilization of the self-and family management framework in this study demonstrates the effectiveness of the framework for research and development of interventions (Grey et al, 2006). However, components of self-management for coronary heart disease have not been fully articulated. It would be helpful for future researchers to have some consensus about what constitutes self-management for coronary heart disease (DeWalt et al., 2009).

Research on self-awareness and development of self-awareness is another area for future investigation. Promotion of self-awareness must be promoted in this population. It is important for women to develop self-awareness to manage the disease effectively. One component of that is learning to listen to body cues (Fleury, & Sedikides, 2007; Riegel, Dickson, Goldberg, & Deatrick, 2007). The initial steps to
developing effective self-awareness involves providing information and having
conformation regarding their health promotional strategies. This self-management
program provided the information. However, there was no confirmation of that the
health promotional strategies that the women employed were effective. Therefore,
dietary, fitness, and stress reducing activities of the women should be evaluated. Another
component of self-awareness involves self-monitoring. While many of the women in this
study were able to discuss their cholesterol level and blood pressure, few were able to
discuss their resting heart rate and their target heart range for aerobic exercise. Since
many of the women were given medication that affects heart rate and response to exercise
this would be important safety information for any person diagnosed with coronary heart
disease and should be part of any learning program.

Conclusion

This study sought to gauge the usefulness and relevance of a self-learning
intervention designed to promote self-management of rural women with coronary heart
disease and to obtain data regarding the efficacy of the intervention. Ten women shared
their experiences of heart disease and provided a critique of the self-learning modules.

The first specific aim of this study was to refine an intervention for rural women
with coronary heart disease (CHD) designed to promote self-management of the
disease. That was accomplished through the qualitative focused interviews. The women
who participated in this study offered valuable insight about what they wanted to know
and what they felt other women would need. Although the original modules provided a
basis, the women requested additional psychosocial content and more emphasis on a
holistic framework. This study demonstrates the importance of including the consumers of patient education in the development of the materials.

The second aim was to provide pilot data evaluating the efficacy of the intervention. This was achieved through the in-depth qualitative interviews, what the women revealed about themselves during the focused qualitative interviews, and the self-efficacy instrument, Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al. 2001). The women acknowledged that they needed to make lifestyle changes based upon their diagnosis and indicated that they were prepared to assume responsibility for their health (self-efficacy). They felt the need to make their health a priority. The challenges the women faced were with regard to self awareness and self monitoring and the adoption of holistic health promotion activities. Most of the women needed to develop increased self-awareness to better manage their disease. Many continued to experience symptoms and these symptoms may or may not have been associated with their heart disease. One way to develop self awareness includes self monitoring of physiological processes such as blood pressure and pulse and reflecting about the findings. The women need to adopt a more holistic approach to health promotion and this includes a diet plan that has been analyzed, a balanced fitness regime that includes strengthening and stretching as well as aerobic activities. Stress reduction activities, since the women identified stress as a factor in the development of their heart disease, is another important aspect of health promotion. Congruence between the data from the interviews and pilot data from the quantitative instrument, Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al. 2001) indicates that the women were confident in their ability to manage their heart disease and the intervention enhanced their feelings
of efficacy and that the self-learning modules met the needs of rural women with coronary heart disease. In addition, congruence between the interviews and the instrument indicated that heart disease evokes a strong emotional response and this must be addressed.

Women are different than men in the development, expression, and treatment outcomes for coronary heart disease (CHD). Therefore, women must have educational programs that address those differences and meet their requirements. This study evokes both the historical tradition of nursing and current research priorities, to meet the needs of a population that has been underserved and experiences high levels of morbidity and mortality, older rural women. While the study demonstrated that a paper-based self-learning program with a holistic focus may be a viable alternative or supplement to traditional cardiac rehabilitation program, it also explored the personal toll that coronary heart disease (CHD) takes on the women. Using the self-and family management framework, this study provided a method by which women can learn to care for themselves.
APPENDIX A

REVISED SELF-MANAGEMENT PROGRAM; CARING FOR YOURSELF: A GUIDE FOR WOMEN DIAGNOSED WITH CORONARY HEART DISEASE

“This is the first day of the rest of your life.”

Charles Dederich

This guide has been designed to help you care for yourself after you have been diagnosed of coronary heart disease (CHD). It has been developed to answer your questions regarding CHD, what changes you can make in your lifestyle that will result in enhanced health and well-being, and what questions to ask you healthcare practitioner so that you may best care for yourself. Strategies that can stop or reverse the progression of the disease are explored. Information will be presented that discusses how heart disease develops and its symptoms, what factors put you a risk for CHD and how to best manage them, the functioning of the heart, tests that are used to provide information about the disease, and what treatments are used to treat CHD. In addition, there are discussions about the body, mind, and spirit, stress, relationships with others, and female hormones. While this guide provides information regarding CHD, more importantly, it will also assist you in thinking about CHD as it relates to you. Through this process you will become better informed about CHD, make healthy lifestyle changes, and be able to take a more active role in your care, all of which involves caring for yourself.

One of the most important things you can do to maintain or enhance your health is to understand how your body responds in health and illness. While the information presented in this guide is appropriate for the general population of women, and is based on the latest scientific knowledge, you will need to consider how the specific details presented relates to you.

There are two parts of each section of this guide. One part will be an educational component. The educational components contain information about the specific topic. In addition, each section contains an exercise. These exercises ask you to consider the information presented in the section. It allows you the opportunity to jot down thoughts related to what you are learning about your physical and emotional self. Writing down your thoughts may help you to see patterns in how you respond to illness and prompt questions that are important for you to know to best manage your health and care for yourself.

To use this guide, you may want to start at the beginning and work your way through, or you may just go to the sections that are of interest to you. The sections are:

- Coronary Heart Disease
- Symptoms
• Risk factors
• Nutrition
• Fitness
• Body/Mind /Spirit
• Stress, Anxiety, and Depression
• Family, Friends, and Lovers
• Hormones
• Sleep, Rest, and Relaxation
• How the Heart Works
• Tests for Coronary Heart Disease
• Treatments for Coronary Heart Disease
• Medications and Supplements
• How Your Heart Influences Other Body Systems
• Glossary
Coronary Heart Disease

“Don’t compromise yourself. You’re all you’ve got.”
— Janis Joplin

As a woman, you may have been surprised to have been diagnosed with coronary heart disease (CHD). While though it is true that women develop the disease later than men, CHD is actually as common in women as it is in men. In this portion of the guide information regarding the development of CHD will be discussed.

The Heart and Circulation

The heart is a pump. It is located slightly left of the center of your chest and is normally the size of your fist. The heart is at the center of the cardiovascular system. Oxygen-rich blood is pumped from the heart into a large artery called the aorta. The aorta brings blood to all of the major organs of the body through arteries while veins return blood to the heart. At some places the arteries are close to the surface and you can feel them with your fingers. Some common places to take your pulse include your wrist, temple, and neck.

(Insert picture of the body with the heart and pulse points)

Coronary Arteries

The heart also needs its own blood supply to function properly. The coronary arteries supply blood to the heart and consist of three main arteries; they are the right, left anterior descending, and left circumflex arteries. For most people, the right coronary artery supplies blood for the electrical conduction system of the heart while the left coronary arteries supply blood to the left part of the heart which pumps blood throughout the body.

(Insert picture of the heart with coronary arteries here)

Atherosclerosis

Atherosclerosis is the major cause of coronary heart disease (CHD). It occurs when plaque, composed of cholesterol and lipids (a type of fat), forms and narrows the artery. There are a number of factors that promote the development of plaque on arterial walls. One factor is an injury to the wall of the artery. The lining of the wall of the artery can be injured by a mechanical force such as hypertension (HTN)/high blood pressure or chemical irritants such as inflammation. Once this injury occurs, the narrowing of the arteries continues over time with cholesterol and lipids in the blood contributing the enlargement of plaque. This plaque gets harder, or calcifies over time. The process of atherosclerosis takes many years to develop.

The atherosclerotic process occurs throughout the body, not in just the arteries of the heart. However, often it is first detected it in the heart because the size of the arteries is
smaller than the rest of the body and there are more twists and turns in the coronary arteries and plaque forms at these spots. Other places that plaque often develops is in the arteries of the neck that supplies blood to the brain (carotid arteries) and the arteries that supply the legs and feet (femoral arteries).

(Insert picture of arteries here)

Exercise: Do you know what of your coronary arteries were affected by your heart disease? You may want to bring this picture to your physician and have him/her identify where your blockages occurred.
Symptoms

“It is health that is real wealth and not pieces of gold and silver.”

—Mahatma Gandhi

Women often have different symptoms of the coronary heart disease (CHD) than men. The classic “crushing chest pain” that often signals heart disease in men is not the way many women experience the disease. Women may have less obvious signs of heart disease, such as:

- Fatigue
- Dizziness
- Shortness of breath
- Back pain
- Jaw pain and/or tooth aches
- Arm pain
- Nausea
- Heartburn
- Vertigo

Since these signs are subtle and are not specific for heart disease, the diagnosis of heart disease may be more difficult to pinpoint in women than in men. By learning your particular signs and symptoms of heart disease, you can better care for yourself. Consider the symptoms you experienced before you were diagnosed with heart disease.

Angina Pectoris

The literal translation of angina pectoris is pain in the chest. Some people develop angina, a pain that lasts a short period of time. As we discussed previously, there are any number of symptom besides chest pain that could be angina. The pain is the result of the heart muscle not getting enough blood and oxygen from the coronary arteries. This may be the result of artherosclerosis or plaque in the artery. Have you ever had a charley horse or cramp in your leg? You can think of angina as a charley horse in your heart! When the blood supply to the muscle increases, as a result of someone resting (which reduces the workload on the heart) or taking a medication that will decrease the workload of the heart
(such as nitroglycerine), the pain will go away. Since this lack of blood to the heart muscle is temporary, lasting no longer than 20 minutes, no permanent damage occurs.

**Stable and Unstable Angina** - When angina is termed as “stable” this means that it occurs only occasionally, with the same pattern of starting (onset), time it lasts (duration), and intensity of symptoms. With stable angina, when a person engages in certain activities he/she will experience their symptoms of angina. Medications and/or stopping the activity can reduce or eliminate this symptom. However, there is cause for concern when there is a change in the onset, duration, or intensity of the pain. Now the angina is termed unstable, meaning that it is not predictable. This can indicate disease progression and would be important to seek medical help if a person should experience any change in their usual pattern of angina.

Angina can be useful when it enables people to seek treatment for coronary heart disease and monitor the progression of the disease. If you experience angina and it does not go away with nitroglycerine (3 doses over 15 minutes) or rest you should immediately seek medical care.

Many individuals especially women, people with diabetes, and the elderly may not experience angina. Their first indication of coronary heart disease is when they suffer a myocardial infarction (MI)/heart attack. In addition, some people continue to experience angina after their MI. Make sure that your practitioner is aware of any angina you experience or if there is an increase or any change in your pattern of angina.

Here is Nancy’s story: “But you see my symptoms were so different from what you would think was a heart disease - I didn’t know. But I knew something was not right. I learned to listen. I know my own body, everybody’s body is different. But I knew something wasn’t right. For instance I had pains in my back. And I thought, “I’m just doing too much. ” If you have a pain in your chest you say, “Oh maybe it’s my heart.” Nancy continued to discuss her symptoms, “I had a few other little things that, um, I thought were also attributed to other things. I had them look at my teeth. No, first I went because I had this pain, like in my ear, and it was going down and I think that there is something wrong with my ear. So my ear doctor said, “No the ear is fine. But I’m going to send you to the dentist because it could be something in your jaw” So I went to the dentist and the dentist said, “Well your jaw is really not that bad. It’s a little off center, but it’s really nothing.” And that is also, now that I learned after, is one of the symptoms. That wasn’t too clear, so it’s amazing. And I didn’t know. I had so many of symptoms. And I did not, I did not know. I did not have chest pain; I had back pain and jaw pain.”

**Myocardial infarction (MI)/Heart Attack**

When you have a myocardial infarction (MI) or heart attack, the blood supply in a coronary artery has stopped for a period of time. If the heart muscle does not receive blood for about six hours, the part of the muscle that is supplied by the artery dies. The classic signs of an MI include severe chest pain which is not relieved by rest, position
change, or the use of medication. However, many people, especially women, diabetics, or elderly people do not have these classic signs when they experience their MI or heart attack.

If you have had an MI, think about the symptoms that preceded your attack. **If you experience those symptoms again, seek immediate medical care.** It is important to seek immediate care if you experience the symptoms that occurred when you had your MI/heart attack because it may be life threatening and so that time sensitive treatment can be used to restore blood flow to the damaged heart muscle.

When the heart muscle dies as the result of an MI/heart attack it is no longer able to expand and contract as effectively as it had in the area that has been damaged. This decreases the heart’s ability to pump. Depending on how much muscle is involved, you may or may not be aware of this decrease in function. The effect of the MI/heart attack also depends on the location of the muscle which has been damaged. For example, an MI/heart attack which affects the left ventricle can be serious because of the importance of this part of the heart’s pumping ability, while one occurring in another part of the heart may not be as serious.

Here is Laura’s story of her heart attack: “I put a glass of water on the table and I had an attack of some kind, I didn’t know, I thought I was dying. The only way I can say it, it was similar to fainting everybody has experienced that. Not quite, but related to that. Everything stopped, and I thought, “this is it!” I remember I was not scared. I thought “this is it, let it be.” According to me it lasted a few seconds, but my doctor said, “That is not possible, it had to be longer.” I probably lost track of time. And then I felt nausea. I thought it was because I ate lox, some bad fish. I thought maybe if I get rid of it I’ll feel better. So I put my finger down my throat and got rid of it. And I felt better. And then I remember that I felt very, very weak but I did everything I had to do, I traveled, I visited family. I don’t know, I had heart failure for three weeks. I kept feeling terrible and I thought it was from fish poisoning. That’s all I thought. And then, it got worse and worse, I couldn’t breathe, I sat up at night. I thought maybe allergies, because all of a sudden it became very warm outside. I started coughing like mad. I thought I had bronchitis. I diagnosed everything. So then I thought I should see Dr. Paige and she would give me an antibiotic. So I got an appointment and I drove over and she took one look at me and said, “How long have you had this because I can’t find anything on your lungs?” So I said, “Three weeks”. And I described what happened. And she said, “You’ve had a heart attack.” So I thought, “Stupid young doctor, you know.” I’ve lived long enough to know when I have bronchitis, you know. So I was not very nice to her. She was wonderful, she was just wonderful and she said, “Look, I’ll give you the antibiotic, it won’t do a thing, but you do me a favor and do a cardiogram?” I said, “OK.” And 10 minutes later I was in the hospital.

**Exercise:** Think about when you were diagnosed with coronary heart disease (CHD). What symptoms did you experience at the time? How were you feeling prior to your diagnosis? Were there any other symptoms that could have been caused by heart disease such as reflux?
Risk Factors

“One’s destination is never a place, but a new way of seeing things.”

—Henry Miller

Since you received a diagnosis of coronary heart disease (CHD), you may have had any one of a variety of emotions. While this diagnosis may affect your life in a number of ways, one of the most important things to consider is that risk factors have been identified that if modified or changed may affect the course of the disease. In this section you are going to explore those risks and that will assist you in identifying, along with your practitioner, your risk factors and steps you can take to modify or change those risks.

Certain things, called risk factors, increase the likelihood of someone developing CHD. In addition, minimizing or eliminating certain risks can reduce the progression of the disease in someone who has been diagnosed with heart disease. The risks which have been identified by the American Heart Association (2010) are:

- High serum cholesterol and other lipids
- High blood pressure
- Cigarette smoking
- Diabetes mellitus
- Being overweight or obese
- Physical inactivity
- Age
- Gender
- Race

Other factors that contribute to heart disease risk:

- Stress
- Alcohol
Diet and Nutrition

Metabolic Syndrome

While some of these things you cannot change, such as age and gender, there are other risks which you can influence. Those things you can change, your modifiable risks are our focus.

Risk factors have been identified through research studies. What these studies were able to show was not necessarily the “cause” of heart disease, but what things have been associated with an increased likelihood of developing the disease. This is a very subtle difference. For instance, few of us would deny the relationship between cigarette smoking and lung cancer, but we are unable to “prove” that cigarette smoking causes lung cancer. The same is true with heart disease. Scientists are continuing to conduct studies which will further increase our knowledge of risk factors or what “causes” coronary heart disease as well as what reduces “risk”.

What is important is that you examine yourself, identify factors that may influence your risk for heart disease, and make a choice to change or modify those risks. To begin, you should review the risk factors and determine what puts you at risk for heart disease. Share your list with your practitioner. This information will enable you to develop an action plan to reduce your risks. While some of these things can be done by you, others require assistance from your practitioner. For instance, if you find that you have high serum cholesterol, the first step would involve a change in your diet. However, that may not be enough. In addition to diet, you need medications to reduce your risk. In any case, it will be important to share your plan with your practitioner so that he/she will be able to support you in reducing your risks.

Treatments such as cardiac bypass surgery, angioplasty, or stents do not cure the disease. However, they may help reduce or eliminate some of the side effects you may experience as a result of the disease. The progression of the disease occurs even with these interventions. Therefore, you have a vital role in modifying or changing the course of the disease.
WHAT ARE YOUR RISKS?

“If you have made mistakes, even serious ones, there is always another chance for you. What we call failure is not the falling down but the staying down.”

— Mary Pickford

EXERCISE:

RISK FACTORS

Look over this list and identify risks your risks for coronary heart disease (CHD):

___ High Serum Cholesterol Level
___ Overweight and Obesity
___ Physical Inactivity
___ Diabetes Mellitus
___ High Blood Pressure
___ Cigarette Smoking

Other factors:
___ Stress
___ Alcohol use
___ Diet and Nutrition
___ Metabolic Syndrome
High Serum Cholesterol

“It’s not that some people have willpower and some don’t. It’s that some people are ready to change and others are not.”

—James Gordon

Cholesterol comes from two sources – it is produced by the body and is in the food we eat. High blood cholesterol has been found to be a significant risk factor for the development of atherosclerosis. High serum cholesterol has been defined as total cholesterol (TC) greater than 200mg/dl. Increased total cholesterol (TC) results in the buildup of plaque in the walls of the arteries. Levels of total cholesterol (TC) increase as women age.

Total cholesterol (TC) is broken down to several parts. They and their desired levels are:

- high density lipoproteins (HDL) - >40 mg/dl
- low density lipoproteins (LDL) - <100 mg/dl
- triglycerides<150 mg/dl (American Heart Association, 2007)

There are many factors that affect serum cholesterol levels. They include:

- age
- diets high in fat, saturated fat, and cholesterol
- genetics
- hormones
- medications
- body weight
- diabetes
- physical activity
- certain diseases such as diabetes, thyroid, and liver disease
A standard lipoprotein test (or profile) includes measurement of total cholesterol (TC), low-density lipoproteins (LDH), high density lipoproteins (HDH) and triglyceride levels and should occur after you have not eaten for 8-12 hours. High levels of low density lipoproteins (LDL) have been shown to be predictive of heart disease therefore it has been referred to as “bad” cholesterol. One way to think of whether cholesterol is good or bad is that in life you always want to take the “high road”. Therefore, high density lipoproteins (HDLs) are the “good” type of cholesterol. High levels of high density lipoproteins (HDL) have a protective function on the development of heart disease. Elevated serum triglyceride levels are also associated with risk of CHD, especially for women. Triglyceride measurements are considered in relationship to other risk factors. Elevated TC and triglyceride levels are associated with obesity, physical inactivity, high alcohol intake, and consumption of trans fatty acids. Ways to reduce low density lipoproteins (LDL), triglycerides, and total cholesterol (TC) include diet, exercise, and medications.
Overweight and Obesity

“I’ve been on a diet for two weeks and all I’ve lost is fourteen days.”

― Totie Fields

This is a risk factor involves your weight. Weight impacts other risk factors such as of cholesterol, diabetes mellitus, and physical inactivity. This is a common problem in our society and it is estimated that almost 2/3 of American adults are overweight or obese. Check height and weight tables to determine your ideal weight. These tables have a range for each size based on what is considered healthy body weight (HBW). Someone that is 10-20% over their ideal weight is considered overweight. If a person is greater than 20% over her healthy body weight, she is considered to be obese.

Another way that ideal weight can be determined is by using body mass index (BMI). BMI is determined by a combination the body weight in kilograms divided by the height in meters. Being overweight is defined as a BMI over 25, while obesity is considered a BMI of 30 or higher.

If you find that this is a risk for you, look at the next chapter which discusses nutrition.

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American Heart Association, 2007
Physical Inactivity

“Always be a first-rate version of yourself, instead of a second-rate version of somebody else.”

—Judy Garland

Physical inactivity is considered a risk factor for the development of heart disease. This risk factor also affects by other risk factors such as: high serum cholesterol or being overweight or obese. Physical inactivity refers to the activity level of a person’s leisure-time activity.

When we consider physical activity the first is the regularity in which people engage in some regular physical activity; the second is the degree of strenuousness of this activity.

To promote cardiovascular health, it is recommended that all adults have 30 minutes or more of moderate physical activity on most days each week. These are activities that get your heart pumping more vigorously than your activities of daily living. Examples of moderately intense activities include such things as walking, jogging, or biking. These activities can be done either indoors on machines such as treadmills or stationary bicycles or outdoors. Other activities include using other exercise machines such as the stair stepper or rower and cardiovascular exercise tapes. Some tapes are designed to exercise “specific areas” such as abdominals, arms, or legs and don’t provide overall cardiovascular exercise. Generally anything that moves the large muscles of the legs and arms has a cardiovascular benefit.

Caution: Before you start exercising you should consult with your practitioner to determine whether it is advisable to begin an exercise program at this time.

Because physical activity is such an important component of caring for yourself, this subject is covered in more depth in Fitness.
Diabetes Mellitus

Since the number of people with diabetes who also have cardiovascular disease (CVD) is greater than those with CVD of the general population, diabetes is considered a risk for the development of CVD. However, research on the treatment of diabetes has demonstrated that maintaining blood glucose within the normal range can significantly affect the course of the disease process of CVD. Therefore, it is important to effectively manage blood glucose levels to reduce the risk that diabetes poses.

Diabetes is described as a fasting blood glucose of 126 mg/dl or more. There are two types or kinds of diabetes, type 1 and type 2. Type 1 diabetes often effects young people and is characterized by a complete loss of the body’s ability to produce insulin. These people must receive insulin injections to survive. About 5-10% of the people with diabetes have type 1 diabetes. Type 2 diabetes is usually the result of insulin resistance and occurs gradually, often going unnoticed for a long period of time. This type of diabetes most often occurs later in life, but an increased number of children are being diagnosed with type 2 diabetes. There is a strong genetic component to the development of this type of diabetes. Obesity also appears to be a factor. Individuals with type 2 diabetes may be treated with either oral hypoglycemic agents or insulin injections in addition to diet management.

The long-term complications of both types of diabetes include changes in the blood vessels, hypertension, and increased levels of cholesterol. These complications all influence the development of CVD, including coronary heart disease (CHD). Women with diabetes have double the rate of CVD than do non-diabetic women.

Since type 2 diabetes often goes unrecognized for long periods of time you can understand that it is important for an individual with CHD to be tested regularly for diabetes to protect him/her against the vascular changes that occur as a result of this disease. Additionally, if you have been diagnosed with diabetes, it is vital for your heart health to care for the diabetes through blood glucose testing, diet, and exercise. There are people specially trained to assist people with diabetes, called diabetic educators. If you have diabetes it may be helpful to ask your practitioner to arrange a visit to such an educator to support you in managing your disease.

Further information can be found at:

American Association of Diabetic Educators – www.aasenet.org
American Diabetes Association – www.diabetes.org
High Blood Pressure

Having high blood pressure or hypertension (HTN) is a risk factor for coronary heart disease (CHD). It is often referred to as the “silent killer” because individuals with hypertension frequently do not have any symptoms. The term we use when there are no symptoms is asymptomatic. Before it is detected, damage to the blood vessels or organs (such as kidneys) may have occurred. Hypertension, in addition to contributing to the development of CHD, increases an individual’s risk for strokes.

Hypertension is described as a higher than normal blood pressure for a period of time. The diagnosis of hypertension is made when blood pressure readings are high on at least three occasions over several weeks. The most desirable blood pressure under 120/80. Blood pressures over 120/80 is considered prehypertension. The diagnosis of hypertension is made when the blood pressure reading is at or over 140/90.

Blood pressure is the pressure of blood against the artery walls. High blood pressure causes the heart is working harder than normal to pump the blood throughout the body. This puts both the heart and blood vessels under strain. In this way it is believed that hypertension contributes to the development of atherosclerosis resulting in CHD and stroke.

Causes

While the cause of hypertension is usually unknown, in most cases there have been factors which seem to contribute to its development. They include:

- increased nervous system activity such as those caused by stress
- overproduction of hormones which retain sodium
- being overweight or obese
- diabetes mellitus
- alcohol intake

What the Numbers Mean

Blood pressure readings have two parts; with each number having a different meaning. The first number is the systolic blood pressure. That is the pressure that the heart pumps against. The second number is what the heart pumps at rest and is called the diastolic blood pressure. Blood pressure readings are recorded as the systolic and diastolic reading and look like this: 134/86. Each of these numbers is important.
Symptoms

Most often, there are no symptoms associated with hypertension; it is diagnosed when your blood pressure is taken. However, at times there are some symptoms; these symptoms include:

* fatigue
* headache
* dizziness or lightheadedness
* heart palpitations
* angina (chest pain)
* shortness of breath

Blood pressure increases in response to physical and psychological excitement and includes things such as pain, exercise, fear, anxiety, etc. These are normal reactions. In addition, some people's blood pressure rises when they see their practitioner. That is called “white coat hypertension.” If your blood pressure is elevated when you visit your practitioner’s office, it would be important to monitor your blood pressure at home, as well. While increased blood pressure may be a normal response to stimulation, problems occur when elevated blood pressure continues over a period of time.

Treatment

Treatment for hypertension starts with lifestyle modifications. These modifications include: 1) dietary changes, 2) limitation of alcohol intake, 3) regular physical activity, and 4) avoidance of tobacco use. These are all things that are needed for overall heart health.

Dietary management of hypertension consists of restricting sodium or salt in the diet, maintaining adequate amounts of potassium, magnesium, and calcium, and caloric restriction to maintain desired weight. One option for diet includes the DASH diet. This diet includes twice the number of fruits, vegetables, and dairy products, one third the usual intake of beef and pork, one half fats and oils and one quarter of the number of snacks and sweets. More information concerning the DASH diet is included in the chapter on Nutrition.

In addition to lifestyle modification, medication therapy may be needed to reduce blood pressure. Your practitioner may choose a medication or medications to control your hypertension, based on his/her knowledge and experience. However, everyone responds a bit differently to the medications and dosages prescribed. Therefore it is important for you to communicate how you respond to the medications with your practitioner. Sometimes side effects may be an initial response to the drug and may decrease with continued use. In addition, the number and severity of side effects may be related to the dose, so that it may be necessary to change the dosage. Some side effects can be minimized or eliminated by changing the time of day the medication is taken. For
instance, diuretics may be best taken in the morning while the side effects of vasodilator and adrenergic inhibitors decrease if the medications are taken in the evening. Caution: It is important to take the medications as prescribed and to not stop taking the medications suddenly. Some of the common types of medications which are used for coronary heart disease (CHD) are included in the chapter on Medications, Supplements, and Herbs.
Cigarette Smoking

Cigarette smoking has been shown to be a risk for the development of heart disease. The risk of developing coronary heart disease (CHD) is two to six times higher in cigarette smokers as opposed to nonsmokers. Even exposure to others cigarette smoking (second hand smoke) can contribute to the development of CHD. Smoking is considered to be the most significant, controllable risk factor for heart disease. Cigarettes with low levels of tar, nicotine, and carbon monoxide, the so-called low yield cigarettes does not reduce the risk for heart disease. The good news is that by stopping to smoke today, you can reduce your risk of heart disease. CHD mortality rates drop to those of nonsmokers within several years.

You should also consider exposure to secondhand smoke, since that is considered a health hazard as well. Limit the amount of exposure you have by doing things such as making the inside of your home, or when you are driving in a car, a smoke-free zone.

Substances in cigarettes cause changes in the arteries that make them work less efficiently. One change is that the arteries constrict when smoking which restricts the flow of blood. Smoking also causes temporary changes in your heart; it beats faster, raises your blood pressure, and reduces blood flow further. Smoking also increases the level of carbon monoxide in your blood, which robs your heart and other tissues of vital oxygen.

Cigarette smoking is both psychologically and physiologically addicting. You may need assistance to stop smoking. There are a number of programs that can help with smoking cessation. In addition, there are medications that may be of benefit to you. It is important to discuss with your healthcare provider about your desire to quit, and what options may be open to you. It is something that can significantly improve your health, your ability to manage your cardiac disease, and care for yourself.

Resources for smoking cessation:

National Cancer Institute: (800) 4-CANCER or http://www.nci.nih.org

American Lung Association: (215) 315-8700 or http://lungusa.org


Other factors that may contribute to heart disease risk:

Stress

Stress has been noted as a possible risk factor in the development of coronary artery disease (CHD). When you’re stressed you body responses, in what is called a fight or
flight response. When confronted with a stressor, your body releases hormones, such as cortisol and adrenaline which cause blood to flow to the muscles, heart and brain. In earlier times, the surge of blood could have meant the difference between life and death. Continued exposure to stressors may cause changes in the lining of the arteries which may lead to development of heart disease. If you believe that stress is a factor for you, there is an entire chapter devoted to stress and suggestions on how to manage it.

**Alcohol**

Alcohol has a number of effects on the development of heart disease. While there is evidence that people that drink a moderate amount of alcohol, one drink a day for women, have a lower risk of heart disease than nondrinkers that is not the case if the person drinks more than that. Excessive consumption of alcohol can raise blood pressure, cause heart failure, and leads to stroke. In addition, it contributes to the development of a component of high cholesterol by raising triglycerides. There are other health risks associated with excessive amounts of alcoholism. Alcohol is discussed further in the chapter on nutrition.

**Diet and Nutrition**

A healthy diet is a cornerstone of prevention and treatment of coronary heart disease (CHD). Several of the major risk factors for CHD are affected by what and how much food you eat. These include:

- High serum cholesterol
- High blood pressure
- Diabetes
- Overweight and Obesity

In addition, it may indirectly affect the amount of physical activity you engage in. A healthy diet is one thing that you can do to care for yourself. More information regarding diet can be found in the chapter on nutrition.

**Metabolic Syndrome**

Although metabolic syndrome has not been identified by the American Heart Association as a risk or potential risk factor, it is important for you to be aware of its existence. It is a cluster of 5 risk factors. Individuals are diagnosed with metabolic syndrome if they have 3 out of 5 risks. They are:

- glucose intolerance (> 100 mg/dl)
- high blood pressure
- abdominal obesity
- high triglycerides
- low HDL-C

Management of metabolic syndrome consists of targeting each risk factor.
Nutrition

“Food is the most primitive form of comfort.”

— Sheilah Graham

Nutrition is an important component of health, including heart health. Food provides the fuel for our bodies to function. In addition, a proper diet can reduce several risks associated with coronary heart disease (CHD). These risks include reduced serum cholesterol, weight management, and can have a significant effect on the development of hypertension (high blood pressure) and diabetes.

At this time, you are going to think about what you know in relation to diet. Some of our thinking about diet has changed in recent years, so take this time to learn what the most current information about diet is and consider your own eating patterns and how they may affect your health.

The dietary guidelines for Americans have been developed by the US Department of Health and Human Services to provide science-based advice on food and activity choices for health. They have defined a “Healthy Diet” as one that:

- includes fruits, vegetables, and whole grains
- contain milk products are either low or fat-free
- includes protein sources such as lean meats, poultry, fish eggs and beans
- is low in saturated fats, trans fats, cholesterol, salt or sodium, and added sugar and alcohol

They recommend:

- Variety – Chose to eat a variety of foods.
- Proportionality – Look at how much of a food or food type you are eating.
- Moderation – Limit your intake of saturated and trans fats, refined sugar, salt, and alcohol.
- Activity – Engage in physical activity most days.

The food guide, “My Pyramid” from the US Department of Health and Human Services website can provide a guide for your nutritional consumption. It will give you the
recommended number of servings for each food group. It can also help you to determine what are considered appropriate serving sizes.

**Nutrients**

Nutrients are substances the body needs function. They provide you with energy and allow for the repair and regeneration of cells and tissues throughout the body. Nutrients need to be broken down by your digestive system. From the digestive system the nutrients are taken into the blood stream to nourish the cells of your body. Nutrients can be divided into two major classifications macronutrients (meaning large) and micronutrients (small).

The five classes of macronutrients work together to meet your nutritional needs. They are:

- Carbohydrates
- Proteins
- Fats or Lipids
- Water
- Fiber

**Carbohydrates**

There are two classifications of carbohydrates: simple and complex. Carbohydrates provide the body with energy. Foods that contain sugars are simple carbohydrates while starches and fiber are complex carbohydrates.

Some examples of simple carbohydrates:

- Candy
- Cookies
- Soft drinks

Some examples of complex carbohydrates:

- Fruits
- Vegetables
- Grains (bread, cereals, pasta)
Carbohydrates provide the body with glucose, which is made during digestion and is needed by the body for energy. The energy from carbohydrates supplies the brain, muscles, tissues, and organs. In addition, carbohydrates are necessary for protein to be digested.

**Fruits**

While we used to talk about fruits and vegetables in one breath, recently we have become aware that it is important to consider fruits and vegetables separately for a healthy diet. If you’re following a 1,600 calorie a day diet, you should eat 1.5 cups of fruit a day. Like vegetables, fruits provide a variety of nutrients, including potassium and dietary fiber. Canned, frozen, dried and fresh fruits all contribute to meeting your dietary fruit goals.

To increase your consumption of fruits you may consider adding fruits as a topping on salads, cereal, pancakes, and other foods. They are also an excellent choice for snacks. Fruit juice consumption should be limited to half of your total fruit intake because often they don’t contain the same amount of fiber as whole fruit.

**Vegetables**

Vegetables provide many important health benefits for your diet. In addition to providing a variety of nutrients, including potassium and dietary fiber to the diet, they help reduce the risk of chronic diseases. No matter whether they are fresh, frozen, or canned, they all contribute towards meeting vegetable intake goals. If you choose to use canned vegetables make sure that you check the amount of sodium it contains. Frozen vegetables are another alternative to fresh vegetables; however, choosing ones without sauces are the best choices to limit your consumption of fat and sodium.

The recommended amount of vegetables to eat daily is 2 cups, if you’re following a 1,600 calorie diet. Some strategies to increase your consumption of vegetables include adding them to as many meals and snacks as you can. For instance, if you are having an omelet for breakfast, include a vegetable filling or add vegetables to your sandwich at lunch. You can also increase the number of vegetables in your soups, stews and casseroles.

Starchy vegetables, such as white potatoes, corn, and green peas should be limited to about 3 servings per week.

**Grains**

Grains are an important component of your diet. Having a diet in which half of your total grains are whole grains, is something that you can do to enhance your health. This amount of whole grains can reduce risk of coronary heart disease and other chronic diseases and contributes to consuming an adequate amount of dietary fiber.

Examples of whole grains that you may be familiar with include brown rice, oatmeal, wild rice, and whole wheat crackers, whole wheat pasta and whole wheat or corn tortillas. Ones to explore are grains such as couscous, buckwheat, and bulgur. You can increase
the number of whole grains consumed by substituting whole grain bread, breakfast cereal, crackers, rice, and pasta for refined products. In addition, whole grains can be an addition to dishes such as soups, stews, and casseroles. By checking the Nutrition Facts label for the fiber content of foods and checking the ingredient list on product labels assures that you are a knowledgeable consumer.

In addition, it is important to determine the amount of grains found in food. People on a 1,600 calorie diet should eat 2 1/2 ounce equivalents per day of whole grains, half of your grain consumption. It is important to understand how this translates into the foods we eat since one ounce of grains is equal to 1 slice of bread, 1 cup of cereal, or ½ cup of cooked pasta, rice, or cereal, a bagel may be 3-4 ounces of grains!

**Proteins**

Protein must be present for the body to grow, repair damaged cells, create new tissue, and influences water balance. Other functions of protein are to provide the cellular foundation, blood clotting, and are instrumental in the development of blood, hormones, enzymes and antibodies. Protein is another energy source. Proteins are made of amino acids. There are 22 amino acids, 8 of which are called essential amino acids. That is because they must be consumed because they cannot be manufactured by the body. If a food contains the entire essential amino acids are consider complete proteins. They can be found in:

- Meats
- Fish
- Poultry
- Beans and bean products such as tofu
- Eggs
- Dairy

To get the maximum benefit for your health you should chose a variety of different foods from this group each week. The Recommended Dietary Allowance (RDA) for protein is 0.75 g of protein/kg of body weight per day.

**Meats**

When selecting meats (beef or pork) you need to make sure that they are lean. You should aim for a portion the size of a deck of cards. When making sandwiches, turkey, roast beef, or ham are good choices compared to fatty luncheon meats such as bologna or salami.

**Fish**
It is recommended that you eat 2 servings of fish a week, especially fatty fish because they have omega 3 fatty acids which have been shown to be cardio protective.

**Poultry**

Poultry, such as chicken, can be an excellent source of protein and a good alternative to red meat. However, the skin of the chicken contains a lot of fat.

**Beans and bean products**

Beans and bean products, such as tofu, can provide an alternative protein source. However, they are not a complete protein and for your body to utilize the protein properly, it is necessary for you to combine this with other foods if this is your only source of protein. There are many good vegetarian cookbooks that can assist you in doing this.

**Eggs**

While in the past, eggs have gotten a bad name because of the amount of cholesterol in the egg yolks. However, eggs are a good and inexpensive source of protein. You’d want to limit your consumption of eggs to 5 a week.

**Dairy**

When we think of the health benefits of dairy products bone health is what often comes to mind. While this is true, low and non-fat milk products provide a variety of other nutrients and as part of the diet serve to keep saturated fat and cholesterol intake low.

Milk and milk products can be consumed as a beverage, a snack (such as yogurt), and ingredient in a recipe, or part of a meal. It is recommended that you consume approximately 3 cups of milk or milk products every day.

If you experience lactose intolerance, lactose-free milk is one option. There are also calcium fortified products (such as beverages and breakfast cereal) or other foods (such as sardines or tofu) that you can eat to get your needed calcium.

**Lactose intolerance**

Lactose intolerance occurs when the body cannot easily digest lactose. Lactose is a type of natural sugar found in milk and dairy products. Lactose intolerance occurs when the small intestine does not make enough of an enzyme called lactase. When lactose moves through the large intestine (colon) without being properly digested, it can cause uncomfortable symptoms. These symptoms include: gas, belly pain, bloating, loose stools or diarrhea and usually occur 30 minutes to 2 hours after you’ve consumed dairy products. Some people with lactose intolerance cannot digest any milk products while others can eat or drink small amounts of milk products or certain types of milk products without problems. If you experience these symptoms, contact your practitioner.
• Remember to keep the overall amounts of foods eaten from this group within the amount needed for the day.

**Fats or Lipids**

A diet low in fat and cholesterol has been shown to be effective in reducing total cholesterol (TC) and low density lipoprotein (LDL), both of which have been shown to be a risk factor in coronary heart disease. For a woman whose diet consists of 1600 calories, this translates into 20 grams or 5 teaspoons of fats a day. But it is not only the amount of fat you consume that is important, the type of fat is important as well. There are several kinds of fats.

- **Saturated fats (SFAs)** are fats that are solid at room temperature have been shown in the development of artherosclerosis. These fats can be found primary in animal products such as butter and meats. Your fat consumption should come primarily from

- **Monosaturated fats (MFAs)** can be found in olive oil, canola oil, peanuts, almonds, and avocados.

- **PUFAs** - come from plants that are grown in temperate climates (corn and soybeans) and fish. Omega -3 PUFAs are come primarily from marine sources but vegetable precursors can be found in flaxseed, canola oils, walnuts, and green leafy vegetables.

While certain foods are high in fat, for others the method in which they are prepared cause them to be high in fat. For instance, fish is considered to be low in fat; however, if we batter (may contain eggs) and fry the fish it becomes an item very high in fat. The preferred method of food preparation to reduce the amount of fats in the diet is to broil, steam, or bake foods rather than fry them.

It is also important to limit foods that contain partially hydrogenated vegetable oil, which contains trans fat, because this type of fat has been shown to be a causative factor in the development of coronary heart disease. Labeling food containing trans fat became required in 2006 and some places, such as New York City, have banned the use of trans fats in their restaurants.

(put illustration of plate here with how much should be protein, and carbohydrates (grains and vegetables)

**Fiber**

Fiber is the indigestible components of plants. You should consume 25-30 grams of fiber per day. There are two types:
• Soluble fiber – dissolves in water

• Insoluble fiber – does not dissolve in water

<table>
<thead>
<tr>
<th>Soluble fiber</th>
<th>Insoluble fiber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citrus fruits</td>
<td>Whole wheat</td>
</tr>
<tr>
<td>Apples</td>
<td>Vegetables</td>
</tr>
<tr>
<td>Peas and beans</td>
<td>Fruits</td>
</tr>
<tr>
<td>Oatmeal</td>
<td></td>
</tr>
<tr>
<td>Oat bran</td>
<td></td>
</tr>
</tbody>
</table>

While it is important to consume adequate amounts of fiber, this is a change that you should make gradually if your fiber intake has been low. It is recommended that you consume between 25-30 grams of fiber per day. Fiber enhances the body’s ability to remove waste products effectively. Certain fiber, termed soluble fiber, has been shown to reduce serum cholesterol. Having too little fiber in your diet may lead to constipation.

**Water**

Since the human body is 55-60% water, it is important to drink enough water to have the body function properly. Most people are able to maintain an adequate level of hydration if they have access to fluids. Many whole foods, such as fruit and vegetables, consist mostly of water. Adequate fluid consumption also leads to digestive health as it prevents constipation.

When you engage in physical activity or if you are perspiring extensively you need to increase your consumption of fluids. You may need to consume fluids during the activity and/or drink several glasses of fluids after you finish the activity. There is no need for you to consume energy drinks when you engage in activity.

You should consider the calorie content of the fluids you consume. Water has no calories and is an excellent choice when you are thirsty. Some other beverages may have quite a number of calories, such as fruit juice, coffee with creamer, or soda, so these calories must be taken into consideration when planning your diet.

**Alcohol**

“I always cook with wine. Sometimes I even add it to the food.”
— W.C. Fields

If one chooses to drink alcohol, it should be in moderation. It is recommended that women limit their consumption of alcohol to 1 or less servings per day. Alcohol contains calories but is low in nutritional value. In addition, alcohol has been found to negatively affect the total triglycerides and HDL cholesterol levels, which can contribute to the development of heart disease. It can also raise blood pressure, a risk factor for heart disease and stroke. In addition, the American Heart Association has added alcohol consumption as a possible risk factor.

Coffee

Research regarding the effects of coffee consumption on cholesterol level has been mixed with some seeing no effects while others have shown an increase. Also it is important to consider the effect of caffeine on your heart rate. If you develop palpitations, or a quickening of the heart, you should switch to decaffeinated beverages, including coffee. Lattes or cappuccino are another type of coffee beverages. However, you need to be careful and avoid flavoring syrups that add calories or full fat milk or whipped cream that add fat as well.

Tea

Tea drinking is a ritual in many countries. Recent research has demonstrated the health benefits of drinking tea. This is especially true of green tea because of the amount of phytochemicals. It is recommended that people drink several cups of green tea per day. As with anything, you need to watch the amount of sugar (and calories) you add to your tea.

Micronutrients

Vitamins and minerals are the micronutrients in food that enable the cells in the body to function properly. They are needed in small amounts and are found in the foods we eat. Vitamins and minerals work together. They should be found in foods as much as possible because foods contain hundreds of chemicals the assist the body in using these nutrients. We’re going to discuss the nutrients and suggest the foods where they can be found.

Vitamins

Vitamins are necessary for life. They are needed for the body to grow and maintain its metabolic function. Each vitamin has its own function. There are two types of vitamins, fat soluble and water soluble. Water soluble vitamins dissolve in water; what the body does not use are excreted through the kidneys.

Water soluble vitamins include:

- B complex (B1 – thiamin; B2 – riboflavin; B3 – niacin; B6 – pyridoxine; folic acid; B12)
- Pantothenic acid
- Vitamin C

Fat soluble vitamins attach to proteins and are carried throughout the body by the blood. Fat soluble vitamins are stored in the liver and fatty tissues of the body. Fat soluble vitamins include:

- A
- D
- E
- K

**Minerals**

Minerals include:

- Calcium
- Magnesium
- Phosphorous
- Sodium
- Potassium
- Iron
- zinc

Calcium and Phosphorus work together in the body. Calcium is found mostly in bones where it is needed for structure. Calcium also helps with blood clotting, nerve conduction, and assists with muscle contractions. Phosphorous is found in early all cells of the body. It is used for energy production, metabolizing some vitamins and minerals and renewing tissues and cells.

Potassium, sodium, and chloride are the three minerals that are sometimes called electrolytes. Potassium is needed for heart, nerve, digestive, and muscle functioning. Sodium is importance for fluids outside the cells and is necessary for nerve and muscle conduction. Chloride is needed by the body for fluid balance inside the cells. Sodium and chloride are found together in table salt.
Sodium or salt is found in almost everything we eat or drink. It also enhances the flavor and serves as a preservative for many foods. A problem occurs when we consume too much sodium. For some people, eating too much sodium can increase their blood pressure and lead to hypertension. For other people, those who have been diagnosed with congestive heart failure (CHF), consuming too much sodium can cause them to retain fluid, which forces their heart to work harder. If you have been diagnosed with either hypertension or CHF you need to restrict your consumption of sodium. Your practitioner can provide guidelines for your sodium intake.

While sodium can be found in almost every food we eat, certain foods have high levels of sodium. These foods may not appear to be salty, such as soda, which contains high amounts of sodium. The American Heart Association recommends restricting salt intake to 6 g of salt (NaCl) and 2.3 g of sodium per day for healthy adults. This equals one teaspoon of salt per day. You should check with your practitioner if you have been diagnosed to find out his/her recommendations for you. You should also keep a food diary, which is when you record all of the food you eat in a day, and evaluate how much sodium you consume. Much of the sodium we consume can be found in processed foods.

Individuals with high blood pressure or other cardiac diseases may be advised to consume a DASH (dietary plan to stop hypertension) diet. This diet is very similar to the USDA guidelines, however there are some differences including increased consumption of fruits and vegetables. The DASH diet is one that has been shown to reduce blood pressure in individuals with hypertension, may lead to weight loss, and was used as a model for my pyramid. This diet limits sodium intake and emphasizes a diet rich in fruits and vegetables and low and fat-free milk products. It incorporates whole grain products and relies on lean meats such as chicken, fish, and lean red meat as a source of protein. This diet is also low in saturated fat, fat, cholesterol, and added sugars. At the end of this chapter there are some web sites that can provide you with more information about the DASH diet, meal plans, and recipes.

### DASH DIET

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Daily Servings</th>
<th>Serving Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains and grain products</td>
<td>7-8</td>
<td>1 Slice bread</td>
</tr>
<tr>
<td></td>
<td></td>
<td>½ cup dry cereal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>½ cup cooked rice, pasta, or cereal</td>
</tr>
<tr>
<td>Vegetables</td>
<td>4-5</td>
<td>1 cup raw leafy vegetable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>½ cup cooked vegetable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 oz vegetable juice</td>
</tr>
<tr>
<td>Category</td>
<td>Amount</td>
<td>Serving Size</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Fruits</td>
<td>4-5</td>
<td>6 oz fruit juice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 medium fruit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>¼ cup dried fruit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>½ cup fresh, frozen or canned fruit</td>
</tr>
<tr>
<td>Low-fat or fat free dairy foods</td>
<td>2-3</td>
<td>8 oz milk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 cup yogurt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 ½ oz cheese</td>
</tr>
<tr>
<td>Meats, poultry, fish</td>
<td>2 or less</td>
<td>3 oz cooked meats, poultry, or fish</td>
</tr>
<tr>
<td>Nuts, seeds, and dry beans</td>
<td>4-5 per week</td>
<td>1/3 cup or 1 ½ oz nuts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 tbsps or ½ oz seeds</td>
</tr>
<tr>
<td></td>
<td></td>
<td>½ cup cooked dry beans</td>
</tr>
<tr>
<td>Fats and oils</td>
<td>2-3</td>
<td>1 teasp soft margarine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 tbsp low-fat mayonnaise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 tsp vegetable oil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 tbsp light salad dressing</td>
</tr>
<tr>
<td>Sweets</td>
<td>5 per week</td>
<td>1 tbsp sugar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 tbsp jelly or jam</td>
</tr>
<tr>
<td></td>
<td></td>
<td>½ oz jelly beans</td>
</tr>
</tbody>
</table>
This is based upon a 2,000 calorie diet

Further information regarding the DASH diet can be found at the website of the American Heart Association.

Iron is used to carry oxygen to the cells from the lungs. Vitamin C helps with iron absorption in food.

Zinc has an effect on the immune system. In addition, it helps healing wounds and converts Vitamin A to a usable form.

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<thead>
<tr>
<th>FOODS HIGH IN SPECIFIC NUTRIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sources of vitamin A</strong></td>
</tr>
<tr>
<td>• Bright orange vegetables like carrots, sweet potatoes, and pumpkin</td>
</tr>
<tr>
<td>• Tomatoes and tomato products</td>
</tr>
<tr>
<td>• Leafy greens such as spinach, collards, turnip greens, kale, beet and mustard greens, green leaf lettuce, and romaine</td>
</tr>
<tr>
<td>• Orange fruits like mango, cantaloupe, apricots, and red and pink grapefruits</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Sources of vitamin B1 – thiamin</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Whole grains, enriched bread, cereal</td>
</tr>
<tr>
<td>• Most vegetables</td>
</tr>
<tr>
<td>• Beans</td>
</tr>
<tr>
<td>• Pork</td>
</tr>
<tr>
<td>• Nuts</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Sources of vitamin B2 – riboflavin</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Whole grains, enriched bread, cereal</td>
</tr>
<tr>
<td>• Leafy green vegetables</td>
</tr>
<tr>
<td>• Dairy, eggs, yogurt</td>
</tr>
<tr>
<td>Sources of niacin</td>
</tr>
<tr>
<td>--------------------------------------</td>
</tr>
<tr>
<td>- Whole wheat</td>
</tr>
<tr>
<td>- Poultry</td>
</tr>
<tr>
<td>- Milk, cheese</td>
</tr>
<tr>
<td>- Eggs</td>
</tr>
<tr>
<td>- Potatoes</td>
</tr>
<tr>
<td>- Tuna</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sources of folic acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Green leafy vegetables</td>
</tr>
<tr>
<td>- Organ meats</td>
</tr>
<tr>
<td>- Beans</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sources of vitamin B12</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Liver</td>
</tr>
<tr>
<td>- Fish</td>
</tr>
<tr>
<td>- Lean meats</td>
</tr>
<tr>
<td>- Milk</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sources of vitamin C</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Citrus fruits and juices, kiwi fruits, strawberries, guava, papaya, cantaloupe</td>
</tr>
<tr>
<td>- Broccoli, peppers, tomatoes, cabbage, brussels sprouts</td>
</tr>
<tr>
<td>- Leafy greens such as romaine, turnip greens, and spinach</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sources of vitamin D</th>
</tr>
</thead>
</table>

260
<table>
<thead>
<tr>
<th>Sources of vitamin E</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Vegetables oils</td>
</tr>
<tr>
<td>• Wheat germ</td>
</tr>
<tr>
<td>• Nuts</td>
</tr>
<tr>
<td>• Dark green vegetables</td>
</tr>
<tr>
<td>• Whole grain</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sources of vitamin K</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Green vegetables</td>
</tr>
<tr>
<td>• Oats and rye</td>
</tr>
<tr>
<td>• Dairy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sources of potassium</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Baked white or sweet potatoes, cooked greens, such as spinach, winter (orange) squash</td>
</tr>
<tr>
<td>• Bananas, plantains, many dry fruits, oranges and orange juice, cantaloupe, and honeydew melons</td>
</tr>
<tr>
<td>• Cooked dry beans</td>
</tr>
<tr>
<td>• Soybeans (green and mature)</td>
</tr>
<tr>
<td>• Tomato products</td>
</tr>
<tr>
<td>• Beet greens</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sources of calcium</th>
</tr>
</thead>
</table>
- Yogurt, milk products, cheese
- Sardines and salmon
- Fortified soy milk, tofu
- Collard greens, broccoli, kale

**Sources of iron**
- Red meat, fish, poultry
- Beans
- Eggs
- Leafy green vegetables

**Sources of zinc**
- Lean meats, fish, poultry
- Yogurt

**Antioxidants**

Antioxidants play a role in preventing or delaying the onset of some diseases. They are compounds that naturally protect the body from free radicals and help to depress the effects of metabolic by-products that cause degenerative changes related to aging. While free radicals have a helpful function in the body in high levels they can damage cells and tissues. They are produced by the body’s own metabolism and are generated from exposure to environmental factors and toxins. Vitamin A, C, E and selenium assist the enzymes in the body to fight free radical damage.

**Phytochemicals**

Phytochemicals are compounds that exist in all plant food and give them the color, flavor, and scent. They are nonnutrient substances found in plants and are not vitamins or minerals. They have been associated with assisting the immune system, working as antioxidants, and fighting cancer. They may be able to reduce LDL. Foods that are high in phytochemicals include:
- Soy
- Fruits (grapes, blueberries, cherries)
- Green tea
- Vegetables (broccoli, bok choy, cabbage, cauliflower)

**Recipe Redo**

Do you have a favorite recipe and think that you can’t eat it anymore? There are ways to modify the recipe to make it more heart healthy. Here are some tips:

- Add vegetables to things like stews, that will increase the fiber and lower the calorie and fat content
- Try to change the fats: remove butter and add heart healthy oils such olive oil and canola oil
- In baked products substitute apple sauce for oil
- Substitute low fat products for full fat products
- Eat smaller portions

**Eating Out**

Eating out can really sabotage your heart-healthy diet. Here are a few strategies to keep you on track:

- Ask how the food is prepared – remember you’re paying for it!
- Fast-food restaurants have a listing of the number of fats, protein, vitamins, etc. check them out before you order.
- While many restaurants frown on sharing food (plus you have to get someone to agree with what you’d like) you may just split the plate in half when you get it and ask for a doggie bag. Then you wouldn’t be tempted to eat the whole thing!
- Ask for dressings and sauces on the side.
- Have a salad; it’s a great way to get full!
- Share dessert!
Food Labels

The nutritional facts label found on processed food packages is an excellent resource for people watching what they eat. They list the amount of key nutrients contained in the food. There is also the percentage daily value (PDV). These numbers are based on 2,000 calorie diet. Below are several food labels. Consider what foods you would chose based on this information.

(put nutritional labels here: white vs. wheat bread; canned soup low sodium vs. regular; 2 types of frozen dinners; soda vs. milk; sugared coffee beverage)

Weight Strategies

When you consider weight there are several ways to look at this issue. The first is to consider the energy found in food. To lose weight you need to consume fewer calories than you need. The tried and true formula of eating fewer calories than you use has been shown over time to be the most effective way to lose weight. Another mechanism that can be used to guide food consumption is “my food pyramid”. This can guide the number and size of servings of certain foods you eat each day.

Below is a chart of body mass index (BMI).

<table>
<thead>
<tr>
<th>Height</th>
<th>Normal (BMI 25)</th>
<th>Underweight (BMI 29.9)</th>
<th>Overweight 25–29.9</th>
<th>Obese (BMI 30 and above)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4'10&quot;</td>
<td>118 lbs. or less</td>
<td>119–142 lbs.</td>
<td>143 lbs. or more</td>
<td></td>
</tr>
<tr>
<td>4'11&quot;</td>
<td>123 or less</td>
<td>124–147</td>
<td>148 or more</td>
<td></td>
</tr>
<tr>
<td>5'0</td>
<td>127 or less</td>
<td>128–152</td>
<td>153 or more</td>
<td></td>
</tr>
<tr>
<td>5'1&quot;</td>
<td>131 or less</td>
<td>132–157</td>
<td>158 or more</td>
<td></td>
</tr>
<tr>
<td>5'2&quot;</td>
<td>135 or less</td>
<td>136–163</td>
<td>164 or more</td>
<td></td>
</tr>
<tr>
<td>5'3&quot;</td>
<td>140 or less</td>
<td>141–168</td>
<td>169 or more</td>
<td></td>
</tr>
<tr>
<td>5'4&quot;</td>
<td>144 or less</td>
<td>145–173</td>
<td>174 or more</td>
<td></td>
</tr>
</tbody>
</table>
Caloric Intake

The first step in planning a diet is to determine your caloric needs. Calories tell us how much energy we receive from foods. Height, level of activity, current weight, and desired weight all affect your caloric needs. Your goal should be to balance calorie intake from food and beverages with the calories you burn in your daily activity.

Are you satisfied with your current weight? If you are not, you would want to reduce the number of calories you consume. This, combined with increasing your activity, can help you lose weight.

Here is a chart that tells you the serving size for each food group based on your caloric intake.

<table>
<thead>
<tr>
<th>CALORIES CONSUMED</th>
<th>1,400</th>
<th>1,600</th>
<th>1,800</th>
<th>2,000</th>
<th>2,200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits</td>
<td>1 cup</td>
<td>1 ½ cups</td>
<td>1 ½ cups</td>
<td>2 cups</td>
<td>2 cups</td>
</tr>
<tr>
<td>Vegetables</td>
<td>1 ½ cups</td>
<td>2 cups</td>
<td>2 ½ cups</td>
<td>2 ½ cups</td>
<td>3 cups</td>
</tr>
<tr>
<td>Grains</td>
<td>5 oz-eq</td>
<td>5 oz-eq</td>
<td>6 oz-eq</td>
<td>6 oz-eq</td>
<td>7 oz-eq</td>
</tr>
<tr>
<td>Meats and beans</td>
<td>4 oz-eq</td>
<td>5 oz-eq</td>
<td>5 oz-eq</td>
<td>5.5 oz-eq</td>
<td>6 oz-eq</td>
</tr>
</tbody>
</table>

American Heart Association, 2007
<table>
<thead>
<tr>
<th>Milk</th>
<th>2 cups</th>
<th>3 cups</th>
<th>3 cups</th>
<th>3 cups</th>
<th>3 cups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oils</td>
<td>4 tsps.</td>
<td>5 tsps.</td>
<td>5 tsps.</td>
<td>6 tsps.</td>
<td>6 tsps.</td>
</tr>
<tr>
<td>Discretionary calorie allowance</td>
<td>171</td>
<td>132</td>
<td>195</td>
<td>267</td>
<td>290</td>
</tr>
</tbody>
</table>

Estimated Calorie Requirements for Women over 51 at Three Levels of Activity.

<table>
<thead>
<tr>
<th>SEDENTARY</th>
<th>MODERATELY ACTIVE</th>
<th>ACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,600</td>
<td>1,800</td>
<td>2,000-2,200</td>
</tr>
</tbody>
</table>

**Diet Modification**

After reviewing the nutritional information in this module, you may be thinking how you would like to change, or modify your diet. It is often best to begin to look at your current diet in an objective manner.

**Food Diary**

It may be helpful to conduct a food diary so that you can accurately review your eating habits. You do this by writing down everything you eat or drink for one day. It is best to have a diary of at least 3 weekdays and one weekend day, so that you can look at your typical eating behavior. You may want to continue with a food diary as you make changes in your diet. If your goal is weight loss, it has been shown that people who keep a food diary lose more weight than others.

One method of diet modification is to reduce the number of calories you consume. Books or websites can provide some information on the number of calories in the foods you eat. Another way to change your diet is to alter the way food is prepared. Grilling, broiling, baking, and poaching are the most healthful ways to prepare foods. Or you may want to work on one aspect of your diet, such as increasing your consumption of fruits and vegetables or fiber. And finally, another easy way to modify your diet is to reduce the number of prepared foods you consume. Prepared foods often have too much fat and sodium and too little fiber.

There are different strategies or diets that provide the structure for people to lose or maintain a desirable weight. Some of these, such as Weight Watchers, have been around a long time and are based on sound nutritional information and behavior principles.
Foods are given point values and you are able to eat a certain amount of points per day. South Beach Diet was developed by a cardiologist. The emphasis of this diet is lean protein and complex carbohydrates. The Atkins diet, with its severe restriction of carbohydrates and promotion of high fat intake, has not gained much support from experts in nutrition. While people may lose weight on this diet, experts debate the long term effects of remaining on such a diet. Some argue that by simply restricting their intake of junk foods, dieters can obtain the same amount of weight loss.

Some other tips:

- **Eat breakfast.** Eating breakfast enables you to break your nighttime fast, which helps to jump-start your metabolism for the day. Also, breakfast eaters tend to be less hungry all day long and less impulsive about unhealthy snacking.

- **Eat regularly.** Skipping meals slows metabolism, causing you to burn less calories and store more calories as fat. Also, you tend to eat more later; especially less healthy choices. Eating every 4 - 5 hours is recommended.

- **Make sure that the methods you use to prepare these foods does not add fat; grilling, broiling, poaching, roasting, or stewing are good methods to choose.**

- **Make sure that you’re really hungry and not thirsty –** try some water before you eat a snack.

- **Try to eat a complex carbohydrate (like a whole wheat cracker or apple) with a protein (such as peanut butter)**

If you desire to lose weight it is best to remember that there is no magic bullet. Weight loss, to be effective in the long run needs to be a slow, gradual process. You should not attempt to lose more than 2 lbs a week. It is important that you consider your ideal weight in combination with the other strategies that you will use to care for yourself and your heart disease.

Nutrition is complicated! Many times there is no absolute right or wrong answer regarding food consumption; so much depends on the individual. Therefore, it may be helpful for you to ask your practitioner for a referral to a dietician to help you plan a diet that best meets your nutritional needs. In addition, the internet does have some reputable sites that can assist you in make diet changes that demonstrate caring for yourself.

**Additional information on nutrition:**

American Dietetic Association: (800) 877-1600 or http://faseb.org/ascn

American Heart Association: www.americanheart.org
Fitness

“I have to exercise in the morning before my brain figures out what I’m doing.”

—Marsha Doble

Fitness means having the energy and strength to feel as good as possible. Getting more fit, even a little bit, can improve your health because it can lower your risk of developing certain diseases. You don't have to be an athlete to be fit. Everyone can work toward some level of fitness that helps them feel better and have more energy. Making small changes in your daily lifestyle helps you improve your fitness.

Benefits of Fitness

Fitness helps you feel better and have more energy for work and leisure time. You'll feel more able to do things you enjoy doing. When you stay active and fit, you burn more calories, even when you're at rest therefore it can also help manage weight.

Fitness benefits all parts of your body: heart, lungs, bones, and joints. It lowers your risk for developing diseases such as heart attack, diabetes, high blood pressure, and some cancers. Engaging in exercise is essential for good health. Physical activity has been shown to have both psychological (mind) and physiological (body) benefits.

Psychological benefits:

- mood
- body image
- improved concentration

Physiological benefits:

- lowering serum cholesterol levels
- lowering blood pressure
- improving sleep
- reducing risk of type 2 diabetes
- reducing risk of osteoporosis
- weight management
As you can see, physical activity can reduce several risk factors associated with cardiovascular disease.

To improve your health, it’s important to make physical activity part of your daily life.

Activity Level

“My doctor recently told me that jogging could add years to my life. I think he was right. I feel ten years older already.”

— Milton Berle

What is your current activity level? Someone whose lifestyle only includes the physical activity of independent living is called sedentary. You are considered to have a “low active” lifestyle if you include about 30 minutes of moderate physical activity most days in addition to the activities of living. Finally, you are considered active if you have a lifestyle that includes 60 or more minutes of physical activity in addition to the activities of independent living. Current recommendations are that people should engage in at least 30 minutes of moderate activity most days.

Types of Exercise

It is important for you to know about the different types of exercise and to make a plan (if you do not meet the current recommendations for exercise), with the support of your practitioner, to incorporate more activity into your life. Think of exercise as something you do for yourself. There are three principle types of exercise. They include: aerobic exercise, flexibility, and muscle strengthening exercises. A balanced exercise routine will include all three types of exercise during the course of the week. Remember that it is important to speak with your practitioner before you begin any exercise regime.

Aerobic Exercise

“It’s all in the attitude—housework is exercise. Slim your way to a clean home!”

— Linda Solegato

Aerobic exercise is one of the most important and efficient methods of attaining muscular and cardiovascular fitness. Aerobic exercise is accomplished when demand is put on the muscles to increase their need for oxygen, causing the heart to beat faster, and the lungs to work harder. This increases cardiovascular endurance. Aerobic exercise is a type of exercise in which you increase your heart rate to a certain level and maintain that level for a period of time. In order to gain aerobic benefits the heart rate must be elevated for the duration of the workout within the target heart rate. When we say aerobic we mean that your cells are receiving an adequate amount of oxygen when you are performing this
exercise. It is recommended that you perform aerobic exercise the minimum of three days a week for at least thirty minutes. It is most beneficial, however, if you exercise aerobically for a half hour most days of the week.

Anyone whose lifestyle is sedentary, or physically inactive, should begin activity levels gradually, five to ten minutes at first and gradually increasing to 30 minutes. One fun way to monitor an increase in physical activity is to count your steps using a pedometer. This inexpensive devise tracts the number of steps you take. By using a pedometer, you can see your gradual increase in your activity, in the number of steps you take a day.

**Target Heart Rate**

Target heart rate is a range of heart rates that you can use as a guide to determine how hard to exercise to gain the most aerobic benefit. Being active within the target heart rate range helps a person not only keep the heart and lungs healthy but also raise or stay at her fitness level.

A person can take his or her pulse and then adjust the activity level to get within the target heart rate range. During exercise, a person's heart should be working hard enough for a healthy effect but not so hard that the heart is overworked.

A person’s age, resting heart rate, activity level, and medications affect target heart rate. Most people with heart disease are given their target heart rate when they have their stress test. If you don’t know your target rate, consult your physician.

Target heart rates serve only as a guide. Everyone is different, so during exercise it's important for you to pay attention to how you feel, how hard you breathe, how fast the heart beats, and how much you feel the exertion in your muscles.

**Pulse**

It is important to take your pulse before, during, and after exercise. It is normal for your heart rate to increase in response to exercise. It is also normal for your heart to take several minutes (10-15) before it returns to its resting rate. If your heart rate declines with exercise or remains elevated for a prolonged period of time (longer than ½ hour) you should consult with your practitioner. In addition, your practitioner may recommend that you take your blood pressure before and after exercise. With both your pulse and blood pressure, your practitioner may give you guidelines for exercise.

One test that we use to gage the intensity of the workout is the “talk test.” This means that you should be able to carry on a conversation with someone while you are exercising. If you are unable to talk when you are exercising you are not exercising aerobically.

There are many different types of aerobic exercises. You must find one or more that fit into your lifestyle and that you enjoy. One of the easiest types of aerobic activities is walking. The only thing you need is walking shoes and clothing to protect you from the
weather. In addition to the benefits of exercise, there is the additional benefit of being outdoors.

Other types of aerobic activities include swimming, utilizing exercise machines such as rowers or stair machines, tapes of aerobic workouts, taking classes which incorporate aerobic activities, dancing, and bicycling.

It is important for you to stop exercising if you experience any chest pain or pressure, or if you become short of breath or dizzy. You will want to report any of these reactions you may have to your practitioner.

**Flexibility**

Flexibility is the ability to move your joints and muscles through their full range of motion. Stretching should be an important component of everyone’s exercise regime. It prevents you from injuring your muscles and provides an opportunity to warm up or cool down in conjunction with aerobic exercise. You should engage in 5-10 minutes of stretching prior to beginning aerobic exercise and 5-10 minutes afterward.

In addition to using stretching to support aerobic activities, stretching exercises may be a freestanding component of your exercise routine. Yoga is a form of stretching exercise that is used to enhance the energy flow within the body. While there are many types of yoga, the most common type is hatha yoga. In this type of yoga positions or asanas are assumed which promote flexibility, balance, equalization of the body, and relaxation. Beginner classes are available in many areas in addition to tapes being readily available. There is some risk of injury if the exercises are performed improperly. Because of this it is usually helpful to take a few classes at the beginning. It is important to remember to stop if any of the postures cause pain. Another type of exercise that increases flexibility is T’ai Chi. It is a beautiful, coordinated series of postures that through regular practice develop and coordinate the body movements.

**Muscle Strengthening Exercises**

Muscle strengthening exercise is the third component of a balanced exercise routine. Strength is an essential, functional component of much of what we do. Weight training is useful in developing muscle strength. As we age, if we do not constantly perform strengthening activities, our muscles will become weaker. Strengthening muscles can promote the development of bones, an important factor for women who may experience bone loss after menopause.

There are three ways to increase muscle strength. They are:

* Muscle bulk is increased by using weights and doing a certain number of repetitions.

* Muscle strength is developed by using the heaviest weights manageable by the person and doing 2-6 repetitions.
* Muscle endurance and definition is increased by lighter weights while doing 40-50 repetitions.

Unlike aerobic activity or stretching where the most benefit occurs if people perform these activities on a daily basis, it is suggested that muscle strengthening exercises be performed only three times a week. Performing these exercises every other day permits the muscle to rest between sessions. Because women do not possess same quantities of hormones men possess, women will not develop extensive muscular growth that we associate with strength training. The objective for women is to strengthen muscles that they use for activities of daily living, such as opening jars, and preventing bone loss. Another benefit of muscle strengthening exercises is that muscles are more physiologically active than fat, so that when muscle replaces fat, more calories are needed to support the weight. This means that muscle training exercises can be important for you to achieve your desired weight. You don’t have to go out and buy weights, cans can serve as weights for muscle strengthening. Here again, it is important to talk to your practitioner before beginning a strength training routine.
Body, Mind, and Spirit

“Work hard to improve your mind and body. Nourish your spirit.

Do the things you fear.”

— Robin S. Sharma

When caring for yourself, you may want to consider the connection between the mind, body, and spirit. The principle of holism is that people are more than a sum of their parts; mind, body and spirit. There is a belief that parts are interconnected and interact in a dynamic way in the whole person. Therefore, it is important to care for your mind and your spirit, if you want to care for your body. Likewise, you should not neglect your body, if you are caring for your spiritual self.

- The physical dimension is the physical part of the body. It is the aspect of a person that allows one to experience and be experienced by others.

- The psychological dimension of the person is the mind. It involves self-identity and it deals with issues related to human interactions.

- The spiritual dimension includes the spirit. The spirit has been described as a unifying force within an individual, integrating, and transcending all other dimensions.

This chapter will explore the spirit, since much of this program is devoted to the body and the mind. It will also explore the idea of healing.

Body

“Breathe. Let go. And remind yourself that this very moment is the only one

you know you have for sure.”

— Oprah Winfrey

Your body can influence your mind and spirit. Taking care of your body helps your mental outlook and connects you to the spiritual world. Much of what is covered in this program is directed to learning what you can do to care for your body. Proper nutrition and exercise provide the basis for caring for yourself.

Mind

“Whatever is bringing you down, get rid of it. Because you’ll find that when you’re free .

. . your true self comes out.”
Spirit

“Mediation is simply about being yourself and knowing about who that is. It is to realize that you are on a path whether you like it or not, namely the path that is your life”

-Jon Kabat-Zinn

Spirituality embraces all aspects of every living thing and the experience of life. For many people spirituality is part of their belief system in a god or higher power; however it can be said that spirituality shows where the commonalities among all beliefs are found. Spirituality is more than just worship practice and organized religion. It embraces the notion that there is a unifying force, a power, an essence to life that is greater than the individual, that it encompasses all human beings and all living things.

Spirituality reflects several aspects of humanness. It explores the centrality of the relationships between self, others and a higher spirit. It also permits an individual to search for the meaning and purpose in life. Hope is considered to be a sense of energy exchanged between the individuals and the self. Relatedness and connectedness is also part of spirituality. Finally, healing is a spiritual process that attends to the wholeness of the individual.

People through the ages perceived a relationship between spiritual practices and health and healing long before it was acknowledged by modern scientists. Prayer has meaning for many individuals and is the most common form of a spiritual ritual. Prayer may take many different forms and the spectrum of these experiences can include solitary quiet meditation or singing in groups.

Exercise:

Consider how you define spirituality and what does it mean to you. Think about how spirituality affects health and healing. Explore prayer and the benefits of prayer for health.

Healing

Healing occurs when there is a sense of harmony, well-being, and peace even when there is illness or disease. Healing is always possible, even when curing is not. Holism recognizes the healing capacities inherent in our body. Holistic healing involves a way of being in and experiencing the world. Healing involves the whole person. There is the belief that people are able to heal themselves. A fundamental belief upon which holistic therapies are based on that the integration of body, mind, and spirit supports health and healing.
Exercise:

Consider your current life situation. Do you feel that you have healing capacities? What do you think you need to do to heal?
Stress, Anxiety, and Depression

“Over the years your bodies become walking autobiographies, telling friends and strangers alike of the minor and major stresses of your lives.”

— Marilyn Ferguson

Stress

Stress has been added to the list of possible factors that contribute to the development of coronary heart disease (CHD). In addition, there appears to be evidence emerging that women are more likely to identify stress as a contributor to heart disease than men. Stress has been described as a bodily response to any demand placed upon it. While people in primitive cultures most often responded to threats of a physical nature, today our major sources of stress involve interpersonal relationships and performance demands. This makes the potential for stress always present. Stress is not always negative, it can actually enhance performance. Good stress makes you feel excited and energized while the bad type makes you feel tense and out of control.

Coping has been described as a constantly changing process to manage stress. An important feature of effective coping involves more than just problem-solving, it also involves managing or altering the stress and changing your emotional response to it.

In terms of heart disease, stress causes a release of hormones which serve to constrict blood vessels and cause damage in the long term to the walls of the blood vessels. Stress can also contribute to the development of hypertension and irregular heart rhythms. Therefore, in caring for yourself you want to be able to manage your stress.

Three approaches you may use to manage stress are:

- Minimizing the amount of stress-inducing situations
- Increasing your resistance to stress
- Using relaxation techniques

While reducing the amount of stress in your life sounds like a good idea, you may be wondering, “How do I do that?” Here are some ways that you may be able to reduce the amount of stress you are experiencing.

Minimizing the Amount of Stress-Inducing Situations

“I try to take one day at a time, but sometimes several days attack me at once.”
Strategies to minimize the frequency of stress-inducing situations include avoiding making too many changes at one time, employing time management strategies, and making changes in your environment that help you to avoid stress.

**Change**

Change, like stress, can be both positive and negative. However, making too many changes at one time can be stressful. Therefore, whenever possible, avoid making too many changes at one time; try to stagger them over a period of time. Too many changes, even positive changes, can be stressful.

**Time Management**

Another way of getting more control over your life is through effective time management. We live in an increasingly hectic environment. While the advances of modern society can be wonderful, sometimes they create additional problems for individuals. An example of this would be that now we have so many ways to communicate with each other instantaneously, keeping in touch with others can become stressful. Therefore, it is important for you to examine ways to accomplish all of the things you want to accomplish and can realistically accomplish while still making time for yourself.

**Environment**

There may be ways to make changes in your environment to avoid stress. You should examine your life. Are there certain situations that make you feel stressed? For instance, it would be less stressful to go to the grocery store when there are not a lot of people rather than at the most popular times. Consider what other situations you can change to make yourself feel less stressed.

**Increasing Resistance to Stress**

“Life moves pretty fast. If you don’t stop to look around once in a while you could miss it.”

— *Matthew Broderick as Ferris Buller, "Ferris Buller’s Day Off"*

Some strategies to increase your resistance to stress are to exercise, doing things that can enhance your self-esteem, and increasing assertiveness.

*Exercise*
Exercise seems to be the way to cure every woe and it does! It can affect our emotional outlook by moderating the effects of stress by reducing the levels of stress hormones. Exercise releases the morphine like substances which have a positive effect on mood. Just add that to the list of reasons why you should exercise.

*Self-Esteem*

Feeling good about yourself or having a positive self-esteem can be a stress reducer as well. Especially as women, we often can more readily identify our weaknesses than we can our strengths. It is important to think about your contributions, rather than what you may view as your weaknesses. Part of this is a matter of perspective. For instance, you may think of yourself as someone who talks a lot. How would you put a more positive outlook on this? Could you think that you have the ability to make people feel at ease because you have something to talk about? Could you think that you are someone who sees so many interesting things that there is always something to talk about? That would a positive spin on something you’ve viewed as a negative. Try that on something you see as a negative about yourself.

We each have messages of ourselves running through our heads, an inner voice. Some of these are positive, I’m good at this, I’m creative, etc. However, some are negative, “I am slow, lazy, stupid, fat, a worry-wart, etc.” What kind of messages run through your mind? Consider replacing your negative thoughts with something positive.

*Assertiveness*

Assertiveness and having a positive self esteem often times go together. If you feel good about yourself, you are more likely to advocate for yourself. So it is important for you make sure that you enhance your self-esteem. A positive self-esteem and knowledge are important factors in enabling you act assertively.

*Scents*

Aromatherapy is a holistic approach that utilizes the essential oils extracted from plants, flowers, flowers, resins, and roots for therapeutic effects. These essential oils can be inhaled or rubbed into the skin. Some common scents and their effects include:

- **Lavender** – relaxation
- **Grapefruit** – focus
- **Lemon** – energy
- **Rose** – mood elevation
- **Cinnamon** – relaxation
- **Ginger** – nausea
- Jasmine – mood elevation

**Massage**

Massages involve a selective application of touch, stroking, pressure, kneading, stretching, compression and motion. There are many types of massage available. Swedish massage is gentle, while others such as neuromuscular massage are deep and intense. Massage is pleasurable and is extremely relaxing, so it may be used as a stress reliever.

**Relaxation Techniques**

“I love living. I have some problems with my life, but living is the best thing they’ve come up with so far.”

*Neil Simon, Last of the Red Hot Lovers*

Relaxation Response

The term relaxation response was coined by a cardiologist, Dr. Herbert Benson, who was interested in the mind-body connection. The results of relaxation response include:

- Decreased heart rate
- Decreased respiratory rate
- Reduced blood pressure
- Reduced oxygen consumption
- Lowered metabolism
- Reduced muscle tension

Progressive relaxation exercises provide a way to assist you in avoiding physiological arousal or the release of stress hormone. A progressive relaxation exercise is a way in which you relax each muscle in the body in a systematic fashion. One of the ways that we hold tension or stress is in our muscles. When our muscles are relaxed we feel less tense. Progressive relaxation is a skill and must be practiced regularly for maximum benefit.

Relaxation therapy, guided imagery, yoga, exercise, prayer, and meditation are some ways that can be used to reduce stress.
Exercise:

Progressive relaxation

You can do an exercise such as this by yourself, have someone read it to you, or pick up a tape or disk containing a progressive relaxation exercise.

1) Begin by sitting or lying quietly. Close your eyes.

2) Take a deep breath through your nose, allowing your belly to rise, and release it through your mouth, do this several times. As you go to each part of your body, spend a minute or so and breathing and relaxing the muscle.

3) Focus your attention on your toes and feet. Imagine them becoming soft and warm. When your toes and feet feel relaxed, move up to your calves.

4) The calves should feel warm and relaxed.

5) Allow your thighs to fall apart. Imagine any tension in your legs flowing down your thighs into your calves, feet, and toes.

6) Relax your buttocks. Let those muscles go limp. Then concentrate on your abdomen releasing those muscles.

7) Relax your arms; forearms and upper arms. Allow them to become heavy and warm.

8) Release the tension in your shoulders. Allow them to drop slightly. Allow any tension to flow down your arms and out your fingers.

9) Relax the muscles in your chest. Pay attention to any tension and continue breathing.

10) Bring your attention to your neck and head, allowing them to relax. Pay attention to your jaw; allow your mouth to open slightly. Release all tension from your cheeks, eyes, and forehead.

After you have relaxed all parts of your body, sit or lie still for a few minutes. Think about how your body feels. Begin moving your fingers and toes. Open your eyes and slowly return to your normal movements.

Anxiety

“Life may not be the party we hoped for, but while we’re here we should dance.”
Anxiety is a vague feeling of dread. This may be in response to external factors or feelings inside yourself. Anxiety is different from fear, because with fear there is something that can be identified. Anxiety is normal in life and can be positive if it spurs you to action to solve a problem. It is considered normal when they anxiety is appropriate to a situation and goes away when the problem is resolved.

Anxiety disorders are a group of conditions where severe anxiety occurs. People with anxiety disorders may respond with severe anxiety to unwarranted fear of objects or life conditions. The disorder impairs their activities of daily living, affects their relationship with others, and may affect their ability to function.

Anxiety causes mental and physical responses. To reduce the uncomfortable feelings, people can adopt new strategies for behaviors. Some of these new behaviors can be positive, such as using imagery, where the person learns to think of a pleasant scene or practicing progressive relaxation techniques where the person learns to relax muscles in a sequence throughout the body. Negative responses to anxiety can result in things such as tension headaches, pain syndromes, or even decreased immune responses.

Levels of anxiety:

- Mild anxiety – occurs when it is felt that something is thought of as needing attention. An example of this may be driving a car in bad weather.

- Moderate anxiety – is a disturbing feeling that something is wrong and you feel nervous and on high alert. Paying attention to a task becomes more difficult, although not impossible.

- Severe anxiety and panic - a person has trouble thinking or reasoning when severely anxious.

If you believe that you suffer from moderate or severe anxiety or panic, it is important to share that information with your practitioner. Medications may be helpful in reducing the anxiety while you develop skills that help reduce anxiety. Make sure that you care for your physical self if you are experiencing anxiety. That includes regular exercise, eating nutritious meals, getting enough sleep and rest. Both caffeine and alcohol are substances that should be avoided. In addition, attend to your spiritual self by engaging in activities that feed your spirit such as prayer and meditation.

**Exercise:**

**Breathing**

*Take a deep breath and gently release it.*
*Feel how the mind releases with the body.*
Take another deep breath, then another.  
Notice how each breath allows the body and mind to relax further.  
Now take a breath and as you exhale, linger in the exhalation.  
Be in the moment.

**Depression**

Recently, researchers have identified a relationship between depression and heart disease. On one hand, it is not uncommon for a person diagnosed with heart disease to show evidence of depression. That is understandable given the events which surround the diagnosis, such as hospitalization and what this means for their future. In addition, sometimes people may blame themselves for the development of the disease. All of these things may lead to depression. However, some researchers believe that heart disease may be an independent risk factor for the development of the disease (such as high blood pressure, elevated serum cholesterol, etc.) and that depression can negatively alter the course of the disease.

Depression is a type of mood disorder. It involves a sad mood or lack of interest in the activities of daily living. It may also involve

- changes in weight (loss or increase)
- changes in sleep patterns
- changes in levels of energy
- difficulty concentrating and making decisions
- feelings of worthlessness and reduced self-esteem
- suicidal thoughts

It is important to examine whether or not you are feeling sad or depressed. If you believe that you have evidence of depression you should talk to your practitioner about it. Prescription medication may be the answer for you, at least at this time. Your practitioner can help you make a decision about what is the most appropriate treatment. Depression has been found to be associated with a neurochemical imbalance in the brain. And just as you would take aspirin to prevent your blood from clotting or cholesterol lowering medications to lower your risk for heart disease, anti-depressive medications can be the best choice for the treatment of depression. There are different types of medications used to treat depression. Working with your practitioner, you should be able to find one that is right for you.

There are other things that you can do which can decrease depressive symptoms. Some of these you may have adopted as a strategy to reduce your risk of heart disease. Moderate exercise, such as walking, can be an effective way to reduce depressive symptoms. Taking time to care for yourself is also very important.
If you believe that the symptoms of depression are worsening and that your practitioner is not attentive to your needs you should seek a referral to someone who specializes in this area. Your mental health is too important to risk.

Exercise:

Experience healing breaths

Close your eyes.
Take some slow deep breaths with gentle exhalations.
Scan your body for any tight muscles.
Gently focus your breath on these areas.
Remain breathing gently.
Notice how your body is becoming lighter.
Feel the freedom and lightness with each breath.
Feel the gentle lightness.
Continue to breathe in this manner.
Stay in this place of freedom and light and healing.
Family, Friends, and Lovers

“Remember, we all stumble, every one of us. That’s why it’s a comfort
to go hand in hand.”

― Emily Kimbrough

Social Support

Social support is recognized as playing a profound effect on health. People who have
family, friends, and/or partners are more likely to survive health challenges, such as
cardiac disease. So it is important for you to identify people that provide support for you.
Different people can provide different kinds of support. Some people are good listeners
and are valuable when you need to talk things out, while others can be fun to be around
and provide a relief from life’s pressures. It is best to have a variety of people who you
can count on during times of stress. You should examine your life and identify people
who provide support for you.

Family

“Age does not protect you from love. But love, to some extent, protects you from age.”

― Jeanne Moreau

Our family is the first social group we know. Families come in a variety of forms and
each one is unique. A family influences and is influenced by its community and culture,
shares many things in common with other families, and deserves respect. Families have
responsibility to respect and care for its members while accepting the individuality of its
members.

People assume certain roles in a family. When one member of a family becomes ill, their
role changes as do the roles of others.

Exercise:

Consider what your role was prior to your diagnosis of coronary heart disease. Has that
role changed? Are you comfortable with your role? What aspects of the role would you
like to change?

Friends

“A good friend is a connection to life—a tie to the past, a road to the future, the key to
sanity in a totally insane world.”
— Lois Wyse

Relationships are a process; they take time and effort. In order to have successful relationships, one must reflect on our own actions, strengthen communication and conflict-resolution skills and provide empathy and support. We need to make our relationships a priority and not neglect them. There are many rewards; healthy relationships feed the body, mind, and spirit. They provide us the opportunity for self-knowledge and personal growth.

Exercise:

Consider what traits you value in a friend. Do you possess the same traits?

Lovers

“Love recognizes no barriers. It jumps hurdles, leaps fences, penetrates walls to arrive at its destination, full of hope.”

— Maya Angelou

It doesn’t matter whether your love has celebrated a 65th year anniversary or 6 month, it is wonderful to love and be loved. Like any relationship, a loving relationship must be nurtured. It can be nurtured by speaking kindly, behaving considerately, and engaging in touch.

Touch is something we are all born to receive and give to others. When we are babies touch showed us that we were safe, secure, and loved. Touch has been found to have it special healing properties. Since the ancient times, touch has had an important part in healing and survival. Touch provides comfort and security.

Exercise:

Consider what loving thing you did you did for your lover today, this week. What can you do to nourish your love?
In their 40s women may begin to experience a decrease in the production of their ovarian estrogen and progesterone until finally it stops. This causes a change in some of the secondary sex characteristic, such as a decrease in breast size and loss of pubic hair as well as a decrease in vaginal lubrication. The adrenal glands become where estrogen is produced. When a previously menstruating woman doesn’t have a period for one year, it is termed menopause. The time before that event is called perimenopause. During this time a women may see her periods decrease, increase, or become irregular.

With most women experiencing menopause at age 51-52 years of age, women can expect to live a third of their lives after menopause. In some cultures this period of life this is called the age of the wise women and it is celebrated.

There are health risks associated with menopause. Women who have reached menopause have an increased risk of the development of heart disease and osteoporosis. Cholesterol levels begin to change increasing the cardiovascular risk. High density lipoproteins (HDL) decrease while low density lipoproteins (LDL) increase. Furthermore, the decreased estrogen levels affect the density of skeletal bones and puts women at risk for the development of osteoporosis and bone fracture. Therefore, women experiencing perimenopause should be screened for cholesterol levels and bone density. Thyroid dysfunction, anemia, and depression may present with many of the same symptoms as those experienced by women in menopause, so it is important to examine these areas as well.

Since women experience an increase in heart disease after menopause, physicians began prescribing hormone replacement therapy as a way of reducing risk. However, findings from recent research studies have shown that hormone replacement therapy is not effective in reducing the development of heart disease and may even pose some additional health risks. Therefore, it is important to discuss the risks and benefits of hormone replacement therapy with your physician. The type of hormone replacement depends on a variety of things, including whether or not you have an intact uterus. There are a variety of different products and methods of delivery such as oral pills, transdermal patches, creams, gels or vaginal rings.

“You can only perceive real beauty in a person as they get older.”

—Anouk Aimee

Menopausal symptoms
Many women who enter menopause experience a variety of symptoms. These symptoms can last for years. They include:

- Night sweats
- Hot flashes
- Irritability
- Insomnia
- Vaginal dryness

If these symptoms affect the quality of your life, hormone replacement therapy can help to relieve the symptoms and may be beneficial when prescribed for a short period of time. In addition to Hormone replacement therapy, some herbs and supplements may be beneficial. Research is being conducted on their effectiveness. The most common herbal and supplements for the treatment of menopausal symptoms include:

- High mineral vinegar extracts – Mineral-rich herbs such as red raspberry leaf, nettles, dandelion and red clover
- Soy foods - contains plant estrogens. Soy intake can be increased by eating tofu, tempeh, soy mild or fresh or roasted soybeans
- Black cohosh
- Motherwort
- Sage
- Ginseng
- Vitamin E (800 international units)

Again, if you decide to try any of these supplements and herbs, it would be important to discuss this with your practitioner because they may interact with your prescription medications.

Some things have been shown to trigger hot flashes in some woman. They include:

- Spicy or hot foods
- Alcohol
- Sugar
- Artificial sweeteners

You may want to limit these substances and see if there is a reduction in the amount and severity of your hot flashes.

Whatever your experience with menopause is it is an opportunity to begin new self-care behaviors and allow you to nurture and care for yourself.
Sleep, Rest, and Relaxation

Sleep

“Life is something that happens when you can’t get to sleep.”

—Fran Lebowitz

Sleep is the time when your body rejuvenates itself. Our daily pattern of sleep and wakefulness is one of our circadian rhythms, a pattern that regulates functions throughout the body. Therefore, sleep is important to your physical and psychological self. While sleep patterns are individualized, most people need between 7 and 8 hours of sleep a night. Additionally, as people age there changes occur in the circadian rhythm, resulting in feeling drowsy in the afternoon or early evening. Whether we are getting enough sleep to satisfy our needs is not found in the number of hours of sleep but in how we feel and function. A person who has had enough sleep awakens refreshed and able to engage in their activities of daily living.

“It is better to sleep on things beforehand than lie awake about them afterward.”

—Baltasar Gracian

Insomnia refers to difficultly falling asleep or staying asleep. There are many causes of insomnia. Some of these causes are short term in nature, such as stress or excitement while others can last a longer period of time and include depression, general anxiety, or chronic illness. Some medications or substances such as caffeine can contribute to insomnia.

Consider whether you have difficulty sleeping – either falling asleep or staying asleep. There are some tips that may be helpful in assuring you get the rest you need.

Sleep Tips

Dos

Try to go to sleep and get up at the same time every day. As boring as that may sound, your body will respond to the regularity of your schedule.

Regular exercise is one of the most important things you can do to sleep well.

Sleep in quiet surroundings.

Don’ts

Consume caffeine in the evening.

Exercise vigorously right before you are planning o going to sleep.

Consume alcohol in excess.
Sleep in a restful, darkened room.

Have the room a comfortable temperature

Make your room a peaceful spot and use relaxing fragrance such as lavender to scent the room or your pillow.

Use “white noise” if helpful

Do relaxation exercises such as deep breathing, progressive relaxation exercises or meditate at bedtime.

Use sleep medications without the knowledge of your physician

Use your bed for stress producing things, such as paying bills

Eat a large meal within 3 hours of going to sleep.

Consume sugar in the evening

Extinguish sources of light.

If you continue to have problems sleeping, you may want to maintain a sleep diary, it may help you to see patterns and assist in identifying the underlying problem. Contact your practitioner if you have explored other alternatives and have not been successful.

I count it as a certainty that in paradise, everyone naps.

―Tom Hodgkinson

In some cultures, a midday nap is part of everyone’s routine. That is not the case in the United States. If you nap (some people benefit, while for others it makes their nighttime sleep more difficult) you want to count the nap as part of your sleep total. Again, think about how it makes you feel and better able to live a productive life.

Rest and Relaxation

“The time to relax is when you don’t have time for it.”

―Sydney J. Harris

You will want to consider, what you do for rest and relaxation. What do you really enjoy doing? Each person is different; listen to your heart, because what may be relaxing for one person may be a source of frustration for another. We’re going to explore a few different things that some people find relaxing; perhaps you want to try one or two!

“Sometimes the most important thing in a whole day is the rest we take between two deep breaths.”

―Etty Hillesum
Hobbies

“Books are the quietest and most constant of friends; they are the most accessible and wisest of counselors, and the most patient of teachers.”

— Charles W. Eliot

There are any number of hobbies that are relaxing. A good hobby relaxes you while stretching your mind. Craft stores are filled with different options. What is nice about a craft that you make something is that, when completed, you have something to show for it! Also, you can achieve some mastery if you pursue your craft over time. Some women enjoy needlework, things like knitting, crochet, embroidery, or cross stitching but painting, sculpture, woodworking can be satisfying as well. Experiment a bit and get in touch with your creative side!

Another hobby you may want to consider is gardening, both indoors and out! Gardening helps the environment and appeals to our esthetic sense. Think of the beauty of bonsai. Gardening out of doors provides exposure to fresh air and is a form of exercise.

Reading is a favorite hobby of many. And you can make it more of a social affair by joining a book club.

Some people enjoy puzzles and the contemplation that comes along with that.

While some people enjoy more solitary and restful hobbies, other people enjoy more vigorous activities, such as golfing. It doesn’t matter what you choose as long as it is something you enjoy.

Music

“The moments of happiness we enjoy take us by surprise. It is not that we seize them, but that they seize us.”

— Ashley Montagu

Music is something that takes you to another place and time. The link between music and health is ancient and elemental. Apollo was not only the god of medicine; he was the god of music. Music dates back to early cultures. The beat of a drum echoes the sound of the heartbeat.

Other sounds, such as the natural rhythm of the ocean, raindrops, and leaves blowing promote relaxation. Find out the kinds of music and sounds you enjoy and make sure that you include it in your life.

Laughter
“You can’t deny laughter; when it comes, it plops down in your favorite chair and stays as long as it wants.”

— Stephen King

Humor is a higher level function of the brain. It has been found to link the logical left-brain function with the creative right brain function. The benefits of laughter include:

- Increase respiratory rate and oxygen consumption
- Increase heart rate
- Stimulates the release of catecholamines, hormones, and endorphins that promote healing
- Boast the immune system
- Diminish anxiety and tension

If you think that the list looks a lot like the benefits of exercise, you’d be right! While laughter doesn’t take the place of exercise it does enhance your life and make a more vibrant you!

Find out what makes you laugh and make sure that you get a regular diet of it.
How the Heart Works

“How lies behind us and what lies before us are tiny matters compared to what lies within us.”

— Ralph Waldo Emerson

The Heart

The heart is a pump. It is located slightly left of the center of your chest and is normally the size of your fist. The heart is divided into four areas or chambers. Each of these chambers performs a special function. The upper areas are called atrias. Their function is to collect blood. The lower chambers are called ventricles. The ventricles are the pumping chambers. In addition to the four chambers, the heart is divided into the left and right sides. The right side of the heart receives blood from the entire body in the atria and the ventricle pumps blood into the lungs. The left atria receives the blood from the lungs and the ventricle pumps oxygenated blood to the rest of the body.

Separating the atria from the ventricle is a valve. Valves are also located at the “end” of the ventricles; where the right ventricle meets the pulmonary artery and the left ventricle joins the aorta. These valves help keep the blood flowing in a forward direction. Valves that work properly contribute to the heart’s ability to pump effectively.

(Circle picture of the internal heart here)

Circulation

The heart is at the center of the cardiovascular system. Oxygen-rich blood is pumped from the left ventricle into the aorta. The aorta brings blood to all of the major organs of the body, including the brain. Arteries and the smaller arterioles bring oxygen-rich blood throughout the body while veins and venules return blood to the heart. The exchange of oxygen and nutrients occur at the capillary level. Oxygen-depleted blood flows into the inferior (lower) or superior (upper) vena cava prior to entering the right atrium. The blood from the right atrium enters the ventricle where it is pumped into the pulmonary artery and then enters the lungs. Here the blood exchanges carbon dioxide for oxygen. The oxygen-rich blood travels through the pulmonary veins into the left atrium and then into the left ventricle and the process is repeated.

(Circle picture the circulatory system here)
Coronary arteries

The heart also needs its own blood supply to function properly. This blood supply is called the coronary circulation. There are three main arteries which provide oxygen rich blood to the heart. They are the right, left anterior descending, and left circumflex arteries. For more information about the coronary arteries see the chapter titled “Coronary Arteries.”

(Insert picture of the heart with coronary arteries here)

As mentioned previously, the heart is a pump. It is an electrical pump that brings oxygen and nutrients to all the tissues of the body. There are things that can affect the heart’s ability to pump. One is an irregularity in the heart rate and rhythm. Another is damage to the muscle of the heart, such as what can occur if someone has a heart attack (myocardial infarction or MI). Let’s look first at heart rate and rhythm.

Heart Rate and Rhythm

The heart’s rate and rhythm are a result of its electrical conduction system. Normally there is a certain sequence, or pattern to the electrical conduction which allows the parts of the heart to contract in a systematic fashion for maximum efficiency.

There are many things that can affect the conduction of electricity through the heart. However, some of the most common things that can affect the conduction system are mechanical events such as damage to the heart muscle and cardiac enlargement. Other things that may cause changes in the heart rhythm include chemical irritants such as those that occur when there is a breakdown of heart muscle (when a heart attack or myocardial infarction (MI) occurs) or an imbalance of body nutrients.

The heart responds to feedback systems from other parts of the body. For example, the heart rate increases in response to the need for more oxygen and nutrients for the cells. Therefore, if you are physically active, your heart rate will increase to meet the needs of your body for oxygenated blood. Your heart also responds to emotional signals, and your heart rate will increase when you’re excited, stressed, or fearful.

Medications can affect the heart rate. Medications such as Beta Blockers can lower your resting heart rate. Other medications can cause an increase in the resting heart rate.

It is important for you to know your resting heart rate, how your heart rate responds to exercise, and what effect the medications you are taking have on your heart rate.

Exercise
Pulse

For this exercise you will need a clock with a minute hand and your index and middle finger.

One way to monitor your heart rate is by taking your pulse. When large arteries are close to the surface of the body, you can feel them. We call these spots pulse points. You may be familiar with a few on them, such as your wrists or your temples. Look at the diagram and see if you can find the pulse points that are illustrated here. You will use your index and middle fingers to find your pulse. Don’t use your thumb! It has a pulse of its own. If you have trouble finding any pulses, ask the nurse to help you the next time you visit your practitioner.

You may have to put some pressure on the skin to feel your pulse.

When you have located a pulse, count the number of beats over the course of 60 seconds. While, some people with very regular heart beats count only to 15 seconds and multiple that by 4 to get their heart rate, it is best to do the entire minute, especially at first. This is your resting heart rate.

You may want to record your heart rate at different times of day and after different activities, such as exercise.

Another way to monitor your heart rate is by using a device that measures heart rate and blood pressure.

Heart Related Disorders

There are two common ways that coronary heart disease (CHD) can directly affect your heart. Coronary heart disease can result in the development of arrhythmias, or irregular heart rhythms and congestive heart failure (CHF).

Arrhythmias

Arrhythmias, or irregular heart rhythms, are disorders of the conduction or electrical system of the heart and may be temporary or permanent. There are some common medications and chemicals in foods, such as caffeine, that can cause changes in heart rate and rhythm. It is not unusual for someone to have arrhythmias soon after a heart attack or myocardial infarction (MI). That is because when the heart muscle is damaged, the muscle gives off chemicals that cause the heart to beat in an irregular manner. One reason why your heart rhythm is monitored when you are admitted to the hospital with a heart attack or myocardial infarction (MI) is for just that reason. These irregular rhythms are usually temporary and go away in the first few days. However, other irregular rhythms may be the result of permanent damage to the heart muscle, especially if part of the conduction system has been damaged.

If you should detect an irregular rhythm when you take your pulse or experience such symptoms as palpitations (your heart beating rapidly for a period of time), lightheadedness,
or dizziness this may be an indication that you have some kind of rhythm disturbance. While everyone experiences some irregular heartbeats, if this becomes noticeable and interferes with your activities of daily living, inform your practitioner. Treatment for arrhythmias includes electrical therapy, pacemakers, automatic defibrillators, and medications.

**Congestive Heart Failure (CHF)**

CHF is a chronic condition which is the result of a decreased ability of the heart to pump. It can be caused by such things as hypertension or high blood pressure, coronary heart disease and certain diseases, such as diabetes puts a person at risk for developing the disease. Currently, over 5 million Americans have Congestive Heart Failure (CHF) with half a million people annually being diagnosed. Signs and symptoms of CHF include:

- shortness of breath (SOB)
- cough (nonproductive)
- difficulty lying flat
- fatigue
- ankle and feet swelling
- rapid weight gain
- awaking during the night gasping for breath
- frequent nighttime urinations
- and anorexia (loss of desire to eat)

If you experience any of these symptoms it is important for you to contact your practitioner for follow-up. While there are no cure for congestive heart failure (CHF) other than a heart transplant, medications and devices such as a pacemaker can improve the heart’s ability to pump and make you be able to do more and feel much better.
Tests for Coronary Heart Disease (CHD)

“Each day offers us the gift of being a special occasion if we can simply learn that as well as giving, it is blessed to receive with grace and a grateful heart.”

— Sarah Ban Breathnach

There are many kinds of tests for cardiac disease. Some of these tests are blood tests which measure risk factors or detect the release of substances produced by damaged heart muscle. Other tests determine the pumping ability of your heart, or blood flow through the coronary arteries. It is important for you to know the result of your tests because this information provides valuable information regarding the decisions you make in collaboration with your practitioner for the treatment of heart disease. Some of the tests described below can be used in combination with other tests.

Blood Tests

Analysis of blood provides important information regarding risk factors or muscle injury.

Risk Factors

C-reactive protein – This test gives an indication of a cardiac specific inflammatory process which has been shown to be a predictor of the development of heart disease.

Cholesterol – Serum cholesterol has been shown to be an important risk for heart disease. Blood tests give an indication of total cholesterol (TC), high density lipoprotein (HDL), low density lipoproteins (LDH), and triglycerides. See Risk Factors for a more thorough discussion of the various components of cholesterol and their implications for you.

Homocystine Level – Homocystine causes damage to the lining of arteries and increases blood coagulation which can affect clot formation. Elevated homocystine levels have been associated with an increased risk of coronary heart disease, stroke, and peripheral vascular disease.

Injury to Heart Muscle

CPK/CPK-MB - This blood test gives information regarding damage to the heart muscle. When the heart muscle is deprived of oxygen for a period of time the heart muscle begins to break down. This test detects the breakdown of the muscle. Any muscle damage will result in an increase in the CPK, however CPK-MB is specific to the heart. We start to see an increase in the CPK-MB about three hours after the injury has occurred. This increase will last for about 48 hours. When it is suspected that a person may have had a myocardial infarction (MI) the CPK-MB tests are performed every few hours. The rise of the CPK-MB is followed until it begins to decrease. This
test gives a practitioner an estimate of the amount of damage which has occurred to the heart muscle.

**Troponin** – This blood test measures contractile proteins that are released following an MI. Tropinin is thought to be the most sensitive indicator of damage to the heart muscle.

**Other Tests**

**Chest X-Ray** – A chest x-ray can determine the size and shape of the heart. It can also determine if there is fluid around the heart and whether it is in the correct location in the chest. This test can determine if there is fluid in the lungs, which can indicate a weakening of the heart.

**ECGs or electrocardiograms** – ECGs provide a recording of the electrical activities of the heart. When the electrical conduction system is damaged the heart doesn’t pump as effectively. The ECG provides this information. In addition, the ECG can determine if the heart muscle lacks of oxygen (ischemia) or if damage to the muscle has occurred (an MI).

There are different types of ECGs. With one type you are attached to a monitor, such as when you were in the intensive care unit or were transported in an ambulance. Another type allows you to walk around while your heart rhythm is being monitored (telemetry). A third type, a Holter monitor, is one that you wear for twenty-four hours which records the heart rhythm. While you are wearing this type on monitor you will need to keep a journal in which you will keep track of your activities and any untoward reactions you have, such as a skipped beat.

A 12-lead ECG records the electrical activities of the heart from a variety of angles. It is an important tool in the detection of ischemia or an MI because it “views” the heart from several angles.

**Transtelephonic Event Recorder** - ECG recordings are transmitted over the telephone.

**Exercise Treadmill (or Bicycle) Test** - This is an example of a test that utilizes an ECG. Here you exercise on a treadmill, and this determines how your heart responds to a stressor, exercise. This test may be performed in conjunction with an echocardiogram.

**Echocardiogram** – An echocardiogram is a test that provides information about the structure of the heart and the function of the heart muscle. There are two different types of echocardiogram. The first is done with a transducer placed on your chest wall. The second type is called a trans-esophageal echocardiogram. In this case the transducer is inserted in your esophagus, or throat. This test permits your practitioner to view the back or posterior part of your heart as well as the front.

**Cardiolite Scan** - For this test, a radio opaque dye is inserted in your veins. Images of the heart are taken, and are repeated in while you exercise. This test can indicate blood flow to the heart. Some individuals are not able to exercise so a medication,
dipyridamole (Persantine), is injected into an intravenous line (IV) which simulates the effects of exercise on the heart.

**Cardiac Catheterization** - This test provides important information regarding your fluid balance, your heart’s pumping capacity, and your coronary arteries. This test is performed in a special laboratory and you are awake but sedated for the procedure. Catheters are inserted in your arm and/or groin. These catheters enter your heart. The first part of the test measures pressures in your heart. These numbers provide an indication of your fluid status and your heart’s pumping capacity.

Another part of the procedure involves inserting a dye in your coronary arteries. This is called coronary angiography. This dye is radio-opaque, meaning that it can be seen with an x-ray camera. The cardiologists can then determine if there is any narrowing of your arteries. At the same time they may perform an angioplasty to enlarge a narrowing and/or place a stent to keep the artery open.

The final part of a cardiac catheterization is to put dye in your left ventricle which will provide an accurate indication of the amount of blood pumped by the heart per minute. It will also enable the cardiologist to view the function of the heart muscle.

**Radionuclide Imaging or Radionuclide Angiography** (includes such tests as a thallium test, MUGA scan or acute infarction scintigraphy)-These tests involve injecting radioactive substances called radionuclitides into the blood stream. Computer-generated pictures can find them in the heart. These tests will show how well the heart muscle is supplied by blood, how well the chambers of the heart are working, or to identify what part of the heart has been damaged by a heart attack.

**Magnetic Resonance Imaging (MRI)** (also called Nuclear Magnetic Resonance Imaging) - This test uses powerful magnets to look inside the body. Computer generated pictures can show plaque in the coronary arteries, the heart muscle, identify damage from a heart attack; any provide other information regarding the cardiovascular system.

**Cardiac Positron Emission Tomography** (PET)-Positron emission tomography of the heart allows heart tissue function to be studied and coronary arteries to be visualized.

New tests are constantly being developed. If your practitioner suggests a test that you are not familiar with, you will want to ask:

- what is the purpose of the test
- how the results may affect your care
- what, if any risks are associated with the test
Treatments for Coronary Heart Disease (CHD)

“Aerodynamically the bumblebee shouldn’t be able to fly, but the bumblebee doesn’t know that so it goes on flying anyway.”

—Mary Kay Ash

Women respond in a different manner than men to conventional treatments such as angioplasty, bypass surgery, as well as medications. This is why it is so important for you to understand how you, personally, are affected by heart disease and when it is appropriate to seek care.

The purpose of medications, surgery, angioplasty and stents are to enhance the modification or risk factors or to reduce the symptoms of heart disease. They do not cure the disease.

INTERVENTIONS

Angioplasty (PTCA) (percutanious transluminal coronary angioplasty)

Since 1999, more angioplasties have been performed than CABGs in the United States (American Heart Association, 2007). People with single- or double-vessel lesions that are near the opening of the artery and are not calcified may have an angioplasty. An interventional cardiologist performs the procedure utilizing x-ray technology to guide the catheters in place. The patient is awake, although sedated, for the procedure. A balloon is part of the catheter. The balloon is inflated, which compresses the lesion in the coronary artery. There may be several inflations before an adequate opening is achieved in the coronary artery. A problem with angioplasty is closure or restenosis of an artery.

Stents

With closure or restenosis of angioplastied lesions common, stents have been developed to maintain the opening or patency of the artery. Stents form a scaffold, or framework for the lesions.

SURGERY

Surgery is needed when people do not respond to medical management for CAD, and angioplasty and/or stents is not an option.

Coronary Artery Bypass Surgery (CABG)

The heart is accessed through a sternal incision. The patient is put on cardiopulmonary bypass (CPB) during surgery. This means that a machine takes over the work of the heart and lungs. In addition to providing circulation and oxygen, cardiopulmonary bypass permits the surgeon to create a hypothermic (cold) condition, which results in a decrease in the body’s need for oxygen and nutrients. The heart is also stopped so that the surgeon
can perform the surgery on a non-beating heart. The occluded arteries are bypassed with the patient’s own venous or arterial blood vessels or synthetic grafts.

**Minimally Invasive Direct Coronary Artery Bypass (MIDCAB)**

This type of surgery may be an option for some patients with certain types of lesions in certain areas of the heart. In one of the most common MIDCAB procedures, a 2-inch incision is made and the fourth rib on the left side is removed and the lesions are bypassed. Cardiopulmonary bypass (CPB) is not needed. This option is not available to everyone, as it depends on the location of the blockages of the coronary arteries.

**Transmyocardial Laser Revascularization**

This is a new procedure for patients with unstable angina and is not candidates for either angioplasty or cardiac surgery. A laser is used to create as many long narrow channels through the left ventricular muscle to the left ventricle. These channels will eventually allow oxygenated blood to flow during diastole from the left ventricle to nourish the muscle. Although many patients report a decrease in anginal symptoms, physicians are unsure of why this procedure is effective.
Medications, Supplements, and Herbs

“A strong positive mental attitude will create more miracles than any wonder drug.”

— Patricia Neal

MEDICATIONS

You may have begun taking medications or drugs to treat your coronary heart disease. Here are some of the broad categories of medications used to treat coronary heart disease. It is important for you to know the name of the medication, dose, and what type of medication it is and why it has been prescribed. As you will see here some medications are used for several different purposes.

It is a good idea to carry around a card in your wallet with the names of the medications and their dosage. Never stop a medication without consulting your practitioner. If you should have some side effects, discuss them with your practitioner. Every medication supplement or herb can interact with each other. Make sure that your practitioner is aware of ANY medication, supplement or herb you’re taking. Remember that caring for yourself involves be responsible for taking your medications.

Drugs affecting Lipid Levels - Antihyperlipidemics

Lowering serum lipid levels decreases the incidence of atherosclerosis, hypertension, and coronary heart disease.

Statins

This category of antihyperlipidemics has been shown to lower serum cholesterol levels. In addition, these drugs have been shown to decrease mortality in people with coronary heart disease. They are most effective if taken in the evening.

Some common statins:

- lovastatin (Mevacor)
- simvastatin (Zocor)
- pravastatin (Pravachol)

The function of the liver has to be monitored when taking statins because these drugs may affect the liver. Statins have also been found to cause myopathies – a disease of the muscle. Muscle and joint aches are a fairly common side effect and should not be associated with a myopathy.

Other Antihyperlipidemics:
Nicotinic acid (niacin, vitamin B3) frequently causes vasodilatation, or flushing. This occurs most frequently in the face, neck and chest. GI effects are also common.

**Drugs affecting coagulation (blood clotting)**

**Anticoagulation therapy**

Anticoagulation therapy counteracts the formation of clots.

Some common anticoagulation medications:

- Heparin – can be given intravenously or in an injection
- Warfarin (Coumadin) - Oral medication

The most common side effect for these types of medications is bleeding. If taking warfarin must monitor PT for therapeutic range. Avoid a dramatic increase in vitamin K intake. Many herbal medications interact with warfarin.

**Antiplatelet agents**

The action of antiplatelet medications is to prevent platelets from sticking together. When platelets stick together they can obstruct the blood flow in the coronary arteries if the arteries have been narrowed by artherosclerosis.

Some common antiplatelets:

- Aspirin – 75 to 325 mg/d should be used in high risk women unless contraindicated.

**Thrombolytics**

Thrombolytic drugs are given in medical emergencies such as a heart attack (myocardial infarction, MI)

- Alteplase – given intravenously
People taking **anticoagulation therapy, antiplatelet agents, and thrombolytics** should monitor themselves for bleeding.

**Drugs affecting Blood Pressure**

Drugs that affect blood pressure include: diuretics, beta blockers, calcium channel blockers, angiotensin-converting enzyme inhibitors (ACE inhibitors), angiotensin II receptor blockers (ARBs), alpha-beta blockers, centrally acting alpha-2 agonists, direct acting vasodilators.

**Diuretics**

These medications reduce fluids in your blood. They may make you to urinate more often. If you find that you need to urinate at a time that is not convenient for you, discuss this with your practitioner, and he/she may be able to find a schedule that works better with your lifestyle.

In addition to increasing the amount of fluid you eliminate, often these medications make you lose potassium, an electrolyte. You may need to eat foods that are naturally high in potassium (such as bananas). Your practitioner will monitor the potassium level in your blood, and determine if a dietary supplement is needed.

Some common diuretics:

- hydrochlorothiazide (Esidrix, Hydrodiuril)
- furosemide (Lasix)
- triamterene (Dyrenium)
- amiloride (Midamor)
- spironolactone (Aldactone)
- acetazolamide (Diamox)

One side effect of diuretics that you need to be aware of is that they may cause something called orthostatic hypotension. As a result of the medication causing a decrease in blood pressure this decrease may cause you to feel “lightheaded” when you change position. When you stand up from sitting this may occur. It is important for you to change position slowly, so that your body can get used to the change in position.

**Beta Blockers**

Beta blockers decrease the size of the infarct, ventricular arrhythmias, and mortality rate in people who experience an MI. They slow the heart rate and decrease the force of cardiac contraction.
Some common beta blockers:

- propranolol – acebutolol
- atenolol – (Tenormin)
- metoprolol (Lopressor)
- nadolol (Coregard)

Patients should report any untoward effects such as shortness of breath, depression, or difficult concentrating. Do not stop taking beta blockers abruptly because it may affect your heart rhythm, blood flow to the heart or blood pressure.

**Calcium Channel Blockers**

Calcium channel blockers enhance vasodilation and blood flow to the heart in addition to affecting they heart rhythm.

Some common calcium channel blockers:

- verapamil (Calan, Isoptin)
- diltiazem (Cardizem)

**Angiotension Converting Inhibitors (ACE inhibitors)**

These medications help the heart muscle function effective and have been shown to increase survival in people who have had an MI. They may cause a decrease in blood pressure, especially when they are first prescribed. It is recommended that ACE inhibitors should be used in women after a heart attack (myocardial infarction/ MI) unless contraindicated. A chronic cough can occur with ACE inhibitors.

A common ACE inhibitor:

- Captopril (Capoten)

**Angiotension II receptor blockers (ARBs)**

These drugs vasoconstrict blood vessels and have been found to be effective in reducing blood pressure.

A common Angiotension II receptor blocker (ARBs)

- losartan

**Alpha-beta blockers**
This medication is used for reducing blood pressure as well as heart rate.

A common alpha-beta blocker:

- labetalol (Normodyne, Trandate)

**Centrally acting alpha-2 agonists**

These drugs are usually added to other drug therapies.

A centrally acting alpha-2 agonist:

- clonidine (methyldopa)

**Direct acting vasodilators**

This medication is usually used in combination with other medications.

A direct acting vasodilator:

- hydralazine (Apresoline)

**Drugs treating Angina**

The drugs that are used to treat angina are nitrates, beta blockers, and calcium channel blockers. Beta blockers and calcium channel blockers have been discussed elsewhere, so only nitrates will be mentioned here.

**Nitrates**

Nitrates dilates (makes larger) blood vessels throughout the body, including the coronary arteries.

Nitroglycerine is an example of a nitrate. It is available as a tablet that you put under your tongue, as a pill, and as a patch. If nitro is taken under the tongue, pain relief should begin to occur within one or two minutes with relief in three to five minutes. You may take as many as three tablets, five minutes apart. If there is no relief after three tablets, you should activate the EMS system. Sublingual nitroglycerine may lower your blood pressure suddenly, so you should be sitting or lying down when you take it.

Some common nitrates:

- nitroglycerine – Nitrostat, Nitrobid IV, Nitrol, Nitrodur, Nitrolingual

- Isosorbide dinitrate – Sorbitrate, Isordil

**Drugs affecting Cardiac Rhythm - Antiarrhythmics**
These drugs affect the rhythm of the heart. In addition to the drugs listed below, beta blockers and calcium channel blockers are sometimes used to treat rhythm problems.

Some common antiarrrhythmic drugs:

- Quinidine (Quinaglute, Duratabs)
- Amiodarone (Cordarone)
- Sotalol (Betapace)
- Bretyium (Bretylol)

Drug levels in the blood of many of these drugs should be monitored.

If you should experience lethargy, confusion, vertigo, or headache contact your practitioner since this could be a sign of toxicity (too much medication).

Drugs treating Congestive Heart Failure (CHF)

The drugs that are used to treat congestive heart failure include angiotension-converting enzyme inhibitors (ACE inhibitors), diuretics, beta blockers, and cardiac glycosides.

Cardiac glycosides

Cardiac glycosides is used to maintain clinical stability, decrease symptoms, and improve ability to exercise.

A common cardiac glycoside:

- Digoxin

Supplements

Omega-3 fatty acids

Omega-3 fatty acids in capsule form (approximately 850 to 1000 mg. of EPA and DHA) may be appropriate for some women. Higher doses (2 to 4 g) may be used in some women with high triglycerides.

Antioxidant supplements

Antioxidant vitamin supplements (eg. vitamin C, E, and beta carotene) should not be used for the primary or secondary prevention of cardiovascular disease.

Folic acid
Folic acid, with or without B6 and B12 supplementation, should not be used for the primary or secondary prevention of cardiovascular disease.
How Your Heart Influences Other Body Systems

“You can either hold yourself up to the unrealistic standards of others, or ignore them and concentrate on being happy with yourself as you are.”

—Jeph Jacques

The purpose of this portion of the guide is to explore the effects of the heart on other parts of your body, as well as other parts of your body’s influence on the heart.

The systems of the body do not work independently. There is a feedback system in place which permits the parts of the body to work together to maintain the proper balance. This process is called homeostasis. The heart is important part of the body’s effort to maintain homeostasis.

Lungs

The right side of the heart pumps blood into the lungs to exchange carbon dioxide for oxygen. The left side of the heart receives this oxygenated blood and distributes it to the rest of the body. When more oxygen is needed by the body, such as when you are exercising, the heart rate and respiratory rate increases to meet that need. Therefore, it is very important for the lungs to function effectively to meet the body’s needs.

Something that you can do to help your lungs to work efficiently is to not smoke. Cigarette smoking affects both the lungs and the blood vessels throughout the body. See Risk Factors, for a more thorough discussion of the effects of cigarettes on the development of heart disease.

Infections

Another respiratory infection, the flu, can have serious consequences. Therefore it is important to obtain a flu vaccine annually. This vaccine offers the best protection against getting the flu. However, there are times when people that have been immunized against the flu and still contract it. If you think you may have the flu, it is important to contact your primary care provider who can confirm the presence of the flu and may be able to prescribe medications which decrease the length and severity of symptoms. In addition to obtaining the flu vaccine, you should also consider receiving protection from another respiratory infection, pneumonia. Unlike the flu vaccine which must be taken annually,
the pneumococcal vaccine which provides a lifetime of protection against one type of pneumonia.

Breathing

It is also important for you to breathe properly. Women often only use the upper part of their lungs to breathe. So it is beneficial if you learn how to breathe using your entire lungs. An exercise here is designed to encourage you to breathe deeply and to use all of your lungs. In addition, deep breathing exercises, such as this one, have been found to create a sense of relaxation.

Exercise

Breathing exercise:

- Sit in a comfortable position, hands loosely on your lap.
- Breathe in through the nose briskly while you count to four.
- Hold the breath for a count of seven (if possible).
- Exhale through the mouth slowly while you count to eight. You should hear your breath.
- Repeat this exercise four times.

If you should feel lightheaded, stop the exercise. Your goal is to make your exhalations longer and more thoughtful. This exercise is especially good when feeling anger or anxiety.

Difficulty breathing or shortness of breath (SOB) can be an important indicator that the heart is not functioning properly. If you should experience a sudden onset of shortness of breath you should seek immediate treatment. In addition, you will also want to consider whether certain positions, like lying flat, cause any breathing difficulties for you.

Nervous system

The nervous system is composed of the brain, spinal cord, and the peripheral nervous system. The brain is at the heart of the regulatory center of the body. The brain not only directs the functioning of other organs, but is very sensitive to the amount of blood, oxygen, and other nutrients it receives. Therefore, the brain can be a very important indicator of how the heart is functioning.

Things to monitor when assessing the nervous system include level of consciousness, light-headedness, anxiety, headache, and fatigue. All of these things can be signs that the
heart is not functioning properly. It is important to seek medical care if these symptoms should occur suddenly.

Just as the brain relies on the proper amounts of blood, oxygen, and nutrients to function properly, the peripheral nervous system (outside the brain and spinal cord) is also dependent on receiving these things from the peripheral arterial system. Decreased blood flow to the peripheries can result in damage to the nerves. If you experience numbness or tingling of your extremities you need to make your practitioner aware of these findings.

Stroke

A stroke is another disease of the cardiovascular system. The location and extent of the stroke affects its severity. There are two major types of strokes, hemorrhagic and ischemic. A hemorrhagic stroke occurs when blood leaks from a blood vessel into the brain. An ischemic stroke occurs when plaque ruptures or a blood clot occludes a blood vessel. Often, this is the result of the same atherosclerotic process that occurs in the coronary arteries and other blood vessels of the body.

(insert picture of the brain)

Some of the signs and symptoms of a stroke include:

- Sudden numbness or weakness of the face, arm or leg, especially on one side of the body
- Sudden confusion, trouble speaking or understanding
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, loss of balance or coordination
- Sudden, severe headache with no known cause

If you or someone you know experience such signs, seek immediate care. It is vital to get treatment within 3 hours of the start of the symptoms.

Since most strokes are ischemic in nature, if you have experienced a stroke many of the same modifications you have made for coronary heart disease will reduce your risk of a stroke. However, you should consult with your practitioner and discuss the best treatment plan for you.

For more information contact:

American Heart Association: http://www.americanheart.org

Muscles
The muscles of the body are sensitive to the amount of blood, oxygen, and nutrients in the body. Muscle pain, aching, cramping and fatigue may indicate that there is not enough blood and oxygen is being delivered to the muscle. This can be because the heart is not pumping effectively, or that arthrosclerosis may be occurring throughout the body, and limiting blood flow to that area.

Muscle fatigue, aching, pain, and cramping may also be the result of an imbalance of certain nutrients, called electrolytes. Low or high levels of some of these electrolytes, including potassium and magnesium, have been associated with muscle cramping. People who take diuretic medications, to remove fluid from the body, are particularly at risk for electrolyte imbalance. In addition to removing fluids, these medications often cause potassium and magnesium to be eliminated through the urine. Since potassium and magnesium are not stored in the body, you must consume foods containing these nutrients on a daily basis, or take a supplement. See Nutrition, for a discussion on nutrition and a list of foods that are good sources of potassium.

If you experience any muscle pain, aching, cramping, or fatigue this information should be brought to the attention of your practitioner.

**Bones and Joints**

Along with muscles, the bones and joints keep our bodies in motion. Because the musculoskeletal system, circulatory and nervous system all work together any problem that causes problems with the nervous system connections, circulation, muscle contraction, joint movement, or support makes the body function improperly.

Bones may appear to be stable, but actually they are continually breaking down and reforming. Therefore it is important to eat adequate amounts of calcium and phosphorus rich foods. Osteoporosis is a disease that is characterized by low bone mass and structural deterioration of bone. This condition can lead to fractures and impair your mobility, that is why it is essential for post-menopausal women to have their bone density measured, and take appropriate treatment, including diet, dietary supplements, and medications.

Osteoarthritis is a type of degenerative joint disease. It most often affects the joints of the hand, wrist, knee, hip, neck, and spine.

Strategies to promote bone and joint health include:

- Maintaining an ideal weight
- Eat a balanced diet
- Engage in weight bearing exercises
Engage in stretching exercises that promote flexibility

If you have been diagnosed with osteoporosis or osteoarthritis consult your practitioner before you begin an exercise regime. Your practitioner, perhaps with the aid of a physical therapist, will be able to develop an exercise regime that promotes joint and bone health and cardiovascular health.

**Kidneys**

The kidneys perform many important functions related to maintaining our body’s balance or homeostasis. The kidneys are one part of the urinary system. In addition to removing waste products and fluid, the kidneys play a role in the regulation of blood pressure and the creation of the oxygen-carrying red blood cells. The kidneys affect and are affected by blood pressure. High blood pressure or hypertension is a factor in the development of heart disease. See Risk Factors for a more thorough discussion of blood pressure.

One thing that we can do to protect our kidneys, in addition to treating high blood pressure, is to take care of our entire urinary system. That means we must drink adequate amounts of water to flush wastes from our body and monitor our urine output. Women are especially susceptible to urinary tract infections due to their anatomy. If untreated, these infections may spread to the kidneys, and affect their function.

**The Digestive System**

The digestive system is important to your health and well-being. Digestion is the process by which nutrients in food are absorbed and provide fuel for the body. The gastrointestinal tract is a tube that extends from your mouth to your anus. Since the heart lies just above the muscle that separates the digestive system and the heart and lungs, it is not uncommon for people to experience digestive disturbances, or what they think are digestive disturbances when it could be your heart. If you continue to experience digestive problems after you are on treatment, make sure that you consult your practitioner.

To promote digestive wellness and care for yourself, you should:

- Avoid stomach irritants (alcohol and smoking)
- Eat a balanced diet
- Eat at regular intervals
- Eat slowly, chewing your food properly
- Promote optimal elimination

**Skin**
The skin is the largest organ of the body and serves to protect the body from microorganisms and trauma. It helps to regulate the body’s temperature through sweating and the expansion and constriction of blood vessels. It also manufactures vitamin D necessary for the absorption of calcium, which is necessary for bone health. It is important to care for your skin when caring for yourself. The most important things a woman can do to maintain healthy skin are:

- Protect it from the damaging effects of ultraviolet radiation (use sun screen)
- Eat a balanced diet
- Drink adequate amounts of fluid
- Keep the skin hydrated
- Refrain from smoking
- Exercise regularly

If you notice a change in your skin color including redness, yellowness, a blue tone, or paleness, consult with your practitioner. This may indicate a problem with your cardiovascular system. Bruising may be the result of the medication you are taking for your heart disease. If you have concerns about bruising, bring this to the attention of your practitioner.

**Diabetes**

Diabetes mellitus, is one of the major risk factors for cardiovascular disease. There are five types of diabetes recognized by the American Diabetic Association:

- **Type 1** – used to be called juvenile diabetes. It is considered to be an autoimmune disease and is marked by complete lack of insulin production. Therefore injection of insulin is needed to treat type 1 diabetes.

- **Type 2** – the most common type of diabetes. This type of diabetes is marked by insulin resistance and a defect in insulin secretion. Oral medication and/or insulin is used in the treatment of this type of diabetes

- **Gestational diabetes**- glucose intolerance related to a pregnancy.

- **Other specific types** – such as genetic types

- **Pre-diabetes** – people who are increased risk for the development of the development of diabetes.
In addition to medications diabetes is always treated by a diet regime and optimally by an exercise program.

While it is estimated that 1/3 of the people with diabetes are unaware they have diabetes there are some signs and symptoms associated with it:

- Increase thirst
- Increased urination
- Increased appetite
- Weakness and fatigue
- Vision changes
- Tingling or numbness in hands or feet
- Sores that are slow to heal
- Recurrent infections

If you are experiencing several of these symptoms, let your practitioner know. In addition, it is a good idea to have a screening test, such as a fasting blood glucose test.

Since diabetes is a risk factor for the development of cardiovascular disease, it is important to determine if you have it and if you are diagnosed with diabetes, to follow a treatment plan so that your risk may be reduced.

**Other**

There are many other organs and systems that affect and are affected by the cardiovascular system. Knowing about how things affect your heart can enable you to take the best possible care of yourself. If you have been diagnosed with any other disease or are taking any medications, be sure that you speak with your practitioner to determine how that would affect or be affected by your heart disease.
Glossary

“An investment in knowledge always pays the best interest.”

—Benjamin Franklin

Some of the vocabulary we use to talk about heart disease is not part of our everyday language. Knowing what the words mean can help you discuss issues related to heart disease with your practitioner.

angina pectoris – A pain or pressure in the chest caused by inadequate blood flow and oxygenation to heart muscles. This pain does not last for more than ½ hour and responds to medication.

angiography – Diagnostic radiography of the heart and blood vessels using a radiopaque contrast medium (dye). This test provides the best information about the condition of the coronary arteries.

angioplasty – Any endovascular procedure that reopens narrowed blood vessels and restores forward blood flow. Most often this procedure is performed on coronary, carotid, or peripheral arteries occluded by arteriosclerosis.

angiotensin –converting enzyme inhibitor (ACE inhibitor) – Any of the medications that are used to inhibit conversion of angiotension I to angiotension II.

anorexia – Loss of appetite.

anterior – Before or in front of when referring to the body, it refers to the abdominal side.

antiplatelet – Any medication that prevents platelets from sticking together.

aorta – The main truck of the arterial system of the body. It begins at the left ventricle of the heart.

arterioles – The smallest arteries.

arteriosclerosis – A disease of the arterial vessels marked by a thickening, hardening, and loss of elasticity in the arterial walls.

atherosclerosis – The most common form of arteriosclerosis marked by cholesterol-lipid-calcium deposits in the walls of the arteries.
atria, atrium – The upper chambers of the heart.

blood – The cell-containing fluid that circulates through the heart, arteries, veins, capillaries, carrying nourishment, electrolytes, hormones, vitamins, antibodies, heat, and oxygen to the tissues and taking away waste matter and carbon dioxide. The cellular components of blood are: red blood cells (erythrocytes); white blood cells (leukocytes); platelets (thrombocytes).

BMI (body mass index) – It is a height/weight index that is used to measure size. It accounts for differences in body composition by defining the level of adiposity (or fat) according to the relationship of height to weight.

capillary – Any of the tiny blood vessels that connects the ends of the smallest arteries (arterioles) with the beginnings of the smallest veins (venules).

carotid arteries - The left and right common carotid arteries form the principle blood supply to the head and neck.

coaulation – The ability of the blood to form clots (thrombus).

collateral blood flow – When the major arteries are blocked, over time other, smaller arteries grow to supply the area.

congestive heart failure (CHF) - A disorder in which the pumping function of the heart is decreased.

coronary – The blood vessels that supply the heart muscle.

coronary artery bypass graft surgery (CABG) – The surgical establishment of extra blood vessels that permits blood to flow past the point of obstruction of a coronary artery.

electrolytes – Solutions that conduct electricity in the body. They are found in blood, tissue fluids, and cells. They include: sodium, potassium, calcium, magnesium, and sodium bicarbonate.

endocardium – The endothelial membrane that lines the heart.

donothelial – A form of squamous epithelium (skin-like) cells consisting of flat cells that line the heart, blood and lymphatic vessels and other body cavities.

epicardium – The serous (fluid-filled) membrane on the surface of the myocardium.

epigastric – The region over the pit of the stomach.

homeostatis – The state of dynamic equilibrium of the internal environment of the body that is maintained by the ever-changing process of feedback and regulation in response to external and internal changes.
intermittent claudication - A disorder of the arterial blood vessels of the legs caused by atherosclerosis. People who have intermittent claudication experience pains in the legs after activity.

ischemia – A temporary deficiency in the blood flow to a tissue or organ.

lipids – Any one of a group of fats or fat-like substances, characterized by their insolubility in water and solubility in fat.

lipoprotein – Chemicals in the bloodstream consisting of simple proteins bound to fat.

lumen – The space within an artery, vein, intestine, or tube.

mg/dl – A metric system measure which means milligrams per deciliter.

myocardial infarction (MI) – The loss of living heart tissue as a result of coronary artery occlusion. It is also known as a “heart attack”.

palpation - A sensation of rapid or irregular beating of the heart.

perfusion – The circulation of blood through tissues.

pericardium - The membranous, fibrous sac enclosing the heart.

plaque – An obstruction in the lining of an artery formed by the abnormal accumulation of lipids (fats) and sometimes calcium.

plasma (thrombocytes) – The liquid part of the blood and lymph.

platelet – A round or oval disk found in the blood of vertebrates. Platelets play an important role in blood coagulation, hemostasis, and blood thrombus formation.

posterior – Toward the rear, the back side.

potassium – A mineral element that serves as the principle electrolyte in the intracellular fluid and is an important electrolyte in the extracellular fluid. Along with other electrolytes, potassium participates in many functions including metabolism, cell membrane homeostasis, nerve impulse conduction, and muscle contraction.

pulmonary – Concerning or involving the lungs.

red blood cells – (erythrocyte) The primary function of the red blood cells is to carry oxygen to tissues and organs throughout the body.

revascularization – Restoration of blood flow to a part.

stents – Any material or device used to hold tissue in place, to maintain open blood vessels and prevent lumen closure. The stent is made of an inert material, usually metallic, with a self-expanding mesh and is placed into an artery.
vena cava – The principle vein drawing blood from the lower portion of the body and deposits the blood into the right atrium of the heart.

ventricle – Either of the two lower chambers of the heart that when filled with blood, contract to propel it into the arteries.

vertigo – A feeling of dizziness and light-headedness.

white blood cells – (leukocytes) They are blood cells that fight infection and tissue damage. They are part of the immune system.
APPENDIX B

SELF-LEARNING MODULES: CARING FOR YOURSELF

These modules are designed to help you care for yourself with your diagnosis of coronary heart disease (CHD). These modules have been developed to answer your questions regarding CHD, what questions to ask your healthcare practitioner so that you may best care for yourself, and what changes in your lifestyle that will result in enhanced health and well-being. Information will be presented which discuss the functioning of the heart, how heart disease develops, what factors but you a risk for CHD, what you can do to stop or reverse the progression of the disease, and how you can make changes in your life. In addition, there is a section that discusses what tests are used to provide information about the disease and what treatments are used to treat CHD. While these modules provide information regarding CHD, they will also assist you in thinking about CHD as it relates to you. Through this process you will become better informed about CHD, be able to take a more active role in your care, empower you to make changes in your life, all components of caring for yourself.

Coronary Heart Disease
Since you received a diagnosis of coronary heart disease, you may have had any one of a variety of emotions. While this diagnosis may impact your life in a number of ways, one of the most important things to consider is that risk factors have been identified that if modified may change the course of the disease. In these modules you are going to explore those risks and learn to identify what you need to do care for yourself.

Women and Coronary Heart Disease
As a woman, you may have been surprised to have been diagnosed with coronary artery disease (CHD). While though it is true that women develop the disease later than men, CHD is as common in women as it is in men. Also, researchers have found that women have different symptoms of the disease and respond differently to treatment. The classic “crushing chest pain” that often signals heart disease in men is not the way many women experience the disease. Women often have more subtle signs of heart disease, such as fatigue, dizziness, or shortness of breath. Since these signs are subtle and are not specific for heart disease, the diagnosis of heart disease is more difficult to obtain in women than in men. By learning your particular signs and symptoms of heart disease, you can better care for yourself.

Additionally, women also respond in a different manner than men to conventional treatments such as bypass surgery or angioplasty, as well as medications. This is why it is so important for you to understand how you, personally, are affected by heart disease and when it is appropriate to seek care. These modules have been developed specifically for women, to address the needs of women with CHD.

Self-Awareness
One of the most important things you can do to maintain or enhance your health is to understand how your body responds in health and illness. The term used for this is self-awareness. While the information presented in these modules is appropriate for the general population of women, you will consider how this relates to you.

**Components of the Modules**

These modules are designed to increase your understanding of coronary heart disease and yourself, to increase your self-awareness. There are two components to these modules. One part will be an educational component. The educational components includes how the heart works, what factors increase your risk for heart disease and how to reduce those risks, and how to identify things that need further follow-up with your healthcare provider. The other component is an exercise which involves you performing an activity. For these exercises you may want to jot down thoughts related to what you are learning about your physical and emotional self. There is a place at the end of each module for this activity. Writing down your thoughts may help you to see patterns in how you respond to illness and prompt questions that are important for you to know to best manage your health.

The subjects we have included in these modules include:

I. Heart Basics: A description of how the heart works.
II. Coronary Artery Disease (CAD) and Risk Factors: A description of coronary artery disease, identifying what factors put you at risk, and what you can do to reduce your risk.
III. Nutrition and Physical Activity: How nutrition and physical activity affects the heart.
IV. Psycho-social Considerations: How your psychological state and social support affects the heart.
V. Appendices:
   A. Tests for Cardiac Disease: Information regarding the different tests used to diagnose cardiac disease is presented.
   B. Treatments: The treatments available for coronary heart disease (CHD), including surgery, angioplasty and stents, and medications are discussed.
   C. Vocabulary

**Directions for Use**

These modules are meant to be used in succession. The nurse will provide you with a module every week. At the end of the week she will review the module with you. This provides an opportunity for you to ask questions and provide feedback for the nurse about the module. The appendix may be helpful to refer to at any time because it contains information regarding medications, tests, and a vocabulary associated with CHD.

At the end of each module there is a place where you write down your thoughts and feelings, questions you may have regarding the information presented, in addition to answering the questions posed in the exercises.
Module I – Heart Basics: A Description of How the Heart Works

This portion of the module is designed to provide you with information about the heart and how it works in relation the entire vascular system.

The Heart

The heart is a pump. It is located slightly left of the center of your chest and is normally the size of your fist. The heart is divided into four areas or chambers. Each of these chambers performs a special function. The upper areas are called atrias. Their function is to collect blood. The lower chambers are called ventricles. The ventricles are the pumping chambers. In addition to the four chambers, the heart is divided into the left and right sides. The right side of the heart receives blood from the entire body in the atria and the ventricle pumps blood into the lungs. The left atria receives the blood from the lungs and the ventricle pumps oxygenated blood to the rest of the body.

Separating the atria from the ventricle is a valve. Valves are also located at the “end” of the ventricles; where the right ventricle meets the pulmonary artery and the left ventricle joins the aorta. These valves help keep the blood flowing in a forward direction. Valves that work properly contribute to the heart’s ability to pump effectively.

The heart is composed of three layers: a thin inner layer, the endocardium; a layer of muscle, the myocardium; and a fibrous outer layer, the epicardium. In addition, the heart is surrounded a protective sac, called the pericardium.

(C Insert picture of the internal heart here)

Circulation

The heart is at the center of the cardiovascular system. Oxygen-rich blood is pumped from the left ventricle into the aorta. The aorta brings blood to all of the major organs of the body, including the brain. Arteries and the smaller arterioles bring oxygen-rich blood throughout the body while veins and venules return blood to the heart. The exchange of oxygen and nutrients occur at the capillary level. Oxygen-depleted blood flows into the inferior (lower) or superior (upper) vena cava prior to entering the right atrium. The blood from the right atrium enters the ventricle where it is pumped into the pulmonary artery and then enters the lungs. Here the blood exchanges carbon dioxide for oxygen. The oxygen-rich blood travels through the pulmonary veins into the left atrium and then into the left ventricle and the process is repeated.

Coronary arteries

The heart also needs its own blood supply to function properly. This blood supply is called the coronary circulation. There are three main arteries which provide oxygen rich
blood to the heart. They are the right, left anterior descending, and left circumflex arteries. Just as everyone has a slightly different fingerprint, the areas which each coronary artery supplies varies slightly. However, for most people, the right coronary artery supplies blood for the electrical conduction system of the heart while the left coronary arteries supply blood to the left atrium and ventricle. The openings for the coronary arteries are located in the aorta, just above the aortic valve. The location of the openings of the coronary arteries guarantees that they receive an adequate amount of blood.

(Insert picture of the heart with coronary arteries here)

**Your Beating Heart**

The purpose of this portion of the module is to discuss with you on the electrical properties of the heart, or the heart rate and rhythm.

**Heart Rate and Rhythm**

The heart is a pump, with an electrical conduction system. Some parts of the heart muscle serve as relay stations for this electrical conduction system. Normally there is a certain sequence, or pattern to the electrical conduction. This sequence allows the heart to contract in a systematic fashion for maximum efficiency.

With a normal heart rhythm the electrical impulse begins in the right atria and travels down the septum, the muscle which separates the two sides of the heart. There are many things that can affect the conduction of electricity through the heart. Some of the most common are mechanical events such as damage to the heart muscle and cardiac enlargement. Other causes of irregular heart rhythms include chemical irritants such as those that occur when there is a breakdown of heart muscle or an imbalance of body nutrients.

The heart responds to feedback systems from other parts of the body. The heart rate increases in response to the need for more oxygen and nutrients for the cells. Therefore, if you are physically active, your heart rate will increase to meet the needs of your body for oxygenated blood. Your heart also responds to emotional signals, and your heart rate will increase when you’re excited, stressed, or fearful.

Medications can affect the heart rate. Medications such as Beta Blockers can lower your resting heart rate and decrease your heart’s ability to increase its rate dramatically. Other medications can cause an increase in the resting heart rate.

It is important for you to know your resting heart rate, how your heart rate responds to exercise, and what effect the medications you are taking have on your heart rate. At the end of the module there is an exercise that has you taking your pulse.
Heart Functioning

The purpose of this portion of the module is to explore the effects of the heart on other parts of your body, as well as other parts of your body’s influence on the heart.

The systems of the body do not work independently. There is an elaborate feedback system in place which permits the body to work together to maintain the proper balance. This process is called homeostasis. The heart is important part of the body’s effort to maintain homeostasis. This important to you because you may have other diseases and it is important for you to understand how these diseases may affect or be affected by your hear.

Heart

There are two ways that coronary artery disease can directly affect your heart. Coronary heart disease can result in the development of congestive heart failure (CHF) and arrhythmias, or irregular heart rhythms. CHF is a chronic condition which is the result of a decreased ability of the heart to pump. Signs and symptoms of CHF include shortness of breath (SOB), difficulty lying flat, fatigue, ankle and feet swelling, rapid weight gain, frequent nighttime urinations, and anorexia (loss of desire to eat). If you experience any of these symptoms it is important for you to contact your practitioner for follow-up. While there are no cure for CHF, medications can improve the heart’s ability to pump and make you feel much better.

Arrhythmias, or irregular heart rhythms, are disorders of the conduction or electrical system of the heart. These arrhythmias may be temporary or precedent. It is not unusual for someone to have arrhythmias after an MI. That is because when the heart muscle is damaged, the muscle gives off substances which make the heart beat in an irregular manner. That is one reason why your heart rhythm is monitored when you are admitted to the hospital with a (MI). These irregular rhythms are usually temporary and go away in the first few days after an MI. However, other irregular rhythms may be the result of permanent damage to the heart muscle, especially if part of the conduction system is damaged by an MI. Treatments for arrhythmias include electrical therapy, pacemakers, automatic defibrillators, and medications. If you should experience an irregular rhythm, such as palpations (your heart beating rapidly for a period of time), lightheadedness or dizziness this may be an indication that you have some kind of rhythm disturbance and you should report these finding to your practitioner. If you noticed when you were taking your pulse that your heart rate was irregular, report these findings to your practitioner, as well. While everyone experiences some irregular heartbeats, if this becomes noticeable and interferes with your activities of daily living, inform your practitioner. Caffeine causes some people’s heart to beat rapidly. To remedy this situation, the answer may be as simple as decreasing the amount of caffeine you consume!
Lungs

As mentioned in a previously, the right side of the heart pumps blood into the lungs to exchange carbon dioxide for oxygen. The left side of the heart receives this oxygenated blood and distributes it to the rest of the body. When more oxygen is needed by the body, such as when you are exercising, the heart rate and respiratory rate increases to meet that need. Therefore, it is very important for the lungs to function effectively to meet the body’s needs.

Something that you can do to help your lungs to work efficiently is not to smoke. Cigarette smoking affects both the lungs and the blood vessels throughout the body. See Module II: Coronary Heart Disease and Risk Factors, for a more thorough discussion of the effects of cigarettes on the development of heart disease.

Upper and lower respiratory infections can also pose problems for someone with heart disease. You must be cautious about taking over-the-counter cold preparations. These medications may interact with prescription drugs used to treat coronary heart disease. Check with your pharmacist or practitioner before buying these medications.

Another respiratory infection, the flu, can have serious consequences. It is important to obtain a flu vaccine annually. This vaccine offers the best protection against getting the flu. However, there are times when people that have been immunized against the flu and still contract it. If you think you may have the flu, it is important to contact your primary care provider who can confirm the presence of the flu and may be able to prescribe medications which decrease the length and severity of symptoms. In addition to obtaining the flu vaccine, you should also consider receiving protection from another respiratory infection, pneumonia. Unlike the flu vaccine which must be taken annually, the pneumococcal vaccine which provides a lifetime of protection against one type of pneumonia.

It is also important to for you to breathe properly. Women often only use the upper part of their lungs to breathe. So it is beneficial if you learn how to breathe using your entire lungs. An exercise at the end of this module is designed to encourage you to breathe deeply and to use all of your lungs. Deep breathing exercises, such as this one, have been found to create a sense of relaxation.

Difficulty breathing or shortness of breath (SOB) can be an important indicator that the heart is not functioning properly. If you should experience a sudden onset of shortness of breath you should seek immediate treatment. In addition, you will also want to consider whether certain positions, like lying flat, cause any breathing difficulties for you.
Nervous system

The nervous system is composed of the brain, spinal cord, and the peripheral nervous system. The brain is at the heart of the regulatory center of the body. The brain not only directs the functioning of other organs, but is very sensitive to the amount of blood, oxygen, and other nutrients it receives. Therefore, the brain can be a very important indicator of how the heart is functioning. Things to monitor include level of consciousness, light-headedness, anxiety, headache, and fatigue. All of these things can mean that the heart is not functioning properly. It is important to seek medical care if these symptoms should occur suddenly.

Just as the brain relies on the proper amounts of blood, oxygen, and nutrients to function properly, the peripheral nervous system is also dependent on receiving these things from the peripheral arterial system. Decreased blood flow to the peripheries can result in damage to the nerves. If you experience numbness or tingling of your extremities you need to make your practitioner aware of these findings.

Muscles

The muscles of the body are sensitive to the amount of blood, oxygen, and nutrients in the body. Muscle pain, aching, cramping and fatigue may indicate that there is not enough blood and oxygen is being delivered to the muscle. This can be because the heart is not pumping effectively, or that arthrosclerosis may be occurring throughout the body, and limiting blood flow to that area.

Muscle fatigue, aching, pain, and cramping may also be the result of an imbalance of certain nutrients, called electrolytes. Low or high levels of some of these electrolytes, including potassium and magnesium, have been associated with muscle cramping. People who take diuretic medications, to remove fluid from the body, are particularly at risk for electrolyte imbalance. In addition to removing fluids, these medications often cause potassium and magnesium to be excreted through the urine. Since potassium and magnesium are not stored in the body, you must consume foods containing these nutrients on a daily basis, or take a supplement. See Module II: Risk Factors, for a discussion on nutrition and a list of foods that are good sources of potassium. If you experience any muscle pain, aching, cramping, or fatigue should be brought to the attention of your practitioner.

Kidneys

The kidneys perform many important functions related to maintaining our body’s balance or homeostasis. The kidneys are one part of the urinary system. In addition to removing waste products and fluid, the kidneys play a role in the regulation of blood pressure and the creation of the oxygen-carrying red blood cells. The kidneys affect and are affected by blood pressure. High blood pressure or hypertension is a factor in the development of
heart disease. See Module II: Risk Factors for a more thorough discussion of blood pressure.

One thing that we can do to protect our kidneys, in addition to treating high blood pressure, is to take care of our entire urinary system. That means we must drink adequate amounts of water to flush wastes from our body, and monitor our urine output. Women are especially susceptible to urinary tract infections due to their anatomy. If untreated, these infections may spread to the kidneys, and affect their function.

Other

There are many other organs which affect and are affected by the cardiovascular system. Knowing about how things affect your heart can enable you to take the best possible care of yourself.
EXERCISE - BASICS
This exercise will help you to think about your body and become aware of how blood flows throughout it and nourishes all of the cells.

Place yourself in a comfortable sitting position, with your feet on the floor and your arms relaxed. Close your eyes and take a deep breath. Slowly exhale. Repeat this breathing exercise six more times.

Open your eyes. Now you will follow the path of blood throughout the body. You may want to have the pictures of the circulatory system available during this exercise. We begin in the left ventricle. Oxygen rich blood is pumped throughout the body by the left ventricle. The ventricle contracts and the valve opens and blood surges. The first place which gets some of this blood is the blood vessels which supply the heart, the coronary arteries. Imagine the blood being pumped into these arteries and how they travel around and through the muscle which is the heart. Imagine that the muscle is being nourished by the blood. Other blood continues to be pumped into the aorta and some of that blood gets pumped into the brain. First the blood travels up both sides of the neck into the carotid arteries. Then it spreads across the brain, nourishing the brain. Other blood is directed into the arms and legs. Feel the blood entering your arms and flowing to your fingers. The blood entering your legs and feet has made a sharp turn in your femoral arteries. This blood supplies the muscles, bones, and skin of your legs. Feel the blood move down your legs.

Some blood has been pumped into your abdominal organs. This blood picks up water and nutrients from your stomach and intestine that is carried throughout the body. The blood is also filtered through organs such as the kidney and liver, where waste products are removed. Blood that oxygen has been removed enter the heart from either above or below, through the two vena cava. This blood is passively received in the right atrium of the heart. When the valves, which separate the top from the bottom chambers of the heart open, blood flows into the lower part of the heart, the ventricles. The right ventricle then pumps the blood gently into the pulmonary arteries, which are connected to the lungs. Blood flows throughout the lungs, exchanging carbon dioxide for oxygen. You exchange the carbon dioxide for oxygen with every breath you take. The oxygen rich blood flows from the pulmonary veins into the left atrium of the heart. When the valve separating it from the left ventricle opens, the blood rushes in, which begins the process all over again.

Remember that this process occurs about seventy-five times a minute, 60 times an hour, 24 hours a day, 365 times a year, for all the years of your life. Reflect on how important the heart is to our minute by minute functioning.
EXERCISE– YOUR BEATING HEART

This exercise designed to make you more aware of the beating of your heart and heart rhythm.

Your pulse is a sign of your heart beating. There are pulse points located at various point on your body. Look at the illustration of pulse points. Pulse points occur when an artery is close to the surface. Some of the most common pulse points are the radial artery (located on the wrist), the carotid artery (located on the neck), and the temporal artery (located at the temple).

Using your index and middle fingers, try to locate these pulse points on both sides of your body. Don’t use your thumb! Your thumb has a pulse of its own. You may have to put a little pressure on the points before you become aware of a pulse.

What pulses have you found? How does your pulse feel? Is it strong or weak, regular or irregular?

You will want to practice taking your pulse. If your pulse is regular you can take your pulse for 15 seconds and multiple that number by 4 to get your heart rate. If the beats seem irregular, count your pulse for an entire minute.

You may want to take your pulse several times during the next week. A guide has been provided. Take it when you just wake up, take it after you have engaged in a physical activity; take it when you are feeling emotional. How much does your pulse differ during the course of the day? What times does your heart beat at its slowest? When is it most rapid? How does it feel when your heart beat rapidly? Does anything you eat or drink affect your heart rate?
# Keeping Track of Your Pulse

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EXERCISE: BREATHING

This exercise relates to your breathing. Proper breathing can increase energy and alertness, because of its effect on the heart. It can also enhance your immune system and promotes relaxation. Women often breathe only with the upper portion of their lungs. This exercise will increase your lungs’ capacity. Practice this whole lung breathing or diaphragmatic breathing on a daily basis.

Stand or sit with your arms stretched out at your sides. Inhale though your nose to a count of seven. While you are inhaling, bring your arms up over your head. Notice how it feels to have a fully expanded rib cage. Hold your breath for a count of seven. Exhale slowly through your mouth, pursing your lips as you exhale. Try to exhale for a count of seven. If you can’t exhale that slowly, just try to exhale as slowly as possible. Repeat this exercise for a total of seven times. Stop at any time, however, if this exercise makes you feel light-headed or faint.

This exercise serves to fully expand and bring oxygen to all parts of the lungs.

Record how you felt performing this exercise. Do you feel more relaxed after performing this exercise? Deep breathing can promote relaxation. It is beneficial to perform this exercise daily to facilitate relaxation and enhance lung function.

If you would like any more information regarding breathing, a book, tape, or class may be beneficial.
EXERCISE: INFORMATION ABOUT YOU

As you have read this module, you may have more questions they you had when you began! Don’t worry; you can easily get the information you need from a variety of sources. One of the most important things that you can do to care for yourself is to ask questions. Your practitioner is an important source of information. Before your next visit you will want to think about what you have learned and be prepared to ask him/her questions that have emerged. One place to begin is to get information reading your health. When you have your blood pressure and pulse taken, write it down. Compare your pulse to the rate you have taken at home. Ask if your heart rate is irregular. You will also want to ask if there is anything that the practitioner is concerned about and following with you. Below is a chart to help you keep tract of that information:

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Module II: Coronary Heart Disease and Risk Factors

The purpose of the first part of this module is to provide a description of atherosclerosis, the major cause of coronary heart disease (CHD). In addition, signs and symptoms of angina and myocardial infarctions (MIs) are discussed.

The second part of the module looks at risk factors related to CHD. Although coronary heart disease is a chronic disease, risk factors have been identified that can reduce your risk for further complications and slow or eliminate the progression of the disease. This module will provide you with information related to risk factors for heart disease. They will assist you in identifying, along with your practitioner, your risk factors and how to modify or change those risks.

Treatments such as surgery, angioplasty, or stents do not cure the disease. However, they may help reduce or eliminate some of the side effects you may experience as a result of the disease. The progression of the disease occurs even with these interventions. Therefore, you have a vital role in directing the course of the disease.

Atherosclerosis

Atherosclerosis is the major cause of coronary heart disease (CHD). It is characterized by the accumulation of cholesterol and lipids in the wall of an artery. This leads to the formation of plaque which serves to narrow the artery. While we don’t know exactly why plaque is formed, it appears that there are a number of factors that promote the development plaque on arterial walls. One factor appears to be an injury to the wall of the artery. It is believed that the lining of the wall of the artery can be injured by a mechanical force such as hypertension or chemical irritants such as inflammation. Once this injury occurs, the narrowing of the arteries continues over time with lipids, or fats in the blood contributing the formation of plaque. This plaque gets harder, or calcifies over time (American Heart Association, 2007; Lewis et al., 2004).

CHD takes many years to develop. Initial changes in the walls of arteries can be found in teenagers, while by the time most people are in their thirties the process of atherosclerosis is well established.

This process occurs throughout the body, not just in the arteries of the heart. However, we often first detect it in the heart because the size of the blood vessels is much smaller than the rest of the body and there are more twist and turns in the coronary arteries. These twists and turns are places where plaque formation is more likely to occur.

(Insert picture of arteries here)
Angina Pectoris

Some people develop angina, a pain in the chest of short duration. This pain is the result of the heart muscle not getting enough blood and oxygen from the coronary arteries. When the blood supply is adequate, as a result of someone resting (which reduces the workload on the heart) or taking a medication that will decrease the workload of the heart, the pain will go away. Since this lack of blood to the heart muscle is a temporary situation, lasting no longer than 20 minutes, no permanent damage occurs. This pain can be experienced in a variety of ways. It can be felt as chest pain, pressure, heaviness in the chest, an upset stomach, heaviness in the left arm, jaw, or tooth pain.

When angina is termed as “stable” this means that it occurs only occasionally, with the same pattern of onset, duration, and intensity of symptoms. With stable angina, the person comes to know that if they engage in certain activities the result will be chest pain. Medications, such as nitrates, can reduce or eliminate this pain. There is cause for concern when there is a change in the onset, intensity, or duration of the pain. Now the angina is termed unstable, meaning that it is not predictable. This can indicate disease progression and would be important to seek medical help if a person should experience any change in their usual pattern of angina.

Angina can be helpful when it enables people to seek treatment for coronary heart disease and monitor the progression of the disease. However, many individuals especially women, people with diabetes, and the elderly do not experience angina. Their first indication of coronary heart disease occurs when they suffer an MI. Some people continue to experience angina after their MI.

Myocardial infarction (MI)/Heart Attack

When you have a myocardial infarction (MI) or heart attack, the blood supply in the coronary arteries has been stopped due to blockage for a period of time. If the heart muscle does not receive blood for approximately six hours, the muscle that is supplied by the artery dies. This is why it is important to seek immediate care if you experience the symptoms that occurred when you had your heart attack.

The classic signs of an MI include severe chest pain which is not relieved by rest, position change, or the use of nitrates. However, many women, diabetics, or elderly people do not have the classic signs when they experience their MI. The symptoms they experience can be caused by a number of illnesses. These symptoms include fatigue, shortness of breath, dizziness, vertigo, or heart rhythm disturbances.

When the heart muscle dies it is no longer able to expand and contract effectively. The damage to the muscle will decrease the heart’s ability to pump. Depending on how much muscle is involved, you may or may not be aware of this decrease in function. The effect of the MI or heart attack also depends on the location of the muscle which has been damaged. For example, an MI which effects the left ventricle can be very serious because of the importance of this part of the heart’s pumping ability.
EXERCISE – YOUR DIAGNOSIS

This exercise is to record how you felt when you were diagnosed with coronary heart disease. What physical symptoms did you experience? List all of the symptoms you had which brought you to seek medical care. Consider things that may have occurred not only immediately prior to your diagnosis, but the days and weeks leading up to your diagnosis. In addition, you should discuss how you responded emotionally to the diagnosis of heart disease.

You will want to record the following information here. If you don’t know the answers to these questions, ask your practitioner at your next appointment.

Coronary Heart Disease
What physical symptoms made you seek help for CHD?

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Diagnosis
What tests were used for the diagnosis of CHD?
- Blood test
- ECG (electrocardiogram)
- Echocardiogram
- Cardiac Catherization
- Other
What were the results of those tests?

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<th>What were the results of those tests?</th>
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Myocardial Infarction (MI)
If you have experienced an MI answer the following questions:
What coronary artery has been found to be the cause of the MI or heart attack?
If you have had a cardiac catheterization, how is the blood flow in the other arteries?
Is there a narrowing in any of the other arteries?
Risk Factors

The purpose of this portion of the module is to present the risk factors for the development of atherosclerosis so that you can determine what puts you at risk.

Certain things, called risk factors, increase the likelihood of someone developing coronary heart disease. In addition to preventing heart disease, minimizing or eliminating certain risks can reduce the progression of the disease in someone who has been diagnosed with heart disease. The risks which have been identified by the American Heart Association (2007) are age, gender, race, high serum cholesterol and other lipids, high blood pressure, cigarette smoking, diabetes mellitus, being overweight or obese, and physical inactivity. While some of these things you cannot change, such as age and gender, there are other risks which you can influence. Those modifiable risks are the focus of this module.

Risk factors have been identified through research studies. One important study was the Framingham Heart Study. This study followed the people of Framingham, Massachusetts for many years, to determine what factors were significant in the development of heart disease. The study, begun in 1942, continues today. What this and other studies were able to show was not necessarily the “cause” of heart disease, but what things have been associated with an increased occurrence of the disease. This is a very subtle difference. For instance, few of us would deny the relationship between cigarette smoking and lung cancer, but we are unable to “prove” that cigarette smoking causes lung cancer. I’m sure we all know someone who has smoked heavily all their lives and did not develop lung cancer. The same is true with heart disease. Scientists are continuing to conduct studies which will further refine our knowledge of risk factors related to the development of heart disease.

Some of the risks, such as diet, are part of our culture. Some of the behaviors we engage in which increase risks have been developed over many years and are therefore, hard to change. What is important is that you examine yourself, identify factors that may influence your risk for heart disease, and make a choice to change or modify those risks.

To begin, you should review the risk factors and determine what puts you at risk for heart disease. Share your list with your practitioner. This information will enable you to develop an action plan to reduce your risks. While some of these things can be done by you, others require assistance from your practitioner. For instance, if you find that you have high serum cholesterol, the first step would involve a change in your diet. However, for many people, that is not enough. In addition to diet, they need medications to reduce their risk. In any case, it will be important to share your plan with your practitioner so that they will be able to support you in reducing your risks.
**High Serum Cholesterol**

Cholesterol comes from two sources – it is produced in the body and is in the food we eat. High blood cholesterol and other lipids have been found to be a significant risk factor for the development of atherosclerosis. High serum cholesterol has been defined as total cholesterol (TC) greater than 200mg/dl. It is believed that the increased total cholesterol (TC) results in the accumulation of plaque in the walls of the arteries. While young women often have low levels of total cholesterol (TC), as women age this number often increases.

Total cholesterol (TC) is broken down to several parts. The parts are: high density lipoproteins (HDL), low density lipoproteins (LDL), and triglycerides. There are many factors that affect serum cholesterol levels. They include: age, diets high in fat, saturated fat, and cholesterol, genetics, sex hormones, medications, body weight, glucose tolerance, physical activity, certain diseases such as diabetes, thyroid, and liver disease, and season of the year.

A standard lipoprotein test or profile includes measurement of total cholesterol (TC), low-density lipoproteins (LDH), high density lipoproteins (HDH) and triglyceride levels after you have not eaten for 8-12 hours. High levels of low density lipoproteins (LDL) have been shown to be predictive of heart disease and may be referred to as “bad” cholesterol. One way to think of whether cholesterol is good or bad is that in life you always want to take the “high road”. Therefore, high density lipoproteins (HDLs) are the “good” type of cholesterol. High levels of high density lipoproteins (HDL) have a protective function on the development of heart disease. Elevated serum triglyceride levels are also associated with risk of CHD, especially for women. Triglyceride measurements are considered in relationship to other risk factors. Elevated TC and triglyceride levels are associated with obesity, physical inactivity, high alcohol intake, and consumption of trans fatty acids. Ways to reduce low density lipoproteins (LDL), triglycerides, and total cholesterol (TC) include diet, exercise, and medications.

**Target levels for cholesterol and lipids**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Goal</th>
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<tbody>
<tr>
<td>Total cholesterol (TC)</td>
<td>&lt;200 mg/dl</td>
</tr>
<tr>
<td>High density lipoproteins (HDL)</td>
<td>&gt;40 mg/dl</td>
</tr>
<tr>
<td>Low density lipoproteins (LDL)</td>
<td>&lt;100 mg/dl</td>
</tr>
<tr>
<td>Triglyceride levels</td>
<td>&lt;150 mg/dl</td>
</tr>
</tbody>
</table>

(American Heart Association, 2007)
EXERCISE – CHOLESTEROL

Record your cholesterol levels. Does the total cholesterol, high density (HDL), or low density (LDL) put you at risk for heart disease? Have you spoken to your practitioner regarding your risk? Look at Module III: Nutrition and Physical Activity for more information on diet and cholesterol and how exercise affects cholesterol levels.

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOTAL CHOLESTEROL</th>
<th>HIGH DENSITY LIPOPROTEIN</th>
<th>LOW DENSITY LIPOPROTEIN</th>
<th>TRIGLYCERIDES</th>
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</table>
Overweight and Obesity

This is risk factor involves weight. Weight impacts other risk factors such as of cholesterol, diabetes mellitus, and physical inactivity. It is estimated that almost 2/3 of American adults are overweight or obese. Currently, more than 17 million American women are obese. The formulas used to diagnose weight issues are height and weight tables. These tables have a range for each size based on what they believe is healthy body weight (HBW). Someone that is 10-20% overweight is considered overweight. Obese is considered to be more than 20% over healthy body weight.

Another way that proper weight can be determined is by using body mass index (BMI). BMI is determined by a combination the body weight in kilograms divided by the height in meters. Being overweight is defined as a BMI over 25, while obesity is considered a BMI of 30 or higher.

Weight Strategies

When you consider weight there are several ways to look at this issue. The first is to consider the energy found in food. To lose weight you need to consume fewer calories than you need. The tried and true formula of eating fewer calories than you use has been shown over time to be the most effective way to lose weight. Another mechanism that can be used to guide food consumption is “my food pyramid”. This can guide the number and size of servings of certain foods you have each day.

There are different strategies or diets that provide the structure for people to lose or maintain a desirable weight. Some of these, such as Weight Watchers, have been around a long time and are based on sound nutritional information and behavior principles. Others are more faddish diets. Currently, two diets that are achieving a lot of public and media attention are the Atkins and South Beach Diets. The Atkins diet, with its severe restriction of carbohydrates and promotion of high fat intake, has not gained much support from experts in nutrition. While people may lose weight on this diet, experts debate the long term effects of remaining on such a diet. Some argue that by simply restricting their intake of junk foods, dieters can obtain the same amount of weight loss. In contrast to the Atkins diet, the South Beach diet emphasizes low fat and permits more complex carbohydrates. However, the long term affect and its impact on health of this diet is still unknown.

If you desire to lose weight it is best to remember that there is no magic bullet. Weight loss, to be effective in the long run needs to be a slow, gradual process. You should not attempt to lose more than 2 lbs a week. It is important that you consider your ideal weight in combination with the other strategies that you will use to care for yourself and your heart disease.
Below is a chart of body mass index (BMI). See the Module III for further information on nutrition and physical activity and for more information regarding maintaining an optimum weight.

<table>
<thead>
<tr>
<th>Height</th>
<th>Normal (BMI under 25)</th>
<th>Overweight (BMI 25–29.9)</th>
<th>Obese (BMI 30 and above)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4'10&quot;</td>
<td>118 lbs. or less</td>
<td>119–142 lbs.</td>
<td>143 lbs. or more</td>
</tr>
<tr>
<td>4'11&quot;</td>
<td>123 or less</td>
<td>124–147</td>
<td>148 or more</td>
</tr>
<tr>
<td>5'0</td>
<td>127 or less</td>
<td>128–152</td>
<td>153 or more</td>
</tr>
<tr>
<td>5'1&quot;</td>
<td>131 or less</td>
<td>132–157</td>
<td>158 or more</td>
</tr>
<tr>
<td>5'2&quot;</td>
<td>135 or less</td>
<td>136–163</td>
<td>164 or more</td>
</tr>
<tr>
<td>5'3&quot;</td>
<td>140 or less</td>
<td>141–168</td>
<td>169 or more</td>
</tr>
<tr>
<td>5'4&quot;</td>
<td>144 or less</td>
<td>145–173</td>
<td>174 or more</td>
</tr>
<tr>
<td>5'5&quot;</td>
<td>149 or less</td>
<td>150–179</td>
<td>180 or more</td>
</tr>
<tr>
<td>5'6&quot;</td>
<td>154 or less</td>
<td>155–185</td>
<td>186 or more</td>
</tr>
<tr>
<td>5'7&quot;</td>
<td>158 or less</td>
<td>159–190</td>
<td>191 or more</td>
</tr>
<tr>
<td>5'8&quot;</td>
<td>163 or less</td>
<td>164–196</td>
<td>197 or more</td>
</tr>
<tr>
<td>5'9&quot;</td>
<td>168 or less</td>
<td>169–202</td>
<td>203 or more</td>
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<tr>
<td>5'10&quot;</td>
<td>173 or less</td>
<td>174–208</td>
<td>209 or more</td>
</tr>
<tr>
<td>5'11&quot;</td>
<td>178 or less</td>
<td>179–214</td>
<td>215 or more</td>
</tr>
<tr>
<td>6'0&quot;</td>
<td>183 or less</td>
<td>184–220</td>
<td>221 or more</td>
</tr>
</tbody>
</table>
EXERCISE

Find your BMI on the chart. What is your BMI? Are you satisfied with it?
Physical Inactivity

While physical inactivity is considered a risk factor, it also impacts and is impacted by other risk factors such as: high serum cholesterol and being overweight or obese. Physical inactivity refers to leisure-time activity. When we consider exercise the first is the regularity in which people engage in some regular physical activity; the second is the degree of strenuousness of this activity.

To promote cardiovascular health, it is recommended that all adults have 30 minutes or more of moderate physical activity on most days each week. Moderate intense activity includes such things as walking, swimming, biking, snowshoeing, and cardiovascular exercise tapes (some tapes are designed to exercise “specific areas” such as abdominals, arms, or legs and don’t provide overall cardiovascular exercise).

Before you start exercising you should consult with your practitioner to determine whether it is advisable to begin an exercise program at this time.

Because physical activity is such an important component of health this subject is covered in more depth in Module III: Nutrition and Physical Activity.
Diabetes Mellitus

The number of people with diabetes who also have cardiovascular disease (CVD) is greater than those with CVD of the general population. It appears that diabetes works with other risk factors for the development of heart disease (Kuehn, McMahon, & Creekmore, 1999). However, research on the treatment of diabetes has demonstrated that maintaining blood glucose within the normal range can significantly affect the course of the disease process. Therefore, it is important to effectively treat high blood glucose levels.

Diabetes is described as a fasting blood glucose of 126 mg/dl or more. There are two types or kinds of diabetes, type 1 and type 2. Type 1 diabetes often effects young people and is characterized by a complete loss of the body’s ability to produce insulin. These people must receive insulin injections to survive. About 5-10% of the people with diabetes have type 1 diabetes. Type 2 diabetes is usually the result of insulin resistance and occurs gradually, often going unnoticed for a long period of time. This type of diabetes most often occurs later in life, but an increased number of children are being diagnosed with type 2 diabetes. There is a strong genetic component to the development of this type of diabetes. Obesity also appears to be a factor. Individuals with type II diabetes may be treated with either oral hypoglycemic agents or insulin injections in addition to diet.

The long-term complications of both types of diabetes include changes in the blood vessels, hypertension, and increased levels of cholesterol. These complications all influence the development of CVD, including coronary heart disease (CHD). Women with diabetes have double the rate of CVD than do non-diabetic women.

Since type 2 diabetes often goes unrecognized for long periods of time you can recognize that it is important for you to be tested regularly for diabetes to protect you against the vascular changes that occur as a result of this disease. Additionally, if you have been diagnosed with diabetes, it is vital for your heart health to care for the diabetes through a process of blood glucose testing, diet, and exercise. There are people specially trained to assist people with diabetes, called diabetic educators. If you have diabetes it would be important to ask your practitioner to arrange a visit to such an educator to support you in managing your disease.

Further information can be found at:

American Association of Diabetic Educators – www.aasenet.org
American Diabetes Association – www.diabetes.org
**EXERCISE**

Record your blood glucose level. Check to see if it is in the normal range.

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<th>DATE</th>
<th>BLOOD GLUCOSE LEVEL</th>
<th>COMMENTS</th>
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High Blood Pressure

High blood pressure or hypertension (HTN) is a significant risk factor for heart disease. It is often referred to as the “silent killer” because individuals with hypertension frequently do not have any symptoms (asymptomatic) until it becomes severe or damage to an organ has occurred. Hypertension, in addition to contributing to coronary heart disease, also contributes to the incidence of strokes.

Hypertension is described as a sustained elevation of blood pressure (BP). This means it is higher than normal for a period of time. The diagnosis of hypertension is made when blood pressure readings are high on at least three occasions over several weeks. The most desirable blood pressure is 120/80 or less. The diagnosis of hypertension is made when the blood pressure reading is at or over 140/90.

High blood pressure means that the heart is working harder than normal to pump the blood throughout the body. This puts both the heart and blood vessels under strain. Hypertension contributes to the development of atherosclerosis. In addition, hypertension is associated with the development of myocardial infarctions (MI), stroke, and kidney disease.

Causes

While the cause of hypertension is unknown, in most cases there have been factors which seem to contribute to its development. They include increased nervous system activity, overproduction of hormones which retain sodium, being overweight or obese, diabetes mellitus, and alcohol intake.

What the Numbers Mean

There are two components to blood pressure. Each number has an individual significance. The first number is the systolic blood pressure. That is the pressure that the heart pumps against. The second number is what the heart pumps at rest. That is the diastolic blood pressure. So you will see blood pressure readings that look like this 134/86.

Symptoms

Most often, there are no symptoms associated with hypertension. However, at times there are some symptoms; these symptoms usually do not appear unless an individual’s blood pressure is extremely high. These symptoms include fatigue, dizziness, heart palpitations, angina, and shortness of breath.

Blood pressure increases in response to physical and psychological excitement. Normally, there is an increase in blood pressure as a result of exercise. In addition, things such as pain or stress can cause an increase in blood pressure. Some people’s blood pressure rises when they visit their practitioner. If your blood pressure is elevated
when you visit your practitioner’s office, it would be important to monitor your blood pressure at home, as well. While increased blood pressure may be a normal response to stimulation, problems occur when elevated blood pressure continues over a period of time.

**Treatment**

Treatment for hypertension starts with lifestyle modifications. These modifications include: 1) dietary changes, 2) limitation of alcohol intake, 3) regular physical activity, and 4) avoidance of tobacco use. Limitations on alcohol intake, the need for regular physical activity, and avoidance of tobacco are needed for overall heart health. Likewise, maintaining a normal weight is not only necessary for heart health, if you are overweight or obese losing weight can contribute to a normal blood pressure. In addition, it may be necessary to limit your intake of salt to reduce your blood pressure.

Dietary management of hypertension consists of restricting sodium or salt in the diet, maintaining adequate amounts of potassium, magnesium, and calcium, and caloric restriction to maintain desired weight. One option for diet includes the DASH diet. This diet includes twice the number of fruits, vegetables, and dairy products, one third the usual intake of beef and pork, one half fats and oils and one quarter of the number of snacks and sweets. More information concerning the DASH diet is included in Module III: Nutrition and Physical Activity.

The American Heart Association recommends restricting salt intake to 6 g of salt (NaCl) and 2.3 g of sodium per day for healthy adults. You should check with your practitioner if you have been diagnosed with hypertension to find out his/her recommendations for you. You should also keep a food diary, which is when you record all of the food you eat in a day, and evaluate how much sodium you consume.

In addition to lifestyle modification, medication therapy may be needed to reduce blood pressure. There have been many research studies which have been do to help your practitioner in choosing the right medication or medications to control hypertension. However, you are an individual and how you respond to the medications and dosages is highly individual. So it is important for you to communicate how you respond to the medications. Side effects may be an initial response to the drug and may decrease with continued use. In addition, the number and severity of side effects may be related to the dose, so that it may be necessary to change the drug or the dosage. Some side effects can be minimized or eliminated by changing the time of day the medication is taken. For instance, diuretics may be best taken in the morning while the side effects of vasodilator and adrenergic inhibitors decrease if the medications are taken in the evening. It is important to take the medications as prescribed and to not stop taking the medications suddenly. Some of the common types of medications which are used for heart disease are included in the Appendix B: Treatments.
EXERCISE: BLOOD PRESSURE

Is blood pressure a risk factor for the development of your coronary artery disease? What have your blood pressure at your last few visits to your practitioner? If you do not know what your blood pressure readings have been, be sure to ask for these readings at your next visit.

<table>
<thead>
<tr>
<th>DATE</th>
<th>BLOOD PRESSURE</th>
<th>ACTIVITY</th>
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Cigarette Smoking

Cigarette Smoking has been shown to be a significant risk for the development of heart disease. The risk of developing coronary heart disease (CHD) is two to six times higher in cigarette smokers as opposed to nonsmokers. Smoking is considered to be the most significant, controllable risk factor for heart disease. Cigarettes with low levels of tar, nicotine, and carbon monoxide, the so-called low yield cigarettes does not reduce the risk for heart disease. It appears that secondhand smoke contributes to the development of CHD. The good news is that by stopping to smoke today, you can reduce your risk of heart disease. CHD mortality rates drop to those of nonsmokers within several years.

The substances that seem responsible for causing the development in CAD are nicotine and carbon monoxide. The nicotine in cigarettes causes heart rate to increase, peripheral vasoconstriction, increased BP, and causes platelets to stick together. Carbon monoxide, which is a byproduct of combustion, interferes with the oxygen carrying capacity of the blood and may also be a chemical irritant to the blood vessel walls. It has also been found that smoking alters estrogen metabolism.

Cigarette smoking is both psychologically and physiologically addicting. You may need assistance to stop smoking. There are a number of behavior programs that can help in the smoking cessation. In addition, there are medications that may be of benefit to you. It is important to discuss with your healthcare provider about your desire to quit, and what options may be open to you. It is something that can significantly improve your health and your ability to manage your cardiac disease.

Resources for smoking cessation:
National Cancer Institute; (800) 4-CANCER or http://www.nci.nih.org
American Lung Association: (215) 315-8700 or http://lungusa.org
EXERCISE: WHAT ARE YOUR RISKS?

Now that you have reviewed the risk factors for coronary heart disease, what are your risks?

___ High Serum Cholesterol Level
___ Overweight and Obesity
___ Physical Inactivity
___ Diabetes Mellitus
___ High Blood Pressure
___ Cigarette Smoking

Now that you have evaluated your risks, it is time to make a plan to reduce your risks. If you have several risks, don’t become overwhelmed! Consider what things you can do that may make you feel better, such as increasing your physical activity. Once you have made that change, you can think about things that may be more difficult to do.

For that plan you will want to think about setting a goal with a timeframe, breaking it down so that you don’t have to wait to the end to see if you have met your goal. For instance if you want to increase your physical activity from no walking to 40 minutes a day, you can start out by walking fifteen minutes a day for the first week, and gradually increasing to 40 minutes. And remember, each time you reach even a part of a goal, celebrate your success! That will keep you on tract!

Make Your Plan:

The following can provide a guide for you if you decide that your goal would be to reduce your cholesterol level. You would want to set dates and target numbers for cholesterol. In addition, you want to make a record of what you have done to achieve that goal.

Goal: Reduce Cholesterol Level by 20 Points
Time Frame: 6 months

<table>
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<th>Cholesterol Level</th>
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### Overweight and Obesity

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<th>DATE</th>
<th>DIET</th>
<th>EXERCISE</th>
<th>WEIGHT</th>
<th>BMI</th>
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### Physical Activity

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<tr>
<th>DATE</th>
<th>CARDIOVASCULAR</th>
<th>STRENGTH</th>
<th>FLEXIBILITY</th>
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### Diabetes Mellitus

If it is not in the normal range have you spoken to your practitioner about your blood glucose? In addition to the information you have received from your practitioner, strategies that may help your blood glucose stay in normal limits can be found in Module III: Nutrition and Physical Activity.
High Blood Pressure
If you have identified high blood pressure as one of your risk factors you may consider purchasing a monitoring devise for blood pressure. You can use either a sphygmomanometer or a stethoscope (although this option requires more technical skill) or a device that automatically measures your blood pressure.

Write down your blood pressure and pulse taken at different times during the day and after different activities. Do you notice any relationship between what you are doing and your blood pressure? How is it compared to the readings you have when you visit your practitioner?

<table>
<thead>
<tr>
<th>DATE/TIME</th>
<th>BLOOD PRESSURE</th>
<th>ACTIVITY</th>
<th>COMMENTS</th>
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Smoking Cessation
If you have decided that you want to quit smoking, it would be important to think about how and when you were going to stop. It would be important to consult with your practitioner, because he/she may be able to make suggestions about the best approach for you. While many people stop on their own, others need the support of a group. You practitioner can inform you if such a group exists in your area.
Module III: Nutrition and Physical Activity

Nutrition

Nutrition is an important component of health, including heart health. Food provides the fuel for our bodies to function. In addition, a proper diet can reduce several risks associated with heart disease. These risks include reduced serum cholesterol, weight management, and can have a significant effect on the development of hypertension (high blood pressure) and diabetes.

Here you are going to think about what you know in relation to diet. Some of our thinking about diet has changed in recent years, so take this time to learn what the most current information about diet is and consider your own eating patterns and how they may affect your health.

The dietary guidelines for Americans have been developed by the US Department of Health and Human Services to provide science-based advice on food and activity choices for health. They have defined a “Healthy Diet” as one that

- includes fruits, vegetables, and whole grains
- contain milk products are either low or fat-free
- includes protein sources such as lean meats, poultry, fish eggs and beans
- is low in saturated fats, trans fats, cholesterol, salt or sodium, and added sugar and alcohol

They recommend:

- Variety – Chose to eat a variety of foods.
- Proportionality – Look at how much of a food or food type you are eating.
- Moderation – Limit your intake of saturated and trans fats, refined sugar, salt, and alcohol.
- Activity – Engage in physical activity most days.

The food guide, “My Pyramid” from the US Department of Health and Human Services website can provide a guide for your nutritional consumption. It will give you the recommended number of servings for each food group. It can also help you to determine what are considered appropriate serving sizes.

Caloric Intake

The first step in planning a diet is to determine your caloric needs. Calories tell us how much energy we receive from foods. Height, level of activity, current weight, and desired weight all affect your caloric needs. Your goal should be to balance calorie intake from food and beverages with the calories you burn in your daily activity.
Are you satisfied with your current weight? If you are not, you would want to reduce the number of calories you consume. This, combined with increasing your activity, can help you lose weight.

Here is a chart that tells you the serving size for each food group based on your caloric intake.

<table>
<thead>
<tr>
<th>CALORIE LEVEL</th>
<th>1,400</th>
<th>1,600</th>
<th>1,800</th>
<th>2,000</th>
<th>2,200</th>
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</thead>
<tbody>
<tr>
<td>Fruits</td>
<td>1 cup</td>
<td>1 ½ cups</td>
<td>1 ½ cups</td>
<td>2 cups</td>
<td>2 cups</td>
</tr>
<tr>
<td>Vegetables</td>
<td>1 ½ cups</td>
<td>2 cups</td>
<td>2 ½ cups</td>
<td>2 ½ cups</td>
<td>3 cups</td>
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<tr>
<td>Grains</td>
<td>5 oz-eq</td>
<td>5 oz-eq</td>
<td>6 oz-eq</td>
<td>6 oz-eq</td>
<td>7 oz-eq</td>
</tr>
<tr>
<td>Meats and beans</td>
<td>4 oz-eq</td>
<td>5 oz-eq</td>
<td>5 oz-eq</td>
<td>5.5 oz-eq</td>
<td>6 oz-eq</td>
</tr>
<tr>
<td>Milk</td>
<td>2 cups</td>
<td>3 cups</td>
<td>3 cups</td>
<td>3 cups</td>
<td>3 cups</td>
</tr>
<tr>
<td>Oils</td>
<td>4 tsps.</td>
<td>5 tsps.</td>
<td>5 tsps.</td>
<td>6 tsps.</td>
<td>6 tsps.</td>
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<tr>
<td>Discretionary calorie allowance</td>
<td>171</td>
<td>132</td>
<td>195</td>
<td>267</td>
<td>290</td>
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Estimated Calorie Requirements for Women over 51 at Three Levels of Activity.

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<tr>
<th>SEDENTARY</th>
<th>MODERATELY ACTIVE</th>
<th>ACTIVE</th>
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<tbody>
<tr>
<td>1,600</td>
<td>1,800</td>
<td>2,000-2,200</td>
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**Fats**

A diet low in fat and cholesterol has been shown to be effective in reducing total cholesterol (TC) and low density lipoprotein (LDL), both of which have been shown to be a risk factor in coronary heart disease. For a woman whose diet consists of 1600 calories, this translates into 20 grams or 5 teaspoons of oil a day. But it is not only the amount of fat you consume that is important, the type of fat is important as well. There are several kinds of fats. Saturated fats, or fats that are solid at room temperature have been shown in the development of artherosclerosis. These fats can be found primary in animal products such as butter and meats. Your fat consumption should come primarily from monosaturated and polyunsaturated oils. Some examples of these types of oil include canola, olive, peanut, soybean, safflower, and sunflower oil; these oils provide essential fatty acids and vitamin E. In addition, the fats found in fish rich in omega-3 fats are considered beneficial.

While certain foods are high in fat, for others the method in which they are prepared cause them to be high in fat. For instance, fish is considered to be low in fat; however, if
we batter and fry the fish it becomes an item very high in fat. The preferred method of food preparation to reduce the amount of fats in the diet is to broil, steam, or bake foods rather than fry them.

It is also important to limit foods that contain partially hydrogenated vegetable oil, which contains trans fat, because this type of fat has been shown to be a causative factor in the development of coronary heart disease. Labeling food containing trans fat became required in 2006 and some places, such as New York City, are seeking to ban the use of trans fats in their restaurants.

**Grains**

Grains are an important component of your diet. Having a diet in which half of your total grains are whole grains, is something that you can do to enhance your health. This amount of whole grains can reduce risk of coronary heart disease and other chronic diseases and contributes to consuming an adequate amount of dietary fiber.

Examples of whole grains that you may be familiar with include brown rice, oatmeal, wild rice, crackers, pasta and tortillas. Ones to explore are grains such as couscous, buckwheat, and bulgur. You can increase the number of whole grains consumed by substituting whole grain bread, breakfast cereal, crackers, rice, and pasta for refined products. In addition, whole grains can be an addition to dishes such as soups, stews, and casseroles. By checking the Nutrition Facts label for the fiber content of foods and checking the ingredient list on product labels assures that you are a knowledgeable consumer.

In addition, it is important to determine the amount of grains found in food. People on a 1,600 calorie diet should eat 2 1/2 ounce equivalents per day of whole grains, half of your grain consumption. While one ounce of grains is equal to 1 slice of bread, 1 cup of cereal, or ½ cup of cooked pasta, rice, or cereal, a bagel may be 3-4 ounces of grains!

**Vegetables**

Vegetables provide many important health benefits for your diet. In addition to providing a variety of nutrients, including potassium and dietary fiber to the diet, they help reduce the risk of chronic diseases. No matter whether they are fresh frozen or canned, they all contribute towards meeting vegetable intake goals. No salt-added canned vegetables and frozen vegetables without sauces are the best choices to limit your consumption of fat and sodium.

The recommended amount of vegetables to eat daily is 2 cups, if you’re following a 1,600 calorie diet. Some strategies to increase your consumption of vegetables include adding them to as many meals and snacks as you can. For instance, if you are having an omelet for breakfast, include a vegetable filling or add vegetables to your sandwich at lunch. You can also increase the number of vegetables in your soups, stews and casseroles.
Starchy vegetables, such as white potatoes, corn, and green peas should be limited to about 3 servings per week.

**Fruits**

While we used to talk about fruits and vegetables in one breath, recently we have become aware that it is important to consider fruits and vegetables separately for a healthy diet. If you’re following a 1,600 calorie a day diet, you should eat 1.5 cups of fruit a day. Like vegetables, fruits provide a variety of nutrients, including potassium and dietary fiber. Canned, frozen, dried and fresh fruits all contribute to meeting your dietary fruit goals.

To increase your consumption of fruits you may consider adding fruits as a topping on salads, cereal, pancakes, and other foods. They are also an excellent choice for snacks. Fruit juice consumption should be limited to half of your total fruit intake because often they don’t contain the same amount of fiber as whole fruit.

**Milk Products**

When we think of the health benefits of milk products bone health is what often comes to mind. While this is true, low and non-fat milk products provide a variety of other nutrients and as part of the diet serve to keep saturated fat and cholesterol intake low.

Milk and milk products can be consumed as a beverage, a snack (such as yogurt), and ingredient in a recipe, or part of a meal. It is recommended that you consume approximately 3 cups of milk or milk products every day.

If you experience lactose intolerance, lactose-free milk is one option. There are also calcium fortified products such as beverages and breakfast cereal or including foods such as sardines or tofu to get the needed calcium.

**Meat, Poultry, Fish, Beans, and Eggs**

To get the maximum benefit for your health you should chose a variety of different foods from this group each week. When selecting meats or poultry, make sure that they are lean. Beans and bean products, such as tofu, can provide an alternative protein source.

Make sure that the methods you use to prepare these foods does not add fat; grilling, broiling, poaching, roasting, or stewing are good methods to choose. When making sandwiches, turkey, roast beef, or ham are good choices compared to fatty luncheon meats such as bologna or salami.

Remember to keep the overall amounts of foods eaten from this group within the amount needed for the day.
Fiber

It is important to consume adequate amounts of fiber. It is recommended that you consume between 25-30 grams of fiber per day. Fiber enhances the body’s ability to remove waste products effectively. Certain fiber, termed soluble fiber, has been shown to reduce serum cholesterol. Good sources of soluble fiber include whole grains, such as oatmeal and beans. Having too little fiber in your diet may lead to constipation. Consuming too much fiber can result in abdominal pain and distension especially if you increase the amount of fiber in your diet rapidly. Here is situation in which you have to make a gradual change, with the goal of reaching 25-30 grams of fiber per day (Mahan & Escott-Stump, 2004).

Sodium

Sodium or salt is an important nutrient. It is found in almost everything we eat or drink. It also enhances the flavor and serves as a preservative for many foods. A problem occurs when we consume too much sodium. For some people, eating too much sodium can increase their blood pressure and lead to hypertension. For other people who have been diagnosed with congestive heart failure (CHF) consuming too much sodium can cause them to retain fluid, which forces their heart to work harder. If you have been diagnosed with either hypertension or CHF you need to restrict your consumption of sodium. Your practitioner will provide guidelines for your sodium intake.

While sodium can be found in almost every food we eat, certain foods have high levels of sodium. These foods may not appear to be salty, such as soda, which contains high amounts of sodium. It is recommended that you consume less than 2300mg of sodium a day.

Individuals with high blood pressure or other cardiac diseases may be advised to consume a DASH (dietary plan to stop hypertension) diet. This diet is very similar to the USDA guidelines, however there are some differences including increased consumption of fruits and vegetables. Further information regarding the DASH diet can be found at the website of the American Heart Association.

Alcohol

If one chooses to drink alcohol, it should be in moderation. It is recommended that women limit their consumption of alcohol to 1 or less servings per day. Alcohol contains calories but is low in nutritional value. In addition, alcohol has been found to negatively affect the total triglycerides and HDL cholesterol levels, which can contribute to the development of heart disease.

Coffee

Research regarding the effects of coffee consumption on cholesterol level has been mixed with some seeing no effects while others have shown an increase. Also it is important to
consider the effect of caffeine on your heart rate. If you develop palpitations, or a quickening of the heart, you should switch to decaffeinated beverages, including coffee.

**Specific Nutrients**

There are certain nutrients that are needed to make the body work efficiently. For adults, consumption of adequate potassium, magnesium and vitamins A, C, and E are necessary. Additional nutrients that women over 50 should be concerned about is calcium and vitamin D and vitamin B12. To prevent the development of osteoporosis it is important to consume enough calcium and vitamin D. As we age, our bodies’ ability to absorb vitamin B12 decreases, so that foods fortified with vitamin B12 or taking vitamin supplements becomes increasingly important.

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<tr>
<th>FOODS HIGH IN SPECIFIC NUTRIENTS</th>
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<td><strong>Sources of vitamin A</strong></td>
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<tr>
<td>• Bright orange vegetables like carrots, sweet potatoes, and pumpkin</td>
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<tr>
<td>• Tomatoes and tomato products</td>
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<tr>
<td>• Leafy greens such as spinach, collards, turnip greens, kale, beet and mustard greens, green leaf lettuce, and romaine</td>
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<tr>
<td>• Orange fruits like mango, cantaloupe, apricots, and red and pink grapefruits</td>
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<tr>
<td><strong>Sources of vitamin C</strong></td>
</tr>
<tr>
<td>• Citrus fruits and juices, kiwi fruits, strawberries, guava, papaya, cantaloupe</td>
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<tr>
<td>• Broccoli, peppers, tomatoes, cabbage, brussels sprouts</td>
</tr>
<tr>
<td>• Leafy greens such as romaine, turnip greens, and spinach</td>
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<tr>
<td><strong>Sources of potassium</strong></td>
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<tr>
<td>• Baked white or sweet potatoes, cooked greens, such as spinach, winter (orange) squash</td>
</tr>
<tr>
<td>• Bananas, plantains, many dry fruits, oranges and orange juice, cantaloupe, and honeydew melons</td>
</tr>
<tr>
<td>• Cooked dry beans</td>
</tr>
<tr>
<td>• Soybeans (green and mature)</td>
</tr>
<tr>
<td>• Tomato products</td>
</tr>
<tr>
<td>• Beet greens</td>
</tr>
<tr>
<td><strong>Sources of calcium</strong></td>
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<tr>
<td>• Yogurt, milk products, cheese</td>
</tr>
<tr>
<td>• Sardines</td>
</tr>
<tr>
<td>• Fortified soy milk, tofu</td>
</tr>
<tr>
<td>• Collard greens, broccoli, kale</td>
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**Fluids**

It is important to be adequately hydrated. For most people, under most circumstances, they are able to maintain an adequate level of hydration if they have an adequate fluid source. However, certain strategies may be needed when you engage in physical activity.
You may need to consume fluids during the activity and/or drink several glasses of fluids after you finish the activity.

You should consider your fluid consumption in light of number of calories in a beverage. Water has no calories and is an excellent choice when you are thirsty. Some other beverages may have quite a number of calories, such as fruit juice, coffee with creamer, or soda, so these calories must be taken into consideration when examining your diet plan.

**Diet Modification**

After reviewing the nutritional information in this module, you may be thinking how you would like to change, or modify your diet. One method of diet modification is to reduce the number of calories you consume. Another way is to change the way food is prepared. Grilling, broiling, baking, and poaching are healthful ways to prepare foods. And yet another easy way to modify your diet is to reduce the number of prepared foods you consume. Prepared foods often have too much fat and sodium and little fiber.

Nutrition is complicated! Many times there is no right or wrong answer regarding food consumption; so much depends on the individual. Therefore it may be helpful for you to ask your practitioner for a referral to a dietician to help you plan a diet that best meets your nutritional needs.

**Additional information on nutrition:**
American Dietetic Association: (800) 877-1600 or http://faseb.org/ascn
American Heart Association: www.americanheart.org
USDA: mypyramid.gov
EXERCISE
Keep a food diary for a period of three days. Don’t include a holiday, as this will not give you an accurate reporting of your normal food consumption. You will want to look at a variety of aspects of your diet. Consider what your strengths are as well as your opportunities for improvement.

Caloric Needs
Review the following chart to determine your caloric needs. What is your daily caloric requirement?

Fat
From this you will be able to determine the total number of grams of fat you should consume. How does this compare to what you have consumed?

Food Variety
Another way to look at your diet is through how many servings of each food groups you need. Have you met the minimum amounts of each group? It is especially important to meet the required number of servings of fruits and vegetables.

Fiber
Have you consumed adequate amounts of fiber? If not, how do you think you could increase the amount of fiber in your diet?

Make a Plan
After you have reviewed various aspects of your diet, decide what changes you would like to make. Make a plan for the next week. At the end of the week, evaluate the effectiveness of the plan. How did you do? Did you meet your goal? What do you need to do so that you can to be successful? Make sure you congratulate yourself on your success!
Physical Activity

Engaging in physical activity is one the most important things you can do for your health. Physical activity has been shown to have both psychological and physiological benefits. It has been shown that physical activity can enhance your mood, body image, and improve concentration. The physiological benefits of exercise include, lowering serum cholesterol levels, lowering blood pressure, improving sleep, reducing risk of type 2 diabetes, and osteoporosis and weight management. As you can see, physical activity can reduce risk factors associated with cardiovascular disease.

Activity Level

What is your current activity level? Someone whose lifestyle only includes the physical activity of independent living is called sedentary. You are considered to have a “low active” lifestyle if you include about 30 minutes of moderate physical activity most days in addition to the activities of independent living. Finally, you are considered active if you have a lifestyle that includes 60 or more minutes of physical activity in addition to the activities of independent living. Current recommendations are that people should engage in at least 30 minutes of moderate activity most days.

Types of Exercise

It is important for you to know about the different types of exercise and to make a plan (if you do not meet the guidelines for exercise), with the support of your practitioner, to incorporate exercise into your life. Think of exercise as something you do for yourself. There are three principle types of exercise. They include: aerobic exercise, stretching, and resistance training. A balanced exercise routine will include all three types of exercise during the course of the week.

Aerobic Exercise

Aerobic exercise is one of the most important and efficient methods of attaining muscular and cardiovascular fitness (Balady et al., 2001). Aerobic exercise is accomplished when demand is put on the muscles to increase their need for oxygen, causing the heart to beat faster and the lungs to work harder. This increases the cardiovascular endurance. Aerobic exercise is a type of exercise in which you increase your heart rate to a certain level and maintain that level for a period of time. In order to gain aerobic benefits the heart rate must be elevated for the duration of the workout within the target heart rate. When we say aerobic we mean that your cells are receiving an adequate amount of oxygen when you are performing this exercise. It is recommended that you perform aerobic exercise the minimum of three days a week for at least thirty minutes. It is most beneficial, however, if you perform aerobic exercises for a half hour most days of the week. Anyone whose lifestyle is sedentary, or physically inactive, should begin activity levels gradually, five to ten minutes at first and gradually increasing to 30 minutes. One fun way to monitor your increase in physical activity is to count your steps with a
pedometer. You can see your gradual increase in activity, in the number of steps you take.

It is important to take your pulse before, during, and after exercise. It is normal for your heart rate to increase in response to exercise. It is also normal for your heart to take several minutes (10-15) before it returns to its resting rate. If your heart rate should decline with exercise or remains elevated for a prolonged period of time (longer than ½ hour) you should consult with your practitioner.

The target heart rate for aerobic activity depends on a number of things including the medications that you are taking, your age, and your exercise tolerance. The range that is usually recommended is 60% of your maximum heart rate. A treadmill stress test is recommended for anyone who wants to begin exercise after a myocardial infarction (MI). The results of this test will guide your practitioner in determining your target heart rate.

In addition to knowing your target heart rate, it is important for you to know some other scales which are used in the determination of the intensity, or how hard, you will work at your exercise. The first scale is the Borg Perceived Exertion Scale. The numbers on the Borg Scale range from 12, meaning not working hard at all to 22, which means working extremely hard. You will want to work in the range of moderately hard, or around the number 18. If the exercise is too easy or too hard you will not receive the benefit of the exercise.

Another test that we use to gage the intensity of the workout is the “talk test.” This means that you should be able to carry on a conversation with someone while you are exercising. If you are unable to talk when you are exercising you are not exercising aerobically. This means that the cells of the body are not getting the benefits of increased oxygen.

You will find that you have to increase the intensity of your workout over time. This is called a training effect. Your heart and your muscles get used to a certain level of activity, so that to continue to beneficial effects of aerobic exercise you must increase the intensity of your workout.

There are many different types of aerobic exercises. You must find one or more that fit into your lifestyle and that you enjoy. One of the easiest types of aerobic activities is walking. Minimal equipment is needed, the most essential being walking shoes, and other clothing to protect you from the weather. In addition, there may be an additional benefit of being outdoors while performing exercise.

Other types of aerobic activities include swimming, utilizing exercise machines such as rowers or stair machines, tapes of aerobic workouts, taking classes which incorporate aerobic activities, bicycling, and cross-country skiing, or snowshoeing.
It is important for you to stop exercising if you experience any chest pain or pressure, or if you become short of breath or dizzy. You will want to report any of these reactions you may have to your practitioner.

**Stretching**

Stretching should be an important component of everyone’s exercise regime. It prevents you from injuring your muscles and provides an opportunity to warm up or cool down in conjunction with aerobic exercise. You should engage in 5-10 minutes of stretching prior to beginning aerobic exercise and 5-10 minutes afterward.

In addition to using stretching to support aerobic activities, stretching exercises may be a freestanding component of your exercise routine. Yoga is a form of stretching exercise that is used to enhance the energy flow within the body. While there are many types of yoga, the most common type is hatha yoga. In this type of yoga positions or asanas are assumed which promote flexibility, balance, equalization of the body, and relaxation. Beginner classes are available in many areas in addition to tapes being readily available. There is some risk of injury if the exercises are performed improperly. Because of this it is usually helpful to take a few classes at the beginning. It is important to remember to stop if any of the postures cause pain.

**Resistance Training**

Resistance training is the third component of a balanced exercise routine. Strength is an essential, functional component of much of what we do. As we age, if we do not constantly perform strengthening activities, our muscles will become weaker. Strengthening muscles can promote the development of bones, an important factor for women who may experience bone loss after menopause.

There are three ways to increase muscle strength. They are:

* Muscle bulk is increased by using weights and doing a certain number of repetitions.
* Muscle strength is developed by using the heaviest weights manageable by the person and doing 2-6 repetitions.
* Muscle endurance and definition is increased by lighter weights while doing 40-50 repetitions.

Unlike aerobic activity or stretching where the most benefit occurs if people perform these activities on a daily basis, it is suggested that resistance training be performed only three times a week. Performing these exercises every other day permits the muscle to rest between sessions. Because women do not possess same quantities of hormones men possess, women will not develop extensive muscular growth that we associate with strength training. The objective for women is to strengthen muscles that they use for activities of daily living, such as opening jars, and preventing bone loss. Another benefit of resistance training is that muscles are more physiologically active than fat, so that
when muscle replaces fat, more calories are needed to support the weight. This means that resistance training can be important for you to achieve your desired weight. You don’t have to go out and buy weights, cans can serve as weights for resistance training. Here again, it is important to talk to your practitioner before beginning a strength training routine.
**EXERCISE:**
Write down what you do with regards to physical activity. How intensive is your exercise? Include whether you engage in aerobic, stretching, and resistance training. What could you do to increase your fitness? Is there one thing that you could do to increase your activity level? Monitor yourself for a week. Record whether you sleep better, are more alert, and how this affects your mood.

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<tr>
<th>DATE</th>
<th>ACTIVITY</th>
<th>DURATION</th>
<th>COMMENTS</th>
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Other sources of information:
American Heart Association: [www.americanheart.org](http://www.americanheart.org)
Module IV: Psychosocial Considerations

The purpose of this module is to explore other factors that may affect your health and well-being. These include psychological factors, such as stress and coping, and social support.

Stress Management

Although there has been some controversy exists in the effect of stress in the prevention and treatment of heart disease, there is a benefit in reducing stress and helping you feel in control of your life and your health. Stress is an inherent part of modern life. Stress is described as a bodily response to any demand placed upon it. While our forefathers responded to threats of a physical nature, we are mostly stressed by interpersonal relationships and performance demands. This makes the potential for stress always present.

In terms of heart disease, long-term stress causes a release of hormones which serve to constrict blood vessels and cause damage to the walls of the blood vessels. This can facilitate the development of hypertension, decreased myocardial perfusion, and irregular heart rhythms. Therefore, in caring for yourself you want to limit your level of stress.

Four approaches you may use to reduce stress are:
- Minimizing the amount of stress-inducing situations
- Increasing your resistance to stress
- Counter-conditioning to avoid physiological arousal
- Engaging in health pleasures

While reducing the amount of stress in your life sounds like a good idea, you may be wondering, “How do I do that?” Here are some ways that you may be able to reduce the amount of stress you are experiencing.

Minimizing the Amount of Stress-Inducing Situations

Strategies to minimize the frequency of stress-inducing situations include avoiding making too many changes at any one time, employ time management strategies, and making changes in your environment that help you to avoid stress.

While avoiding making too many changes at once may not be an option at certain times, if at all possible try to stagger the changes over a period of time. Change, even positive change, can be stressful. At the end of this module there is a scale which gives a value to life changes. You will want to do that activity to gage the amount of change in your life.

Another way of getting more control over your life is through effective time management. We live in an increasingly hectic environment. We now have so many ways to communicate with each other instantaneously. While the advances of modern
society can be wonderful, sometimes they can create more of a problem for individuals. It is important for you to examine ways to accomplish all of the things you want to accomplish and make time for yourself.

There may be ways to make changes in your environment to avoid stress. Are there certain situations that make you feel stressed? For instance, it would be less stressful to go to the grocery store when there are not a lot of people rather than at the most popular times. What other situations can you change to make yourself feel less stressed? Your first activity would be to examine situations in your life that cause you stress. Determine if there is any way to make changes in what you do that may make you feel less stressed.

**Increasing Resistance to Stress**

Some strategies to increase your resistance to stress are to exercise, doing things that can enhance your self-esteem, and increasing assertiveness. Here again, exercise is identified as an important factor in achieving mental health. Module III: Nutrition and Exercise, provides you with some more information regarding the benefits of exercise.

Feeling good about yourself, or having a positive self-esteem can be a stress reducer as well. Especially as women, we often can more readily identify our weaknesses than we can our strengths. It is important to think about your contributions, rather than what you may view as your weaknesses. Part of this is a matter of perspective. For instance, you may think of yourself as someone who talks a lot. How would you put a more positive outlook on this? Could you think that you have the ability to make people feel at ease because you have something to talk about? Could you think that you are someone who sees so many interesting things that there is always something to talk about?

We each have messages of ourselves running through our minds. I am slow, lazy, stupid, fat, a worry-wart, etc. What are the messages that run through your mind? Are you able to replace negative thoughts with something positive?

Assertiveness and having a positive self esteem often times go together. If you feel good about yourself, you are more likely to advocate for yourself. So it is important for you make sure that you enhance your self-esteem. A positive self-esteem and knowledge are important factors in enabling you act assertively.

**Counter-Conditioning to Avoid Physiological Arousal**

Progressive relaxation exercises provide a way to assist you in avoiding physiological arousal. A progressive relaxation exercise is a way in which you relax each muscle in the body in a systematic fashion. One of the ways that we hold tension or stress is in our muscles. When our muscles are relaxed we feel less tense. Progressive relaxation is a skill and must be practiced for maximum benefit. There is a progressive relaxation activity at the end of this module.
Relaxation therapy, guided imagery, yoga, exercise, prayer, and meditation are some ways that can be used to reduce stress. See Module III: Nutrition and Physical Activity for more information regarding the benefits of yoga and other forms of exercise.

**Engaging in Healthy Pleasures**

Health pleasures are things that bring feeling of happiness to you. They may include gardening, going to the movies, reading a book, cooking, anything that brings you joy. It is important to seek out these kinds of activities frequently, at least on a weekly basis. Hobbies are one example of pleasurable activities that you can pursue to relieve stress. They can be creative exercises that get you more in touch with your own values and beliefs.

Humor is not only enjoyable and one of the best antidotes to stress, but it has been shown to have health producing benefits as well. Humor can give people a different perspective on their problems and it facilitates objectivity. It puts situations into perspective. Remember that old saying, “laughter is the best medicine.”

**Support Systems**

Researchers have found that support systems influence the outcomes in cardiac disease. People that have identified support systems tend to have a better prognosis than those who do not. Support systems include family and friends. So it is important for you to identify people that provide support for you. Different people can provide different kinds of support. Some people are good listeners and are valuable when you need to talk things out, while others can be fun to be around and provide a relief from life’s pressures. It is best to have a variety of people who you can count on during times of stress. You should examine your life and identify people that provide support for you.

**Psychological Factors**

When caring for the body, it is important to acknowledge the connection between the mind and body. For instance, recently researchers have identified a relationship between depression and heart disease. It is not uncommon for a person diagnosed with heart disease may show evidence of depression. This is understandable given the events which surround the diagnosis, such as hospitalization and what this means for their future. Needing to make changes to one’s lifestyle is difficult. In addition, sometimes people may blame themselves for the development of the disease. All of these things may lead to depression. However, study findings seem to indicate that depression may be an independent risk factor for the development of heart disease and that depression can negatively alter the course of the disease.

So it is important to examine whether or not you are feeling sad or depressed. If you believe that you have evidence of depression you should talk to your practitioner about it. Prescription medication may be the answer for you, at least at this time. Your practitioner can help you make a decision about what is the most appropriate treatment.
Depression has been found to be associated with a neurochemical imbalance in the brain. And just as you would take aspirin to prevent your blood from clotting or cholesterol lowering medications to lower your risk for heart disease, anti-depressive medications can be the best choice for the treatment of depression. There are other things that you can do which can decrease depressive symptoms. Some of these you may have adopted as a strategy to reduce your risk of heart disease. Moderate exercise, such as walking, can be an effective way to reduce depressive symptoms. Taking time to care for yourself is also very important.

If you believe that the symptoms of depression are worsening and that your practitioner is not attentive to your needs you should seek a referral to someone who specializes in this area. Your mental health is too important to risk.
EXERCISE: PSYCHOLOGICAL STATE

Progressive Relaxation Exercise
Find a quiet place. Sit or lie down for this exercise.

You feel quiet.
You are beginning to feel quite relaxed.
Your feet feel heavy and relaxed.
Your ankles, your hips and your knees feel heavy.
Your whole central portion of your body feels relaxed and quiet.
Your hands, arms, and shoulders feel heavy, comfortable and relaxed.
Your neck, jaw and forehead feels relaxed. They feel comfortable and smooth.
Your whole body feels quite heavy, comfortable, and relaxed.
You are quite relaxed.
Your mind is quiet.
Your thoughts are turned inward and you are at ease.
Deep within your mind you can visualize and experience yourself as relaxed, comfortable and still.
You feel an inward quietness.

Practice this exercise on a daily basis. How does it make you feel?
EXERCISE: SELF ASSESSMENT

Throughout these modules, you have looked at aspects of your heart, your body and risk factors for heart disease. Now it’s time for you to examine your psychological and social health.

How would describe your mood? Are you generally happy? Sad? Anxious?
How do you feel about the future?
What do you like to do for recreation?
Are there people you can count on for help?
What things are most meaningful in your life?

Just as you made a plan for reversing risk factors, you should make a plan to take care of psychosocial and spiritual needs. Remember, this is an important part of caring for yourself!
Appendix A: Cardiac Tests

There are many kinds of tests for cardiac disease. Some of these tests are blood tests which measure risk factors or detect the release of substances produced by damaged heart muscle. Other tests determine the pumping ability of your heart, or blood flow through the coronary arteries. It is important for you to know the result of your tests because this information provides valuable information regarding the decisions you make in collaboration with your practitioner for the treatment of heart disease.

Blood Tests

Analysis of blood provides important information regarding risk factors or muscle injury.

Risk Factors

C-reactive protein – This test gives an indication of a cardiac specific inflammatory process which has been shown to be a predictor of the development of heart disease.

Cholesterol – Serum cholesterol has been shown to be an important risk for heart disease. Blood tests give an indication of total cholesterol (TC), high density lipoprotein (HDL), low density lipoproteins (LDH), and triglycerides. See Module II: Coronary Heart Disease and Risk Factors for a more thorough discussion of the various components of cholesterol and their implications for you.

Injury to Heart Muscle

CPK/CPK-MB - This blood test gives information regarding damage to the heart muscle. When the heart muscle is deprived of oxygen for a period of time the heart muscle begins to break down. This test detects the breakdown of the muscle. Any muscle damage will result in an increase in the CPK, however CPK-MB is specific to the heart. We start to start to see an increase in the CPK-MB about three hours after the injury has occurred. This increase will last for about 48 hours. When it is suspected that a person may have had a myocardial infarction (MI) the CPK-MB tests are performed every few hours. The rise of the CPK-MB is followed until it begins to decrease. This test gives a practitioner an estimate of the amount of damage which has occurred to the heart muscle.

Troponin – contractile proteins that are released following an MI. Tropinin is thought to be the most sensitive indicator of damage to the heart muscle.

Other Tests

Chest X-Ray – A chest x-ray can determine the size and shape of the heart. It can also determine if there is fluid around the heart and whether it is in the correct location in the chest. This test can determine if there is fluid in the lungs, which can indicate a weakening of the heart.
**ECGs or electrocardiograms** – ECGs provide a recording of the electrical activities of the heart. When the electrical conduction system is damaged the heart doesn’t pump as effectively. The ECG provides this information. In addition, the ECG can determine if the heart muscle lacks of oxygen (ischemia) or if damage to the muscle has occurred (an MI).

There are different types of ECGs. With one type you are attached to a monitor, such as when you were in the intensive care unit or were transported in an ambulance. Another type allows you to walk around while your heart rhythm is being monitored (telemetry). A third type, a Holter monitor, is one that you wear for twenty-four hours which records the heart rhythm. While you are wearing this type on monitor you will need to keep a journal in which you will keep track of your activities and any untoward reactions you have, such as a skipped beat.

A 12-lead ECG records the electrical activities of the heart from a variety of angles. It is an important tool in the detection of ischemia or an MI because it “views” the heart from several angles.

**Transtelephonic Event Recorder** - ECG recordings are transmitted over the telephone.

**Exercise Treadmill Test** - This is an example of a test that utilizes an ECG. Here you exercise on a treadmill, and this determines how your heart responds to a stressor, exercise. This test may be performed in conjunction with an echocardiogram.

**Echocardiogram** – An echocardiogram is a test that provides information about the structure of the heart and the function of the heart muscle. There are two different types of echocardiogram. The first is done with a transducer placed on your chest wall. The second type is called a trans-esophageal echocardiogram. In this case the transducer is inserted in your esophagus, or throat. This test permits your practitioner to view the back or posterior part of your heart as well as the front.

**Cardiolite Scan** - For this test, a radio opaque dye is inserted in your veins. Images of the heart are taken, and are repeated in while you exercise. This test can indicate blood flow to the heart. Some individuals are not able to exercise so a medication, dipyridamole (Persantine), is injected into an intravenous line (IV) which simulates the effects of exercise on the heart.

**Cardiac Catherization** - This test provides important information regarding your fluid balance, your heart’s pumping capacity, and your coronary arteries. This test is performed in a special laboratory and you are awake but sedated for the procedure. Catheters are inserted in your arm and/or groin. These catheters enter your heart. The first part of the test measures pressures in your heart. These numbers provide an indication of your fluid status and your heart’s pumping capacity.

Another part of the procedure involves inserting a dye in your coronary arteries. This is called coronary angiography. This dye is radio-opaque, meaning that it can be seen with
an x-ray camera. The cardiologists can then determine if there is any narrowing of your arteries. At the same time they may perform an angioplasty to enlarge a narrowing and/or place a stent to keep the artery open.

The final part of a cardiac catherization is to put dye in your left ventricle which will provide an accurate indication of the amount of blood pumped by the heart per minute. It will also enable the cardiologist to view the function of the heart muscle.

**Radionuclide Imaging or Radionuclide Angiography** (includes such tests as a thallium test, MUGA scan or acute infarction scintigraphy)-These tests involve injecting radioactive substances called radionuclitides into the blood stream. Computer-generated pictures can find them in the heart. These tests will show how well the heart muscle is supplied by blood, how well the chambers of the heart are working, or to identify what part of the heart has been damaged by a heart attack.

**Magnetic Resonance Imaging (MRI)** (also called Nuclear Magnetic Resonance Imaging)-This tests sues powerful magnets to look inside the body. Computer generated pictures can show the heart muscle, identify damage from a heart attack, any provide other information regarding the cardiovascular system.

**Cardiac Positron Emission Tomography** (PET)-Positron emission tomography of the heart allows heart tissue function to be studied and coronary arties to be visualized.

New tests are constantly being developed. If your practitioner suggests a test that you are not familiar with, you will want to ask what is the purpose of the test, how the results may affect your care and what, if any risks are associated with the test.
Appendix B: Treatments

This appendix discusses the treatments available for heart disease. The purpose of medications, surgery, angioplasty and stents are to enhance the modification or risk factors or to reduce the symptoms of heart disease.

MEDICATIONS
You may have begun taking medications to treat your coronary heart disease. Here are some of the broad categories of medications used to treat coronary heart disease. It is important for you to know the name of the medication, dose, and what type of medication it is. It is a good idea to carry around a card in your wallet with the names of the medications and their dosage. Never stop a medication without consulting your practitioner. If you should have some side effects, discuss them with your practitioner. Remember that caring for yourself involves be responsible for taking your medications.

Diuretics
These medications reduce fluids. They may make you to urinate more often. In addition to increasing the amount of fluid you eliminate, often these medications make you lose potassium, an electrolyte. You may need to eat foods that are naturally high in potassium. Your practitioner will monitor the potassium level in your blood, and determine if a dietary supplement is needed.

One important side effect of these medications is that they may cause something called orthostatic hypotension. As a result of the medication causing a decrease in blood pressure this decrease may cause you to feel “lightheaded” when you change position. When you stand up from sitting this may occur. It is important for you to change position slowly, so that your body can get used to the change in position.

Nitrates
Increases collateral blood flow, redistributes blood flow toward the subendocardium, and causes dilation of the coronary arteries.

Nitroglycerine is an example of a nitrate. If nitro is taken under the tongue, pain relief should begin to occur within one or two minutes with relief in three to five minutes. You may take as many as three tablets, five minutes apart. If there is no relief after three tablets, you should activate the EMS system.

Nitro may lower your blood pressure suddenly, so you should be sitting or lying down when you take them.

Beta Blockers
Beta blockers decrease the size of the infarct, ventricular arrythmias, and mortality rate in people who experience an MI. They slow the heart rate and decrease the force of cardiac contraction.
Patients should report any untoward effects such as shortness of breath, depression, or difficult concentrating.

**Calcium Channel Blockers**
Calcium channel blockers enhance vasodilation and blood flow to the heart.

**Angiotension Converting Inhibitors (ACE inhibitors)**
These medications help the heart muscle function effective and have been shown to increase survival in people who have had an MI. They may cause a decrease in blood pressure, especially when they are first prescribed.

**Antiplatelet agents**
Aspirin is one type of antiplatelet agents that is often prescribed. The action of antiplatelet medication is to prevent platelets from sticking together. When platelets stick together they can obstruct the blood flow in the coronary arteries if the arteries have been narrowed by artherosclerosis.

**SURGERY**
Surgery is needed when people do not respond to medical management for CAD or when disease progression is evident.

**Coronary Artery Bypass Surgery (CABG)**
It is the most common type of cardiac surgery in the United States. The heart is accessed through a sternal incision. The patient is put on cardiopulmonary bypass (CPB) during surgery. This means that a machine takes over the work of the heart and lungs. In addition to providing circulation and oxygen, cardiopulmonary bypass permits the surgeon to create a hypothermic condition, which results in a decrease in the body’s need for oxygen and nutrients. The heart is also stopped so that the surgeon can perform the surgery on a non-beating heart. The occluded arteries are bypassed with the patient’s own venous or arterial blood vessels or synthetic grafts.

**Minimally Invasive Direct Coronary Artery Bypass (MIDCAB)**
This type of surgery may be an option for some patients with certain types of lesions in certain areas of the heart. In one of the most common MIDCAB procedures, a 2-inch incision is made and the fourth rib on the left side is removed and the lesions are bypassed. Cardiopulmonary bypass (CPB) is not needed. This option is not available to everyone, as it depends on the location of the blockages of the coronary arteries.

**Transmyocardial Laser Revascularization**
This is a new procedure for patients with unstable angina and are not candidates for either angioplasty or cardiac surgery. A laser is used to create as many long narrow channels through the left ventricular muscle to the left ventricle. These channels will eventually allow oxygenated blood to flow during diastole from the left ventricle to nourish the muscle. Although many patients report a decrease in anginal symptoms, physicians are unsure of why this procedure is effective.
Other Interventions:

**Angioplasty (PTCA) (percutaneous transluminal coronary angioplasty)**
Since 1999, more angioplasties have been performed than CABGs in the United States (American Heart Association, 2007). People with single- or double-vessel lesions that are near the opening of the artery and are not calcified may have an angioplasty. An interventional cardiologist performs the procedure utilizing x-ray technology to guide the catheters in place. The patient is awake, although sedated, for the procedure. A balloon is part of the catheter. The balloon is inflated, which compresses the lesion in the coronary artery. There may be several inflations before an adequate opening is achieved in the coronary artery. A problem with angioplasty is closure or restenosis of an artery.

**Stents**
With closure or restenosis of angioplastied lesions common, stents have been developed to maintain the opening or patency of the artery. Stents form a scaffold, or framework for the lesions.
Appendix C: Vocabulary

Some of the vocabulary we use to talk about heart disease is not part of our everyday language. Knowing what the words mean and how to pronounce the words can help you discuss issues related to heart disease with your practitioner.

**angina pectoris** – A pain or pressure in the chest caused by inadequate blood flow and oxygenation to heart muscles. This pain does not last for more than ½ hour and responds to medication.

**angiography** – Diagnostic or radiography of the heart and blood vessels using a radiopaque contrast medium (dye).

**angioplasty** – Any endovascular procedure that reopens narrowed blood vessels and restores forward blood flow. Most often this procedure is performed on coronary, carotid, or peripheral arteries occluded by artherosclerosis.

**angiotensin–converting enzyme inhibitor (ACE inhibitor)** – Any of the medications that are used to inhibit conversion of angiotension I to angiotension II.

**anorexia** – Loss of appetite.

**anterior** – Before or in front of when referring to the body, it refers to the abdominal side.

**antiplatelet** – Any medication that prevents platelets from sticking together.

**aorta** – The main truck of the arterial system of the body. It begins at the left ventricle of the heart.

**arterioles** – The smallest arteries.

**arteriosclerosis** – A disease of the arterial vessels marked by a thickening, hardening, and loss of elasticity in the arterial walls.

**atherosclerosis** – The most common form of arteriosclerosis marked by cholesterol-lipid-calcium deposits in the walls of the arteries.

**atria, atrium** – The upper chambers of the heart.

**blood** – The cell-containing fluid that circulates through the heart, arteries, veins, capillaries, carrying nourishment, electrolytes, hormones, vitamins, antibodies, heat, and oxygen to the tissues and taking away waste matter and carbon dioxide. The cellular components of blood are: red blood cells (erythrocytes); white blood cells (leukocytes); platelets (thrombocytes).
**BMI (body mass index)** – It is a height/weight index that is used to measure nutritional status. It accounts for differences in body composition by defining the level of adiposity according to the relationship of height to weight.

**capillary** – Any of the minute blood vessels that connects the ends of the smallest arteries (arterioles) with the beginnings of the smallest veins (venules).

**carotid arteries** - The left and right common carotid arteries form the principle blood supply to the head and neck.

**collateral blood flow** – When the major arteries are blocked, over time, other, smaller arteries grow to supply the area.

**congestive heart failure (CHF)** - A disorder in which the pumping function of the heart is decreased.

**coronary** – The blood vessels that supply the blood directly to the heart muscle.

**coronary artery bypass surgery (CABG)** – The surgical establishment of a shunt that permits blood to travel from the aorta or internal mammary artery to a branch of the coronary artery at a point past an obstruction.

**electrolytes** – They are solutions that conduct electricity. They are found in blood, tissue fluids, and cells. They include: sodium, potassium, calcium, magnesium, and sodium bicarbonate.

**endocardium** – The endothelial membrane that lines the heart.

**endothelial** – A form of squamous epithelium (skin-like) cells consisting of flat cells that line the heart, blood and lymphatic vessels and other body cavities.

**epicardium** – The serous (fluid-filled) membrane on the surface of the myocardium.

**epigastric** – The region over the pit of the stomach.

**homeostasis** – The state of dynamic equilibrium of the internal environment of the body that is maintained by the ever-changing process of feedback and regulation in response to external and internal changes.

**intermittent claudication** - A disorder of the arterial blood vessels of the legs caused by atherosclerosis.

**ischemia** – A temporary deficiency in the blood flow to a tissue or organ.

**lipids** – Any one of a group of fats or fat-like substances, characterized by their insolubility in water and solubility in fat.
lipoprotein – Chemicals in the bloodstream consisting of simple proteins bound to fat.

lumen – The space within an artery, vein, intestine, or tube.

mg/dl – A metric system measure which means milligrams per deciliter.

myocardial infarction (MI) – The loss of living heart tissue as a result of coronary artery occlusion.

cardiac palpation - A sensation of rapid or irregular beating of the heart.

perfusion – The circulation of blood through tissues.

pericardium - The membranous, fibroserous sac enclosing the heart.

plaque – An obstruction in the lining of an artery formed by the abnormal accumulation of lipids (fats) and sometimes calcium.

plasma (thrombocytes) – The liquid part of the blood and lymph.

platelet – A round or oval disk found in the blood of vertebrates. Platelets play an important role in blood coagulation, hemostasis, and blood thrombus formation.

posterior – Toward the rear, the back side.

potassium – A mineral element that serves as the principle electrolyte in the intracellular fluid and is an important electrolyte in the extracellular fluid. Along with other electrolytes potassium participates in many functions including metabolism, cell membrane homeostasis, nerve impulse conduction, and muscle contraction.

pulmonary – Concerning or involving the lungs.

red blood cells – (erythrocyte) The primary function of the red blood cells is to carry oxygen.

revascularization – Restoration of blood flow to a part.

stents – Any material or devise used to hold tissue in place, to maintain open blood vessels and prevent lumen closure. The stent is made of an inert material, usually metallic, with a self-expanding mesh introduced into the coronary artery.

vena cava – The principle vein drawing blood from the lower portion of the body and deposits the blood into the right atrium of the heart.
**ventricle** – Either of the two lower chambers of the heart that when filled with blood, contract to propel it into the arteries.

**vertigo** – It is used to describe feelings of dizziness and light-headedness

**white blood cells** – (leukocytes) They are blood cells which fight infection and tissue damage.
APPENDIX C

FOCUSED QUALITATIVE INTERVIEWS;
DATA COLLECTION AND ANALYSIS

Data Collection

Focused qualitative interviews have been conducted by the nurse researcher to assess the usefulness of the self-learning modules, “Caring for Yourself”, for the participants; older, rural, community-dwelling women who have been diagnosed with coronary heart disease (CHD). Data collection continued until saturation plus two was achieved for both this and the in-depth interviews; this resulted in 10 participants.

The technique of verbal probing was used. The investigator read a portion of the module aloud (approximately a paragraph) and the participants were asked their interpretation of what had been read. Additionally, the participants were asked their opinion regarding wording and the appropriateness of the content. These interviews were tape recorded and transcribed verbatim in a Word document.

There were a total of four modules: Module I: Heart Basics: A Description of the Anatomy and Physiology, Electrophysiology, and How Other Parts of the Body Influence the Heart; Module II: Coronary Heart Disease and Risk Factors; Module III: Nutrition and Physical Activity; and Module IV: Psychosocial Considerations. Each week the women were given a module and a focused qualitative interview regarding that module was conducted one week later. Therefore, each woman participated in a total of four focused qualitative interviews.
Data Management

At enrollment, each participant was assigned a number from 416 to 425. The nurse researcher had a list matching participants with numbers, and this list was placed in a locked cabinet in her home office. Data entry of the transcripts reflected these numbers. At the conclusion of the study, the list matching the participant with the number will be destroyed, as will the audio-tapes.

The intent of the focused qualitative interviews was to elicit data that was used to evaluate the usefulness, relevance, and clarity of the modules. Therefore, the unit of analysis was each separate module. After each focused qualitative interview a completed verbatim transcript of the interview was made. These transcripts were put into a Word document, in the password protected personal computer of the principle investigator. After each data entry, a back-up file was created.

Data Analysis

Marshall and Rossman (1999) have identified six phases of the data analysis process: “(a) organizing the data; (b) generating categories, themes, and patterns; (c) coding the data; (d) testing the emergent understandings; (e) searching for alternative explanations; (f) writing the report (pg. 152).” During each of these phases the data is reduced and the researcher provides an interpretation of the data.

The first step of the process, the organization, involves the researcher reading and rereading the data and making sense of the findings. In the second phase, the researcher begins to generate categories, themes, and patterns by looking at the data and identifying recurrent ideas or words, noting patterns of meanings in the words of the participants (Marshall & Rossman, 1999). In qualitative analysis there occurs a formal representation
of analytic thinking through coding. Throughout the research process coding is the method by which the investigator begins to put the concepts that have emerged from the data into patterns (Strauss & Corbin, 1990). As categories and themes are developed and coding has begun, the researcher begins evaluating the codes identified and examines the data for negative instances of the patterns and incorporating them in to the constructs. It at this point, that the researcher is able to critically analyze and seek other explanations for the findings. The final step in the process, writing the report, is central to the process of data analysis, as the final words and themes are recorded (Marshall & Rossman).

An Excel spreadsheet was made that allowed for systematic summarization the feedback received for each module. Each module was placed on a separate spreadsheet. The contents of the module were in the first column. Each woman had a separate column and their comments were aligned with the content of the module. Data analysis began with an interpretation of each participant’s responses for each portion of the module. Special attention was paid when participants interpreted the content of the module in different ways, when there was material that was not understood, material was presented in such a way that the participants were offended, and when they requested additional information. Included in the Excel spreadsheet was a summary of each participant’s interpretation of the module and the inductively derived categorization of their appraisal of the content. Categories for the codes uncovered were created. The five categories were: (1) irrelevant material; (2) unclear material; (3) problems with wording and tone; (4) additional content requested, and (5) valued the content. Any material that included the participant sharing information about herself was put in a separate Excel spreadsheet and combined with the transcripts of the in-depth qualitative interviews. Finally, a
A descriptive summary was created that was used to facilitate comparison of the participants’ interpretation of the module.

The next step in the data analysis was to compare the summarized data for each module across participants. Analysis was focused on the women’s critique of each aspect of the modules. Related codes were clustered in the analysis and provided a basis on which to refine the modules. A summary table for each module was developed and a comparison of interpretations was made. A final analysis of each module with an overview of the range of interpretations, nature and extent of the codes, and evaluation of the quality of each module was conducted. From this final analysis a decisions was made concerning about the appropriateness of the content of the modules including any modifications that were necessary.
### Table C.1

**Focused Qualitative Interviews and Phases of Data Analysis**

<table>
<thead>
<tr>
<th>PHASE 1</th>
<th>PHASE 2</th>
<th>PHASE 3</th>
<th>PHASE 4</th>
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<th>PHASE 6</th>
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<tbody>
<tr>
<td>Organizing the data</td>
<td>Generating categories, themes, and patterns</td>
<td>Coding the data</td>
<td>Testing the emergent understandings</td>
<td>Searching for alternative explanations</td>
<td>Writing the report</td>
</tr>
<tr>
<td>Data is transferred from Word to Excel spreadsheet</td>
<td>Categories and patterns begin to emerge from the data</td>
<td>Data is coded</td>
<td>Self-management program revised; Member checks are performed; women review modules</td>
<td>Critically analyze and explore alternative explanations for themes; review literature</td>
<td>Wrote report</td>
</tr>
</tbody>
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APPENDIX D

IN-DEPTH INTERVIEWS; 
DATA COLLECTION AND ANALYSIS

Data Collection

In-depth interviews have been conducted by the nurse researcher to assess the women’s belief in their ability to manage their disease, health practices, responsibility for health, the adoption of health promoting behaviors, and self-awareness. A written topic guide of questions has been developed to assure all salient topics are covered. The questions are open-ended, permitting participants to provide illustrations and explanations for their responses. The first in-depth interview was conducted prior to the introduction of the intervention. The final in-depth interview was conducted one month post completion of the intervention. These interviews were audio-taped and transcribed verbatim. Data collection continued until saturation plus two was achieved for both this and the focused qualitative interviews; this resulted in 10 participants.

Data Management

At enrollment, each participant was assigned a number from 416 to 425. The nurse researcher has a list matching participants with numbers, and this list has been placed in a locked cabinet in her home office. Data entry of the transcripts reflects these numbers. At the conclusion of the study, the list matching the participant with the number will be destroyed, as will the audio-tapes.

After each in-depth interview was completed, a verbatim transcript of the interview was made in a Word document, in the constant comparison method. The women have been paired according to their strongest characteristic. The transcripts
of each of the pairs have been put into an Excel spreadsheet, in the personal computer of the principle investigator. After each data entry, a back-up file was created. The unit of analysis for the in-depth interviews was the pair.

**Data Analysis**

Marshall and Rossman (1999) have identified six phases of the data analysis process: “(a) organizing the data; (b) generating categories, themes, and patterns; (c) coding the data; (d) testing the emergent understandings; (e) searching for alternative explanations; (f) writing the report (pg. 152).” During each of these phases the data is reduced and the research provides an interpretation of the data.

The first step of the process, the organization, involves the researcher reading and rereading the data and making sense of the findings. In the second phase, the researcher begins to generate categories, themes, and patterns by looking at the data and identifying recurrent ideas or words, noting patterns of meanings in the words of the participants (Marshall & Rossman, 1999). In qualitative analysis there occurs a formal representation of analytic thinking through coding. Throughout the research process coding is the method by which the investigator begins to put the concepts that have emerged from the data into patterns (Strauss & Corbin, 1990). As categories and themes are developed and coding has begun, the researcher begins evaluating the codes identified and examines the data for negative instances of the patterns and incorporating them into the constructs. It at this point, that the researcher is able to critically analyze and seek other explanations for the findings. The final step in the process, writing the report, is central to the process of data analysis, as the final words and themes are recorded (Marshall, & Rossman).
An Excel spreadsheet was made that allowed for systematic coding of the comments of the women. In addition to the comments from the in-depth interviews, anything that the women revealed about themselves during the focused qualitative interviews was included. Data analysis began with an interpretation of each participant’s responses. Each dyad was placed on a separate spreadsheet. Included in the Excel spreadsheet was a summary of each of the codes that emerged. Member checks are performed. Finally, a descriptive summary was created that was used to support the dyad’s narrative.
Table D.1

In-Depth Interviews and Phases of Data Analysis

<table>
<thead>
<tr>
<th>PHASE 1</th>
<th>PHASE 2</th>
<th>PHASE 3</th>
<th>PHASE 4</th>
<th>PHASE 5</th>
<th>PHASE 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizing the data</td>
<td>Generating categories, themes, and patterns</td>
<td>Coding the data</td>
<td>Testing the emergent understandings</td>
<td>Searching for alternative explanations</td>
<td>Writing the report</td>
</tr>
<tr>
<td>Data is transferred from Word to Excel spreadsheet</td>
<td>Categories, themes, and patterns begin to emerge from the data</td>
<td>Data is coded; the women are paired</td>
<td>Critically analyze and explore alternative explanations for themes; review literature</td>
<td>Wrote report</td>
<td></td>
</tr>
</tbody>
</table>
Table D.2
Topic Guide for In-Depth Interviews

<table>
<thead>
<tr>
<th>First Interview</th>
<th>Final Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tell me about your diagnosis.</strong></td>
<td><strong>How have you been?</strong></td>
</tr>
<tr>
<td><strong>What symptoms have you experienced since your diagnosis?</strong></td>
<td><strong>What symptoms have you experienced since we last spoke?</strong></td>
</tr>
<tr>
<td><strong>Tell me about your health practices?</strong></td>
<td><strong>Tell me about any changes you’ve made to your health practices.</strong></td>
</tr>
<tr>
<td>- Nutrition</td>
<td>- Nutrition</td>
</tr>
<tr>
<td>- Exercise</td>
<td>- Exercise</td>
</tr>
<tr>
<td>- Practitioner</td>
<td>- Practitioner</td>
</tr>
<tr>
<td>- Medications</td>
<td>- Medications</td>
</tr>
<tr>
<td>- Other</td>
<td>- Other</td>
</tr>
<tr>
<td>Describe what health means to you. Who is responsible for your health?</td>
<td>What changes to your thoughts about health has occurred since your diagnosis? As a result of the modules?</td>
</tr>
<tr>
<td>Where do you get your information about health?</td>
<td>Where do you get your information about health?</td>
</tr>
<tr>
<td>How would you describe how well you know your body?</td>
<td>How would you say how well you know your body?</td>
</tr>
<tr>
<td>With whom do you speak about your health with?</td>
<td>With whom do you speak about your health with?</td>
</tr>
<tr>
<td>How would you assess your ability to manage your heart disease?</td>
<td>What have you learned from participating in this study?</td>
</tr>
<tr>
<td>Is there anything you’d like me to know?</td>
<td>How would you assess your ability to manage your heart disease?</td>
</tr>
<tr>
<td></td>
<td>What would you like to tell women who have been diagnosed with heart disease?</td>
</tr>
<tr>
<td></td>
<td>Is there anything you’d like me to add to the modules?</td>
</tr>
<tr>
<td></td>
<td>Is there anything you’d like me to know?</td>
</tr>
</tbody>
</table>
# APPENDIX E

## DEMOGRAPHIC DATA SHEET

<table>
<thead>
<tr>
<th>Name:</th>
<th>Assigned Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Telephone #:</th>
<th>Primary Care Practitioner:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. <strong>AGE</strong></th>
<th>2. <strong>HIGHEST EDUCATION LEVEL</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>___ 60-64</td>
<td>___ SOME GRADE SCHOOL</td>
</tr>
<tr>
<td>___ 65-69</td>
<td>___ COMPLETED 8TH GRADE</td>
</tr>
<tr>
<td>___ 70-74</td>
<td>___ SOME HIGH SCHOOL</td>
</tr>
<tr>
<td>___ 75-79</td>
<td>___ COMPLETED HIGH SCHOOL</td>
</tr>
<tr>
<td>___ 80 OR OLDER</td>
<td>___ SOME COLLEGE</td>
</tr>
<tr>
<td></td>
<td>___ COMPLETED COLLEGE</td>
</tr>
<tr>
<td></td>
<td>___ ADDITIONAL EDUCATION</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. <strong>Race/ethnicity</strong></th>
<th>4. <strong>Living Situation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>___ American Indian or Alaskan Native</td>
<td>___ I live alone</td>
</tr>
<tr>
<td>___ Asian or Pacific Islander</td>
<td>___ I live with my spouse or partner</td>
</tr>
<tr>
<td>___ Black or African American</td>
<td>___ I live with one of my children</td>
</tr>
<tr>
<td>___ Hispanic or Latino</td>
<td>___ I live with another adult</td>
</tr>
<tr>
<td>___ Mixed Race</td>
<td>___ Other</td>
</tr>
<tr>
<td>___ White</td>
<td></td>
</tr>
<tr>
<td>___ Other</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. <strong>I live in a(n):</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>___ Apartment</td>
<td>___ I live alone</td>
</tr>
<tr>
<td>___ Assisted Living</td>
<td>___ I live with my spouse or partner</td>
</tr>
<tr>
<td>___ Single Family House</td>
<td>___ I live with one of my children</td>
</tr>
<tr>
<td></td>
<td>___ I live with another adult</td>
</tr>
<tr>
<td></td>
<td>___ Other</td>
</tr>
</tbody>
</table>
APPENDIX F

CONSENT FORM

UNIVERSITY OF MASSACHUSETTS AMHERST
HUMAN SUBJECTS INSTITUTIONAL REVIEW BOARD

RESEARCH INFORMED CONSENT FORM

Subject: ______________________________________

Principal Investigator: Cynthia S. Jacelon, PhD RN CRRN-A
Student Investigator: Holly Evans Madison, MS RN
Sponsor: University of Massachusetts Amherst

Title of Project: The refinement and evaluation of the efficacy of a self-management intervention for rural women with coronary heart disease

PURPOSE OF RESEARCH:
You have been invited to participate in a research study, the purpose of which is for the participants to evaluate and provide pilot data regarding the effectiveness of a self-management intervention for rural women with coronary heart disease. The study will contribute to our knowledge of self-management interventions for rural women with coronary heart disease.

PROCEDURES:
This is what will happen during the study:

- You will read four self-learning modules or packets
- Six tape-recorded interviews will be conducted; one each at the beginning and end of the of the study where we discuss your health beliefs and practices; four related to the content of the modules
- You will complete a survey about health beliefs on three different occasions

Participation in this study will take you about 15 hours over the course of two months

RISKS AND DISCOMFORTS:
You may experience some discomfort from recalling the events surrounding your diagnosis and treatment during this study. If you do experience any discomfort, we ask that you inform us. We can stop the interview. If you continue to be disturbed by these events, we will contact your practitioner and appropriate referrals will be made.

BENEFITS:
Benefits for participation in this study may include that you have more information concerning coronary heart disease.

COSTS AND COMPENSATION:
You will receive no compensation for your participation in this study, nor will participation incur any cost to you.

The University of Massachusetts does not have a program for compensating subjects for injury or complications related to human subjects research but the study personnel will assist you in getting treatment.

**ALTERNATIVES TO PARTICIPATION**
Your medical treatment will not be affected by whether or not you decide to participate in the study. Participating in the study does not limit your options regarding other treatments or educational programs designed for people with coronary heart disease, such as cardiac rehabilitation programs. If you decide to be in the study, you have the right to tell me you do not want to continue with the study at any time.

**SUBJECT ENROLLMENT/LENGTH OF STUDY**
It is expected that 10-15 subjects will be enrolled in this study. This study is expected to last for one year, but your participation is expected to last 2 months.

**CONFIDENTIALITY**
The information you provide will be kept confidential and private. You will be assigned a number and your interviews and surveys will be recorded using that number. Only Ms. Madison will have a copy of the document that links you with that number and that document, as well as all computer files, will be maintained in a password protected file on her personal computer. Hard copies of all data files will be kept in a locked cabinet in Ms. Madison’s home office. When the study is finished the key that can link information to you personally will be destroyed. The data will be kept so that future research questions can be answered. The data obtained in the study will be used for publication in the scientific literature. No real names or identifying data will be used to identify your information for publication. Once the study is complete, the tapes will be securely destroyed.

**VOLUNTARY PARTICIPATION**
You should decide on your own whether or not you want to be in this study. In addition to signing this form, you will be asked at the beginning of each contact whether you want to continue in the study. Your medical treatment will not be affected by whether or not you decide to participate in the study. Participating in this study does not limit your options regarding other treatments or educational programs designed for people with coronary heart disease, such as cardiac rehabilitation programs. If you do decide to be in the study, you have the right to tell me you do not want to continue with the study at any time. There will be no consequences related to your medical treatment should you decide to withdraw from the study.

**REQUEST FOR ADDITIONAL INFORMATION**
Should you have any questions about any matter relative to your participation in this project, you may call: Cynthia Jacelon, 413-545-9576 or Holly Evans Madison at 802-366-0268.
If you would like to speak with someone not directly involved in the research study, you may contact the Human Research Protection Office at University of Massachusetts Amherst via email at humansubjects@ora.umass.edu; telephone (413-545-3428); or mail (Office of Research Affairs, 108 Research Administration Building, University of Massachusetts, 70 Butterfield Terrace, Amherst, MA 01003-9242).

**SUBJECT STATEMENT OF VOLUNTARY CONSENT**

When signing this form I am agreeing to voluntarily enter this study. I understand that, by signing this document, I do not waive any of my legal rights. I have had a chance to read this consent for, and it was explained to me in a language which I use and understand. I have had the opportunity to ask questions and have received satisfactory answers. A copy of this signed consent form will be given to me.

_____________________________________________________________________
Subject (print or type)

___________________________________________
Signature Date

Witness (Print or type) to __Discussion or __Signature

_____________________________________________
Signature Date

**STUDY REPRESENTATIVE STATEMENT:**

I have explained the purpose of the research, the study procedures, the possible risks and discomforts, the possible benefits, and have answered any questions to the best of my ability.

_____________________________________________
Study Representative Name (Print or Type) Date

___________________________________________
Signature
APPENDIX G
SELF-EFFICACY FOR MANAGING
CHRONIC DISEASE SCALE

We would like to know *how confident* you are in doing certain activities. For each of the following questions, please choose the number that corresponds to your confidence that you can do the tasks regularly at the present time.

1. How confident are you that you can keep the fatigue caused by your disease from interfering with the things you want to do?

   | Not at all confident | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Totally confident |

2. How confident are you that you can keep the physical discomfort or pain of your disease from interfering with the things you want to do?

   | Not at all confident | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Totally confident |

3. How confident are you that you can keep the emotional distress caused by your disease from interfering with the things you want to do?

   | Not at all confident | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Totally confident |

4. How confident are you that you can keep any other symptoms or health problems you have from interfering with the things you want to do?

   | Not at all confident | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Totally confident |

5. How confident are you that you can do the different tasks and activities needed to manage your health condition so as to reduce you need to see a doctor?

   | Not at all | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Totally confident |
6. How confident are you that you can do things other than just taking medication to reduce how much you illness affects your everyday life?

<table>
<thead>
<tr>
<th>Not at all confident</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Totally confident</th>
</tr>
</thead>
</table>

This scale was developed by the Stanford Patient Education Research Center and is available at no cost and may be used without permission, due to funding by the National Institute of Nursing Research (NINR).
APPENDIX H
LETTER TO PRACTITIONERS

Dear Practitioner X,

I am conducting a study the purpose of which is for the participants to evaluate and provide pilot data regarding the effectiveness of a self-management educational intervention for rural women with coronary heart disease. This study is being conducted under the supervision of Cynthia Jacelon, PhD, RN of the University of Massachusetts. I would like you to assist me in the recruitment of participants by giving women the attached flyer.

The activities your patients will participate in include:

- They will read four self-learning modules or packets related coronary heart disease
- Six tape-recorded interviews will be conducted; one each at the beginning and end of the of the study where we discuss their health beliefs and practices; four related to the content of the modules
- They will complete a survey about health beliefs on three different occasions

Participation in this study will take them about 15 hours over the course of two months

Participating in this study does not limit your patient’s options regarding other treatments or educational programs designed for people with coronary heart disease, such as cardiac rehabilitation programs.

This study has received approval by the University of Massachusetts Human Subjects Review Board as well as the IRB from your Institution. Copies of the modules with references will be provided to you upon request for review.

Thank you in advance for your assistance. If you have any further questions, please do not hesitate to contact me at 802-366-0268. Thank you.

Sincerely,

Holly Evans Madison, MS, RN
APPENDIX I

CRITERIA FOR DIAGNOSIS WITH CORONARY HEART DISEASE

Criterion of a first-time AMI by the Consensus Document of the Joint European Society/American College of Cardiology Committee for the redefinition of Myocardial Infarction (Alpert, Thygesen, Antman, & Bassand, 2000) or by the participant’s practitioner. The criteria of the Joint European Society/American College of Cardiology Committee require the rise and fall of biochemical markers (Tropnin or CK-MB) associated with myocardial necrosis with at least one of the following indications: ischemic symptoms, development of pathological Q waves on the electrocardiogram, electrocardiogram changes of ischemia, (ST segment elevation or depression) or coronary artery intervention.
REFERENCES


