Developing a role for OT in cardiac rehabilitation

Karen M. Austermiller

The University of Toledo

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Karen M. Austermiller

Faculty Mentor: Lynne Chapman, MS, OTR/L, CS, CDC

Site Mentor: Julia Iveson RN, BSN, CCRN

Department of Rehabilitation Sciences
Occupational Therapy Doctorate Program
The University of Toledo

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Note: This document describes a Capstone Dissemination project reflecting and individually planned experience conducted under faculty and site mentorship. The goal of the Capstone experience is to provide the occupational therapy doctoral student with a unique experience whereby he/she can demonstrate leadership and autonomous decision-making in preparation for enhanced future practice as an occupational therapist. As such, the Capstone Dissemination is not formal research.
# Table of Contents

Executive Summary ..................................................... 5

Introduction ............................................................... 6
- Sponsoring Agency ................................................... 11
- Federal Initiatives and National Trends ....................... 14
- Literature Review ................................................... 18
- Investigating the Need ............................................ 25
- Program Goal ......................................................... 27
- Objectives ............................................................. 27

Programming ............................................................. 28
- Participants .......................................................... 28
  - Role of Occupational Therapist ............................... 29
  - Occupational Therapy ......................................... 29
  - Occupation-Based Programming ............................. 30
- Frames of Reference ............................................... 33
- Model of Practice ................................................... 37
- Outline for Intervention ......................................... 38
- Assessment .......................................................... 39
- Occupations of Daily Living ..................................... 40
- Productivity .......................................................... 41
- Leisure and Relaxation .......................................... 41
- Special Considerations .......................................... 45
- Criteria ............................................................... 46
Marketing and Recruitment of Participants 46

Budget and Staffing 47

Direct Costs 48

Indirect Costs 48

Funding for Direct Service 49

Grant Funding 49

Self-Sufficiency Plan 51

Timeline 52

Services 52

Direct 52

Indirect 52

Documentation System 52

Program Evaluation 53

Summative Evaluation 53

Formative Evaluation 54

Evaluation of Program Objectives 54

Conclusion 55

References 56 – 65

Appendices 66

Appendix A: Organizational Chart 68

Appendix B: Needs Assessment Survey: OT/ COTA 69

Appendix C: Needs Assessment Survey: Healthcare Professionals 70

Appendix D: Needs Assessment Survey: Patients 71
Appendix E: Needs Assessment Survey: Caregivers/Spouse
Appendix F: Explanation of METs
Appendix G: Core Components of Cardiac Rehabilitation
Appendix H: Tai Chi Overview
Appendix I: Role Checklist
Appendix J: Initial Assessment Tool
Appendix K: Progress Note Template
Appendix L: Recipe
Appendix M: Recipe
Appendix N: Recipe
Appendix O: Make a Healthy Snack Flyer
Appendix P: Recipe for Healthy Snack
Appendix Q: Tai Chi Flyer
Appendix R: Letter of Support
Appendix S: Letter of Support
Appendix T: Letter of Support
Appendix U: Supplies and Equipment
Appendix V: Evaluation Tool
Appendix W: Evaluation Tool
Appendix X: Semi-Structured Interview
Appendix Y: Timeline
Appendix Z: Job Description
Executive Summary

Cardiac related illnesses are chronic and do not end when patients are discharged from the hospital. In order to meet the recommendations of health organizations and address the needs of the population, additional outpatient and community based services need to be established for cardiac rehabilitation patients. Developing a Role for OT in Cardiac Rehabilitation is intended to offer services to people in Lenawee County who have been discharged from inpatient cardiac rehabilitation and have a physician referral to participate in ongoing cardiac rehabilitation (CR). The focus of the program is to provide additional services and resources for patients participating in phase II cardiac rehabilitation. The services are intended to provide additional programming and resources to existing phase II CR programs. Additional programs and resources were developed to support patients for increased participation in safe and healthy lifestyle behaviors. This includes active participation in occupations of life, increased sense of well-being, and compliance to lifestyle guidelines for cardiovascular health. The Program provides services that correspond with the recommendations of health organizations such as the CDC, and WHO. The specific program topics will rely on the specific needs of the participants. Initial evaluations will include identifying cardiovascular capacity levels for safe and effective use of therapeutic occupation. Pre and Post evaluations will be used to assess patients’ sense of well-being, healthy lifestyle behaviors, and engagement in occupations of life (leisure, caregiving, employment, and exercise, social). Programming will be based on individual needs of the person, group and evidence based practice. The program goal encompasses issues of safety while increasing function and supporting healthy lifestyle behaviors. This is a cost-effective program which is projected to reduce the financial burden of medical costs for individuals, institutions, providers, and insurers by reducing the number of participants who experience subsequent cardiac related
events that require acute care services. The program is beneficial to the participants who may experience a higher quality of life, less risk of subsequent disease, and improved function.

**Introduction**

More people die in the United States from Heart disease than any other disease. Currently, one third of the people living in the United States have a type of heart disease. Heart disease can affect anyone regardless of socioeconomic status, race, gender, age, or geographic area. Most of the risk factors for heart disease are controllable. They include: high blood pressure, high cholesterol, smoking, diabetes, sedentary lifestyle, and excess body fat. Treating the risk factors can reduce the likelihood of experiencing an acute cardiac episode. Issues that are related to cardiovascular health include cognitive impairment, and depression (Center for Disease Control (CDC), 2010). Occupational therapy has a role in cardiac rehabilitation because it aims to increase function and reduce risk factors for further pathology, and injury.

There are 3 phases, Phase I, Phase II, and Phase III widely recognized in cardiac rehabilitation. Phase I generally lasts from two to 6 weeks. It is sometimes referred to as the acute phase because patients are generally in the hospital and require 24 hour care. During this phase patients begin to participate in self-care occupations and daily ambulation. When a patient is discharged from phase I physicians may refer them to an outpatient CR program. Orientation to the outpatient CR program initiates Phase II and lasts 12 weeks or up to 36 sessions at which point patients may enroll in a Phase III program. Phase III is referred to as the Maintenance Phase. Patients may participate in Phase III programs throughout the rest of their lives baring any additional cardiac event in which the person would start over in Phase I (Singh, Schoken, Williams, Stamey, Kaplan, et al., 2012). The American Heart Association (AHA, 2012)
recommends participation in Phase III should continue for those with risk factors throughout the lifespan for secondary prevention of comorbidities and subsequent cardiac events (AHA, 2012).

There are 4 treatment areas recognized in cardiac rehabilitation: 1) Improve function and quality of life, 2) Reduce the risk of death and additional heart attacks, 3) Ease symptoms including pain, and 4) Stop the progression of heart disease (Agency of Health Care Policy and Research, 1995). The Center for Disease Control (CDC) suggests: 1) The need for cardiac rehabilitation programs at the community level, 2) Patient compliance to guidelines for those with a history of heart attack and heart disease, 3) Educating consumers about the benefits of cardiac rehabilitation, 4) Equality and access to services regardless of gender, ethnicity, economics, or cultural values (CDC, 2011) PATH (Personal Action Toward Health) has been developed by Lenawee County to meet the state goal of “#1 work to improve the health of older adults (Lenawee County Department of Aging, 2011)”.

The role for occupational therapy in cardiac rehabilitation in the past has mainly taken place in phase I (the acute care setting). Occupational therapists in the acute cardiac setting generally focus on compliance to precautions (e.g., sternal precautions), energy conservation techniques, and independence for basic occupations of daily life (ODLs). Additionally, when time permits the therapist may provide materials to educate patients and their caregivers about fall risks and relaxation techniques. Occupational therapy services are infrequently used by patients participating in phase II cardiac rehabilitation (outpatient). Phase II cardiac rehabilitation programs monitor patients three times weekly while they participate in prescribed exercise programs up to 36 sessions. Cardiac Rehabilitation (CR) programs generally offer classes that provide education on various topics (e.g., nutrition, medication, heart disease, stress management). Evidence supports the effectiveness of cardiac rehabilitation programs. However,
less than 30% of people appropriate for phase II cardiac rehabilitation actually participate (AHA, 2012). This is attributed to multiple factors including accessibility, socio-economics, and psycho-social issues (e.g., gender, motivation, depression, and anxiety). A needs assessment was completed to identify the needs of cardiovascular patients with specific emphasis on residents of Lenawee County to whom BH serves. Interviews with staff, patients, and experts was completed in addition to observation at multiple facilities. Issues regarding advocacy, direct service programs, alternative programming and reimbursement were explored. The focus of this capstone will be in developing an occupational therapy program that provides individualized and direct service to patients who have occupational needs. Occupational Capacity for Life (OCL) is an occupational-based therapy program designed to assist people in connecting the principles of cardiovascular health to the many roles they play in life in order to increase long term changes in lifestyle behaviors.

The focus of the OCL program is to collaborate with other disciplines in the cardiac rehabilitation setting and provide additional services to facilitate a return to employment, caregiving, volunteerism, recreation, home management, and leisure occupations. The role of the occupational therapist is to focus on safety and improvement to function while adhering to established cardiovascular parameters. This can include interventions to improve balance and energy conservation techniques in addition to graded functional performance. Additional therapeutic intervention may include education on safety issues regarding cardiovascular disease and stress management. The OCL program is individualized and will be scheduled to meet the needs of each participant. Occupational therapy is a complimentary service for cardiac rehabilitation patients and is reimbursable as a direct service with physician referral by most third party payers. Alternate funding for those who require work hardening interventions may
also be available through individual application to Michigan Works of Lenawee County or the employer of the patient.

Additional Programs

The success of the OCL program relies on advocacy efforts (Grace, Leung, Reid, Robert, Oh, Wu, et al., 2012). Occupational therapists have a wide scope of practice which may contribute to a lack of understanding from other disciplines working in cardiac rehabilitation. The role of occupational therapy in cardiac rehabilitation is dependent on physician referral. Physicians (cardiologists, cardiac surgeons, and primary care) are most often unfamiliar with the unique skillsets of occupational therapists or how they can contribute to positive outcomes for their patients. It is important not only to advocate for the benefits of occupational therapy but also to establish a line of communication from which relationships can be built with additional medical personnel. This will lead to an increase in understanding about the OT profession, an increase in referral rates, and better outcomes for patients. The role of occupational therapists in cardiac rehabilitation includes educating other disciplines about OT. This should be done in an effective, creative, and professional manner.

The TO HEAL (Therapeutic Occupation Helps Everyone Actively Live) program is a non-profit OT advocacy program meant to serve as an ongoing resource for therapists by providing materials that can be used or adapted to promote the role of occupational therapy in all phases of cardiac rehabilitation. Materials such as brochures, journal articles, patient testimonials, and a power point presentation can be accessed online and adapted for quick and easy use. This program will be evaluated by tracking increases to the number of referrals over the next year. This program is funded through in-kind donation and private donations.
Heart disease is the leading cause of mortality in women but a variety of factors influence women’s participation in CR programs. The number of women participating in CR programs is disproportionate to the number of women who could benefit from participation (AHA, 2012).

WILL (Women Interested in Living Longer) is a program intended to provide services specifically for women in Lenawee County who have been referred by their physicians but do not wish to participate in traditional cardiac rehabilitation exercise programs. This program focuses on occupation as a means for exercise with programming that is more naturalistic and appealing to women while still adhering to cardiovascular parameters. The program offers classes and support groups that are meant to address the specific needs of women and is meant to improve compliance and therefore reduce further risk of subsequent cardiac incidents. The WILL program will meet up to 3 times weekly (a total of 36 sessions) for 12 weeks. This program is reimbursable by third party payers with established qualification for cardiac rehabilitation services. The principles of the WILL program correspond with the recommendations of health organizations such as the CDC, and WHO and is supported by a growing body of scientific evidence. Pre and Post evaluation tools will be used to measure functional capacity, healthy lifestyle behaviors, and engagement in occupations of life (leisure, caregiving, employment, exercise, social). Both programs could be accessible through the outpatient cardiac rehabilitation departments.

**Program Goals**

The goal of the OCL Program is to provide occupational therapy services to participants of phase II CR programs that coincide with guidelines of the ACSM, recommendations of the AACVPH, and includes collaboration with CR professionals at ProMedica Affiliate, Bixby hospital.
Location

The CL program will be located the Cardiac Rehabilitation Center at Bixby Hospital (BH), Adrian, MI. BH is an affiliate ProMedica Health Systems Hospital. It is an 88-bed, acute care facility. The mission statement for the facility is:

*ProMedica's Mission is to improve your health and well-being. Which is why, at ProMedica Bixby Hospital, we don't just treat patients, we treat them, and their families, with respect. In fact, we've been doing so for 100 years. We focus on bringing you excellent care, impeccable service and a compassionate ear. And we're a critical access point to extensive care throughout the entire ProMedica system. We are an 88-bed, full-service acute-care hospital that never rests. Dedicated to serving our community, we have more than 120 active doctors working rigorously to meet the needs of our patients and their families.*

*(Promedica, 2012)*

The goal of the OCL program is similar to the institutional mission and focuses on the health and well-being of patients but concentrates only on patients with cardiovascular disease and their family members. Although the OCL program could be used elsewhere or in other ProMedica affiliate facilities, the CR department at BH was selected due to the enthusiasm of staff, accreditation, commitment to patients, and general philosophy to strive for changes that support evidence based practice and leads to better services and additional resources for patients.

The CR program at BH is certified by the American College of Sports Medicine (ACSM) and the American Association of Cardiovascular and Pulmonary Health. The cardiac rehabilitation program has been in operation for over twenty years. The current supervisor, Julia Iveson, RN, BSN, CCRN has served as an integral part of the program since its inception in 1990. The CR program at BH offers services to phase II and phase III patients. They offer monitored exercise, provide educational materials, and offer educational classes weekly. A support group for patients is also offered through the cardiac rehab department but is located at a counseling facility nearby. The educational classes are taught by professionals with an area of expertise (i.e., a pharmacist teaches a class on cardiovascular medications, a nutritionist teaches
a class on diet and exercise, a nurse teaches about heart disease, and a counselor facilitates the support group). Currently, the department has 4 staff members including two nurses, and two exercise specialists. The floor plan includes a large office space, several counter areas, large classroom, waiting room, rest area, closet, and gym. Equipment at the facility includes; halter monitors, treadmills, stationary and recumbent bikes, stair climbers, rowing machines, and additional items typically found in a fitness center) The facility offers ample space to house occupational intervention staff, tools, and equipment.

Occupational therapy has contributed to cardiac rehabilitation in the past. A needs assessment was conducted in order to develop a viable program. The needs assessment was comprehensive and contributed to the development of a program goal and objective.

First, statistical information from the AHA, WHO, CDC, Lenawee County, and BH was collected to examine trends, outcomes, prevalence, population characteristics, mortality, and health recommendations regarding cardiac related disease. Second, participation at the BH facility for 2010 and 2011 was examined. Third, multiple disciplines with various amounts of experience working in cardiac care were interviewed. Fourth, patients and/or family members were interviewed at various facilities in various phases of cardiac rehabilitation. Fifth, a review of the literature was completed. Sixth, the role of occupational therapy in CR was researched through interview with professors and clinical professors of occupational therapy, core text, and search of the American Occupational therapy Association website. Sixth, it was determined that surveys targeted towards four different populations including health professionals, OT/COTA’s, patients, and their family members would be the most appropriate way to develop some of the recurring themes found through less formal interview. The surveys were created, distributed, collected, compiled, and a target theme was identified. Seventh, Practicum took place at 5
different cardiac rehabilitation facilities located in Toledo, OH, Ann Arbor, MI., Detroit, MI., and Adrian, MI. Eighth, three nationally recognized and respected experts in the field of CR were personally interviewed. The resultant effect of the needs assessment was the concept of the CL program. Specific programming interventions were developed through consultation with CR directors, OT’s, and cardiac rehabilitation professionals including: Exercise physiologists, exercise specialists, researchers, nurses, and certified Yoga and Tai Chi instructors.

Statistical and demographic information shows that cardiac disease is prevalent in Lenawee county and supports the development of additional services in cardiac rehabilitation which includes helping maintain healthy lifestyles and returning to necessary life roles. The statistical information for Lenawee County is consistent with national information. Heart disease is the leading cause of death. The population of Lenawee County is just under 100,000 people (99,837) The ratio of men to women is equivalent (50.2% male and 49.8% female). There is a large population of people originating from Mexico of Hispanic descent. Mexican Americans are among other minorities at greater risk of developing comorbidities related to heart disease including obesity, HTN, and diabetes according to AHA (American Heart Association, 2012). Residents of Lenawee County are broken down by ethnicity as follows: 88.8 % Caucasian, 7.6 % Hispanic, 2.4 % are Black, and 1.8% Oriental or Pacific Islander. Also, Lenawee County is an independent farming community and home to migrant workers (mainly from Mexico) who reside in Lenawee County during harvesting seasons also seek treatment for cardiac disease (Lenawee County Health Department, 2009). The mortality rate for heart disease in Lenawee County was 437 in 2006 (Lenawee County Health Department, 2011). Occupational therapy interventions that support patients with cardiac disease might help to lower future mortality rates of those who participate in cardiac rehabilitation at BH.
Participants in cardiac rehabilitation programs have most likely experienced a cardiac related event such as a MI, CABG, angioplasty, or stenting. Patients are referred to phase II cardiac rehabilitation programs by their physician. According to a report from the American Heart Association in 2010 the average age of potential cardiac rehabilitation participants is 61 (Jones, et. al., 2010). The participants at BH range from 25 to 92 years of age. In 2010 they completed 3264 patient sessions with about 175 patients. Of the participants, 37% were women and 63% were male (J. Iveson. Personal Interview, January 28, 2011). The demographics for the facility at BH represent a diverse population. Many of the participants find it necessary to return to employment, resume caregiving responsibilities, continue with volunteer positions in the community.

Interviews with staff members of cardiac care units in multiple phases identified key areas of concern for the patients they worked with. The informal and formal interviews took place with rehabilitation specialists, physical therapists, physical therapy assistants, interns, physicians, nurses, exercise physiologists, medical assistants, ultrasound technicians, dieticians, occupational therapists, and occupational therapy assistants. The various professions provided a variety of perspectives but resulted in common themes. Common themes included compliance with medical precautions and advice, diet, smoking cessation, safe occupation, and resuming roles in their lives while maintaining a healthy lifestyle. Healthy lifestyles include regular exercise, occupation, socialization, diet, stress management and quality of life.

Patients and their family members in phase I seemed less aware of what needs they may have. However, fear regarding how cardiac disease would affect future function, income, and anxiety about the risk of secondary events were themes that emerged through surveys.
Careful monitoring with use of monitoring equipment by professional staff was highly desirable in a phase II program. Patients and/or family members in phase II said they preferred to participate in CR programs that involved monitoring because they felt safer and more comfortable in the presence of trained medical staff. Many patients said they would not feel comfortable participating if they were not being monitored which is why they felt it was unlikely they would engage in physical occupations on their own. Many people expressed a willingness and desire to resume physical occupations. This implies that if people are given an opportunity to resume naturalistic occupations while being monitored they may gain an increase in confidence to participate in occupations outside of the clinical setting which is essential to achieving an active healthy lifestyle beyond phase II.

Surveys and interviews with OTs and COTAs provided insight regarding the potential problems with reimbursement for services in later phases of CR, a lack of understanding from other disciplines, and an inadequate amount of sessions for cardiac patients in phase I. A typical scenario described by multiple therapists with experience working in phase I CR involves interventions related to very basic occupations of daily life such as toileting, grooming, and eating. Most therapists seemed to agree much more could be done to assist patients with cardiac disease in transitioning back to work, leisure, and social occupations. Also, many things that therapists touch upon in phase I could be reinforced at a later phase when patients and family members have time to accept and understand more about their prognosis. Patients who experience cardiac events often feel limited by their condition.

Therapeutic occupation can help patients identify ways in which they can return to prior roles safely and enjoy a quality of life. Occupational therapy can help patients in all areas of occupation including: leisure, employment, community, social, familial, and home management.
Men and women both benefit from participation in CR programs but women participate less frequently than men (AHA, 2012) Male and female participants may have different program needs. Women have been shown to be more compliant when given options for participation in alternative exercise programs, home programs, or gender specific classes (AHA, 2012). Programs can work to meet the individualized needs of each participant which may include issues related to gender roles. Other role issues may relate to how discharge instructions apply to their life roles.

Participants of cardiac rehabilitation are discharged from the hospital with cardiac guidelines from the cardiologist and hospital staff that specify restrictions and recommendations for returning to occupations. The things that are addressed in the guidelines may include medications, signs to look for, physical restrictions of work load, physical exercise, stress, and weight loss. Patients were asked about the guidelines at a visit to a cardiac rehabilitation facility in Michigan. The general theme was that patients feel they understand the guidelines at discharge but once they are home have difficulty determining their limitations which puts them at risk. (e.g., a patient said his wife tells him he can’t do anything and that his doctor never said he couldn’t work. The patient described working in a physically demanding job in temperature extremes. This is generally not advisable for patients at risk for subsequent heart attacks due to the stress that is placed on the heart. However, the patient did not see specific instructions related to working conditions).

Interviews, surveys, and research suggest patients are given a lot of information at time of stress and may not be able to clarify and apply the guidelines to occupational participation later on. They also describe misunderstandings about the guidelines or how long they are supposed to follow the guidelines resulting from contradicting information provided in the media, and by
various health professionals. Clarification on how the physician’s guidelines apply to the
dividuals occupations might help in developing healthy support systems between the patient
and their spouse. The spouse of a person who has cardiac disease can experience a tremendous
amount of fear and anxiety over risk to losing their significant other.

Experts in CR including, Barry A. Franklin PhD, Beaumont Health Systems, Dalynn
Badenhop, PhD, FACSM, UTMC, and Jenny Adams, PhD., Baylor Health Systems all support
development of a role for OT in phase II cardiac rehabilitation. Dr. Franklin stated that more
can be done to improve outcomes for participants in cardiac rehabilitation and that multiple
disciplines can contribute to better designs in programming and the development of progressive
and dynamic programs. He also stated that acquiring skills that allow crossover training creates a
team environment and puts everyone on the same page. Multiple disciplines need to be able to
relate by using a common language. It is also important for anyone who wants to work in CR to
actively pursue involvement with other health professionals through national affiliation and
certification from the American College of Sports Medicine which is the common source for CR
guidelines in addition to the AACVPH. At Beaumont, staff members participate in all aspects
of research, professional development, and patient care (Barry Franklin, Personal
correspondence, February 2012). Dr. Adams stated that there is a gap between what people do in
CR and how that relates to a return to their lives (Personal correspondence January 2012). Dr.
Badenhop stated that women and minorities may participate more in CR if given access to
alternative programs (Personal correspondence, January 2012). This supports national statistical
information that women are less than 30% likely to participate in cardiac rehabilitation despite
the fact cardiovascular disease is the number one cause of death in women (Women’s Heart
Foundation, 2011). All three experts were enthusiastic and supportive of the development of occupational therapy programming.

A Review of the Literature

There is a growing body of evidence that supports the use of occupational therapy in subsequent phases of cardiac rehabilitation. Occupational therapy research that has been completed during phase I infers a role for OT in subsequent phases. Cardiac rehabilitation has been shown to benefit patients, reduce risk factors and mortality, and be cost effective. A review of the literature supports the role of OT in CR. “Rehabilitation of the cardiac patient involves restoring and maintaining optimal physical, psychological, occupational, social, and recreational status” (Dafoe, Franklin, and Cupper, 1999).

A case report completed in 1985 by Wilke and Sheldahl was written to provide evidence of effective occupational therapy, share methodology, and to provide an official statement as to the value and effectiveness of occupational therapy with participants in cardiac rehabilitation. A summary of the report is documented below.

* A significant percentage of patients do not return to work after MI or CABG for nonmedical reasons. These reasons include unwarranted medical restrictions, patient anxiety concerning ability to meet job demands, apprehensive family members, and fearful employers. A case study is presented to illustrate how occupational therapists can enhance a patient’s work potential by using skills in activity analysis to develop simulated work evaluations. Satisfactory performance on a test that closely simulates work demands can help the physician, patient, family,
and employer gain confidence in the patient’s ability to return to work.

(Wilke & Sheldahl, 1985, p.327)

When Wilke & Sheldahl’s report was published, fewer people were diagnosed with cardiovascular disease. The characteristics of patients who were participating in CR were older, predominantly male, and less conscious of healthy lifestyles. However, the concept that many people do not feel confident in returning to their prior roles following a cardiac event is still commonly seen in patients. When patients are unable to resume their life roles, it can result in devastating economic, personal, and emotional problems (Dafoe, et. al., 1999).

An interview with Dr. Jenny Adams, director of cardiac rehabilitation at Baylor Health Systems, Dallas, TX, provides additional support in developing individualized programs that help people resume prior roles. “I have seen patients who have lost everything because they are not able to return to the physical demands of their job. There are current limitations in national rehabilitation guidelines that limit the ability of people to achieve the physical capacity necessary to return to prior employment or recreational activities. The program at our facility encourages people to increase the level of capacity necessary to return to work or recreation while being monitored for symptoms in a safe environment. This gives them confidence and allows us to provide cardiac rehabilitation that is individualized”. Ideally, there needs to be a way for people to develop the functional capacity necessary, gain confidence, or receive additional therapeutic interventions so that they can return to their lives or have additional resources to learn to do their jobs in more efficient and less physically demanding ways (Personal correspondence with Jennifer Adams, EP, PhD, director of cardiac rehabilitation at Baylor Health Systems, Dallas, TX., January 2012).
In a two part review of return-to-work programs in 2000, Shrey and Mital identified specific job stressors in various job tasks and a lack of strategies and resources for patients with coronary heart disease. The participants in the study had high expectations in returning to employment but lacked the support of concrete action plans. Job-simulated rehabilitation was used for male and female participants. There were two categories (heavy and light) of work. The outcomes for return-to-work programs included improved physical strength, joint flexibility, dexterity, and aerobic capacity. The outcomes “were either equal or exceeded conventional phase 2 cardiac rehabilitation training programme” (p.621). Additionally, the patient’s perspective related to personality type and employment stress was examined using the Jenkin’s activity survey. All the subjects were identified with ‘type A’ personalities. This corresponds with a higher risk for cardiac related illness and suggests interventions that include stress management may be especially important to patients in phase II cardiac rehabilitation.

A randomized controlled trial on goal attainment was completed of 201 people recovering from a myocardial infarction (Oldridge, Guyatt, Crowe, Feeny, & Jones, 1999). The participants were asked to identify a goal. Later the participants were asked if and when they had achieved the goal. The outcomes for exercise tolerance and quality of life were compared to the participant’s perception of goal achievement. Results of the study showed the outcomes were improved in the participants who participated in CR programming over those who did not.

A study was completed with cardiac rehabilitation patients over the age of 65 to see if their needs were currently being met. The study focused on the experiences, perceptions, and contexts influencing cardiac rehabilitation as reported by patients. A qualitative method was used to allow for a wide range of responses to be given. Focus groups were used to generate data from individuals. The focus groups were audiotaped and transcribed by two researchers. The
transcripts were coded within an agreed framework. This is relevant to the CL program plan because it supports the necessity of programming that focuses on individualized needs of a specific population. The literature provided by the authors offer further evidence on the benefits of cardiac rehabilitation programs in reducing risk and increasing quality of life. Additionally, the results demonstrate that people over the age of 65 with cardiac disease have needs that are not being met. It is also important to look at the effectiveness of programming in terms of perception of the participant.

The study examined the participant perception of quality of life, anxiety, depression, and symptom presentation of participants in relationship to their attendance in a cardiac rehabilitation program. This study used a mixed design and generated quantitative data through questionnaires, and clinical assessments. Adults who did not participate in cardiac rehabilitation had significantly poorer scores for depression and a lower quality of life. Qualitative data results identified themes in the participants’ views of attendance. The themes reflect a lack of enthusiasm or interest in attending and following attendance of the program (Tolmie, Lindsay, Kelly, Tolson, Baxter, & Belcher, 2009).

A review of prior research studies in cardiac rehabilitation was completed by Witt and Associates. They studied the effectiveness of occupational therapy programs following open heart surgery concluded more research is necessary to establish the effectiveness of occupational therapy after open heart surgery. Only one case-series, Level 4 study, fit with the research question. The study is not strong for evidence based on where it falls in the hierarchy of evidence however it did show a statistical and significant improvement in the average score of the 44 participants on the FIM scores. This demonstrates that OT is beneficial in improving function in patients following cardiac surgical care. Improvements in functioning led to 93% of
the participants being independent at discharge. These findings are encouraging but not substantiated by other studies. Also, the temporal nature of healing could have contributed to the improved FIM Scores. Limitations to this study as noted by the author include the lack of literature available to study and the inclusion of only one study. The study does show a correlation (however weak) between improved function and occupational therapy following heart surgery. It is also relevant because the limitations of the study indicate that more needs to be done to provide research opportunities to study the role of occupational therapy with cardiac patients. A program that focuses on patients resuming function in their daily lives that can be evaluated may help to provide support for funding in this area of research (Witt, et., al. 2004).

Cardiac rehabilitation is beneficial to patients when programs are individualized and accessible. Wells (2007) reviewed the effectiveness of occupational therapy programs following open heart surgery. Results of this study indicate that occupational therapy has been shown to significantly improve functioning in cardiac patients at the 1st phase of cardiac rehabilitation. The study also verifies that occupational therapy has an established role in cardiac rehabilitation. A program that focuses on patients resuming function in their daily lives at a later stage of rehabilitation may result in further increases in function. Another research study suggests that cardiac rehabilitation patients have needs that are not being met.

Occupational Therapy Practice magazine recently published an article on the role of OT in cardiac rehab. The focus of the article was stroke rehabilitation, however the article suggests fear in returning to prior roles is commonly felt in patients following any cardiac event. The authors also state overall issues amongst participants in cardiac rehabilitation as compliance and, and managing pain (Gibbons, 2011). These are all areas that should be considered with the
development of an occupation-based program for participants of phase II CR in addition to personalized interventions.

A qualitative design was used to examine the effectiveness of programming from the perspective of the individual rather than a set of characteristics in forty-seven participants. The participants had a history of heart disease and had participated in cardiac rehabilitation at a single facility in Scotland (Clark, Whelan, Barbour, and MacIntyre, 2005). The themes identified in the study included concerns over whether the program would be individualized to meet their needs and goals and opportunity to receive support from a group of peers. The participants did not attribute their participation in rehabilitation to changes in their long term health behaviors. The participants expressed that the positive aspects of participating in rehabilitation were related to socialization and feeling safe while in the rehab setting. The researchers of this study suggest additional services are needed to support and promote changes in behavior following hospital based cardiac rehabilitation. This study directly relates to the need for individualized services provided in a setting where interaction with peers takes place. It also supports the goals of developing programs that help to establish long term changes in health behavior.

An article by Bonzheim and Franklin (2000) defines the role of cardiac rehabilitation and core components of a contemporary program with women. The authors note coronary heart disease (CHD) as the leading cause of death for women. The authors note exercise as a vital component to cardiac rehabilitation programs for women. Programs that offer additional components (e.g., psychosocial/ vocational, medical surveillance/ emergency support, risk factor modification) are most beneficial. A multidimensional view of cardiac rehabilitation is discussed by the authors in terms of women but the concept of contemporary multi component cardiac rehabilitation can be generalized to all participants of cardiac rehabilitation programs.
Occupational therapists can help to develop programs that meet the individual needs of male and female patients.

Research studies that have been completed in the last two years provide relevant areas of service for a cardiac rehabilitation program. This includes the use of spirituality with relaxation, and motivation of participants to attend programs. Higher compliance rates may contribute to less progression of heart disease (Dunn, S. L., Stommel, M., Corser, W.D., & Holmes-Rovener, M., 2009). Pain and control of angina symptoms is an additional area that could be addressed in the CL Program through visualization techniques, relaxation, or meditation (Changa, Casey, Duseck, Bensonca, 2010). Best Practice Guidelines in Cardiac Rehabilitation recommends personalized interventions with groups of less than ten patients (Goble, 1999). This is applicable to developing alternate occupation-based exercise classes.

“The American Heart Association and the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR) recognize that all cardiac rehabilitation/secondary prevention programs should contain specific core components that aim to optimize cardiovascular risk reduction, foster healthy behaviors and compliance to these behaviors, reduce disability, and promote an active lifestyle for patients with cardiovascular disease” (Balady, Ades, Comoss, Limacher, and Pina, et. al., 2000, p. 1069). The current programming at BH focuses on but not all of the core component areas. However, more can be done to meet the established guidelines by developing a role for occupational therapy in phase II CR programs.

Occupational therapists with past experience in cardiac care noted the following areas for which they provided service: Education for managing weight, increasing activity, controlling diabetes, smoking cessation, and coping with stress. Cardiac Rehabilitation leaders such as Baylor Health Systems had the lowest readmission rates for patients with cardiac related events.
They attribute their success in part to the provision of services which include helping people return to work, increase confidence, relaxation techniques, and developing a foundation for a healthier lifestyle (Baylor Health Systems, 2011). Baylor Health Systems does not have OT’s on staff in their phase II CR facilities but the programming includes hands on occupation, and simulation of naturalistic occupation. Their successful strategies correspond with occupation-based programming and therefore support the development of similar but intensified occupation-based programming by an occupational therapist.

Occupational therapists can provide expertise in areas of returning to occupation, restoring function, and promoting or supporting patients with long term lifestyle change. Occupational therapists support patients through use of environmental and contextual factors that can lead to healthy behaviors outside of the clinical setting. The American Occupational Therapy Association official document (Scaffa, Slyke, Brownson, & American Occupational Therapy Association Commission on Practice, 2008) points out that occupational therapy believes that engagement in meaningful occupations supports health and leads to a productive and satisfying life. Occupational therapy can play important roles in health promotion and disease or disability prevention through 1) promoting healthy lifestyles, 2) emphasizing occupation as an essential element in health promotion, 3) providing intervention in population level. This document lays a solid ground for the OCL program.

Summary of program need

Cardiac related illnesses are chronic and do not end when patients are discharged from the inpatient or hospital setting. In order to meet the recommendations of health organizations and address the needs of the population occupational therapy services are needed in phase II of cardiac rehabilitation so that patients may resume life roles with confidence while maintaining
healthy lifestyles. This is beneficial to the participants who may experience a higher quality of life, less risk of subsequent disease, and improved function. This is a cost effective program that will likely reduce the financial burden of medical costs for individuals, institutions, providers, and insurers by reducing the number of participants who experience subsequent cardiac incidents that require acute care services.

There are many areas of focus that can be used with CR participants. However, to prioritize the needs of the population for occupational therapy it is important to consider the area of programming with highest impact and therefore benefit participants the most. A priority list of needs for the CL program was developed after synthesizing the information from the literature, health initiatives, formal and informal interviews, data collection, and the role of occupational therapy. The list was used to develop goals and objectives for programming and a model of practice in which to base therapeutic interventions. A program that offers occupational therapy services to meet the specific needs of participants in Phase II cardiac rehabilitation that includes resumption of prior roles at work, home, and within the community. Occupational therapists can provide additional support in the areas of coping and stress management. The needs assessment and review of the literature from the annotated bibliography supports the use of programming with emphasis on resuming prior roles (which may include returning to work) in a manner that supports healthy lifestyles over a longer period of time. Occupational interventions allow patients to transfer the principles of CR programs to everyday life. The program is unique because 1) it is occupation based (using the role acquisitions frame of reference, 2) complimentary to the services that are already being offered in conventional rehab programs, and 3) is collaborative with other disciplines. The premise is that this will prolong the period of compliance with heart healthy behaviors once participants graduate from phase II.
Objectives

Program Goal

The goal of the Capacity for Life program is to provide individualized occupational-based services to participants in phase II cardiac rehabilitation programs to decrease the incidence of subsequent heart related events.

Objectives

1. Participants will describe three roles that are meaningful and purposeful to them as identified in the Role Acquisitions Model (Mosey 1986) using the role checklist, by the end of the first session.

2. Participants will describe 3 internal and external factors related to the roles identified as meaningful and purposeful with verbal cues by the end of the first session.

3. Participants will identify and document one source of physical or emotional stress associated with each (of three) roles with less than three verbal cues by the end of the second session.

4. Participants will identify and document one or more controllable (and personally applicable) risk factors when prompted for cardiovascular disease by the end of the third session.

5. Participants will identify a minimum of one objective for lowering their risk factors for cardiovascular disease when prompted by the end of the third, sixth, and ninth sessions.

6. Participants will participate in a minimum of one therapeutic occupation (that contributes to skill acquisition for roles (identified in the first session) when prompted during each therapy session.
7. Participants will document and report on whether they met the third, sixth and ninth session objectives by the end of the fifth, eighth, and tenth sessions.

8. Participants will demonstrate one stress management occupation of their choice when prompted one time for every three sessions or four out of twelve sessions.

9. Participants will independently document 1 positive role change personally experienced as a result of healthier behaviors by the eleventh session.

10. Participants will identify, demonstrate, and document three healthy coping strategies to use outside of the clinical setting when prompted in a Capacity for Life Plan by the twelfth session.

11. Participants will identify and document a minimum of one goal and three objectives when prompted as part of a Capacity for Life Plan by the twelfth session.

The programs goal, objectives, and schedule were developed after reviewing material from the needs assessment, the literature, Mosey’s Role Acquisition Frame of Reference, and through consultation with occupational therapists with experience working in cardiac care facilities. The OCL sessions are meant to begin at the midway point of conventional phase II programming (≈ 18 sessions or 6 weeks). The start time is based on creating an overlap to standard CR programming which will allow participants time to properly transition from entry to exit.

Programming

Participants

The potential participants for this program are male and female adult participants in the CR program BH. These participants have a history of cardiovascular disease and frequently reside in Lenawee County or nearby communities. It should be noted that ProMedica Health Systems employs an extensive network of affiliates including cardiologists and primary care
physicians whom currently serve as the primary source of referral. However participants can be referred from other health care networks.

The inclusion criteria may include a physician referral for occupational therapy evaluation or physician referral to participate in CR. Evaluation outcomes dictate further need for occupational interventions. The evaluation includes formal assessment with use of the activity checklist, role checklist, and reference to baseline scores from the QL36 obtained at orientation to the standard CR program. It should be noted that participants of standard programming at BH are subject to additional inclusion criteria that includes medical stability, physician referral, and compliance to participate.

**Role of Occupational Therapy**

Currently, the CR program at BH focuses mainly on the exercise component in prescription to exercise with progression. They also offer educational classes (presented by professionals in associated fields) on nutrition, heart disease, and medications. Participants also may participate in a depression support group. Although, the current programming offered by BH is excellent, it is thought that an occupation-based program will offer the participants an additional benefit and therefore contribute to even better outcomes. The addition of an occupation-based program will help to educate, promote, develop, and encourage individuals to resume, change, or take on new roles that attribute to a healthy and active life. The occupational therapy services provided by the OCL program are direct and include therapeutic evaluation, intervention, and follow-up.

**Occupational therapy**

Occupational Therapy (OT) intervention can contribute to CR programs by enhancing and maintaining the physiological and psychosocial status of people. Individuals with disorders
of the cardiovascular system may be limited by psychosocial, physical, emotional, and behavioral responses to occupation (activity). The goal of providing OT to patients in a CR setting is to assist with role definition, functional performance, and adaptation enabling the patient to be independent and adopt long term healthy lifestyles whilst recovering from cardiovascular related illness or surgery.

Occupational therapists are best suited to implement programming that uses occupation as a therapeutic intervention to improve health and function. Occupational therapists have skillsets to provide additional support in psycho-social, and physiological domains. The AOTA (2012) promotes the use of environments and contexts to support health and occupational participation. Interventions that provide experience, skillsets, or generalization to naturalistic occupations are ideal and the primary focus of the CL program.

OCL programming is designed to easily communicate with other health professionals and utilizes widely recognized CR terminology and systems of measurement. This is a small but important detail of programming because of the need to effectively interface with many other disciplines in phase II cardiac rehabilitation. Common language between disciplines may help create a continuity of care.

Currently, METs are used in the majority of CR facilities and are recognized as a standard unit of measure. The CL program includes METs as a means to translate occupation, goals, and outcomes. Please see Appendix F.

Occupation-based Programming

Consistent with the principles of occupational therapy, the OCL program will be occupation-based. An occupation can be defined as “a dynamic relationship among an occupational form, a person with a unique developmental structure, subjective meanings and
purposes, and a resulting occupational performance” (Nelson & Thomas, 2003, p90). According to Occupational Therapy Practice Framework: Domain & Process, occupations include occupations of daily living, instrumental occupations of daily living, education, leisure, play, social participation, etc. (American Occupational Therapy Association, 2008). The program relies on the use of occupational interventions to support social engagement and reinforce the healthy lifestyle choices presented in the CR core program. This includes stress management, smoking cessation, limited alcohol, fat, and sodium intake, self-monitoring of blood pressure and blood glucose (with diagnosis of diabetes).

The occupational therapist will play many roles in this program. The first role for the therapist in this program will be an educator’s role. Through teaching, role playing, and discussion, the therapist will develop rapport with patients and their families. The second role for the therapist is to promote a healthy lifestyle for these participants. The occupational therapy therapist will develop an individualized approach to a healthy lifestyle change. The occupational therapist will help these participants to uncover their unhealthy lifestyles, set up personal goals, and change their lifestyles. The third role of the occupational therapist is to provide support to patients in understanding and practicing skills that will allow them to confidently monitor their own BP, pulse, and identify warning signs related to cardiovascular disease. The fourth role is to provide opportunities to enhance occupational performance through group and individualized therapy sessions. The occupational therapist will play a unique role to add purposeful and meaningful occupations to promote their well-being (Scaffa, Slyke, Brownson, & American Occupational Therapy Association Commission on Practice, 2008).

OT’s have training, education, and skillset to analyze and identify physical, psychosocial, and cultural barriers to function. OT’s use holistic and client-centered approaches
to promote health; the occupational therapist will emphasize occupation as an essential element in health promotion; and the occupational therapist will grade up or grade down participants’ occupation based on each individual’s function level. Therefore, the occupational therapist is an ideal healthcare provider for the OCL program.

**Frame of Reference**

A theoretical foundation for practice is needed to establish a basis for intervention and meet the objectives and overall goal of the CL program. Mosey’s Role Acquisition Frame of Reference was selected based on the needs of the program. The frame of reference focuses on the acquisition of roles. Role(s) are identified within the context of occupational therapy as a set of behaviors expected by society, shaped by culture, and may be further conceptualized by the client. When there are conflicts or obstacles to performing competently the role performance may be dysfunctional (OTPF, 2002). Social roles are determined by cultural, economic, and physical conditions. Developing skills in role acquisition is meant to promote development in all areas of one’s life.

Mosey’s Role Acquisitions Frame of Reference was developed in 1986 and is based on learning theory. Role Acquisition is a theory-based intervention that focuses on evaluation and treatment within roles and skills and it is client-centered and client-driven. Roles and their underlying skills are identified and prioritized by the client. The implementation of Role Acquisition model was geared towards the desired roles of the participants. It often combines individual intervention with group treatment. The client and the therapist have individual meetings prior to the start of evaluation and treatment and these meetings focus on the person's identification of roles and progress with his/her specific roles and skills. The improvement in role functioning can be directly linked to identified roles and occupations. The frame of
reference emphasizes that conscious experience will lead to learning that is carried out unconsciously. Simulation of naturalistic situations is important and active participation is necessary. Interpersonal skills and task skills are necessary in all areas of social participation. Areas to consider include Occupations of daily living, family function, employment, and leisure occupations. The assessment process and results are considered in a qualitative manner that is not based on a developmental stage or hierarchy of development of skill.

The Role Acquisition Framework consists of four parts: theoretical base, function-dysfunction continuums, functional or dysfunctional behaviors, and methods to promote positive identity changes. The theoretical base of Role Acquisition provides a description of a person's need to learn and feel competent and successful in social roles (Mosey, 1986). It describes how learning takes place, the learning of typical and atypical roles, and the therapeutic tools that assist in the process of developing roles. The continuums and the behaviors indicative of function and dysfunction provide a means to evaluate a person's task and interpersonal skills and social roles. Examples of task skills include the willingness to engage in doing tasks, ability to organize tasks in a logical manner, and ability to tolerate frustrations associated with tasks. Examples of interpersonal skills include the ability to initiate, respond to, and sustain verbal interactions whilst communicating accurately. This requires the patient to express themselves clearly and use appropriate body language and vocal tone. Examples of roles that are generally desirable to patients in CR include: grandfather, neighbor, volunteer, sister, caregiver, worker, CR group member, and community member.

The Role Acquisition framework supports the development of skills and roles to create positive change. Successful engagement in roles and success in different roles are necessary for older adults’ life satisfaction. The goals and objectives of the OCL program rely on role identity
to provide motivation and insight for long term healthy behaviors. The occupational therapist will develop interventions to facilitate change in the patients’ skills and role functioning.

Following a cardiac event many participants may find resuming prior roles challenging. The chronic nature of illness may require participants to develop skills to identify new or change prior roles. The participant may wish to develop a healthier lifestyle which could alter their role in the community, at work, in the family, and with friends. For example: A man may be known as a ‘drinking buddy’ or ‘regular’ at the American Legion where fried fish is frequently served. His desire to quit drinking beer or eating fried food may make it difficult for him to maintain friendships that involve these things. Establishing a new role to maintain in old friendships or new friendships will support the participants desire to maintain a healthier lifestyle.

The Role Acquisition frame of reference also allows flexibility so that interventions can be individualized. It can be complimented by the use of standardized measures that were selected to meet the specific needs of patients in cardiac rehabilitation programs. Developing occupation-based interventions that focus on the identity of healthy roles is supportive to the needs and desires of patients. This supports the use of the Role Acquisition framework as the primary theoretical basis for the OCL program.

It is important that the theoretical base for the OCL program is consistent with the theoretical base of conventional CR programming. CR facilities generally follow the guidelines and utilize resources from the American College of Sports Medicine (ACSM), the American Association of Cardiovascular Pulmonary Health (AACVPH), and the American Heart Association (Personal correspondence with Vandria Erskin, exercise physiologist & Pamela Miller, exercise physiologist, BHCR, March 2011).
The American College of Sports Medicine (ACSM) is the gold standard for sports medicine and exercise science internationally. Their mission is to “integrate scientific research, education, and practical applications of sport’s medicine and exercise science to maintain and enhance physical performance, fitness, health, and quality of life” (ACSM, 2012 p. 1).

The ACSM offers certification for Health Fitness, Clinical, and Clinical Specialists. Certification is highly desirable. Exercise Specialists and Exercise Physiologists at CR facilities are often certified by ACSM. CR facilities that were observed for this program development all utilized guidelines from the ACSM for exercise prescription, key components of programming, and progression of rehabilitation (ACSM, 2012).

The ACSM publishes a resource guide which offers guidelines specific to the needs of participants in cardiac rehabilitation. In addition to exercise prescription guidelines and safe progression of exercise the resource includes models of practice and frames of reference for behavioral change.

The predominant model of practice recommended by the ACSM is the Stages of Change Model (SOC) (also known as a trans-theoretical model of practice). It is a theoretical frame of reference that identifies a series of changes a person goes through in order to modify health behaviors. The series of changes include 5 phases. The phases are: Pre-contemplation, Contemplation, Preparation, Action, and Maintenance. Each of these phases has specific identifiers that can be used to support patients. According to the SOC frame of reference there are five behavioral processes and five cognitive processes that are used throughout the phases. The cognitive processes are used more during action and the behavioral processes are used in maintenance.
The processes can also be described as personal strategies. The Behavioral Processes are: Substituting, Committing to it, Reminding (visual / auditory), and Enlisting Social Support. The five cognitive processes are: Being Aware of Risks, Increasing Knowledge, Comprehending Benefits, Increasing Healthy Opportunities, Caring About Consequences (Napolitano, Lewis, Whitely, and Marcus, 2006).

Although the SOC is not used as a primary frame of reference for the OCL program, it is important to note the theoretical influence of the framework in the scope of developing a program for participants in CR so that the OT can exchange information with other staff members in a language that is unified and develop programming that is consistent with the theory base of trained cardiac rehabilitation professionals (Napolitano, Lewis, Whitely, and Marcus, 2006).

The American Heart Association (AHA) provides resources and educational materials for health professionals, patients, caregivers, and family members regarding all aspects of cardiovascular disease (ie., smoking cessation, nutrition, screening tools, support networks, research, exercise, etc.). Guidelines for CR from the AHA are presented from a panel of experts and were used to identify a role for occupational therapy in phase II programs. Refer to Appendix G. Active lifestyles, stress management, safety, and healthy behaviors are all areas befitting occupational therapy. These specific areas provide a framework within the context of overall CR guidelines (AHA, 2012).

The BHCR program is accredited through the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPH). The accreditation process requires the facility meet certain standards and adhere to guidelines to obtain program certification. The mission of the agency is: “To reduce morbidity, mortality, and disability from cardiovascular and pulmonary
diseases through education, prevention, rehabilitation, research, and disease management (AACVPH, 2012). These guidelines were also used to identify and develop a role for occupational therapy that is consistent with the expectations of the governing body.

**Model of Practice**

In addition to the aforementioned frame of reference, the biomechanical model of practice was selected in order to provide assessment measures and a basis for the mechanical aspects of human function. The biomechanical model focuses on prevention, restoration, maintenance, and compensation (Bernstein, 1967; Flinn, Jackson, Gray, & Zemke, 2008). It uses the biomechanical analysis and measures to determine “just-right“ challenges for clients. The model is based on principles of kinesiology such as internal and external forces which act on the body. The main focus is on the mechanics of the body and movement. It is often used to improve clients’ joint range of motion (ROM), endurance, and strength. Analysis of these factors allows therapists to consider the musculoskeletal capacities of patients related to performance. This is applicable to the OCL program. As the patient progresses, occupations are graded leading to increases in ROM, endurance, and strength. The goal of these interventions is to support patients in resuming life roles, and participating as necessary to adopt healthy life styles.

The biomechanical model of practice is commonly used by multiple disciplines in medical settings, does not require expensive equipment, and provides information that is acceptable in terms of reimbursement. This model is used along with the Role Acquisition frame of reference and the ACSM, AHA, and AACVPH guidelines to develop a complete and comprehensive occupational therapy program.

**Outline for OT intervention**
Two outlines for the role of OT in CR was found through online search engine Google using the term Occupational therapy cardiac programming. Information was available online from the *13th International Conference on Health Promoting Hospitals,* Empowering for health: Practicing the principles (2011) and *Cork University Hospital,* Clinical support services (2011). The information was restructured, modified, and adapted to encompass the goal of the OCL program. The results include an outline that identifies support for the physical, social, and emotional needs of patients in resuming prior roles. Support is given for all areas of occupation and particular effort is placed on developing a plan to continue post CR.

Intervention and education include:

1. Assessment of ability to perform ODL’s.
3. Vocational work evaluation and advice.
4. Teaching of compensatory strategies to increase strength and tolerance in ADL’s.
5. Recommendation of appropriate techniques to enhance everyday function.
6. Advice and psychological support to patient and family regarding safe functional level.
7. Reducing stress, anxiety and depression.
8. Supporting lifestyle changes in occupational performance with the aim of secondary prevention.
9. Liaison with CR staff and Physicians to enhance overall rehabilitation outcome.
10. Education that supports development of skills to promote autonomy with self-monitoring.

The following is a comprehensive outline of OT’s role in CR to include assessment and areas of intervention. Interventions will meet the specific needs of the patient and will be
identified through an evaluation process. Interventions will include individual therapy by direct referral, consultation, and group education occupations as a complimentary CR resource.

Assessments

The assessment tools used for the OCL program will include informal and formal assessment. The assessment process will include observation, health professional priority checklist, ROM, MMT, Berg Balance Scale, activity checklist, and the role checklist.

Observation is a necessary part of the intervention process. Observation of participants is a form of evaluation and can provide insights as to what can be done within the meeting to modify, grade, and adapt occupations. Significant changes in performance should be documented. This information can be used to create an appropriate intervention for the following week.

Formal assessments were selected to support the objectives and goals of the program. They were selected for appropriateness to objectives, ease of use, established reliability and validity. The assessments are appropriate to use with the population of the program. Four assessments tools will be used for most participants in the OCL program. They are the Priority Checklist, role checklist, and activity checklist (adapted to include MET values). These are screening tools used to identify meaningful roles and occupational (activities) engagement from the perspective of the patient. Additionally, range of motion (ROM), manual muscle testing (MMT) and the Berg balance test will be used to identify additional physical performance barriers commonly seen in patients in phase II CR (i.e., diabetic neuropathy, arthritis, arthroplasty).

The priority checklist is a tool that helps to target patients that are in need of occupational therapy services. Multiple disciplines can document areas of concern. This helps to identify
patients and also may serve as a consistent means for referral.

The activity checklist is an inexpensive self-evaluation tool that is easy to use and can be completed in 15 minutes. The checklist may also be administered by the OT.

ROM and MMT are considered a standard assessment tool amongst physical and occupational therapists. It is easily administered, requires no expense or special certification. It provides a baseline from which therapists may develop a basis for performance and appropriate interventions. It also may highlight comorbidities which commonly occur in older adults that may serve as an additional barrier to performance.

The Berg Balance Scale (BBS) measures balance in 14 standing tasks and was established through the Center for Gerontology and Health Care Research at Brown University. It has established reliability and validity and is commonly used in rehabilitative settings with adults. It requires inexpensive equipment and can be completed in less than 20 minutes (Gutierrez, 2010).

The role of OT in CR was established through the use of review of core text. It includes interventions to resume and develop occupational capacity for life. The areas for intervention include: Self Care (ODL’s), Mobility and function, safety, productivity, leisure and relaxation.

ODL’s

- Provide instruction in adaptive techniques e.g. sitting while grooming instead of standing.
- Provision of adaptive equipment (e.g., shower chair, railings).
- Patient and family member education for recognizing the signs of cardiovascular stress during occupations of daily living.
- Family education; supportive balance between over exertion and deconditioning.
Mobility and Function

- Positioning (e.g. endurance, environment, etc.)
- Transfer training (safety, endurance e.g. bed to chair, car etc.)
- Assessment for, provision of, and instruction in use of ambulation devices.
- Instruction on safe lifting techniques
- Provide fall risk information and education
- Provision of resources and education on return to driving, or use of public transport, following cardiac event/surgery.
- Referral for Driving Assessment where appropriate.

Productivity

- Increasing tolerance for occupational engagement
- Improving functional independence
- Resumption of employment, volunteerism, and caregiving
- Referral to vocational specialist for further assessment as needed.
- Help person to maintain or increase home management activities.
- Suggestion of home or work environment modifications that might reduce physical or emotional stress.
- Job analysis; including amount of dynamic and static work done, energy requirements in terms of metabolic costs, temperature stress and psychological stress.
- Encouraging the development of long term goals and objectives.

Leisure and relaxation:

- Identify leisure interests that fit within established MET levels as permitted.
- Modify occupations to allow safe participation.
• Explore new leisure interests to include stress management techniques, aerobic capacity, and relaxation.
• Encourage a balance in occupational participation to include physical, cognitive, and social participation.
• Referral to appropriate community resources.
• Developing goals, objectives and techniques for occupational engagement post CR

Patients who have experience a cardiac event often have comorbidities that must be considered during the rehabilitation process. Specific interventions to meet the needs of each participant in phase II CR are necessary to ensure that the benefits of CR are fully utilized and that people are more likely to generalize the education and learned behavior outside of the clinical setting. Personalizing the rehabilitation experience includes the provision of motivating factors, coping strategies, and goal setting. These ideas go beyond the basic premise of CR but support long term behavior changes which may result in improved health. Additionally, the therapeutic interventions that are planned are also meant to reduce subsequent risks associated with participation in occupation. For example, A patient experiences occasional light headedness and dizziness but has successfully reached a MET equivalent in CR that makes it plausible for him to return to work. A worksite evaluation can be completed to identify risks and provide strategies and adaptations to the patient so that the risk of injury in regards to returning to work is minimized. Another example would be a patient who has lived a very free spirited life which has included a life of overindulgence. She views herself as a “gypsy” or “hippy” and despite her acceptance of adopting a healthier lifestyle she struggles with redefining her role in her family and with her friends. Support is given to her so that she can explore ways to express her free spirit in ways that are supportive of her health. Cooking, tai chi, journaling, and playing
a musical instrument are all things that allow her to maintain rooted in her role as a free spirit but expand her identity to include new and healthy behaviors. The patient has embraced the idea of expanding her role as a “granola gypsy” or “healthy hippy”. It is important to note that the labels that are used were coined by the patient herself. It is my belief that personalizing interventions for the specific needs of the patient allows patients to define their own needs, goals, and is more likely to carry over benefits beyond the walls of the CR facility.

Personalized interventions may involve a single session or multiple sessions. Interventions may include referral to additional therapy or community resources. Therapeutic intervention can include a home evaluation, job evaluation, or education on fall risks. Also, education can be provided to patients and family members regarding adherence to medical guidelines which may improve safety, lower anxiety, and increase occupational participation. The focus for patients participating in CR is on heart related disease and it is not always feasible or reasonable to be participating in therapy beyond the 3 sessions a week and 6 days of aerobic exercise that are required of them. Caregivers, who transport patients often do not have additional hours available to attend more medical appointments. Therefore, within the context of the CR facility an OT can provide interventions that are convenient, safe, and personalized. When extensive occupational therapy is needed a patient can be referred to a therapist through the Total Rehab outpatient clinic (affiliate of ProMedica). A referral document was developed to support the referral process and allow for cross discipline communication regarding the needs of patients participating in CR.

Group therapy sessions are designed to support the needs of the group and are complimentary to the education classes that are currently offered. A registered dietician teaches a class about heart healthy diets. The OT can further enhance the education provided by the
dietician by offering a heart healthy cooking class that uses occupation to enhance, promote the
information provided by the dietician through a hands on learning experience. For a sample of
recipes used in a group cooking class see Appendices L-N. A game of heart disease jeopardy
would be scheduled following an educational class on heart disease taught by the CR supervisor.
A weekly Tai Chi class allows participants an alternate form of exercise but still allows them to
be monitored at the CR facility. The format of the Tai Chi class is based on Tai Chi
Fundamentals and is geared toward the elderly or chronically ill patients. See explanation in
Appendix H. The exercises can be modified to allow all patients to participate if they desire and
still adhere to medical guidelines. Tai chi has shown lower blood pressure and increase aerobic
and reducing tension and anger (Jin, 1992).

Many participants in CR phase II programs wish to return to employment or household
occupations that require lifting objects of various weights and reaching (Personal
correspondence with patients at the BH CR facility, March 2012). To simulate the task of lifting
and reaching occupations a lifting station can be developed to allow patients to participate in
different types of lifts and reaches that are appropriately designed to correspond with current
MET levels. Common lifts include lifting from floor to waist (ie, a laundry basket, a grocery
bag, a bag of topsoil or mulch), lifting from waist to shoulders (ie., storing seasonal items,
shelving books, or placing dishes in cupboards), and reaching above shoulders (ie, hanging
clothes in a closet or on a clothesline). A station with three shelves, a hanging rack, and various
containers easily adapted by adding weights can be used to allow patients to engage in tasks
while being monitored in the facility. The tasks can be graded to correspond with increases in
MET levels to provide the just right challenge. This allows patients to safely reach goals prior to being discharged from the phase II program. The station will be labeled with appropriate lifting techniques and monitored by CR staff.

Additional areas for occupational therapy intervention include fall risk education, nutritional resources, and alternative educational materials to be used with patients who have low vision, additional provisions can be provided and developed to explore community resources for leisure occupations, and in offering support to family members who serve as primary care givers to the patient participating in CR who often have their own health issues and concerns (*Personal correspondence* with Patients at BHCR, March 2012).

**Special Considerations**

Family members should have the opportunity to attend the program so that they understand what is safe for their loved one to do (or how something can be done differently so it is safe). A reduction of fear and ‘safe heart behaviors’ could result from education and hands on learning experiences. Additional programs for reducing fear could involve relaxation exercises, meditation practice, or the adoption of strategies such as breathing slowly. Safe heart behaviors could be developed and supported through group learning and sharing experiences or tips. A forum where people can hear and discuss similar areas of concern may also help in reducing fear and encourage safe heart behaviors due to group accountability. The program needs to be flexible and adapt to the needs of the group. It should be assessed to determine effectiveness.

Assisting in a team effort with other health professionals is fundamental in developing interventions that are supportive but do not detract from the goals and quality of CR already in place. Providing explanations regarding occupational therapy interventions to the patient, family, and CR staff helps in the overall goal of a CR program that is comprehensive,
personalized, and effective in generating long term behavior changes for participants. It is also important for OT’s who desire to work in Phase II programs to have a working clinical knowledge of the measurement tools, assessments, orientation, education, and discharge planning of the facility.

The inclusion/exclusion criteria

Patients with occupational therapy needs are eligible to participate in the OCL through the phase II CR program or by direct referral from a physician. Patients who have been diagnosed with unstable angina, class IV heart failure, uncontrolled tachy arrhythmias or brady arrhythmias, obstructive cardiomyopathy, or severe hypertension (RHR $\geq$ 200) should be excluded from any programming that includes physical exercise but may participate in other portions of the program with a physician’s approval (King, et. al., 2005).

Marketing and Recruitment of Participants

The people who will be approached to help market the program include; Health professionals including cardiologists, nurses, physical therapists, primary care physicians, exercise physiologist employed by ProMedica Health Systems; cardiologists who work with patients residing in Lenawee County. Additionally, word of mouth and membership in the AHA, and ACSM is planned to assist in promoting the goal of the OCL program.

The main marketing strategy will be through ‘word of mouth’ and encouraging referral from patients, physicians, and health professionals affiliated with ProMedica. This can be done by establishing professional relationships. It is my opinion that professional relationships are most easily established through communication opportunities that include sharing knowledge, mutual respect, and by expressing a sincere interest in understanding others views. “Strong relationships make for strong referrals” as stated by marketing professionals who advise health
professionals (Visiton, 2011). A study that looked at predictors of compliance to cardiac rehabilitation was published in 2009. The Authors suggested that physicians would be more likely to refer patients to cardiac rehabilitation if they were informed of available programs (Brown, & et al., 2009). This population is less likely to seek out a program and will feel more confident and safe entering a program that has been endorsed by a trusted provider. Patients may be more likely to participate in programs they are referred to by a physician. The relationships with health care professionals who work in cardiology is necessary in the development of the OCL.

Physicians will be contacted regarding the goal and given references for resources that were used to establish EBP. The references will be included in a brochure that briefly outlines the program as is relevant to their cardiology practice. Please refer to Appendix Y.

A trademark or logo was developed with the following things in mind: 1) Embraces the major theme of the program, 2) Attractive when printed in multiple sizes and in black and white (to reduce cost), and 3) Original (so that it is not mistaken for a different organization). Logos are beneficial in creating an identity in the community because they create a visual image of your program for people to identify with (Fazio, 2008).

Secondary marketing strategies include brochures that were developed based on tips provided by the AOTA (2011). The brochures have a logo, and description of the OCL program (AOTA, 2011).

**Budget and Staffing**

The total annual first year budget for the OCL program which includes the start-up costs is $48,000. This includes employee salary, equipment, and supplies. The highest cost associated with the program is the salary of a part-time OT. The program requires the ongoing services and
involvement of an occupational therapy due to the professional skills and legalities involved in providing occupational therapy. It is expected that reimbursement would be obtained through prior mentioned options (third party payers, etc.). This would offset the cost of the therapist salary initially and then cover the cost after the initial year of operation.

**Direct costs**

The initial start-up costs for the program include staff salary, and equipment. The program requires additional personal which includes hiring a part-time (20 hours weekly) licensed occupational therapist registered to work in the state of Michigan with knowledge in cardiac rehabilitation (additional certification by the ACSM is preferred). Please see job description in *Appendix Z*. The estimated cost for a part-time therapist is $43,000. This is based on taking the average salary of an OT employed full-time in MI from Indeed.com and dividing it in half.

The estimated cost to purchase equipment for starting the program is $5000. This includes equipment, and items for therapeutic purposes, office items and supplies, and miscellaneous. The equipment is needed to develop a lifting station, cooking station, laundry station, alternative exercise station, and stairway. Materials are needed to maintain the stations and market the program to the community and healthcare affiliates. materials, The alternative exercise station requires Xbox Kinex game system, Tai chi DVD’s, Monitor, items to simulate occupational tasks (stairs w/ railing, push cart, laundry basket, and non-perishable grocery items), and office supplies to be used in the development and distribution of marketing materials. A detailed budget with rationale for individual items can be seen in Appendix T.

**Indirect costs**
Indirect costs such as electricity, building maintenance, and janitorial services are covered in the CR facility budget. The OCL does not require additional space and should not cause an addition to the current indirect operating expenditures of the CR department at BH.

**Funding for OT direct Service**

Third party payers with patient copay as applicable will be used when referral is made by a physician. Generally, this includes patients with special needs for safety and/or function of ODL’s (e.g., history of fall, live alone, comorbidities, poor balance, and/or need of assistive device training).

Self-pay, Michigan Works, or employer pay for patients who plan to return to work and need vocational training or work hardening. This may involve outside referral to another OT and/or vocational counselor.

Grant funding will cover start-up costs for program equipment and supplies marketing. Educational classes will be paid for by annual CR budget.

**Sources for Grant Funding**

One source of funding is through grant application to the Lenawee Community Foundation. The Lenawee Community Foundation gives grants to non-profit organizations in Lenawee County, MI. The foundation is a compilation of many contributors (private, business, & corporate sponsors). The board of directors is made up of community stakeholders and includes corporate CEO’s, attorneys, physicians, advocates, educators, and youth representatives. The foundation’s goal is to build a stronger, healthier community.

The Mission Statement: *Lenawee is our community, and the Lenawee Community Foundation is our community foundation. Together we can work towards making Lenawee*
County a better place. The future is in our hands. Our Dreams and Our Gifts will be Our Legacy- for good, forever.

Funds that are unrestricted and available through a competitive process are given to organizations that benefit the community of Lenawee. Funding amounts are not specified. All applications are reviewed by staff prior to submission to the Board of Directors. Priority is given to projects that show potential for benefit to community members. Funding amounts are subject to approval by the Foundation Board of Directors and are evaluated on a case by case basis. The history of funding amounts is variable ($1000 to $40,000).

The deadline for application for a grant for a community health program is August 1st. The Application is reviewed by 10-12 staff members who make recommendations to the Board of Directors who approve or reject the application in September. Applicants are notified of the funding decision by October 30th. The foundation does not fund programs that are: outside of Lenawee County, do not benefit residents, have been previously denied, individual scholarships, services that are governmental obligations, long term commitments for financial support.

A letter of inquiry can be submitted to Sue Hammersmith, CEO to obtain specific guidelines for the review process. The application is given to applicants once it is determined that the project meets the basic criteria.

I was given information by Ms. Hammersmith (Personal correspondence March 2011) regarding award amounts and strategies. She said that award amounts are based on the specific program needs. LCF has never funded an occupation based program before. Generally, the program funds well-established agencies that they have worked with before on new programs. However, they have funded other health programs for seniors, expectant mothers, and children. Basically, the LCF will consider funding any project that addresses a strong need in Lenawee
County. Strategies for submitting to use in the application process include showing how the OCL program 1) addresses a high priority community need, 2) has potential for improving quality of life in Lenawee County, 3) is creative and innovative, 4) self-sustaining, and 5) encourages collaborative efforts, and community involvement.

A second source of funding is through general budget of expenditure of the CR department with start-up costs obtained through the Promedica, Physicians and Continuum Services (PPCS) Foundation. This is funding through a grant application. The PPCS foundation evaluates grant applications quarterly to be used for the benefit affiliates, staff, and patients of Promedica Health Systems. The deadline for grant requests for 2012 are February 2\textsuperscript{nd}, May 3\textsuperscript{rd}, August 16\textsuperscript{th}, and October 25\textsuperscript{th}. Funding amounts vary but generally fall below $5000.00 without prior consent from the Grant Council. The Executive Director of the PPCS Grants Council, Sara Bingham was contacted on April 9\textsuperscript{th} with inquiry as to grant amount to use for application for the OCL program.

**Self-Sufficiency Plan**

It is the goal of the OCL program to acquire funding for the initial start-up costs through grant application or personal endowment. It is expected that within one year the program’s effectiveness and quality will be established. It is also expected to expand the number of participants participating in CR through stronger referrals. An increase in the number of patients will contribute to the generation of revenue and may justify hiring a permanent staff member. At which time a proposal will be made to the hospital administration to hire an OT to continue the program. Alternately, a therapist already on staff may be able to share time from another department to work in CR to keep the program operating.

**Timeline**
A timeline outlining major tasks and milestones that will take place during the initial start-up phase of the program can be found in Appendix X. The timeline for programming will vary due the personalized nature of occupational therapy interventions and revolving pattern of phase II orientation and discharge. However, educational classes, lifting stations, and consultation is scheduled weekly in accordance to patient demands. Evaluations and screenings for the OCL program will take place within the first week of a new patient’s phase II orientation. Discharge from the OCL program will coincide with discharge from the CR phase II program. Also, informal meetings with staff regarding goals, concerns, and interventions will take place at least once a week. A report will be given to physicians monthly or as required.

**Direct and/or Indirect Services**

Direct services include 1) interviews with the participant, 2) the administration of assessments, 3) occupational interventions, 4) educational sessions, 5) off-site evaluation, and 6) one-on-one consultation.

Indirect services include 1) care coordination with the participant’s health care professionals with authorization from the participants 2) educating other health members on the efficacy of occupation, 3) educating other team members about identifying occupational needs of CR patients for referral, 4) developing marketing tools, education materials, and advocating for the role of OT in CR, 5) contributing to grant writing and funding applications, and 6) completing required documentation.

**Documentation System**

The current system of documentation utilizes 1 ½ inch binders with tabs for medical history, referral information, and assessments. The staff uses highlighters to place attention on areas of concerns. The binders are kept in a cabinet above the monitoring station. When patients
are at the facility the exercise logs are removed from the binder and placed on a clip board. The OT could use the binder without inconveniencing other staff members. This would provide the medical history and other pertinent information to the OT and keep the patients records intact. The OT will set up a tab to use in the binder for assessments, progress notes, and logs. This will make the occupational information accessible to other disciplines and help with communication in the CR facility. The participant will be given a notebook prior to discharge to use to document their progress with goals, nutrition, occupation for goals, BP, and blood sugar (PRN). When the participant finishes this program, the following information will be recorded in a discharge summary: participant’s name, entry evaluation summary with assessments, participant’s goals, discharge evaluation with assessments, and referrals or recommendations (PRN).

**Program Evaluation**

The program will be evaluated through summative and evaluative methods. Additionally, the program will undergo further evaluation through ability to meet patient objectives and contribution to overall patient outcomes.

**Summative**

The program uses evaluation to interpret the individual patient and overall programs ability to meet the stated goal and objectives. The Role and Activity checklists will be administered initially, at the end of CR, and 12 weeks and 1 year post CR. This measure will help to determine the success of each patient in resuming desired roles and level of engagement in occupations of life (leisure, caregiving, employment, aerobic activity, and social). The collective results can be analyzed yearly to determine the success of the program. Qualitative information (feedback) will also be obtained from participants, their family, physicians, and
other health care professionals during informal interview throughout the year. The information will be documented, compiled, and analyzed for dominant themes on a yearly basis.

**Formative**

An evaluation of the program and facility will also be mailed to participants following their last session. *Please refer to Appendix U and V.* The information obtained regarding the program and the facility will be used in a formative manner. Adjustments will be made to increase patient satisfaction as necessary. Formative evaluation will also be done for the individual patient at each session in terms of therapeutic intervention and progression.

**Evaluation of program objectives**

The objectives of the program are designed for individualized therapy sessions and will be evaluated with each individual at each session as being met, partially met, or not met. This will be used in as formative evaluation to provide intervention plans for the patient and also as a summative evaluation. The percentage of CR patients who participated in OCL that met the program objectives should be above 70% in order to maintain the goal and objectives for ongoing programming.

**Outcomes**

The overall outcomes of the CR department will be used to assess changes in the success of the program following the implantation of the OCL program when compared to prior outcome measures. The measures will include number of CR participants, compliance rates, and rate of heart related hospital readmissions.

**Support**

Support for the OCL program was obtained from the facility director, Mary Bohn and supervisor, Julia Iveson of ProMedica Health Systems, Adrian, MI. Additional support was
received from Dr. Barry Franklin, and Roger Sacks of Beaumont Health Systems in Royal Oak, MI; Dr. Dalynn Badenhop of University of Toledo Medical Center, Toledo, OH, and; Dr. Jenny Adams of Baylor Health Systems, Dallas, TX. Please see Letters of Support in Appendices P, Q, and R.

**Conclusion**

The goal of the OCL program is to utilize occupation to contribute to the health and well-being of patients participating in CR programs by promoting safety and compliance, and supporting active and healthy lifestyles. This contributes to the overall goal of CR which includes secondary prevention of cardiovascular disease. The OCL program is a cost effective, complimentary, individualized, and viable service designed to benefit participants of CR and their families.
References


American College of Sports Medicine, 2012. Who we are. Retrieved from: 

http://www.acsm.org/about-acsm/who-we-are 03252012


Center for Disease Control. Cardiac rehabilitation fact sheet. Retrieved From: www.cdc.gov/dhdsp/data_statistics/fact_sheets/fs_state_cardiacrehab.htm 20110214


Cork University Hospital. Clinical support services: Occupational therapy, (2011). Retrieved from:
http://www.cuh.hse.ie/Our_Services/Clinical_Support_Services/Occupational_Therapy/Services_Provided/Occupational_Therapy_in_Cardiac_Services/


Indeed (2012). An average salary for occupational therapists in Michigan. Retrieved from:


http://circ.ahajournals.org/cgi/content/full/112/21/3354 04062010


*The Activity Checklist. MOHO Related Resources* retrieved from: http://www.uic.edu/depts/moho/mohorelatedrsrcs.html


Women’s Heart Foundation, (2011). *Women’s heart fact sheets*. Retrieved from:
http://www.womensheart.org/content/HeartDisease/heart_disease_facts.asp 04072011


http://www.who.int/cardiovascular_diseases/prevention_control/en/


## Appendices

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Organizational Chart</td>
<td>68</td>
</tr>
<tr>
<td>B</td>
<td>Needs Assessment Survey: OT/ COTA</td>
<td>69</td>
</tr>
<tr>
<td>C</td>
<td>Needs Assessment Survey: Healthcare Professionals</td>
<td>70</td>
</tr>
<tr>
<td>D</td>
<td>Needs Assessment Survey: Patients</td>
<td>71</td>
</tr>
<tr>
<td>E</td>
<td>Needs Assessment Survey: Caregivers/ Spouse</td>
<td>72</td>
</tr>
<tr>
<td>F</td>
<td>Explanation of METs</td>
<td>73</td>
</tr>
<tr>
<td>G</td>
<td>Core Components of Cardiac Rehabilitation</td>
<td>74</td>
</tr>
<tr>
<td>H</td>
<td>Tai Chi Overview</td>
<td>80</td>
</tr>
<tr>
<td>I</td>
<td>Role Checklist</td>
<td>81</td>
</tr>
<tr>
<td>J</td>
<td>Initial Assessment Tool</td>
<td>82</td>
</tr>
<tr>
<td>K</td>
<td>Progress Note Template</td>
<td>86</td>
</tr>
<tr>
<td>L</td>
<td>Recipe</td>
<td>87</td>
</tr>
<tr>
<td>M</td>
<td>Recipe</td>
<td>88</td>
</tr>
<tr>
<td>N</td>
<td>Recipe</td>
<td>89</td>
</tr>
<tr>
<td>O</td>
<td>Make a Healthy Snack Flyer</td>
<td>90</td>
</tr>
<tr>
<td>P</td>
<td>Recipe for Healthy Snack</td>
<td>91</td>
</tr>
<tr>
<td>Q</td>
<td>Tai Chi Flyer</td>
<td>92</td>
</tr>
<tr>
<td>R</td>
<td>Letter of Support</td>
<td>93</td>
</tr>
<tr>
<td>S</td>
<td>Letter of Support</td>
<td>94</td>
</tr>
<tr>
<td>T</td>
<td>Letter of Support</td>
<td>95</td>
</tr>
<tr>
<td>U</td>
<td>Supplies and Equipment</td>
<td>98</td>
</tr>
<tr>
<td>V</td>
<td>Evaluation Tool</td>
<td>101</td>
</tr>
</tbody>
</table>
Appendix W: Evaluation Tool 102
Appendix X: Semi-Structured Interview 103
Appendix Y: Timeline 106
Appendix Z: Job Description 110
Appendix A

Organizational Chart

[Diagram showing organizational structure with names and titles for OTR/L, Cardiac Rehabilitation, Cardiology, etc.]
Appendix B

Survey: OT/ COTA’s (Cardiac Care)

My name is Karen Austermiller and I am an occupational therapy student interested in identifying patient needs in cardiac rehabilitation. The information you provide will greatly assist me in identifying areas of development in cardiac rehabilitation. I am specifically interested in learning about your experiences as an occupational therapist working with patients who have been diagnosed with cardiac illness. As a student, I wish to develop a clinically viable and realistic program. Your insight as an experienced practitioner will serve as an invaluable asset to my work. I greatly appreciate your willingness to participate!

1. How many years have you worked as an OT or COTA?
2. How many years have you worked in Cardiac Care?
3. What is the setting in which you work? (acute, inpatient rehab, etc.,)
4. How many patients with cardiac illness do you provide services to each week?
5. What interventions do you commonly use with patients following a cardiac event?
6. What resources are available in your organization or community for patients with cardiac illness?
7. What tools/ reference materials are commonly given to patients to be used once they leave the facility?
8. Do you know of a phase II or phase III cardiac rehabilitation program that includes occupational therapy? (Please provide name and/or location of program)
9. In your opinion:
   a. Do patients undergo long term changes to their behavior once they leave the therapy setting? Why or why not?
   b. Do patients and their families transfer the information that they learn to the home setting? Why or why not?
   c. What role do you think OT could play in phase II or phase III cardiac rehabilitation?
   d. Please share any additional comments you have regarding patient care, occupational therapy, or cardiac rehabilitation.

May I contact you?

Name________________________________________
Email________________________________________

Thank you for your participation!
Appendix C

Survey: Healthcare Professionals (Cardiac)

Hello, my name is Karen Austermiller and I am an occupational therapy doctoral student interested in identifying patient needs in **cardiac rehabilitation**. The information you provide will greatly assist me in identifying areas for development in cardiac rehabilitation. Your professional insight, knowledge, and experience is an invaluable part of establishing legitimacy in my chosen area of study. I greatly appreciate your willingness to participate!

1. What is your job title or professional credential?
2. How many years have you worked in cardiac care?
3. Approximately how many different patients with cardiac illness have you worked with in the last month?
4. What are the basic demographics of the population you work with? (male/female, employed/retired, married/single, lives at home/assisted living)
5. What do you think is the biggest challenge patients face following a cardiac event?
6. What concerns do patients express about returning to daily life?
7. What concerns do family members express about the patient?
8. What resources are available for patients who are candidates for phase II or phase III cardiac rehabilitation?
9. How would you describe an excellent and comprehensive cardiac rehabilitation program?
10. What is the name &/or location of a cardiac rehab program that you feel is exemplary?
11. What do you foresee as the greatest need for patients in cardiac rehabilitation over the next 5 years?
12. Further comments or suggestions:
13. May I contact you with further questions?

Name _________________________
Email _________________________
Phone _________________________

Thank you for your participation!
Appendix D

Survey: Patients (Cardiac)

My name is Karen Austermiller and I am an occupational therapy doctoral student interested in identifying patient needs in cardiac rehabilitation. The information you provide will greatly assist me in identifying areas of development in cardiac rehabilitation. Your responses are confidential and will be used for the purpose of developing further programs. I greatly appreciate your willingness to participate!

Are you Male or Female?

What is your age?

Are you single/ married/ divorced/ widowed?

Do you have support from others in taking care of your daily needs?

Are you employed?

If employed: How many hours do you work weekly?

If employed: Do you plan/ need to return to work?

If employed: Briefly describe what your main job requirements are:

If employed: What concerns do you have about returning to work?

What has been the most difficult part of your recovery?

What are your concerns about caring for yourself and returning to your daily life?

Do you feel you have a good understanding of what you should do to improve your health?

What are some things you need to do to improve your health?

What areas of healthy living would you like more information about?

Do you have any limitations in terms of returning to everyday tasks?

If yes: What are your limitations?

What types of classes, programs, or information do you think is still needed to help cardiac patients?

Please share any additional comments you have about the needs of cardiac rehabilitation patients?

Thank you for your participation!
Appendix E

Survey: Caregivers/ Spouse of Cardiac Patient

My name is Karen Austermiller and I am an occupational therapy doctoral student interested in identifying patient needs in cardiac rehabilitation. The information you provide will greatly assist me in identifying areas of development in cardiac rehabilitation. Your responses are confidential and will be used for the purpose of developing further programs. I greatly appreciate your willingness to participate!

1. Do you provide support to someone who recently experienced a cardiac event?

2. Do you provide support to others in addition to the above person?

3. Do you have any physical disabilities or illness that limits your ability to support another person?

4. Are you employed?

5. What has been most helpful to you in supporting your loved one?

6. What have been the biggest challenges in supporting your loved one?

7. What suggestions do you have for healthcare providers who provide cardiac rehabilitation?

8. Are there topics/ ideas/ support groups or specific programs that you think might benefit cardiac patients and their families in the future?

9. Does your loved one express fear or anxiety about participating in their daily routine?

10. Have you experienced fear or anxiety regarding your loved one’s ability to resume their daily routine?

Thank you for your participation!
Appendix F

Bear with us for an explanation of METs

By John Briley

THE WASHINGTON POST

September 27, 2005

So you're chugging away on a cardio machine, growing increasingly peeved that the "calories burned" display isn't rocketing skyward. You hit that mysterious "MET" button and squint at the readout. How's that? Does anyone have a clue what this number means?

Calculating METs – or metabolic equivalent units – can offer proof you're accomplishing something fitness-wise, just as "calories burned" can. Think of METs as shorthand for how much oxygen your body is consuming, at rest, work or play.

We'll try to make the egghead part as brief and painless as possible: One MET equals 3.5 milliliters of oxygen per kilogram of body weight per minute – which is what our bodies require at rest. The more effort an activity requires, the higher its MET value. (Walking briskly at, say 3.5 miles per hour, burns 3.8 METs per minute.) That value is the same for most of us, regardless of fitness level.

"If you and I walk a mile at the same pace, we will consume the same amount of oxygen and burn the same number of METs," said William L. Haskell, a professor at Stanford University's School of Medicine, who helped develop the Compendium of Physical Activities Tracking Guide, a fairly exhaustive list of activities and their MET values.

The person in worse shape will work harder to make the mile and won't be able to sustain the pace as long, Haskell said. If both people weighed the same, the calorie burn would be equal as well. But if one person weighed 110 pounds and the other 220, the heavier person would expend roughly double the calories of the lighter walker.

Thus, the beauty of METs: We can all use the same scale without the need for elaborate metric system calculations.

METs come in handy in two instances: To track your cardio fitness progress over time, you can work toward sustaining higher MET levels for longer periods, and hitting higher MET values during your intervals. Or, if you have a cardiac condition, your doctor can use a MET capacity test to prescribe a safe exercise zone.

An individual's capacity is the highest MET number he or she can sustain for a few minutes, Earnest said. You can increase this capacity by getting more fit. A healthy 50-year-old man should have a capacity of at least 9.2 METs; a healthy 50-year-old woman should clock in at 8.2 METs or higher.

Appendix G

Core Components of Cardiac Rehabilitation/Secondary Prevention Programs

**Patient Assessment**

- **Medical history:** include cardiovascular (including peripheral vascular and cerebrovascular) diagnoses and prior cardiovascular procedures (including assessment of left ventricular function); comorbidities; symptoms of cardiovascular disease; risk factors for atherosclerotic disease progression; and medications and medication compliance. (See below for physical activity and psychosocial assessment.)

- **Physical examination:** include vital signs; cardiovascular and pulmonary examination; post procedure wound sites; and joint and neuromuscular examination. (See below for specified examination for hypertension, weight, and diabetes.)

- **Testing:** obtain resting ECG; assess quality of life using standard questionnaires (eg, MOS SF-36). (See below for specified tests for exercise, lipids, and diabetes.)

**Interventions**

- Compose written records that reflect the patient evaluation and contain a patient care plan with detailed priorities for risk reduction and rehabilitation.

- Actively communicate this plan to the patient and the primary healthcare provider.

**Expected Outcomes**

- Development and implementation of short-term (ie, weeks or months) and long-term (ie, years) goals and strategies to reduce disability and subsequent cardiovascular disease risk.

- Improvement in quality of life as identified by positive changes on follow-up questionnaire.

- Generation of a written summary of patient outcomes upon completion of the program that is provided to the patient and to the primary and referring healthcare providers. Written summaries should identify specific areas that require further intervention and monitoring.

---

**Physical Activity Counseling**

**Evaluation**

- Assess current physical activity level and determine domestic, occupational, and recreational needs.

- Question activities relevant to age, gender, and daily life, including driving, sexual activity, sports, gardening, and household tasks.

- Assess readiness to change behavior, self-confidence, barriers to increase physical activity, and social support in making positive changes.

**Interventions**

- Provide advice, support, and counseling about physical activity needs on initial evaluation and in follow-up. Target exercise program to meet individual needs (see "Exercise Training" section of table). Provide educational materials as part of counseling efforts. Consider simulated work testing for patients with heavy labor jobs.

- Set goals to increase physical activity that include 30 minutes per day of moderate physical activity on 5 days per week.

- Explore daily schedules to suggest how to incorporate increased activity into usual routine; e.g., parking farther away from entrances, walking up 2 or more flights of stairs, walking for 15 minutes during lunch break.

- Advise low-impact aerobic activity to minimize risk of injury. Recommend gradual increases in intensity over weeks.
Expected Outcomes

- Increased participation in domestic, occupational, and recreational activities.
- Improved psychosocial well-being, reduction in stress, facilitation of functional independence, prevention of disability, and enhancement of opportunities for independent self-care to achieve recommended goals.

Nutritional Counseling

- Obtain estimates of total daily caloric intake and dietary content of fat, saturated fat, cholesterol, sodium, and other nutrients.
- Assess eating habits, including number of meals, snacks, frequency of dining out, and alcohol consumption.
- Assess target areas for nutrition intervention as outlined in the core components of weight, hypertension, and diabetes, as well as heart failure, kidney disease, and other comorbidities.

Interventions

- Prescribe specific dietary modifications aimed to at least attain the saturated fat and cholesterol content limits of the AHA Step II diet.
- Individualize diet plan according to specific target areas as outlined in the core components of weight, hypertension, and diabetes (as outlined in this table), as well as heart failure and other comorbidities.
- Educate and counsel patient (and family members) regarding dietary goals and how to attain them.
- Incorporate behavior-change models and compliance strategies in counseling sessions.

Expected Outcomes

- Patient adherence to prescribed diet.
- Patient understanding of basic principles regarding dietary content of calories, saturated fat, cholesterol, and other nutrients.
- Plan in place to address eating-behavior problems.

Lipid Management

- Obtain fasting measures of total cholesterol, HDL, LDL, and triglycerides. In those with abnormal levels, as per NCEP, obtain a detailed history to determine whether diet, drug use, and/or other conditions that may affect lipid levels can be altered.
- Assess current treatment and compliance.
- Repeat lipid profiles at 4–6 weeks after hospitalization and at 2 months after initiation of or change in lipid-lowering medications.

Interventions

- Provide nutritional counseling and weight management aiming for at least an AHA Step II diet in those patients with LDL $100 mg/dL; consider adding drug treatment in those with LDL 100–130 mg/dL; add or intensify drug treatment in those with LDL .130 mg/dL.
- Provide interventions to increase HDL to .35 mg/dL. These include exercise, smoking cessation, and consideration of targeted drug therapy.
- Provide interventions to reduce triglycerides to ,200 mg/dL. These include nutritional counseling and weight management, exercise, alcohol moderation, and drug therapy as per NCEP.
- Provide and/or monitor drug treatment in concert with primary healthcare provider. Expected Outcomes

- Short term: Continued assessment and modification of intervention until LDL ,100 mg/dL.
Running Head: DEVELOPING A ROLE FOR OCCUPATIONAL THERAPY

Long term: LDL, 100 mg/dL. Secondary goals include HDL, 35 mg/dL and triglycerides, 200 mg/dL.

Hypertension Management

- Measurement of resting BP on $2 visits.
- Assess current treatment and compliance.

Interventions

If BP 130–139 mm Hg systolic or 85–90 mm Hg diastolic:

- Provide lifestyle modifications including exercise, weight management, moderate sodium restriction, alcohol moderation, and smoking cessation.
- Drug therapy in patients with heart failure, diabetes, or renal failure.

If BP $140 mm Hg systolic or $90 mm Hg diastolic:

- Provide lifestyle modification and drug therapy.
- Provide and/or monitor drug therapy in concert with primary healthcare provider.

Expected Outcomes

- Short term: Continued assessment and modification of intervention until BP ,130 mm Hg systolic and ,85 mm Hg diastolic.
- Long term: BP ,130 mm Hg systolic and ,85 mm Hg diastolic.

Smoking Cessation

- Document smoking status as never smoked, former smoker, or current smoker (which, because of the high rate of relapse, includes those who have quit in the last 6 months); specify both the amount of smoking (packs per day) and duration of smoking (number of years). Assess use of cigar smoking, pipe smoking, and chewing tobacco, as well as exposure to secondhand smoke.
- Assess for confounding psychosocial issues.
- Determine readiness to change by asking every smoker if he/she has considered quitting in the last 6 months.
- If no (precontemplation), firmly advise that he/she give it some thought; plan to ask again at future visits.
- If yes (contemplation stage), proceed with interventions below.
- Ongoing contact: update status at each visit during first 2 weeks of cessation, periodically thereafter for at least 6 months.

Interventions

When readiness to change is confirmed, help the smoker set a quit date and select appropriate treatment strategies (preparation):

Minimal

- Provide individual education and counseling by program staff, supplemented by self-learning materials.
- Encourage physician, staff, and family support.
- Provide relapse prevention.

Optimal

- Provide formal smoking cessation program using group and/or individual counseling.
- Provide and/or monitor pharmacological support as needed in concert with primary physician.
- Offer supplemental strategies if desired, eg, acupuncture, hypnosis.
- Arrange follow-up by return visits or telephone contact for at least 6–12 months.

Expected Outcomes
Short term: patient will demonstrate readiness to change by initially expressing decision to quit (contemplation) and selecting a quit date (preparation). Subsequently, patient will quit smoking and use of all tobacco products (action); adhere to pharmacotherapy, if prescribed; practice strategies as recommended; and resume cessation plan as quickly as possible when relapse occurs.

Long term: complete abstinence from smoking and use of all tobacco products at 12 months from quit date.

Weight Management

- Measure weight, height, and waist circumference. Calculate body mass index.

Interventions

- In patients with BMI ≥ 25 kg/m² and/or waist ≥ 40 inches (102 cm) in men and ≥ 35 inches (88 cm) in women:
  - Establish reasonable short-term and long-term weight goals individualized to patient and associated risk factors (e.g., reduce body weight by at least 10% at a rate of 1–2 lb/wk over a period of time up to 6 months).
  - Develop a combined diet, exercise, and behavioral program designed to reduce total caloric intake, maintain appropriate intake of nutrients and fiber, and increase energy expenditure.
  - Aim for an energy deficit of 500–1000 kcal/d.

Expected Outcomes

- Short term: Continued assessment and modification of interventions until progressive weight loss is achieved. Provide referral to specialized, validated nutrition weight loss programs if weight goals are not achieved.
- Long term: adherence to diet and exercise program aimed toward attainment of established weight goal.

Diabetes Management

- Identify diabetic patients by initial history and note medication type, dose, and regimen; type and frequency of glucose monitoring; and history of hypoglycemic reactions.
- Obtain fasting plasma glucose measurements in all patients and HbA1C in diabetic patients to monitor therapy.

Interventions

- Develop a regimen of dietary adherence and weight control that includes exercise, oral hypoglycemic agents, insulin therapy, and optimal control of other risk factors. Drug therapy should be provided and/or monitored in concert with primary healthcare provider.
- Monitor glucose levels before and/or after exercise sessions. Instruct patient regarding identification and treatment of post exercise hypoglycemia. Limit or prohibit exercise if blood glucose $300 mg/dL.
- Refer patients without known diabetes whose fasting glucose is ≥ 110 mg/dL to their primary healthcare provider for further evaluation and treatment.

Expected Outcome

- Normalization of fasting plasma glucose (80–110 mg/dL or HbA1C ≤ 7.0), minimization of diabetic complications, and control of associated obesity, hypertension (BP < 130/85 mm Hg), and hyperlipidemia.
Evaluation

- Using interview and/or standardized measurement tools, identify psychological distress as indicated by clinically significant levels of depression, anxiety, and anger or hostility; social isolation; sexual dysfunction/maladjustment; and substance abuse (alcohol or other psychotropics).

Interventions

- Offer individual and/or small group education and counseling regarding adjustment to CHD, stress management, and health-related lifestyle change. When possible, include family members and significant others in such sessions.
- Develop supportive rehabilitation environment and community resources to enhance patient's and family's level of social support.
- Teach and support self-help strategies.
- In concert with primary healthcare provider, refer patients experiencing clinically significant psychosocial distress to appropriate mental health specialists for further evaluation and treatment.

Expected Outcomes

- Evidence of emotional well-being indicated by the absence of clinically significant psychological distress, social isolation, or drug dependency.
- Demonstration of self-responsibility for health-related behavior change; relaxation and other stress management skills; ability to obtain effective social support; compliance with use of psychotropic medications, if prescribed; and reduction or elimination of alcohol, tobacco, caffeine, or other nonprescription psychoactive drugs.
- Develop a plan for ongoing management if important psychosocial issues are present.

Physical Activity Counseling

Evaluation

- Assess current physical activity level and determine domestic, occupational, and recreational needs.
- Question activities relevant to age, gender, and daily life, including driving, sexual activity, sports, gardening, and household tasks.
- Assess readiness to change behavior, self-confidence, barriers to increase physical activity, and social support in making positive changes.

Interventions

- Provide advice, support, and counseling about physical activity needs on initial evaluation and in follow-up. Target exercise program to meet individual needs (see "Exercise Training" section of table). Provide educational materials as part of counseling efforts. Consider simulated work testing for patients with heavy labor jobs.
- Set goals to increase physical activity that include 30 minutes per day of moderate physical activity on 5 days per week.
- Explore daily schedules to suggest how to incorporate increased activity into usual routine; eg, parking farther away from entrances, walking up 2 or more flights of stairs, walking for 15 minutes during lunch break.
- Advise low-impact aerobic activity to minimize risk of injury. Recommend gradual increases in intensity over weeks.

Expected Outcomes

- Increased participation in domestic, occupational, and recreational activities.
- Improved psychosocial well-being, reduction in stress, facilitation of functional independence, prevention of disability, and enhancement of opportunities for independent self-care to achieve recommended goals.
Evaluate

- Obtain an exercise test (or other standard measure of exercise capacity) before participation, which is repeated as changes in clinical condition warrant. Test should include assessment of heart rate and rhythm, signs, symptoms, ST-segment changes, and exercise capacity.

Interventions

- Develop a documented individualized exercise prescription for aerobic and resistance training that is based on evaluation findings, risk stratification, patient and program goals, and resources. Exercise prescription should specify frequency (F), intensity (I), duration (D), and modalities (M).
  - For aerobic exercise: F 5 3–5 d/wk; I 5 50% to 80% of exercise capacity; D 5 30–60 min; and M 5 walking, treadmill, cycling, rowing, stair climbing, arm ergometry, and others.
  - For resistance exercise: F 5 2–3 d/wk; I 5 8–15 repetitions maximum for each muscle group (where repetition maximum is maximum number of times a load can be lifted before fatigue); D 5 1–3 sets of 6–10 different upper- and lower-body exercises (20–30 min); and M 5 elastic bands, cuff/hand weights, dumbbells, free weights, wall pulleys, or weight machines.

- Include warm-up, cool-down, and flexibility exercises in each exercise session. Provide updates to the exercise prescription routinely and when patient condition warrants. Structured outpatient or home-based programs are appropriate and may include ECG monitoring as deemed necessary. Regardless of program site, supplement the formal exercise regimen with at-home activity guidelines as outlined in the “Physical Activity Section” of this table. Caloric expenditure of at least 1000 kcal/wk should be a specific exercise program objective.

Expected Outcomes

- As a component of an overall program of cardiac rehabilitation/secondary prevention, exercise will assist in lowering cardiovascular risk and improve overall outcomes. Improved functional capacity through enhanced muscular endurance and strength, flexibility, and weight management will improve symptoms and physiological responses to physical challenges and should assist in the modification of various unhealthy behavior and psychosocial characteristics.

- Patient understanding of safety issues during exercise. ECG indicates electrocardiogram; MOS SF-36, Medical Outcomes Study Short Form 36; AHA, American Heart Association; HDL, high-density lipoprotein; LDL, low-density lipoprotein; NCEP, National Cholesterol Education Program; BP, blood pressure; HbA1C, major fraction of glycosylated hemoglobin; and CHD, coronary heart disease.
Appendix H

Tai Chi Fundamental Description
Appendix I

Role Checklist for OCL program

Roles often provide us with a sense of identity, motivation, and meaning. Roles can help pinpoint occupations in which you may participate in and give insight as to what can be done to assist you in returning to desired occupations of life.

**Directions:** Define the roles you participate in, when you had the role, and level of importance. Place an × or ✓ to mark your selections.

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<th>How important is this role to you?</th>
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Appendix J

Orientation form

CR Orientation Date: ____/____/2012  Scheduled Class time __________________________

Patient’s first and last name ___________________________ (preferred name)

DOB ___________________________

Precautions (e.g. deaf, blind , poor vision, fall risk, diabetic, uses O2, experienced recent loss of loved one or pet)

Baseline:

RHR _______ THR _____ BP _____/____ O2 sat _____%  MET _____

Please complete the above information for patients planning to return to work. Thank you.

Today’s date ____________________________

Address _______________________________________________________________

Phone _________________________________

Single__   Widowed__     Married __    Resides with: ______________________________________

Dx ___________________________   Diabetic ___  Arthritis_____ Pulmonary disease______

Hx of Arthroplasty_____ (joint (s)_______________________________)

Fall(s) Hx ___________________________ Fall Risk    MIN    MOD    HIGH

What are your current restrictions/ limitations as ordered by your physician or at hospital discharge:

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

May we contact your physician(s) with questions or concerns?   YES   NO
Patient signature

Cardiologist/location/
phone___________________/___________________/___________________

Primary MD/ location/
phone___________________/___________________/___________________

What is your job title____________________________________ How many years have you had your job?_____

What do you like about your job?________________________________________________________

Please describe your primary job responsibilities
____________________________________

How many hours do you work a day?_____ a week?____ # of breaks per day/ lunch________

Does your job involve: (check all that apply)

Travel___ Sitting___ Standing ___ Climbing Stairs___ Walking ___ Running ___ a ladder____

Stress___ a shovel___ Pushing ___ Pulling ___ Extreme Temp ___ work w/ arms above head ___

Lifting ___ Describe object(s)
lifted:____________________________________

(____#’s ______ x per hour), from (floor to waist___ to shoulder___ above head ___)

Can you do the following:

Reach to pick up something up off the floor YES NO

Reaching above your head YES NO

Walk up and down a flight of stairs YES NO

Squat down like a baseball catcher YES NO

Bathe and dress yourself YES NO
Stand for 5 minutes without support   YES   NO

**Do you currently have trouble:**

Maintaining your balance when walking   YES   NO

Remembering things   YES   NO

Concentrating   YES   NO

Sleeping   YES   NO

Swallowing   YES   NO

Relaxing   YES   NO

When are you planning to return to work?

What are your concerns about returning to work?

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

Would you like an onsite job evaluation   YES   NO

What are your goals for occupational therapy at CR:

Goal 1)

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

Objective

a)

Objective

b)

Objective
c)
Goal
2) _____________________________________________________________
   __________________________
   __________________________
   __________________________
   __________________________
   __________________________

Objective
a) _____________________________________________________________

Objective
b) _____________________________________________________________

Objective
c) _____________________________________________________________

Additional Comments:
______________________________
______________________________
______________________________

ROM:

MMT:

BBS Score:
## Appendix K

**Cardiac Rehab**  
Promedica Bixby Hospital  
MULTIDISCIPLINARY PROGRESS NOTES

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| Addressograph |

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<th>Time</th>
<th>Name</th>
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**Legend:**  
- **UE** = Upper extremity  
- **LE** = Lower Extremity  
- **PH** = Poor historian  
- **NC** = Patient Non-compliant  
- **WRE** = Weight Resistance Exercise  
- **L** = Left  
- **R** = Right  
- **A** = Anterior  
- **P** = Posterior  
- **X** = Number of times completed  
- **BL** = Both sides  
- **UL** = One side  
- **Airex** = Blue pad used for balance  
- **Airex B** = Blue pad shaped like balance beam  
- **Core** = Exercises that strengthen abdominal, back, girdle, pelvic, or stability muscles  
- **Shifting** = Transfer of weight and center of gravity (done in standing or sitting)  
- **Transverse** = Planar angle in space  
- **Horizontal** = Planar angle (runs 90 degrees from vertical)  
- **Vertical** = Planar angle (running from top to bottom)  
- **Crossing midline** = When arms or legs cross over to opposite side of body

400193 (08/02)  
Med-Surg\Forms\Multidisciplinary Progress Notes
Appendix L

Banana-berry smoothie

Preparation time: 5 minutes

1 cup ice cubes
1 medium banana (approximately 6 inches long), sliced and frozen
1/2 cup frozen blueberries (not thawed)
1 container (8 ounces) nonfat, artificially sweetened vanilla yogurt
1/4 cup skim milk

Place ice cubes at the bottom of the blender and add banana slices, blueberries, yogurt, and milk. Cover and blend in pulses until smooth, stopping frequently to stir down the ice. Serve right away. Freeze leftovers in an airtight, microwave-safe container and thaw in the microwave until slushy.

Yield: 2 1/2 servings; Serving size: 1 cup

Nutrition Facts
Per Serving:
Calories: 138
Carbohydrate: 28 g
Protein: 6 g
Fat: <1 g
Saturated fat: 0
Sodium: 80 mg
Fiber: 3 g
Exchanges per serving: 1/2 skim milk, 1 1/2 fruit
Carbohydrate choices: 2

This recipe was developed by Tami Ross, a Diabetes Nutrition Specialist and Certified Diabetes Educator in Lexington, Kentucky.
Just peachy smoothie

Preparation time: 5 minutes

Place milk, peaches, and yogurt in the blender and pulse on high until smooth. Add artificial sweetener to taste and blend again. Add ice cubes one at a time, blending in pulses on high until smooth after each addition. Serve immediately.

Leftovers can be frozen in a microwave-safe freezer container and thawed in the microwave in 10-second increments until slushy.

Yield: 2 3/4 cups; Serving size: 1 cup

Nutrition Facts
Per Serving:
Calories: 53
Carbohydrate: 10 g
Protein: 3 g
Fat: <1 g
Saturated fat: <1 g
Sodium: 37 mg
Fiber: <1 g

Exchanges per serving: 1/2 skim milk, 1/2 fruit ; Carbohydrate choices: ½

This recipe was developed by Tami Ross, a Diabetes Nutrition Specialist and Certified Diabetes Educator in Lexington, Kentucky. Retrieved from: http://www.diabetesselfmanagement.com/Blog/Tara-Dairman/recipe_of_the_week_banana_berry_smoothie/
Cantaloupe cooler

Preparation time: 5 minutes

1 cup cubed cantaloupe
1/2 cup nonfat, no-sugar-added vanilla yogurt
1/4 teaspoon lemon juice
1 packet NutraSweet
Dash cinnamon

Combine all ingredients in a blender and blend until smooth.

Yield: 1 serving; Serving size: 1 cooler

Nutrition Facts
Per Serving:
Calories: 108
Carbohydrate: 20 g
Protein: 6 g
Fat: <1 g
Saturated fat: 0 g
Sodium: 128 mg
Fiber: 2 g

Exchanges per serving: 1 fruit, 1/2 skim milk
Carbohydrate choices: 1 1/2
Appendix M

Heart Healthy Occupation flyer

Make a heart healthy snack

When: Monday, May 23rd, 2012
Anytime between 9 – 11:30am
Where: Education Room

Please see Karen (OT student) if you have questions.
Appendix N

Making a Healthy Snack Occupation

Nachos can be a heart healthy snack

INGREDIENTS:

- Baked tortilla chips (Garden of Eatin’)
- Fat free cheddar cheese (Kraft)
- No salt added, black beans (Kuner’s)
- Fat free sour Cream or non-fat plain yogurt
- *Olives (*soaked in water overnight and rinsed well)
- Lettuce
- Tomato
- Bell pepper
- Fresh Cilantro
- Green onions
- Fresh Lime
- Avocado

For a snack: Chop fresh items and set aside. Place 6-8 tortilla chips on a plate, cover with ¼ cup of shredded cheese, and ¼ cup of black beans. Microwave until cheese is warm (30 seconds or less), top with fresh produce of your choice, sour cream or yogurt, and sprinkle lightly with cilantro, drizzle with ¼ tsp. of lime.

For a meal: use 8-12 chips and repeat directions above with 1/3 cup cheese, 1/3 cup black beans.

Alternatives: Mix toppings in a bowl, drizzle with lime, top with sour cream or yogurt and sprinkle with cilantro and use chips to scoop up the mixture like a dip. Leftover ingredients can be used to make a salad, a fresh salsa, or wrapped in lettuce and eaten like a burrito.

This is a very low calorie, low sodium, low sugar snack or meal! Enjoy😊
Tai Chi Flyer

Tai Chi

Today

9am, 10am, and 11am

In the education room

10 minute sessions

Tai chi helps to improve balance & flexibility, increase immunity, reduce stress, and increase body awareness.
Appendix P

Letter of Support

April 27, 2012

University of Toledo
Re: OT Program

To Whom It May Concern,

I have been asked by Karen Austermillier to review and provide comments regarding her Program Development Manuscript. I found her manuscript to be extremely interesting, thorough and the topic a very novel idea.

I am an Exercise Physiologist at the Baylor, Jack and Jane Hamilton Heart and Vascular Hospital in Dallas, TX. My particular role is in working with cardiac rehabilitation patients whom we call “Industrial Athletes”: firefighters, police officers, mechanics, farmers and other people with highly exertional jobs. Our Cardiac Rehabilitation Department-Return to Work Lab team (cardiologists, nurses, cardiac rehabilitation specialists) has designed customized evaluative and rehabilitative techniques for industrial athlete patients who have experienced cardiac events (e.g., coronary artery bypass graft surgery, myocardial infarction, angioplasty, stent placement, pacemaker/implantable cardioverter-defibrillator implantation, valve replacement). As an Exercise Physiologist, I am offering high-intensity specificity of training to industrial athlete patients with the hope that they can effectively train for safe return to work. I am performing this training because I believe it is the ethical thing to do for my patients. However, there are currently a few missing links in my return to work model.

I am acting in a role which would be considered somewhat of a personal trainer. Exercise Physiologists in Texas can be certified but do not have the ability to be licensed by the state. This, in itself, is a problem in that there is no way to know who is capable of safely providing this specific training. There are also complicated issues concerning the paperwork involved with returning industrial athletes to work. For example, for patients who have what we call “regular” jobs, their cardiologist has full power to tell them “yes” or “no” about their desire to return to work. Conversely, the industrial athletes, firefighters for example, sometimes have legal papers and tests that have to be performed in addition to a release paper being signed by their cardiologist.

In my opinion, Karen has a novel idea in that by including a licensed Occupational Therapist as a member of the cardiac rehabilitation team, some of my concerns might be addressed and changed for the betterment of patient care in the future. After reading her manuscript I am convinced that the Occupational Therapist already knows how to evaluate, educate, train and “release or transfer” patients for successful return to work. I believe the Occupational Therapist would provide welcomed diversity to a cardiac rehabilitation team and this could only result in better care for the patients. I think her ideas are new and refreshingly logical and should be considered not only by cardiac rehabilitation programs in her geographical area, but those across the nation.

Most Sincerely Yours,

Jenny Adams

Jenny Adams, Ph.D.
Senior Research Associate, Exercise Physiologist
411 North Washington, Suite 3100, Dallas, TX  75246
April 27, 2012

Occupational Therapy Department
University of Toledo

Dear Departmental Heads:

I am pleased to provide this letter of support for Karen Austermiller in developing a role of occupational therapy in cardiac rehabilitation (Occupational Capacity for Life program).

Over the course of my 5 years as an exercise physiologist working in a cardiac rehabilitation setting, I have personally seen the benefits of what a regimented exercise program can provide. Increasing fitness levels leads to better outcomes from a cardiac standpoint by improvement in lipid profiles, stress management, blood sugars, blood pressure reduction, and overall wellness, among many others.

The benefits of this type of therapy following an acute coronary event or procedure are unquestionable. There is however, a sorely missing component that is rarely utilized; the ability to apply these benefits during normal daily activities. One of the biggest hurdles that I frequently see is a compliance of maintaining cardiovascular improvement beyond what they do in a structured setting. Fear of having another event often leads to people not doing activities that would normally be safe under most circumstances. This is where having occupational therapy would be a tremendous help. By having a program that is more individualized to a person’s own daily activities, it can aide in better compliance of an exercise program, and more importantly improve a patient’s return to normalcy.

It is my own personal belief that this type of program as outlined by Karen has numerous benefits and would likely lead to better outcomes for patients within cardiac rehabilitation. Feel free to contact me. I would be more than happy to further express my support for such a tremendous program.

Sincerely,

Roger Sacks

Exercise Physiologist
William Beaumont Hospital RO
Preventative Cardiology, RLS
4949 Coolidge Hwy
Royal Oak, MI 48073
Roger.Sacks@beaumont.edu
248-655-5773
Appendix R

Letter of Support

May 1, 2012

University of Toledo
Re: Occupational Therapy Department

To whom it may concern,

I am a registered nurse in charge of the Cardiac Rehab Program at ProMedica Bixby Hospital in Adrian, MI. Karen has been working here in our rehab for the semester.

Karen has presented a great program called Occupational Capacity for Life. She has assisted us in helping prepare patients to return to work/activity requiring higher MET levels by actually reproducing activities while patients are here on heart monitoring. We are better able to assure patients that their heart is ready for the burdens of their particular job/activity roles. They gain confidence and feel safer when successfully engaging in higher level activity. Karen has individualized OT care for our patients and it has benefited them and improved our program. I would wholeheartedly recommend expanding this OT role in all cardiac rehab settings.

Sincerely,

Julia Iveson RN BSN CCRN
Charge Nurse Cardiac Rehab
ProMedica Bixby Hospital
Adrian MI 49221
Appendix S

Contact List

**OTR/L**

Julie Jepsen Thomas, OTR/L PhD.
Occupational Therapy Program
University of Toledo
Toledo, OH

James Kessler, OTR/L
UTMC
Toledo, OH

Mary Hypio, OTR/L
Mercy St. Vincent’s
Toledo, OH

Dave Brown, MA OTR/L
WorkAbility Supervisor
Beaumont Health Systems
Royal Oak, MI

**CR Program Directors**

Barry A. Franklin, PhD, FACSM
Beaumont Health Systems
Royal Oak, MI

Daylnn Badenhop, PhD.
UTMC
Toledo, OH

Jennifer Adams, EP, PhD
Baylor Health Systems
Dallas, Texas

**CR Program Supervisors/Managers**

Julia Iveson BSN, CCRN
CR supervisor
Bixby Hospital
818 Riverside Dr.
Adrian, MI 49221

Amy Fowler, BS
CR Manager
Beaumont Health Systems
Royal Oak, MI

**Cardiologists**

Silverman, Henry MD
818 Riverside Ave # 500
Adrian, MI 49221
517.265.9690

Silverman III, Henry MD
818 Riverside Ave # 5
Adrian, MI 49221
517.265.0214

Ames, Tonya MD
1548 W Maumee St # C.
Adrian, MI 49221
517.266.1042

Balkany, Louis MD
415 Mill Rd
Adrian, MI 49221
517.266.0242
Appendix T

Supplies and Equipment List

Supply list: In kind donation from Tecumseh Community Garage Sale June 2012 and Lowe’s

Badminton rackets

Tennis Racket

Golf Clubs
- 1 Putter
- 1 Iron club
- 1 Wood club

Scrap Wood/ dowels for crafts

Magazines/ wrapping paper for decoupage

Kitchen equipment
- Pots and Pans
- Blender
- Mixer

Home maintenance equipment
- Paint roller
- Step ladder

Total Value ≈ $ 150.00

Supply list retrieved from: https://electro-Medical.com

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Shipping costs *  
Total costs * Shipping Costs Additional $1806.90*

Supplies from Wasserstrom retrieved from: [https://www.wasserstrom.com](https://www.wasserstrom.com) restaurant-supplies

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Total Cost $30.96

Supplies from Favorite Plus retrieved from: [https://www.favoriteplus.com](https://www.favoriteplus.com)

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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FP180</td>
<td>Easy ECG handheld monitor</td>
<td>Monitoring outside of clinic</td>
<td>$149.00</td>
</tr>
<tr>
<td>FP300D</td>
<td>Finger Pulse Oximeter</td>
<td>Monitoring outside of clinic</td>
<td>99.00</td>
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Total Cost $248.00

Supplies from Walmart retrieved from: [https://www.walmart.com](https://www.walmart.com)

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<tr>
<th>Item #</th>
<th>Description</th>
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<th>Cost</th>
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</thead>
<tbody>
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</tr>
<tr>
<td>PN51E530</td>
<td>51” Samsung plasma Television</td>
<td>Alternative to exercise</td>
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<td></td>
<td>Tilting Wall mount system</td>
<td>Misc. Equipment</td>
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<td>Item</td>
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<td>Cost</td>
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</tr>
<tr>
<td>-------------------------------------</td>
<td>----------------------------------------------</td>
<td>--------</td>
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</tr>
<tr>
<td>X Box 360 Kinect Game system</td>
<td>Alternatives for exercise</td>
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<td>Kinect Carnival</td>
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<td>$1,357.84</td>
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**Supplies from Craft store from Lowes, J Bar Hobbies, & Hobby Lobby**

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<th>Item</th>
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<tr>
<td>Power tools</td>
<td>Simulated work</td>
<td>$200.00</td>
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<tr>
<td>Model building</td>
<td>Simulated work/ quality of life/ craft</td>
<td>831.00</td>
</tr>
<tr>
<td>Wood</td>
<td>Simulated work</td>
<td>211.00</td>
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<tr>
<td>Wood working plan book</td>
<td>Simulated work/ quality of life/ craft</td>
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<td><strong>Total amount</strong></td>
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**Office supplies from Office Max**

<table>
<thead>
<tr>
<th>Item</th>
<th>Justification</th>
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</tr>
</thead>
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<tr>
<td>Colored paper</td>
<td>Marketing tools</td>
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</tr>
<tr>
<td>Spiral Notebooks</td>
<td>Patient Journal for Goal Setting OCL plan</td>
<td>101.00</td>
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<td>Misc.</td>
<td>Marketing, organization</td>
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<tr>
<td><strong>Total amount</strong></td>
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<td>$264.30</td>
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</tbody>
</table>
**Appendix U**

**Evaluation of the Occupational Capacity for Life (OCL) Program**

1. Did the OCL program help you identify your individual occupational capacity?

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Not Sure</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
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<tr>
<td>7</td>
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<td>9</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Did the OCL program help you to resume life roles?

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Not Sure</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
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<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Did the OCL program help you determine how to participate in life roles safely?

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Not Sure</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Did the OCL program help you acquire skills for managing stress?

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Not Sure</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
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<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Did the OCL program help you to develop personal goals for healthy behaviors?

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Not Sure</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix V

### Facility Evaluation: OCL program

1. Was the cardiac rehabilitation facility at BH an appropriate location for the OCL program?

<table>
<thead>
<tr>
<th>Circle One:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why or why not?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Was the cardiac rehabilitation facility at BH a good atmosphere for the OCL program?

<table>
<thead>
<tr>
<th>Circle One:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why or why not?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Was the facility and staff accommodating to your needs?

<table>
<thead>
<tr>
<th>Circle One:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why or why not?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### For Future OCL programs

1. What did you enjoy most about the OCL program?

2. What did you enjoy least about the OCL program?

3. What suggestions do you have to improve the OCL program?

4. What are the most important things you learned participating in the OCL program?
Appendix W

Semi-Structured Interview:

Julia Iveson, RN, BSN, CCRN Cardiac Rehabilitation Supervisor, Bixby Medical Center

How is CR handled at this facility?

There is a phase I and II. Phase I takes place until patients are discharged from inpatient care. Usually, this phase just covers precautions, personal hygiene, getting dressed....stuff like that. Phase II begins usually 2 weeks after a stint or 4 weeks after surgery. Usually patients are in Phase 2 up to 12 weeks or 36 visits. Patients are monitored with a halter. They participate in exercises and some educational classes. Phase III is a maintenance phase and we don’t offer it here....well we do have a group that meets to work out here but it isn’t really a program...we are here but we don’t really do anything with them unless they ask us for information or something. Most of the people that come to that have been coming for years. It is sort of the same core group.

How many people are in the core group?

There are about 7 diehards and others that are semi-regular...about 15 in total of those that have been coming for a long time.

Are there women in the core group?

Yes, but the women aren’t as regular with coming in to workout. They sort of drop in and out depending on what family stuff they have going on.

Is that covered by insurance? Or how does that work?

Well depending, some of them might pay a copay, others pay a 'fitness fee' if they are not covered by insurance. I think it is about 50 dollars a month. But they don’t seem to mind paying. They really like working out here. I guess they like us if they are willing to pay to come
in. Although, I think financial burden could prevent people from participating. Also some of the guys are retired UAW workers and they used to be covered but now they aren’t so that could cause some of them to drop out of that group.

Do you use a model of practice or a theory base?

Yes we use guidelines from the ACSM which is who certifies us and the AACVPH We also use Clinical Practice Guidelines #17 and Cardiac Rehabilitation & Secondary Prevention Programs 4th ed

Do you use a circuit style workout where people follow a specific pattern and move from machine to machine?

Sort of. Sometimes people don’t like certain machines so they skip the ones they don’t like. Some people just really dislike the bike. I don’t know why. I keep thinking I should move it out of the corner but I am not sure where to put it where it won’t be a trip hazard for people. So I don’t know but the Bike is not popular.

Besides the machines, do you do offer any exercise classes?

Yes, we do some stretches and balance things. One of the things that we started recently is core work.

Is there additional programs you would like to offer here at BH?

I have been thinking it would be nice to offer some fitness classes (e.g., yoga) or other stress management classes. We offered a stress management class but it was not well attended. I think there is a stigma. No one wants to think they need help admit they can’t manage stress so going to a class is like saying you have a mental problem. It would also be really nice to have some type of work hardening program for patients who are returning to work. Many of our patients are still employed in manual jobs and it would be great for them to gain confidence
prior to returning to employment by simulating work while they are still monitored and in a place they feel safe.

Are there any cardiac rehabilitation programs that you think offer patients exceptional program opportunities?

* Baylor Health Systems in Texas has an excellent program. They do a lot with returning people to work.*

Thank you!
## Appendix X

### Timeline

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Recruiting /Marketing Advocacy/Admin</th>
<th>Evaluation/ Assessment</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Complete paperwork for employment through Bixby Medical Center</td>
<td>Note feedback from referral sources or potential participants.</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Develop marketing brochures</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Develop marketing flyers</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Document contact information for key personnel</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Create a list of contacts, affiliates and relevant agencies.</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Purchase supplies and equipment</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Familiarize with facility Documentation develop additional documents PRN .</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Organize work space</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Develop file system</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Set up computer, phone system</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Develop an intervention inventory list</td>
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<td>□</td>
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</table>

<table>
<thead>
<tr>
<th>Week 2</th>
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<th>Evaluation/ Assessment</th>
<th>Interventions</th>
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<tbody>
<tr>
<td></td>
<td>Deliver brochures introductions to Cardiac staff acute care.</td>
<td>Track number of brochures given and location</td>
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<tr>
<td></td>
<td>Note attendance for the week, phone calls, and performance of participants.</td>
<td>Complete patient orientation PRN</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Take phone calls as necessary</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>patient orientations interviews</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Go over manuals and operation of medical equipment.</td>
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<td>□</td>
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</table>

<table>
<thead>
<tr>
<th>Week 3</th>
<th>Recruiting /Marketing Advocacy/Admin</th>
<th>Evaluation/ Assessment</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OT individual/group interventions</td>
<td>Note attendance for the week, phone calls, and performance of participants.</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Consultation</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Return Phone Calls</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Complete OT orientation/ discharge interviews.</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Follow up with physician’s offices regarding referrals.</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Making PRN</td>
<td></td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Make a list of needed</td>
<td></td>
<td>□</td>
</tr>
</tbody>
</table>

| | | | □ Plan individual and group interventions w/ set up. | |
| | | | □ Complete group meeting at facilities with ≥ 1 participant | |
| | | | □ Plan following week intervention | |
| Week 4 | ○ OT individual/group interventions  
○ Consultation  
○ Return Phone Calls  
○ Complete OT orientation/ discharge interviews.  
○ Follow up with physician’s offices regarding referrals.  
○ Filing PRN  
○ Make a list of needed supplies for interventions  
○ update marketing material, assessment sheets) PRN | ○ Attendance sheet at each group session  
○ Note attendance for the week, phone calls, and performance of participants. Intake interviews with assessments  
○ Take notes following meetings regarding participants performance | ○ Plan following week intervention |
|-----------------|-----------------|-----------------|
| Week 5 | ○ OT individual/group interventions  
○ Consultation  
○ Return Phone Calls  
○ Complete OT orientation/ discharge interviews.  
○ Follow up with physician’s offices regarding referrals.  
○ Filing PRN  
○ Make a list of needed supplies for interventions  | ○ Attendance sheet at each group session (Tai Chi, Cooking, Jeopardy)  
○ Note attendance for the week, phone calls, and performance of participants.  
○ Documentation daily documentation | ○ Complete group meeting at facilities with ≥ 1 participant  
○ Plan following week interventions  
○ Send assessments home with participants to complete |
| Week 6 | ○ OT interventions  
○ Consultation  
○ Return Phone Calls  
○ Complete OT orientation/ discharge interviews.  
○ Follow up with physician’s offices regarding referrals.  
○ Filing PRN  
○ Make a list of needed supplies for interventions next week  
○ Print forms(attendance sheet, marketing material, assessment sheets) PRN | ○ Attendance sheet at each meeting  
○ Note attendance for the week, phone calls, and performance of participants. Intake interviews and screenings  
○ Progress notes | ○ Complete group meeting at facilities with ≥ 1 participant  
○ Plan following week intervention  
○ Collect assessments from Participants  
○ Plan for the last session with individuals if applicable for next week) |
| Week 7 | ○ OT individual/group interventions  
○ Consultation  
○ Return Phone Calls  
○ Complete OT orientation/ discharge interviews.  
○ Follow up with physician’s offices  | ○ Attendance sheet at each meeting  
○ Note attendance for the week, phone calls, and performance of participants. Intake interviews with assessments  
○ Take notes following meetings regarding participants performance | ○ Final interventions  
○ Assessments  
○ Discharge  
○ Group meetings  
○ Plan for the last session with individuals if applicable for next week) |
<table>
<thead>
<tr>
<th>Week 8</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>☐ OT individual/group interventions</td>
<td>☐ Attendance sheet at each meeting</td>
<td>☐ Plan for group interventions</td>
</tr>
<tr>
<td>☐ Consultation</td>
<td>☐ Number of sessions completed by each participant</td>
<td>☐ Final interventions</td>
</tr>
<tr>
<td>☐ Return Phone Calls</td>
<td>☐ Note attendance for the week, phone calls, and performance of participants. Intake interviews with assessments</td>
<td>☐ Assessments</td>
</tr>
<tr>
<td>☐ Complete OT orientation/discharge interviews</td>
<td>☐ Take notes following meetings regarding participants performance</td>
<td>☐ Discharge</td>
</tr>
<tr>
<td>☐ Follow up with physician’s offices regarding referrals.</td>
<td>☐ Evaluate the assessments of those people who completed the program</td>
<td>☐ Group meetings</td>
</tr>
<tr>
<td>☐ Filing PRN</td>
<td></td>
<td>☐ Plan for the last session with individuals if applicable for next week</td>
</tr>
<tr>
<td>☐ Make a list of needed supplies for interventions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

REPEAT

REPEAT

REPEAT

*The program is revolving so that different people will enter and exit the group at different times. The Total number of sessions that will be completed per person is based on the individual. A follow up phone call will be used to administer the Activity Instrument 12 weeks following the last session.*
Appendix Y

Marketing tool

**Occupational Therapy & Cardiac Rehabilitation**

*Promoting an Occupational Capacity For Life (OCL)*

Occupational Therapists (OT’s) provide additional services for patients participating in cardiac rehabilitation (CR) which contribute to better outcomes for patients.

Evidence-based practice supports the inclusion of OT in supporting patients with cardiovascular disease with outcomes of improved quality of life, and increased activity, reduction in falls, and return to work.

The role of Occupational Therapy in cardiac rehabilitation is to prepare patients physically and psychologically for ADL’s and occupations of work and leisure (eg., home maintenance, golf, volunteerism or employment). OT’s collaborate with the patient, family, CR nurses and exercise specialists, cardiologist, and primary care providers to develop interventions that are individualized, safe, and appropriate to the needs of the patient.

Liaison with CR staff and Physicians to enhance overall rehabilitation outcome.

- Assessment of ability to perform ADL’s.
- Vocational work evaluation and advice.
- Teaching of compensatory strategies to increase strength and tolerance in ADL’s.
- Techniques and Strategies to enhance everyday function.
- Advice and psychological support to patient and family regarding safe functional level.
- Reducing stress, anxiety and depression.
- Supporting lifestyle changes in occupational performance with the aim of secondary prevention.

*Health is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity. WHO, 1948*

Cardiac Rehabilitation at Bixby Hospital
818 Riverside Drive, Adrian, Michigan 49221
Phone (517) 265-0223 Fax (517) 265-0880
Appendix Z

Job Description

Title: Occupational Therapist, ACSM certified, ACLS

Professional Requirements:
- National Certification Registration (OTR)
- Licensure in Michigan (/L)
- Interest or experience in Cardiac Rehabilitation
- Current CPR Certification
- ACLS
- ACSM certification
- Availability MTW 6:30-6:30

Reports to:
- Mary Bohn, Director of Total Rehab and Cardiac Rehabilitation
- Julia Iveson, Supervisor of Cardiac Rehabilitation

Summary of Responsibilities:

Performance Tasks:
- Administer and interpret patient evaluations
- Plan Group Interventions
- Home evaluations PRN
- Job evaluations PRN
- Implement therapeutic interventions
- Administrative duties as needed including answering phones, filing, inventory and budget.
- Market and recruit
- Develop education materials
- Documentation
- Other duties PRN

Conditions:
- Half time M-F
Annotated Bibliography

Karen M. Austermiller

Department of Rehabilitation Sciences

Occupational Therapy Doctorate Program

The University of Toledo

May, 2012

Note: This document contains an annotated bibliography
Annotated Bibliography


Abstract: Purpose. The purpose of this study is to test the efficacy and effectiveness of an intensive cardiac rehabilitation program in improving health outcomes in multiple sites. Methods. This study employs a non-experimental (prospective tint series) design to investigate changes in cardiovascular disease in 2974 men and women from 24 socio-economically diverse sites who participated in an intensive cardiac rehabilitation program at baseline, 12 weeks, and 1 year. Paired t-tests were used to assess differences by comparing baseline values to those after 12 weeks, baseline values to those after 1 year, and values after 12 weeks to those after 1 year. Results. Eighty-eight percent of patients remained enrolled in the program after 12 weeks, and 78.1% remained enrolled in the program after 1 year. Patients showed statistically significant improvements after 12 weeks in body mass index (BMI), triglycerides, low density lipoprotein cholesterol, total cholesterol, hemoglobin A1c, systolic blood pressure, diastolic blood pressure, depression, hostility, exercise, and functional capacity. These differences also remained significant after 1 year. There was additional significant improvement between 12 weeks and 1 year only in BMI, high density lipoprotein cholesterol, functional capacity, and hostility, and significant recidivism between 12 weeks and 1 year in all other measures (except triglycerides) and depression, yet improvements from baseline to 1 year remained significant in all measures (except HDL, which was unchanged) (p < .005). Conclusions. This intensive cardiac rehabilitation program was feasible and sustainable for most patients who enrolled and was associated with numerous subjective and objective improvements in health outcomes. It demonstrates that the intervention works when it is administered by staff at multiple clinical/community sites in four different states. These improvements were also seen in patients 65 years of age or older. (Am J Health Promot 2010;24[4]:260-266.)

Summary & Significance

The researchers in this study used a multiple assessment measures to evaluate the effectiveness and efficacy of a 12 week CR programs in four different sites representing different demographics. The results indicate that the benefits of CR are effective in multiple populations and extend up to a year post CR which is significantly longer than what has been found in
through research of less comprehensive programs. This is significant because it validates the need for inclusion of multiple disciplines and a holistic approach to CR programming.
Abstract (Introduction): Major depression is common among patients recovering from a myocardial infarction (MI). Additionally, clinically significant depressive symptoms are present in other patients whose symptom severity or duration does not meet established criteria for a diagnosis of major depression. Over the last decade, increasing evidence suggests that in addition to its effect on quality of life, post-MI depression also deserves attention because of a reported relation to increased morbidity and mortality. This evidence report reviews the studies that have examined depression or depressive symptoms in patients after an MI and focuses on the prevalence, clinical significance, treatment, and methods of evaluating this condition. A number of studies have evaluated various aspects of post-MI depression including prevalence, its association with mortality, and major adverse events, and treatment. This report addresses the following key questions regarding post-MI depression.

1. In patients diagnosed with and hospitalized for acute MI, what is the prevalence of depression during initial hospitalization for MI? Depression was defined as symptoms of depression meeting established threshold criteria by psychiatric interview or validated questionnaire. What is the prevalence of depression during initial hospitalization for an acute MI, with and without a history of previous depression as reported by study investigators? 2. What percentage of patients with post-MI depression continue to have depression (or depressive symptoms) one or more months after initial hospital discharge? 3. What is the association of post-MI depression with outcomes independent of other predictors of post-MI outcomes? Post-MI outcomes include: • Clinical outcomes—total mortality, cardiac mortality, MI, resuscitated arrest, stroke, arrhythmias, and revascularization. • Quality of life. • Utilization of health care services—readmission, total hospital days, and cost of care. Potential predictors include demographic and clinical characteristics of patients that have been reported to be associated with the risk of post-MI outcomes. What is the association of post-MI depression with surrogate markers of cardiac risk independent of other predictors of post-MI outcomes? Surrogate markers of disease severity include: heart rate variability, platelet reactivity, and markers of inflammation such as C-reactive protein. Do post-MI patients with depression have better outcomes with depression treatment compared to those without depression treatment? Depression treatment includes all interventions intended to have specific impact on depression, such as antidepressants, cognitive behavioral therapy, inter-personal therapy, psychosocial support, and cardiac rehabilitation. Do outcomes differ with or without improvement in depression for post-MI patients with depression that do receive depression treatment? Do outcomes differ with or without improvement in depression for post-MI patients with depression that do not receive depression treatment? What are the performance characteristics (e.g., sensitivity, specificity, reliability, and predictive value) of...
instruments or methods that are used to screen for depression (or depressive symptoms) following an acute MI? 5a. What are the performance characteristics of instruments or methods that are used to screen for depression (or depressive symptoms) following an acute MI, during hospitalization? 5b What are the performance characteristics of instruments or methods that are used to screen for depression (or depressive symptoms) following an acute MI, within three months after hospitalization? 6. Does the use of cardiac treatment for patients with acute MI differ for those with and without depression? Cardiac treatment includes: revascularization (angioplasty or bypass surgery), angiotensin converting enzyme (ACE) inhibitors, beta blockers, statins, antiplatelet agents, or other treatments recommended by the American Heart Association or the American College of Cardiology.

Summary & Significance

The Johns Hopkins University Evidence-based Practice Center (EPC) used a team of researchers and clinicians specializing in cardiology, psychiatry, general internal medicine, and cardiac rehabilitation to recruit experts to identify key areas for investigating post-MI depression with assistance from the EPC team. The review panel included eight experts. A comprehensive search of the literature was done and included electronic and hand searching. The research literature was rated on a 100 point scale based on relevancy to key questions, methodology, and statistical accuracy. The researchers used research with top ratings to review each of 6 key questions. The study used a total of 78 articles published from 1993 to 2004. The findings suggest that 60-70% of patients who have depression immediately following MI continue to be depressed months later. This has a significant impact on male and females in terms of quality of life return to work compliance with health recommendations, and mortality. The evidence suggests depressive symptoms are prevalent in patients post-MI e patients with depression have higher rates of mortality and increased morbidity. The results were inconclusive regarding the use of anti-depressants or of any disparity of medical treatment received by the participants of the studies in relationship to relief of depressive symptoms.
Occupational therapists should be aware of the prevalence of depression in patient’s post-MI and provide screening, referral, and support when appropriate. Occupational therapy interventions should encourage patients to develop goals that allow for increased perception of quality of life. This may prove more beneficial over traditional counseling and pharmacological treatment with this population.
Abstract: Objectives. To examine whether any response shift in quality of life (QoL) assessment over the course of a cardiac rehabilitation (CR) programme could be explained by changes in individuals’ internal standards (recalibration), values (reprioritization), and/or conceptualization of QoL and the extent to which any response shift could be explained by health locus of control, optimism, and coping strategy. Design. Longitudinal survey design. Methods. The schedule for evaluation of individual QoL-direct weighting (SEIQoLDW) was administered at the beginning and end of a CR programme. At the end of the programme, the SEIQoL-DW then-test was also administered to measure response shift. A total of 57 participants completed these measures and other measures to assess health locus of control, optimism, and coping. Results. Response shift effects were observed in this population mainly due to recalibration. When response shift was incorporated into the analysis of QoL a larger treatment effect was observed. Active coping as a mechanism in the response shift model was found to have a significant positive correlation with response shift. Conclusion. This study showed that response shift occurs during CR. The occurrence of response shift in QoL ratings over time for this population could have implications for the estimation of the effectiveness of the intervention.

Summary & Significance

The study was designed to assess the response shifts in health locus of control, optimism, and coping in participants of CR programs. A response shift is defined as changes to internal standards and values following a change in health state. The participants completed surveys on the 1st day of CR and completed the surveys after 10 weeks of participation. The findings suggest that response shifts are reflected in the QoL results. Patients apparently undergo a change in the way they rate, perceive, and prioritize QoL categories which may alter the responses from day 1 to week 10. These changes are not considered in the current measures of the QoL and therefore may not give accurate measurements. The researchers suggest that response shifts be considered when interpreting results of QoL surveys.
The results of this study suggest the Qol measurement tools be interpreted within the context of the patients shift in response. Response shifts can cause patients to reevaluate the way they perceive their goals for cardiac rehabilitation. Reevaluation may lead to changes in an occupations meaning and purpose over the course of phase II rehabilitation. OT’s should be prepared to re-examine goals periodically with patients to make sure that they are still reflective of their needs.

Abstract: **Purpose:** Development and validation of a physical activity scale for measuring physical activity in 24 h of sports, work, and leisure time on an average weekday. **Methods:** For development of the physical activity scale, 2500 randomly selected Danish men and women between the age of 20 and 60 were contacted by mail and asked to select frequent and relevant physical activities from a number of activities of known MET intensity. The activities were included in the physical activity scale, organized in nine different MET levels ranging from sleep/rest (0.9 METs) to high-intensity physical activities (6 METs). Face validity of the physical activity scale was explored through interviews with 10 volunteer men and women. Concurrent validity was assessed against 4 of accelerometry (CSA 7164) and physical activity diary in 40 volunteer men and women between 20 and 60 yr of age. **Results:** The correlation between the activity scale and the diary was high (r = 0.74, P = 0.000), whereas correlation between the activity scale and accelerometer measurements was poor (r = .20, NS). The physical activity scale MET-time was systematically higher than average MET-time estimated from the diary, and the difference increased with increasing total MET-time. **Conclusion:** The physical activity scale appears to be a simple and valid alternative to measuring physical activity by diary in adult sedentary to moderately active Danes. The scale encompasses work, leisure time, and sports activity in one measure; it is easy to administer, and it provides detailed information on different activity levels as well as a single measure of the total amount of physical activity on an average weekday.

Summary & Significance

The reason people participate in CR programs is to improve their physical capacity so that they in turn can function in the roles necessary for a meaningful life. The level of physical activity can be hard to quantify in patients outside of the cardiac rehabilitation program. Activity diaries can be used but require patients to write consistently, and keep track of their entries. Many patients do not follow through with keeping a diary of activity. The information that the diary provides is important in determining level of function and outcomes of CR. An alternative to the activity diary is an instrument that is more convenient for patients to use and gives measurable data. Measuring the amount of participation in daily activity provides
specific and quantifiable information on how cardiovascular or cardiopulmonary capacity translates in the everyday life of participants. It is also important to have a tool that transcends disciplines. Having a valid tool that is consistent with measures used in CR programs such as METs helps to transition the patient from the clinic setting to the home, allows for quantifiable measures of outcome, and helps patients understand the connection between physical capacity and function. The self-report instrument requires less time to complete and relies less on patient compliance. However, the tool was developed in a country outside of the United States. The instrument may need to be adjusted to meet the cultural identity of the population for which it will be used or a similar instrument designed for use in the United States should be located.

This is an instrument that links the disciplines of Exercise science and occupational therapy together in a manner that promotes collaboration and evidence based practice. It helps to highlight improvement in physical capacity through exercise is a means to and end which is occupation (activity)

Abstract: Research objective: To evaluate whether a cardiac rehabilitation program improved on the outcomes of an outpatient heart failure clinic for older adults with chronic heart failure. Setting: Participants were recruited from the acute medical unit, medical and cardiology outpatient clinics of a hospital in Wales, as well as from general practices in the hospital’s catchment areas. Design: Randomized controlled trial with concealed allocation to groups and blinding of assessors for one major outcome. Analysis was by intention to treat. PED score: 6 out of 8 for internal validity; 2 out of 2 for statistical reporting. Participants: Two hundred participants (n = 100 intervention, n = 100 control. Sample size determined power by calculation). Participants had to be aged 60 years or older, with heart failure (New York Heart Association class II or III), and left ventricular systolic dysfunction (ejection fraction ≤ 40%).

Intervention: Patients in the control group received standard care which consisted of weekly monitoring (for 8 weeks) of clinical status; education about heart failure, treatment, self-monitoring, and diet; and maintenance of their patient health record. In addition to standard care, participants in the intervention group received an 8-week cardiac rehabilitation program (twice a week) and additional group education input (that covered medication, diet, and exercise) from a multidisciplinary team. Individual counseling sessions with the dietician, psychotherapist, or occupational therapist were also available if needed. After this 8-week period, participants then participated in a 16-week community-based exercise program (weekly for 1 hour). Outcome measures: The primary outcome measure were: functional status (NYHA class), functional performance (6-min walk test (6 MWT), perceived exertion (Borg rating of perceived exertion (Borg RPE); measure prior to and upon completion of the 6 MWT), health-related quality of life (Minnesota Living with Heart Failure questionnaire (MLHF), and cost-utility (EuroQol). Outcomes were measured at baseline and 24 weeks. The NYHA class and MLHF questionnaire were administered at 8 weeks. The secondary outcome measures were number and length of stay of hospital admissions arising from heart disease, and prescribed heart failure medication. Main findings: Participants were comparable at baseline functional performance and quality of life scores. The follow-up rate was 85% in the intervention group and 94% in the control group at 24 weeks. At 24 weeks, there were significant between-group improvements for the NYHA class (improvement of 45% of intervention group participants vs. improvement of 11% of control group participants), 6 MWT, MLHF questionnaire, and EuroQol. The intervention group had significantly fewer admissions (11 vs 33) and spent fewer days in hospital (41 vs 187) than the control group. Author’s conclusion: Cardiac rehabilitation offers and effective model of care for older patients with heart failure.

Summary and Significance
The study provides evidence that CHF patients benefit from CR. It also discusses the importance of a personalized approach and programming from a multidisciplinary team. This is relevant because it shows how occupational therapy may provide additional benefits when patients have opportunities to participate with intervention beyond the acute phase (phase 1) of CR.
Introduction. Cardiac rehabilitation/secondary prevention programs are recognized as integral to the comprehensive care of patients with cardiovascular disease.1,2 In 1994, the American Heart Association stated that cardiac rehabilitation programs should consist of a multifaceted and multidisciplinary approach to overall cardiovascular risk reduction, and that programs that consist of exercise training alone are not considered cardiac rehabilitation.1 This concept has been further developed in the Agency for Health Care Policy and Research clinical practice guideline on cardiac rehabilitation,2 which provides the most comprehensive review of the scientific literature and evidence-based recommendations regarding all aspects of the discipline. The American Heart Association and the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR) recognize that all cardiac rehabilitation/secondary prevention programs should contain specific core components that aim to optimize cardiovascular risk reduction, foster healthy behaviors and compliance to these behaviors, reduce disability, and promote an active lifestyle for patients with cardiovascular disease. The purpose of this statement is to present specific information regarding evaluation, intervention, and expected outcomes in each of the core components of cardiac rehabilitation/secondary prevention programs: baseline patient assessment; nutritional counseling; risk factor management (lipids, hypertension, weight, diabetes, and smoking); psychosocial management; physical activity counseling; and exercise training. These recommendations are intended to assist cardiac rehabilitation staff in the design and development of their programs and to assist healthcare providers, insurers and policy makers, and consumers in the recognition of the comprehensive nature of such programs. It is not the intent of this statement to promote a rote approach or homogeneity among programs, but rather to foster a foundation of services upon which each program can establish its own specific strengths and identity and effectively attain outcome goals for its target population. Comprehensive and detailed guidelines regarding cardiac rehabilitation/secondary prevention programs have been published by the AACVPR3 and endorsed by the American Heart Association. Detailed guidelines on specific risk factor modifications are also available.4–17 Specific details regarding management of patients with heart failure, valvular disease, arrhythmias, and other cardiovascular diagnoses are beyond the scope of this document and can be found in the AACVPR guidelines.

Core Components of Cardiac Rehabilitation/Secondary Prevention Programs

Patient Assessment. Evaluation. Medical history: include cardiovascular (including peripheral vascular and cerebrovascular) diagnoses and prior cardiovascular procedures (including assessment of left ventricular function); comorbidities; symptoms of cardiovascular disease; risk factors for atherosclerotic disease progression; and medications and
medication compliance. (See below for physical activity and psychosocial assessment.) Physical examination: include vital signs; cardiovascular and pulmonary examination; postprocedure wound sites; and joint and neuromuscular examination. (See below for specified examination for hypertension, weight, and diabetes.) Testing: obtain resting ECG; assess quality of life using standard questionnaires (e.g., MOS SF-36). (See below for specified tests for exercise, lipids, and diabetes.) Interventions. Compose written records that reflect the patient evaluation and contain a patient care plan with detailed priorities for risk reduction and rehabilitation. Actively communicate this plan to the patient and the primary healthcare provider. Expected Outcomes. Development and implementation of short-term (i.e., weeks or months) and long-term (i.e., years) goals and strategies to reduce disability and subsequent cardiovascular disease risk. Improvement in quality of life as identified by positive changes on follow-up questionnaire. Generation of a written summary of patient outcomes upon completion of the program that is provided to the patient and to the primary and referring healthcare providers. Written summaries should identify specific areas that require further intervention and monitoring. Physical Activity Counseling. Evaluation. Assess current physical activity level and determine domestic, occupational, and recreational needs. Question activities relevant to age, gender, and daily life, including driving, sexual activity, sports, gardening, and household tasks. Assess readiness to change behavior, self-confidence, barriers to increase physical activity, and social support in making positive changes. Interventions. Provide advice, support, and counseling about physical activity needs on initial evaluation and in follow-up. Target exercise program to meet individual needs (see “Exercise Training” section of table). Provide educational materials as part of counseling efforts. Consider simulated work testing for patients with heavy labor jobs. Set goals to increase physical activity that include 30 minutes per day of moderate physical activity on 5 days per week. Explore daily schedules to suggest how to incorporate increased activity into usual routine; e.g., parking farther away from entrances, walking up 2 or more flights of stairs, walking for 15 minutes during lunch break. Advise low-impact aerobic activity to minimize risk of injury. Recommend gradual increases in intensity over weeks. Expected Outcomes. Increased participation in domestic, occupational, and recreational activities. Improved psychosocial well-being, reduction in stress, facilitation of functional independence, prevention of disability, and enhancement of opportunities for independent self-care to achieve recommended goals. Nutritional Counseling. Evaluation. Obtain estimates of total daily caloric intake and dietary content of fat, saturated fat, cholesterol, sodium, and other nutrients. Assess eating habits, including number of meals, snacks, frequency of dining out, and alcohol consumption. Assess target areas for nutrition intervention as outlined in the core components of weight, hypertension, and diabetes, as well as heart failure, kidney disease, and other comorbidities. Interventions. Prescribe specific dietary modifications aimed to at least attain the saturated fat and cholesterol content limits of the AHA Step II diet. Individualize diet plan according to specific target areas as outlined in the core components of weight, hypertension, and diabetes (as outlined in this table), as well as heart failure and other comorbidities. Educate and counsel patient (and family members) regarding dietary goals and how to attain them. Expected Outcomes. Patient adherence to prescribed diet.
Patient understanding of basic principles regarding dietary content of calories, saturated fat, cholesterol, and other nutrients. Plan in place to address eating-behavior problems.

Lipid Management. Evaluation. Obtain fasting measures of total cholesterol, HDL, LDL, and triglycerides. In those with abnormal levels, as per NCEP,9 obtain a detailed history to determine whether diet, drug use, and/or other conditions that may affect lipid levels can be altered. Assess current treatment and compliance. Repeat lipid profiles at 4–6 weeks after hospitalization and at 2 months after initiation of or change in lipid-lowering medications. Interventions. Provide nutritional counseling and weight management aiming for at least an AHA Step II diet in those patients with LDL $100 mg/dL; consider adding drug treatment in those with LDL 100–130 mg/dL; add or intensify drug treatment in those with LDL .130 mg/dL. Provide interventions to increase HDL to .35 mg/dL. These include exercise, smoking cessation, and consideration of targeted drug therapy. Provide interventions to reduce triglycerides to ,200 mg/dL. These include nutritional counseling and weight management, exercise, alcohol moderation, and drug therapy as per NCEP.9 Provide and/or monitor drug treatment in concert with primary healthcare provider.

Expected Outcomes c Short term: Continued assessment and modification of intervention until LDL ,100 mg/dL. Long term: LDL ,100 mg/dL. Secondary goals include HDL .35 mg/dL and triglycerides ,200 mg/dL. Hypertension Management Evaluation Measurement of resting BP on $2 visits. Assess current treatment and compliance. Interventions If BP 130–139 mm Hg systolic or 85–90 mm Hg diastolic: Provide lifestyle modifications including exercise, weight management, moderate sodium restriction, alcohol moderation, and smoking cessation. Drug therapy in patients with heart failure, diabetes, or renal failure. If BP $140 mm Hg systolic or $90 mm Hg diastolic: Provide lifestyle modification and drug therapy. Provide and/or monitor drug therapy in concert with primary healthcare provider. Expected Outcomes c Short term: Continued assessment and modification of intervention until BP ,130 mm Hg systolic and ,85 mm Hg diastolic. Long term: BP ,130 mm Hg systolic and ,85 mm Hg diastolic.

Smoking Cessation. Evaluation. Document smoking status as never smoked, former smoker, or current smoker (which, because of the high rate of relapse, includes those who have quit in the last 6 months); specify both the amount of smoking (packs per day) and duration of smoking (number of years). Assess use of cigar smoking, pipe smoking, and chewing tobacco, as well as exposure to secondhand smoke. Assess for confounding psychosocial issues. Determine readiness to change by asking every smoker if he/she has considered quitting in the last 6 months. If no (precontemplation), firmly advise that he/she give it some thought; plan to ask again at future visits. If yes (contemplation stage), proceed with interventions below. Ongoing contact: update status at each visit during first 2 weeks of cessation, periodically thereafter for at least 6 months. Interventions. When readiness to change is confirmed, help the smoker set a quit date and select appropriate treatment strategies (preparation):Minimal. Provide individual education and counseling by program staff, supplemented by self-learning materials. Encourage physician, staff, and family support. Provide relapse prevention. Optimal. Provide formal smoking cessation program using group and/or individual counseling. Provide and/or monitor pharmacological support as needed in concert with primary physician. Offer supplemental strategies if desired, eg, acupuncture, hypnosis. Arrange follow-up by return visits or telephone contact for at least 6–12 months. Expected Outcomes. Short term: patient will demonstrate readiness to change by initially expressing decision to quit (contemplation) and selecting a
quit date (preparation). Subsequently, patient will quit smoking and use of all tobacco products (action); adhere to pharmacotherapy, if prescribed; practice strategies as recommended; and resume cessation plan as quickly as possible when relapse occurs. Long term: complete abstinence from smoking and use of all tobacco products at 12 months from quit date. Weight Management. Evaluation. Measure weight, height, and waist circumference. Calculate body mass index. Interventions. In patients with BMI .25 kg/m² and/or waist .40 inches in men (102 cm) and .35 inches (88 cm) in women: Establish reasonable short-term and long-term weight goals individualized to patient and associated risk factors (e.g., reduce body weight by at least 10% at a rate of 1–2 lb/wk over a period of time up to 6 months). Develop a combined diet, exercise, and behavioral program designed to reduce total caloric intake, maintain appropriate intake of nutrients and fiber, and increase energy expenditure. Aim for an energy deficit of 500–1000 kcal/d. Expected Outcomes. Short term: Continued assessment and modification of interventions until progressive weight loss is achieved. Provide referral to specialized, validated nutrition weight loss programs if weight goals are not achieved. Long term: adherence to diet and exercise program aimed toward attainment of established weight goal. Diabetes Management. Evaluation. Identify diabetic patients by initial history and note medication type, dose, and regimen; type and frequency of glucose monitoring; and history of hypoglycemic reactions. Obtain fasting plasma glucose measurements in all patients and HbA1C in diabetic patients to monitor therapy. Interventions. Develop a regimen of dietary adherence and weight control that includes exercise, oral hypoglycemic agents, insulin therapy, and optimal control of other risk factors. Drug therapy should be provided and/or monitored in concert with primary healthcare provider. Monitor glucose levels before and/or after exercise sessions. Instruct patient regarding identification and treatment of post exercise hypoglycemia. Limit or prohibit exercise if blood glucose $300 mg/dL. Refer patients without known diabetes whose fasting glucose is .110 mg/dL to their primary healthcare provider for further evaluation and treatment. Expected Outcome Normalization of fasting plasma glucose (80–110 mg/dL or HbA1C ,7.0), minimization of diabetic complications, and control of associated obesity, hypertension (BP ,130/85 mm Hg), and hyperlipidemia. Psychosocial Management. Evaluation. Using interview and/or standardized measurement tools, identify psychological distress as indicated by clinically significant levels of depression, anxiety, and anger or hostility; social isolation; sexual dysfunction/maladjustment; and substance abuse (alcohol or other psychotropics). Interventions. Offer individual and/or small group education and counseling regarding adjustment to CHD, stress management, and health-related lifestyle change. When possible, include family members and significant others in such sessions. Develop supportive rehabilitation environment and community resources to enhance patient’s and family’s level of social support. Teach and support self-help strategies. In concert with primary healthcare provider, refer patients experiencing clinically significant psychosocial distress to appropriate mental health specialists for further evaluation and treatment. Expected Outcomes. Evidence of emotional well-being indicated by the absence of clinically significant psychological distress, social isolation, or drug dependency. Demonstration of self-responsibility for health-related behavior change; relaxation and other stress management skills; ability to obtain effective social support; compliance with use of psychotropic medications, if prescribed; and reduction or elimination of alcohol, tobacco,
caffeine, or other nonprescription psychoactive drugs. Develop a plan for ongoing management if important psychosocial issues are present. Physical Activity Counseling Evaluation. Assess current physical activity level and determine domestic, occupational, and recreational needs. Question activities relevant to age, gender, and daily life, including driving, sexual activity, sports, gardening, and household tasks. Assess readiness to change behavior, self-confidence, barriers to increase physical activity, and social support in making positive changes. Interventions. Provide advice, support, and counseling about physical activity needs on initial evaluation and in follow-up. Target exercise program to meet individual needs (see “Exercise Training” section of table). Provide educational materials as part of counseling efforts. Consider simulated work testing for patients with heavy labor jobs. Set goals to increase physical activity that include 30 minutes per day of moderate physical activity on 5 days per week. Explore daily schedules to suggest how to incorporate increased activity into usual routine; eg, parking farther away from entrances, walking up 2 or more flights of stairs, walking for 15 minutes during lunch break.

Advise low-impact aerobic activity to minimize risk of injury. Recommend gradual increases in intensity over weeks. Expected Outcomes. Increased participation in domestic, occupational, and recreational activities. Improved psychosocial well-being, reduction in stress, facilitation of functional independence, prevention of disability, and enhancement of opportunities for independent self-care to achieve recommended goals. Exercise Training Evaluation. Obtain an exercise test (or other standard measure of exercise capacity) before participation, which is repeated as changes in clinical condition warrant. Test should include assessment of heart rate and rhythm, signs, symptoms, ST-segment changes, and exercise capacity. Interventions. Develop a documented individualized exercise prescription for aerobic and resistance training that is based on evaluation findings, risk stratification, patient and program goals, and resources. Exercise prescription should specify frequency (F), intensity (I), duration (D), and modalities (M). c For aerobic exercise: F53–5 d/wk; I550% to 80% of exercise capacity; D530–60 min; and M5walking, treadmill, cycling, rowing, stair climbing, arm ergometry, and others. For resistance exercise: F52–3 d/wk; I58–15 repetitions maximum for each muscle group (where repetition maximum is maximum number of times a load can be lifted before fatigue); D51–3 sets of 6–10 different upper- and lower-body exercises (20–30 min); and M5elastic bands, cuff/hand weights, dumbbells, free weights, wall pulleys, or weight machines. Include warm-up, cool-down, and flexibility exercises in each exercise session. Provide updates to the exercise prescription routinely and when patient condition warrants. Structured outpatient or home-based programs are appropriate and may include ECG monitoring as deemed necessary. Regardless of program site, supplement the formal exercise regimen with at-home activity guidelines as outlined in the “Physical Activity Section” of this table. Caloric expenditure of at least 1000 kcal/wk should be a specific exercise program objective.

Expected Outcomes. As a component of an overall program of cardiac rehabilitation/secondary prevention, exercise will assist in lowering cardiovascular risk and improve overall outcomes. Improved functional capacity through enhanced muscular endurance and strength, flexibility, and weight management will improve symptoms and physiological responses to physical challenges and should assist in the modification of various unhealthy behavior and psychosocial characteristics. Patient understanding of safety issues during exercise. ECG indicates electrocardiogram; MOS SF-36, Medical Outcomes Study Short Form 36; AHA, American Heart Association; HDL, high-density
lipoprotein; LDL, low-density lipoprotein; NCEP, National Cholesterol Education Program; BP, blood pressure; HbA1C, major fraction of glycosylated hemoglobin; and CHD, coronary heart disease.

Summary & Significance

The guidelines help to identify all of the core components of a phase II cardiac rehabilitation program and were established by a panel of experts. The guideline is supported by scientific evidence. Occupational therapists are the ideal discipline to develop and manage programming in two core components (psychosocial, physical activity) as specified in the guidelines. Occupational therapy can provide additional support to patients in core component smoking cessation, exercise, and nutrition.

The CR program at BH is comprehensive but does not offer established programming in the aforementioned areas. Occupational therapists can offer skillsets that are complimentary to the established program and patients may benefit from inclusion of core component programming that focuses on occupation.

Abstract: Coronary heart disease is the leading cause of mortality, morbidity, and disability among women, and is responsible for more than 250,000 deaths each year in the United States. The importance of raising awareness for women about heart disease is not only vital for women, as it enables them to seek medical treatment for symptoms and participate in preventative programs, health care workers who are dedicated to achieving better outcomes. There is a need to enroll larger numbers of women at earlier stages of this disease in multi-disciplinary cardiovascular prevention and rehabilitation programs, which are designed to circumvent or attenuate barriers to participation and adherence. This paper reviews the facts related to coronary heart disease in women, identifies gender-specific cardiac risk factors, and summarizes the role of exercise in the primary and secondary prevention of heart disease.

**Summary and Significance**

Women are especially at risk for cardiac related disease and also have higher mortality rates from MI. Women have barriers that can be addressed to improve compliance with healthy behaviors and reduce subsequent risks of further cardiac events.
Abstract: Cardiovascular disease is one of the main causes of death and disability in industrialized and post-industrialized countries, including Italy. Improvement in treatment of the acute phase and efficacy of prevention programmes contribute greatly to extending patient survival, thus increasing the prevalence of the disease even in the population of working age. Thus it is mandatory to provide adequate rehabilitation programmes in order to achieve full social reintegration of such patient, including return to work, which is an important aspect of their quality of life. This report reviews suffering from a heart complaint. Criteria are also proposed for the assessment of reintegration at work of cardiovascular patients that take account of the residual clinical and functional working capacity of the patient in relation to the specific environmental and organizational work features. With the tools available to monitor the cardiovascular system during work it is possible to pursue to advantage such a comprehensive rehabilitation programme but close cooperation between occupational physicians and cardiovascular rehabilitation specialists is required in a preliminary phase this can be achieved in hospital outpatient clinics equipped to develop and test specific protocols.

Summary & Significance

As more patients desire or need to return to work following a cardiac event, it is important for cardiac rehabilitation programs to address employment when developing a plan of care and establishing interventions that are client-centered.

Abstract: Objectives: Studies have shown beneficial effects from practicing the relaxation response (RR). Various pathways for these effects have been investigated. Previous small studies suggest that spirituality might be a pathway for the health effects of the RR. In this study, we tested the hypothesis that increased spiritual well-being by eliciting the RR is one pathway resulting in improved psychological outcomes. Methods: This observational study included 845 outpatients who completed a 13-week mind/body Cardiac Rehabilitation Program. Patients self-reported RR practice time in a questionnaire before and after the 13-week program. Similarly, data on spiritual well-being, measured by the subscale of Spiritual Growth of the Health-Promoting Lifestyle Profile II, were collected. The psychological distress levels were measured by the Symptom Checklist-90-Revised. We tested the mediation effect of spiritual well-being using regression analyses. Results: Significant increases in RR practice time (75 min/week, effect size/ES=1.05) and spiritual well-being scores (ES=0.71) were observed after participants completed the program (Pb.0001). Patients also improved on measures of depression, anxiety, hostility and the global severity index with medium effect sizes (0.25 to 0.48, Pb.0001). Greater increases in RR practice time were associated with enhanced spiritual well-being (β=.08, P=.01); and enhanced spiritual well-being was associated with improvements in psychological outcomes (β=−0.14 to −0.22, Pb.0001). Conclusion: Our data demonstrated a possible dose–response relationship among RR practice, spiritual and psychological well-being. Furthermore, the data support the hypothesis that spiritual well-being may serve as a pathway of how RR elicitation improves psychological outcomes. These findings might contribute to improved psychological care of cardiac patients.

Summary and Significance:

This study focused on how spirituality is complimentary to relaxation practice. Additionally it highlights the overall benefits of stress reduction practice for cardiac rehabilitation patients. Patients who associated the relaxation response with spirituality spent more time participating in relaxation exercises and had a greater sense of well-being. Less depression was also indirectly associated with tailoring relaxation to meet the individual spirituality of the participants. Limitations to the study included lack of prior statistical reports for the selected statistical analysis, lack of control for variables such as additional therapy.
received, and use of antidepressants. However the high number of participants and the length of the study increase the significance of the findings.

The information from this study is important to the development of an occupation based cardiac rehab program because it provides evidence for the psychological component of therapeutic intervention. Relaxation and stress management are important components of cardiac rehabilitation that need to be addressed to provide holistic occupational interventions. Tailoring relaxation techniques to an individual’s spiritual preference is more likely to contribute to a sense of well-being and therefore contribute to more positive therapeutic outcomes.
CDC. Cardiac Rehabilitation. Retrieved From: www.cdc.gov/dhdsp/data_statistics/fact_sheets/fs_state_cardiacrehab.htm 20110214

(No abstract provided)

Summary and Significance:

The Center for Disease Control recommends strengthening secondary prevention of cardiac illness through education, awareness, and promotion of heart healthy lifestyles. They also include goals for cardiac rehabilitation. The goals are: Improve functional capacity and quality of life, reduce risk of sudden death and subsequent attack, control pain and symptoms, and prevent the progression of further damage to the heart.

These goals are important to identify in any program that is geared towards cardiac rehabilitation. Pain and control of angina symptoms is an additional area that could be developed by visualization techniques, relaxation, or meditation.
Abstract: This paper reports a study examining the quality of life of clients following hospital admission with acute coronary syndrome in Hong Kong and their use of cardiac rehabilitation. Background: Coronary heart disease is a major source of mortality and morbidity in Hong Kong. Western studies have suggested that participation in cardiac rehabilitation improves the quality of life of clients with coronary heart disease yet the use of cardiac rehabilitation has been reported to be low. Better understanding is needed of the psychosocial status of these clients in Hong Kong and their use of cardiac rehabilitation services. Methods: A prospective, pretest–post-test study was carried out, with data collected over a period of 6 months with convenience sample of 182 participants. Baseline data were obtained within one week after hospital admission for individuals experiencing ACS. The second phase of data collection commenced at 6 months after hospital discharge. Total period of data collection took over 12 months between 2002 and 2003. The Chinese version of the SF-36 was used to assess quality of life, and demographic data and the extent to which clients participated in the cardiac rehabilitation programme were assessed. Results. Only 25% of the participants attended at least one session of the cardiac rehabilitation programme. Significant improvement occurred in all clients’ perceived quality of life 6 months following initial hospital admission. No significant group differences in perceived quality of life were found according to whether or not clients used the cardiac rehabilitation services. Conclusion: Improvement in perceived health-related quality of life was evident over a 6-month period. Yet our findings suggested that participation in the cardiac rehabilitation programme did not have any apparent effects in subjects’ perceived quality of life. Further studies using both generic and disease-specific health-related quality of life instruments, as well as the inclusion of control group, are recommended. Continual improvement in cardiac rehabilitation programmes, and consideration of alternative modes of delivery other than the traditional attendance at hospital outpatient services, are also recommended.

Summary and Significance:

The results of this study help to justify the need for additional occupation based programming for cardiac rehabilitation because the results show that exercise alone does not contribute to the person’s perception of quality of life. Quality of life is an important part of “living life to its fullest”. If one does not feel they have a quality of life they might be less apt to follow through with health seeking behaviors, participate in daily occupations, or remain active
in their lives. Also, with less value placed on the benefits of cardiac rehabilitation there may be less compliance and less positive outcomes.
Abstract: The aim of this paper is to report patients’ experiences of cardiac rehabilitation and perceptions of the mechanisms and contexts influencing its long-term effectiveness. Background: Cardiac rehabilitation programmes for the secondary prevention of coronary heart disease are common. The effects of these programmes, however, can be inconsistent and little is known of the personal and contextual factors that influence service effectiveness. Method: Forty-seven participants with a formal diagnosis of coronary heart disease who had attended a programme of cardiac rehabilitation in Scotland 3 years previously were included in focus groups to discuss their perceptions and experiences (30 males and 17 females). The data were generated in 2002 and analysed using the realist approach of Pawson and Tilley (1997).

Results: Participants’ accounts indicated that the didactic content of cardiac rehabilitation was not strongly linked to longer-term health behavior change. The main positive effects of cardiac rehabilitation were related to the effect of participation on mediating social and body-focused mechanisms that were triggered when the rehabilitation setting was perceived to be safe. Social mechanisms identified included social comparisons, camaraderie, and social capital. Body-focused mechanisms included greater knowledge of personal physical boundaries and a greater trust in the heart-diseased body. Collectively, these mechanisms had a positive effect on confidence that was perceived as being imperative to maintain health behavior change.

Conclusions: More support is required to promote health behaviour change after the completion of cardiac rehabilitation. Use of community-based exercise services and conventional or web-based support groups for coronary heart disease patients should be encouraged, as these appear to extend the positive health effects of the mechanisms that promote behaviour change. At the completion of cardiac rehabilitation programmes, patients should be referred to safe and appropriate community-based exercise services. Further research is needed to examine the effects on health outcomes of mechanisms and contexts related to cardiac rehabilitation.

Summary and Significance:

This study focused on the experiences, perceptions, and contexts influencing cardiac rehabilitation as reported by patients. A qualitative method was used to allow for a wide range of responses to be given. Focus groups were used to generate data from individuals. The focus
groups were audiotaped and transcribed by two researchers. The transcripts were coded within an agreed framework.

The researchers used a ‘realist’ approach which explored the effectiveness of programming from the perspective of the individual rather than a set of characteristics. There were forty seven participants who had been diagnosed with heart disease and had participated in cardiac rehabilitation in Scotland. The most prevalent theme to immerge from the data was surprise over the group format of cardiac rehabilitation. Other themes included concerns over whether the program would be individualized. Later themes included, the ’group format to be an advantage’ because they recognized similar fears, and changes in the lives of others which helped them to ‘not feel so alone’. The participants did not attribute their participation in rehabilitation to changes in their long term health behaviors. The participants expressed that the positive aspects of participating in rehabilitation were related to socialization and feeling safe while in the rehab setting. The researchers of this study suggest community-based services are needed to support and promote changes in behavior following hospital based cardiac rehabilitation. The study states, “At the completion of cardiac rehabilitation programmes, patients should be referred to safe and appropriate community based exercise services” (Clark, Whelan, Barbour, MacIntyre 2005, p.362).

This study directly relates to the need for community based cardiac rehabilitation programming. It also supports a group format, individualized needs, safety, and a focus on long term changes in health behavior.

(No abstract provided)

**Summary and Significance:**

This study looks at the connection between feeling hopeless and participation in cardiac rehabilitation immediately following an incident, at 3 months, and at 8 months post. They also formulate a theoretical link between feelings of hopelessness and the development or progression of heart disease. The study took place by interviewing 207 patients in Michigan from five community hospitals who had acute cardiac symptoms. Instruments were used to measure hopelessness, depression, activity status, comorbidities, and participation in exercise. The results indicate patients who had feelings of hopelessness were less likely to participate in cardiac rehabilitation programs following a cardiac incident and unlikely to participate actively in their life 8 months later. Limitations to this study include a definition that distinguishes hopelessness from depression, a lack of statistical data, an interview protocol, and an unknown reliability of the questionnaire measures.

However, the findings are relevant in developing an occupation based cardiac rehabilitation program. The article supports the need for programs to address the whole patient in addition to cardiovascular exercise. Also, it looks at what may contribute to consistent participation in a cardiac rehabilitation program. It could be that programs which help decrease
hopelessness increase the compliance rate of patients in cardiac rehabilitative programs. Higher compliance rates may contribute to less progression of heart disease.
Abstract: Cardiac Rehabilitation and secondary prevention can promote recovery, reduce coronary events and improve quality of life in many people with heart disease. Traditionally provided for people with coronary heart disease, there is scope to have provision for a range of people, both young and old, and including those with heart failure, valve disease or with internal cardiac defibrillator. At its best, cardiac rehabilitation spans the whole pathway of care, beginning before admission to hospital and continuing long after, with ongoing management of lifestyle changes. Guidelines are available based on best evidence, and programmes focus on the whole person and address physical, psychological, and social well-being. They incorporate health education, risk factor modification, social support and exercise. Programmes can be run in the community, home, or hospital. To ensure effective cardiac rehabilitation for each patient, members of the multi-disciplinary team are challenged to work together to meet the individual needs of patients and their family. The standard of care should be monitored through audit so that improvements can be made.

Summary and Significance

The authors describe the history of CR and propose guidelines to ensure effective programming. CR that consisted of a minimum of 6 weeks of bedrest was initiated in the 1930’s for patients following an acute coronary episode. Dr. Herman Hellerstein introduced a multi-disciplinary program in the 1950’s after recognizing the long period of bedrest resulted in deconditioning. This resulted in CR program with an emphasis on physical exercise. Since then CR have added additional components to CR programs including; education, modification of risk, and psychosocial support. Currently, evidence-based practice includes preventative efforts. Evidence supports CR programs that include occupational therapists. The World Health Organization (WHO) states cardiac rehabilitation is cost effective. A meta-analysis completed by Taylor et al., in 2004 included a sample of 8940 patients. They found CR results in a reduction in risk factors for further cardiac related incident and an increase in health related quality of life. The study also showed a reduction in mortality of 25% in a 3-year period. Patients who have been shown to benefit from CR include patients who have/had a myocardial infarct,
coronary artery bypass graft surgery, angina, percutaneous transluminal coronary angioplasty, valve surgery, cardiac transplantation, congenital heart disease, internal cardiac defibrillator and chronic heart failure. CR takes place in 3 phases. All phases should involve monitoring of patients and a continuity of care that includes communication with patient, physician, and members of the CR team. A key factor that is noted by the authors includes patients awareness of how to continue with and active lifestyle following the final phase of the rehab process. This is significant to the development of the role of ot in CR in the United States. Occupational therapist are included in all three phases of a multidisciplinary approach utilized in the United Kingdom. The article provides support for the cost effectiveness of holistic programs that include occupational therapists in all phases of CR programs.

Abstract: BACKGROUND: While systematic referral strategies have been shown to significantly increase cardiac rehabilitation (CR) enrollment to approximately 70%, whether utilization rates increase among patient groups who are traditionally underrepresented has yet to be established. This study compared CR utilization based on age, marital status, rurality, socioeconomic indicators, clinical risk, and comorbidities following systematic versus nonsystematic CR referral. METHODS: Coronary artery disease inpatients (N = 2635) from 11 Ontario hospitals, utilizing either systematic (n = 8 wards) or nonsystematic referral strategies (n = 8 wards) completed a survey including sociodemographics and activity status. Clinical data were extracted from charts. At 1 year 1680 participants completed a mailed survey that assessed CR utilization. The association of patient characteristics and referral strategy on CR utilization was tested using χ2. RESULTS: When compared to nonsystematic referral, systematic strategies resulted in significantly greater CR referral and enrollment among obese (32 vs. 27% referred, P = .044; 33 vs 26% enrolled P = .047) patients of lower socioeconomic status (41 vs. 34% referred, P = .026; 42 vs 32% enrolled P = .002). There was significantly greater enrollment among those of lower education (P = .04) when systematically referred; however, no significant differences in degree of CR participation based on referral strategy. CONCLUSION: Up to 11% more socioeconomically disadvantaged patients and those with more risk factors utilized CR where systematic processes were in place. They participated in CR to the same degree as the non-systematically referred counterparts. These referral strategies should be implemented to promote equitable access.

Summary & Significance

Referral strategies involve regular and systematic use of education materials and follow up in order to lead to increases to enrollment in CR programs for patients of lower socioeconomic status and higher risk patients. Referral programs can be used with all populations and help to increase enrollment in CR programs. However, referral does not denote participation beyond the point of enrollment. This indicates the importance for having a systematic referral process in place when promoting an OT CR program but also suggests that efforts must be made to encourage full participation and compliance in completing the program.

(No abstract provided)

Summary and Significance:

Heart disease (along with stroke) cost the United States $500 billion dollars last year in medical expenses. More people die in the United States from Heart disease than any other disease. Currently, one third of the people living in the United States have a type of heart disease. Heart disease can affect anyone regardless of socioeconomic status, race, gender, age, or geographic area. The risk factors for heart disease are controllable. They include: high blood pressure, high cholesterol, smoking, diabetes, sedentary lifestyle, and excess body fat. Treating the risk factors can reduce the likelihood of experiencing an acute cardiac episode. Issues that are related to cardiovascular health include cognitive impairment, and depression.

The goal of Healthy People 2020 is to use prevention, early diagnosis, and treatment of risk factors to improve the health and quality of life for individual with cardiovascular disease.

This information is related to program planning because risk factors could be addressed through community programs (ie., smoking cessation) to avoid further incidence and improve quality of life.

Abstract: We investigated psychosocial and clinical factors related to work resumption, delay in returning to work and level of work activity after and acute myocardial infarction in Japanese male patients. A total of 111 married male patients experiencing a first acute myocardial infarction, aged less than 65 years and in full-time employment participated. Interviews and questionnaires were administered during hospitalization to assess potential predictors of work-related outcomes, with follow-up (81.6%) after and average of 8 months. We found that failure to return to work was predicated independently by older age (p =0.019), an introverted personality (p =0.011) and the presence of depressive symptoms during hospitalization (p=0.031). Delay in returning to work was predicted by greater concerns about health (p =0.011), low social support (p = 0.0201). Resuming work at a lower activity level than before infarction was associated with older age (p = 0.008), higher health concerns (p =0.012), and patients’ predictions of their lower work activity (p = 0.001). Clinical indices of infarction sized and disease severity did not predict work-related outcomes. We conclude that psychosocial factors are associated with work resumption in Japanese men characterized by a job-centered lifestyle, with different factors being important for different work outcomes. The psychosocial factors found to be important are similar to those identified in Western societies.

Summary & Significance

There are many factors that relate to the physical, social, and emotional being of patients with cardiac disease. Japanese men are similar to men and women in the United States who rely on work as a means for economic survival, self-worth, and materialistic gain. The needs of people returning to work vary on the requirement for their specific job or career. Occupational therapists, working with patients following a cardiac event should incorporate personalized and meaningful goals in therapeutic intervention. This may include a goal to return to work. Occupational therapists should be knowledgeable about the areas of function necessary for the desired employment. OT’s may use assessment tools to measure work capacity in relation to job requirements. On site evaluations of job requirements may also assist therapist in the
development of interventions that are most appropriate. Occupations that simulate specific work related tasks are beneficial to patients returning to employment situations. Cardiologists and rehabilitation staff need to be aware of the services that occupational therapists provide so that they can refer patients appropriately.
Summary and Significance:

This text provide information on the phases of cardiac rehabilitation, controllable risk factors addressed in rehab, blood pressure measurement, signs /symptoms of exercise intolerance, home programs, MET values of specific ODL’s, and formula for MAHR (Maximum Age-Adjusted Heart Rate).

This information is fundamental to cardiac rehabilitation programs for occupational therapists. There are basic skill sets that need to be mastered so that my development program reflects a standard and safe environment for cardiac patients to engage in occupations. Also, the skills need to be mastered so that they can be used in the therapy setting for participants’ safety and appropriate programming.
hospital-supervised exercise versus home-based exercise in patients after orthotopic
heart transplantation: Effects on functional capacity, quality of life, and
psychological symptoms.

Abstract: In heart transplant patients it is common to observe a reduced exercise capacity
and diminished quality of life. The objective of this study was to compare the effectiveness
of a hospital-based exercise program versus that of a home-based exercise program on the
functional capacity, quality of life, and psychological symptoms among heart transplant
patients. Methods. Thirty-eight heart transplant patients were randomly placed into two
groups: a hospital-based exercise program (group 1, n =15) or a home-based exercise
program (group 2, n =13). All patients performed flexibility, stretching, aerobic,
strengthening, breathing, and relaxation exercise programs for 8 weeks. We performed
estimates of functional capacity (maximal oxygen consumption–p VO₂), quality of life
(Short Form-36-SF36), and psychological symptoms (Beck Depression-BDI, the State-Trait
Anxiety Inventory- STAI). Results. In group 1, significant increases were observed in
pVO2 and all SF36 subgroups, with the exception of vitality and social function subgroups
(P > .05). Significant increases were not observed on the BDI or STAI (P > .05). Group 2
failed to show significant improvements in any variable, with the exception of the score on
the bodily pain subgroup of the SF36 (P < .05). Conclusion. Based on our clinical results,
we recommend a well-organized exercise program performed in a rehabilitation unit to
improve postoperative exercise capacity and quality of life among heart transplant
patients.

Summary and Significance

This research article helps to support the changing characteristics of patients who are
appropriate for CR. Patients with heart transplants have specific needs regarding a return to
function. Occupational therapists are able to address the needs of these patients by using skills
that enhance quality of life, energy conservation and grading occupations that lead to an increase
of functional capacity.

The research states in conclusion, that exercise in a rehabilitation unit is preferred to a
home program. However, the research discusses a well-organized program in a rehab facility vs.
a very vague program. The researchers also describe the organization and follow up as
important elements of an effective program. Therefore, it does not negate a home program but rather supports a well-organized program which could take place anywhere. Overall, cardiac rehabilitation was shown to be effective with heart transplant patients. This supports the development of programming that includes heart transplant patients.

**Summary and Significance:**

This text provides an overview of the cardiovascular system, pathology of cardiac disease, signs and symptoms of cardiac distress, occupational therapy evaluation and intervention.

This information is important to know as a base of knowledge. A base of knowledge is necessary so that future research is understood in the proper contest, and that my performance on site and in developing a program is driven by foundational knowledge that is well understood and accepted in the field of cardiac rehabilitation. There is also relevant vocabulary that should be understood so that communication with other disciplines is effective and productive. Additionally, it would be irresponsible of me to develop a program for this particular population without fully addressing the risks, precautions which include signs and symptoms of distress. Also, the information about occupational evaluation and intervention serves as a base from which other techniques and interventions can be developed, and compared.

Abstract: Part A of the paper dealt with the overall comparison between the job-simulated phase II CR training program and a conventional phase II CR training program (control). This is part B of the tho part paper and reports on the effects of job-simulated phase II CR physical training program on job-related physical capabilities. Fifteen male and two female coronary heart disease (CHD) survivors (angioplasty and bypass patients) participated in the field study. These participants underwent training activities that simulated performance of physical work elements. Three different categories of activities were included: flexibility activities, dexterity activities, and strength oriented upper and whole body activities. A number of response measures (dynamic strength, its endurance as indicated by number of cycles performed, time, heart rate, and systolic and diastolic blood pressure), isokinetic strength (at different five different speeds), time taken to complete various dexterity tests (purdue pegboard test, O’Connor tweezer test, Pennsylvania bimanual test, and arm and shoulder hand tool set test), and angles achieved by various body parts (spine, neck, shoulder, knee, ankle, and wrist) were recorded prior to training and after each set of six training sessions. A MANOVA was conducted to analyze the training effect for each dependent variable; training time (before beginning training and after each of the three sets of six training sessions) was the repeated measure. The results indicated that training had a very significant effect on most response measures (p < 0.01) and caused most response values to change appropriately (e.g. increase in strengths, reduction in dexterity tests’ performance time, and increase in the flexibility of various joints). As indidcated in part A of the paper, the job simulated phase II CR training fared better than conventional phase II CR training programs as far as the return to work (RTW) was concerned, and at least as good when comparing the physiological conditioning of the CHD survivors. With significant improvements in physical work capabilities, it is clear that the job simulated phase II CR training program is a serious contender to replace conventional Phase II CR training programs.

Relevance to industry: A new phase II cardiac rehabilitation training program, based on elements of physical work, is described. It is shown that such a program not only improves CHD survivors’ work-related physical capabilities, it also improves their physiological conditioning and vastly increases their chances of returning to work when compared to a conventional phase II cardiac rehabilitation program.

Summary & Significance

The article compares traditional cardiac rehabilitation programs with a return to work (RTW) program for CR phase II participants. Both methods corresponded with positive physiological effects for patients with CHD. However, the authors state the RTW helped to
improve participants’ physical capability for work. This suggests that a RTW program is beneficial to those patients with Cardiac disease who need or desire to return to work.
(Maccabi Healthcare Services, Tel Aviv, Israel). Retrieved from:
www.ncbi.nlm.nih.gov/pubmed/17352280 01/16/2012

Abstract: Cardiovascular disease is the leading cause of death in developed countries (40% of all causes of mortality). Heart disease is common in the working age population and thus is contributes to a decline in employees’ fitness for work. In Israel about 80% of patients recuperating from myocardial infarction (MI) return to work. However, long term employment may be as low as 50% and its patterns are associated predominantly with patient age and job characteristics, as compared to measures of illness severity or the method of coronary revascularization. The need for clinical guidelines in the management of return to work after myocardial infarction has recently led to the initiation of a joint committee of the Israeli National Heart Occupational Societies. These clinical guidelines have been published and are summarized in this issue. For most common cardiac disease, including heart failure, valve disease, and angina, patients can exert themselves up to onset to symptoms. Therefore, patients with functional capacity 1 and 11, as estimated by New York Heart Association (NYHA) criteria, can return to their previous work. Timing of return to work for patients with asymptomatic uncomplicated cardiac disease: Post MI within 4 weeks, CABG within 4-8 weeks and percutaneous interventions within 1 week. For patients with a Strenuous job or an NYHA functional capacity III or IV, a few weeks of delay and exercise or other functional testing may be needed. There are a few exceptions including patients with strenuous work or specific cardiac diseases as hypertrophic cardiomyopathy, severe aortic stenosis, and Marfan’s syndrome. In such cases, cardiological and occupational specialist advice should be sought.

Summary & Significance

Cardiovascular disease disrupts the lives of many who are of working age. Long term employment is low worldwide for 50% of patients recovering from a cardiac event. Clinical guidelines have been established for those with uncomplicated heart disease to assist patients in returning to work. The article states patients may need functional testing and or consultation with an occupational specialist to ensure a safe and successful transition back to work.

This article highlights and suggests a need for program development to address the needs of patients with cardiac disease in transitioning back to work safely and successfully.

Occupational therapists have skillsets to develop work hardening programs, modify work
stations, provide strategies for energy conservation, complete functional evaluations, and assist with increasing functional capacity to return to work. Therefore this article suggests occupational therapy is needed to assist cardiac patients with returning to work.

Abstract: The aim of this paper is to report a study to describe how cardiac patients experience the first 3 months following a cardiac event requiring hospitalization, identify differences between the needs expressed by patients and the support they received during their recuperation and produce a preliminary model for the development of cardiac rehabilitation programmes, taking into account the patient perspective. Although cardiac rehabilitation should be standard care for patients with cardiovascular disease, less than 20% begin and maintain a rehabilitation programme. Cited barriers include inadequate rehabilitation services, sub-optimal referral, low participation rates of women and older adults and travel considerations. The literature suggests that programmes better adjusted to patient needs could increase attendance, but little research has considered this perspective. Focus groups were conducted with a purposefully selected sample of 20 men and women who had been hospitalized for myocardial infarction, angina or percutaneous angioplasty. Data were analysed using qualitative content analysis. A gap exists between what traditional rehabilitation programmes offer and patients’ expressed needs during the recuperation process after hospitalization for a cardiac event. In our study, participants focused on stress management rather than on modifying health habits. Support groups were viewed as beneficial and, according to patients, accepting their condition, knowing their limits and better continuity of care would also help reduce stress. Based on the findings, we devised a model as the basis for developing cardiac rehabilitation programmes. Cardiac rehabilitation programmes need to shift their focus of attention from promoting healthier behaviors to responding to participants’ perceived needs, alongside risk factor reduction.

Summary & Significance:

This was a qualitative study that included a sample of 20 actual participants out of 30 individuals identified by a selection process taken from a list of persons who were hospitalised for a cardiac event between January and April 1999 at one hospital in Quebec, Canada. The participants had a mean age of 69.6 years with a range of 50-91 years. Among the participants, 16 were male and 4 were female, 15 were married, and 16 were retired.

Three focus groups were used to collect data. Verbatim transcription of taped sessions was completed. Researchers also took notes at each session to be used to conceptualize overall themes. The analysis was completed using Nvivo qualitative analysis software by two separate
independent analysts blind to the intent of the research. The first analyst used axial coding to categorize emerging themes. The second analyst coded the responses and interpreted the transcripts. The final analysis included 40% of the transcriptions.

The basic themes identified by the study were of a personal nature. The themes include; Having physical needs met but needing support for anxiety, worry, and stress, benefits of support from other cardiac patients, a need for caregiver support, support in accepting their condition and limitations. Another theme that was identified was that participants with family history of cardiac illness were more resigned to their condition. When looking at changes to behavior, it should be noted that changes to behavior relied on several things including; the participants beliefs of what was risky behavior, what impact it would have, and their ability to implement or accommodate a change in behavior.

Also, patients expressed a need for a continuity of care after leaving the hospital, communication that included having documentation that they could refer to and easily understand. Specific areas for service identified through this study are weekly support groups, caregiver support, less involved travel, and stress management,

The findings suggest that CR programs should focus on the personalized needs of the individual rather than lifestyle modification and changes in health habits. Patients are more likely to change a behavior when they are a part of the decision process.
Abstract: Purpose: Racquet sports, including singles tennis, may be too demanding and inappropriate for many older coronary patients with impaired cardiorespiratory fitness. As an alternative leisure-time physical activity, we evaluated the cardiorespiratory and hemodynamic responses to table tennis in clinically stable patients with coronary disease.

Methods: Ten low risk cardiac men (mean ± SD age = 67.6 ± 8.8 years) satisfying inclusion criteria (functional capacity ≥ 8 metabolic equivalents (METs)) without evidence of impaired left ventricular function, significant dysrhythmias, and/or orthopedic limitations to playing table tennis, completed the study. Patients were monitored for heart rate (HR), blood pressure (BP), and electrocardiographic (ECG) responses at rest and during exercise. Metabolic data were directly obtained using breath-by-breath measurements of oxygen consumption (VO2), adjusted for body weight (kg). Average aerobic requirements during a 10-minute bout of continuous table tennis were individually obtained followed by a rest period of 5-10 minutes, allowing a return to baseline hemodynamic responses. Subjects then repeated the exercise bout with cardiorespiratory measurements obtained on the other participant. Perceived exertion was assessed using the Borg rating of perceived exertion (RPE) scale (6-20).

Results: Exercise testing in our study subjects revealed an average estimated functional capacity of 6.8 ± 1.4 METs. Baseline HR and BP responses (prior to table tennis) were 74.1 with peak HR and BP responses of 98.0 ± 7.8 bpm and 119.2 ± 17.1 mmHg, respectively. Aerobic requirements of table tennis averaged 3.2 ± 0.05 METs, with peak HR and BP responses of 98.0 ± 8.5 bpm and 140.4 ± 16.2 mmHg, respectively. RPE during table tennis averaged 10.6 ± 1.7. Considering the target heart rate ranges (50%-80% of the heart rate reserve) based on the patients most recent graded exercise test, most subjects (n =7) fell within or below their prescribed exercise intensity.

Conclusions: Our finding suggest that table tennis represents a viable leisure-time activity for many cardiac rehabilitation participants with a moderately impaired level of cardiorespiratory fitness. The average aerobic requirement of table tennis averaged (2.7-3.7 METs) approximated the exercise training workloads for many of these patients.

Summary & Significance

Occupations of leisure, such as table tennis can be used for therapeutic intervention with cardiac rehabilitation patients with a moderately impaired level of cardiorespiratory fitness. The research supports the use of leisure occupations to increase functional capacity during phase two or three...
cardiac rehabilitation.

emedicine.medscape.com/article/319683 01/06/2012 1-18

(no abstract provided)

Summary & Significance:

Cardiac Rehabilitation (CR) is an important aspect of patient care. CR can lead to an improved quality of life, reduce mortality, and lower costs. CR takes place in 3 phases. Studies support the use and development of programs to improve function and quality of life for patients who have been diagnosed with cardiac disease. CR programs are cost effective and are not limited to monitored exercise. CR should include a team of professionals that provide support to a patient's overall well-being. This includes the physical, social-economic, psychosocial, and behavioral aspects of functioning.

The 3 phases

There are three phases of CR. The first phase, “Phase 1” is initiated in the hospital following a cardiac event. The patient is educated about disease and recovery. Most hospitals have a team of health professionals who work with the patient to establish dietary, emotional, spiritual, and physical support. Physical activity usually begins within 24-48 hours for low risk patients. Patients are monitored 24 hours a day and taught to complete self-care by utilizing energy conservation techniques. It is recommended that patients participate in physical activity that includes 5 minutes of stretching and 5-10 minutes of walking with a target heart rate of 20 beats above resting heart rate and RPE of less than 14. Activity is increased to 30 minutes as tolerated. Discharge planning includes the patient's dietary, physical, and secondary prevention.
considerations. The patient is generally provided with resources to continue treatment and rehabilitation. The post discharge phase (Phase 1.5) takes place over 2-6 weeks. Patients are encouraged to continue low level activity and resume a healthy lifestyle. Patients who have completed phase 1 and 1.5 are eligible to participate in phase 2 CR.

Phase 2 of CR involves supervised exercise and lasts 3-6 months. Supervision generally is done by an exercise specialist and nurses who are trained to work with cardiac patients. The physician, nurse, and exercise specialist work together to determine the amount of exercise and type of exercise needed for the patient. They use tools including formulas and clinical standards and guidelines. Exercise takes place in an outpatient facility 3 times weekly with monitoring by ECG’s. Additionally, patients are educated on smoking cessation, stress management, nutrition and weightloss.

Phase 3 of CR is referred to as the maintenance program for which the patient should participate indefinitely. Phase 3 includes exercise several times a week, following a nutritious diet, compliance to medical intervention, weight management, smoking cessation, stress management, and limited alcohol intake.

Sexual Activity

Most patients can resume sexual activity safely 2-3 weeks following an uncomplicated myocardial infarction. Side effects from medication and/ or fear can cause impotence, premature or delayed ejaculation, and reduced libido. It is important for patients to understand that intercourse does not generally raise the heart rate above 120bpm. This is the same rate for any household activity. Patients may reduce elevated heart rates and potential risks by choosing less strenuous sexual positions, familiar sex partner, familiar surroundings, and avoiding alcohol.

Outcomes
Outcomes of CR training include; improved exercise tolerance, control of symptoms, improvement in blood level lipids, effects of body weight and blood pressure, reduction to smoking, reduction of stress, improved psychosocial well-being, enhanced social adjustment and functioning, return to work and reduced mortality.

The outcomes of patients who participate in exercise training are shown to improve exercise capacity in men and women regardless of age. Complications from exercise are rare with a mortality rate of 1 patient per 784,000 patient hours and a nonfatal infarction rate of 1 patient per 294,000 hours. The benefits of exercise are short lived. Patients must maintain exercise to continue to benefit from improved exercise capacity. Patients who initially have diminished exercise capacity benefit more from exercise training. Outcomes on lipid levels, blood pressure and rate of obesity is positive when nutrition, medication, and behavioral modification is included with exercise in CR. Outcomes also show measures of enhanced functioning with the inclusion of educational services in CR. Cardiac rehabilitation training has not been shown to influence the rate in which patients return to work. Non-exercise variables affect this outcome. These variables include but are not limited to prior employment status, employer attitude, and economic incentives. Outcomes show a decrease in mortality. Published studies in the US (National Institute of Health) and Europe show a decrease in mortality through multiple randomized controlled studies. The scientific evidence suggests a 25% reduction in mortality and establishes a significant relationship (P .02) in patients who underwent multifactorial cardiac rehabilitation and lower sudden death rates between 2 weeks- 10 years post MI. There are no studies that suggest women or the elderly are at higher risk of complications from participation in cardiac rehabilitation. Studies suggest following CABG, patients on dialysis have a higher likelihood of survival when they participate in CR.
The risks that may be associated with CR involve patients who have been misdiagnosed, or who reach an intensity level of exercise that is inappropriate. Proper referral of patients to cardiac programs is essential. Patients with certain risk factors such as complex ventricular arrhythmias, or angina at a workload of less than 5 METs should not be referred to CR programs until their condition has been stabilized. Skilled professionals should monitor and evaluate patients throughout phase 1 and 2 of CR. About 15-25% of patients in CR are considered high risk and require 24 hour ECG monitoring. Intermediate risk patients includes exercise in the presence of health professionals who are certified in advanced cardiac life support (ACLS). Low-risk patients have an exercise capacity greater than 8 MET without symptoms. They can perform exercise or strenuous physical activity independently provided they are able to monitor their own hear rate and recognize warning signs. Home based CR and offsite CR programs with transtelephonic surveillance have been shown to be safe for low risk patients.

CR has been shown to be cost effective by cost analyses. Cost effectiveness in the United States was shown to be between $4,950- $32,700 per life saved. The range represents specific savings of secondary prevention of further interventions such as thrombolytic therapy, and bypass surgery. In Sweden the overall cost effectiveness of CR was measured showing a savings of $12,000 per patient. This includes a reduction in rehospitalization. The studies in Sweden also showed an increase in returning to work from 38% to 53% of patients.

(No abstract provided)

Summary and Significance:

The authors of this editorial express that cardiac rehabilitation is a valuable tool in the treatment and secondary prevention of cardiac illness. CR programs need to be utilized more frequently. Also, programs need to be fully developed to meet the needs and demands of the current cardiac population.

Internationally, competing demands for resources in the health care system has led to a disparity between the needs and availability of quality CR programs. Less than 21% of patients in the United States participate in CR. Participation in Europe is estimated to be 35%. The amount of people who could benefit from CR has increased due to advances in medical care over the last 10 years. There has been an increase in the number of patients 75 years and above who undergo cardiac surgical procedures. There has also been a reduction in risks, allowing patients with comorbidities the ability to participate in cardiac care safely. CR contributes to improved function, independence, and reduces the rates of re-admission. This demonstrates benefits to the individual patient in addition to a reduction in cost to providers.
Abstract: The primary aim of this study was to examine the needs of older people in relation to cardiac rehabilitation and to determine if these were currently being met. A secondary aim was to compare illness representations. Background: Coronary heart disease accounted for over seven million cardiovascular deaths globally in 2001. Associated deaths increase with age and are highest in those older than 65. Effective cardiac rehabilitation can assist independent function and maintain health but programme uptake rates are low. We have, therefore, focused specifically on the older patient to determine reasons for the low uptake. Design: Mixed methods. Methods: A purposive sample of 31 older men and women (≥ 65 years) completed three questionnaires to determine illness representations, quality of life and anxiety and depression. They then underwent a brief clinical assessment and participated in a face-to-face audio-taped interview. Results: Quantitative: Older adults, who did not attend a cardiac rehabilitation programme, had significantly poorer personal control and depression scores \( (p < 0.01) \) and lower quality of life scores than those who had attended. Few achieved recommended risk factor reduction targets. Qualitative: The three main themes identified as reflecting the views and experiences of and attendance at the cardiac rehabilitation programme were: ‘the sensible thing to do’, ‘assessing the impact’, and ‘Nothing to gain’. Conclusions: Irrespective of level of attendance, cardiac rehabilitation programmes are not meeting the needs of many older people either in terms of risk factor reduction or programme uptake. More appropriate programmes are needed. Relevance to clinical practice: Cardiac rehabilitation nurses are ideally placed to identify the rehabilitation needs of older people. Identifying these from the older person’s perspective could help guide more appropriate intervention strategies.

Summary and Significance:

This study was mainly trying to identify the needs of cardiac rehabilitation patients over the age of 65 and to see if their needs were currently being met. The study also examined the quality of life, anxiety, depression, and symptom presentation of participants in relationship to their attendance in a cardiac rehabilitation program. This study used a mixed design and generated quantitative data through questionnaires, and clinical assessments. Adults who did not participate in cardiac rehabilitation had significantly poorer scores for depression and a lower quality of life. Qualitative data results identified themes in the participants’ views of attendance.
The themes reflected a lack of enthusiasm or interest in attending and following attendance of the program. The authors present literature from the World Health Organization that states people over 65 years of age are more likely to develop heart disease but also have more risk factors that can be modified to prevent illness. Modifications would include, control of diabetes, nutrition, exercise, and increased quality of life (WHO, 2003).

This study is relevant to my program plan because it supports the necessity of programming that focuses on individualized needs of a specific population. The literature reviewed in this article offers further evidence on the benefits of cardiac rehabilitation programs in reducing risk and increasing quality of life. Additionally, the results demonstrate that people over the age of 65 with cardiac disease have needs that are not being met. The inclusion of the needs of older people should be part of my program development.

Abstract: Background: This review was undertaken to seek evidence that clarifies the effectiveness of occupational therapy and physical therapy programs after open-heart surgery. Methods: A search was completed using the several online databases and a manual search on articles in print. Results: Only one article suited to the clinical query. The article is a case-series and was based on a study conducted at a rehabilitation unit over a 14-month period. The study states significant functional improvement in clients that received inpatient occupational therapy and physical therapy prior to hospital discharge. Conclusion: Even though the roles of occupational therapy and physical therapy in aftercare of cardiac surgery are well established, there continues to be a dearth of studies pertaining to the topic. More studies to strengthen the evidence are clearly warranted.

Summary and Significance:

This is a review of the literature for the effectiveness of occupational therapy programs following open heart surgery. More research is necessary to establish the effectiveness of occupational therapy after open heart surgery. Only one case-series, level 4 study fit with the research question. The study is not strong for evidence based on where it falls in the hierarchy of evidence however it did show a statistical and significant improvement in the average score of the 44 participants on the FIM scores. This demonstrates that OT is beneficial in improving function in patients following cardiac surgical care. Improvements in functioning led to 93% of the participants being independent at discharge. These findings are encouraging but not substantiated by other studies. Also, the temporal nature of healing could have contributed to the improved FIM Scores. Limitations to this study as noted by the author include the lack of literature available to study and the inclusion of only one study.

This article is relevant to my program development because it shows a correlation (however weak) between improved function and occupational therapy following heart surgery. It is also relevant because the limitations of the study indicate that more needs to be done to
provide research opportunities to study the role of occupational therapy with cardiac patients. A program that focuses on patients resuming function in their daily lives that can be evaluated may help to provide support for funding in this area of research.

Abstract: Background: Treatment and rehabilitation of patients with heart disease is focused on survival, work resumption, achievement of a state of subjective well-being and compliance with behavioural changes in order to prevent progression of the atherosclerotic process. Objectives: To propose a specific job fitness evaluation method for workers with heart disease, based on analysis of occupational factors influencing the cardiovascular system and the definition of a clinical and functional profile of the patient, with special regard to aspects influencing vocational attitude. Methods: A literature review was performed. Results and Conclusions: Although resumption of work is not the sole objective in the rehabilitation process, it remains an important goal not only for economic reasons, but also because it is beneficial for most patients’ psychological well-being. However, it must be admitted that specific job fitness evaluation is rarely performed during rehabilitation programmes of cardiac patients and this can cause problems at the time of return to work. Doubts and uncertainties are also due to the lack of standardized evaluation methods and to the clinical peculiarity of these patients, mainly due to the risk of sudden disability. The job fitness evaluation method used in this study allows physicians to perform assessments based on objective data, so improving patients’ confidence in their work capacity. To achieve a satisfactory application of the method, close cooperation between the cardiologist and the occupational physician is necessary.

Summary and Significance

Many people who participate in cardiac rehabilitation are planning to return to work. Evaluations and assessments that lead to interventions to assist a person in the transition back to work may allow people and their loved ones to be more confident about their performance level and strategies to safely perform job tasks can be learned to maximize the performance potential of the individual.