Cardiac Rehabilitation: A Review of Psychosocial and Quality of Life Outcomes

Heidi C. Squier
Robert M. Kaplan

University of California, San Diego
UCSD/SDSU Joint Doctoral Program in Clinical Psychology

INTRODUCTION

Cardiovascular disease (CVD) is the leading cause of death in the United States (Morbidity & Mortality Weekly Report, 1994). The vast majority of patients with CVD have coronary artery disease (CAD), which is manifested clinically by myocardial infarction (MI), angina, or arrhythmias (American Heart Association, 1994; Fletcher et al., 1992). There are an estimated eleven million people diagnosed with CAD in the United States (American Heart Association, 1994). Despite an encouraging decline in incidence of myocardial infarction in the last decade (31.4% reduction between 1982 and 1992), approximately 1,500,000 Americans will suffer

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Address correspondence to Robert M. Kaplan, Professor and Chief, Division of Health Care Sciences, 0622, Department of Family and Preventive Medicine, University of California, San Diego School of Medicine, 9500 Gilman Drive, La Jolla, CA 92093-0622.

The authors gratefully acknowledge the help of James A. Blumenthal for his valuable comments and assistance with the preparation of the manuscript.

[Haworth co-indexing entry note]: "Cardiac Rehabilitation: A Review of Psychosocial and Quality of Life Outcomes." Squier, Heidi C., and Robert M. Kaplan. Co-published simultaneously in *Journal of Prevention & Intervention in the Community* (The Haworth Press, Inc.) Vol. 13, No. 1/2, 1996, pp. 143-159; and: *Preventing Illness Among People with Coronary Heart Disease* (ed: John D. Piette, Robert M. Kaplan, and Joseph R. Ferrari.) The Haworth Press, Inc., 1996, pp. 143-159. Single or multiple copies of this article are available from The Haworth Document Delivery Service [1-800-342-9678, 9:00 a.m. - 5:00 p.m. (EST). E-mail address: getinfo@haworth.com].

a myocardial infarction this year, and over 500,000 will die as a result (American Heart Association, 1994). In addition to its effect on mortality, CAD results in symptoms of pain and fatigue, neurocognitive deficits, and severe limitation in daily function, and therefore reduction in quality of life (Blumenthal, 1985; Kaplan, 1988). In fact, in 1991-1992, 7.9 million Americans were considered disabled due to CAD, accounting for 19% of all disabilities (American Heart Association, 1994). Although other groups of patients with congenital or valvular heart diseases are occasionally appropriate for cardiac rehabilitation programs, this review will focus on those with CAD, since most studies of rehabilitation outcomes are presented for this group only.

The purpose of this review is to present a brief overview of the treatment options available to patients with CAD, with specific focus on the cardiac rehabilitation program, followed by a review of the current literature with regard to psychosocial and quality of life outcomes in studies of cardiac rehabilitation. Finally, a method is proposed to allow for a more unified measure of outcomes by which to judge the cost/utility of these programs.

TREATMENT OF CAD

Modern medicine has responded to the demand for prevention of mortality and treatment of morbidity in CAD with remarkable advances, including surgery and medical therapies. Cardiac rehabilitation, which includes exercise, education, and psychological/behavioral techniques such as lifestyle modification, also has become more widely accepted (Blumenthal & Wei, 1993). With the increase in overall numbers of programs and the development of such regulatory associations as the American Association of Cardiopulmonary Rehabilitation [AACVPR], standards for such programs have become more clear in recent years (e.g., Gordon & Gibbons, 1990). Following is a brief description of such therapies, with specific emphasis on cardiac rehabilitation.

Surgery and Medical Management. Surgical interventions for patients with coronary artery disease include such revascularization procedures as percutaneous transluminal coronary angioplasty (PTCA), coronary artery bypass graft (CABG), and atherectomy. Studies reporting the effects of surgical interventions upon mortality have been inconsistent (Kaplan, 1988; Prevost & Deshotels, 1993). In addition, there is a general consensus that these interventions do not inhibit the atherosclerotic process (Fletcher et al., 1992). Findings that demonstrate increased quality of life due to reduction of symptoms in post-surgery cardiac patients are very encouraging (Fletcher et al., 1992); however, many unanswered questions remain (Prevost & Deshotels, 1993). For instance, decreases in symptoms and limitation must be interpreted in an overall picture of the patient's health, taking into account such post-operative difficulties as neuropsychological deficits following CABG (Blumenthal, 1985).

Pharmacologic therapy is commonly used for patients with CAD. There are a wide variety of medications used in the relief of symptomatic angina and for management of atherosclerosis, including beta adrenergic blocking agents, nitrates, calcium channel blockers, angiotensin-converting enzyme inhibitors, antiarrythmics, and diuretics (Friedensohn & Schlesinger, 1992; Reeder, 1995; Taylor, 1992). In addition, there are a number of new agents used in the critical management of lipid levels in these patients. The pharmaceutical literature is rich with efficacy studies for cardiac medications (e.g., Reeder, 1995; Tognoni, 1994; Viskin et al., 1995); however, it appears that although some have been proven to be quite effective in the relief of symptoms, there are none to date that contain no adverse side effects, including such complaints as depressive symptoms, hypotension, tachycardia, lightheadedness, nausea, fatigue, sleep disturbance, and impotence (*Physicians' Desk Reference*, 1995). A more thorough discussion of the benefits and side effects of cardiac medications is beyond the scope of this review (see Friedensohn & Schlesinger, 1992; Reeder, 1995).

CARDIAC REHABILITATION

Comprehensive cardiac rehabilitation is now a commonly chosen and accepted treatment option for the patient with CAD, in the United States and around the world (Bittner & Oberman, 1993; Butler, Palmer & Rogers, 1992; Dubach et al., 1993; Efremushkin, Ospiova, & Krutskikh, 1993; Fleischaker, Gower, Canafax, & Holt, 1981; Gulanick, 1991; Il'iash, 1991; Oldridge et al., 1991; Pashkow & Dafoe, 1992; Rovario, Holmes & Holmstead, 1984; Van Camp & Peterson, 1986). Cardiac rehabilitation is not a new concept, but has progressed rapidly in most areas of the United States, due to medical and psychobehavioral advances, as well as the recent constraints on health care expenditure (Blumenthal & Wei, 1993). For instance, in the 1970's most post-MI patients were hospitalized for approximately one month and total bedrest was advised (Blumenthal, 1985). Today, the average MI patient is now hospitalized for only 5-7 days, allowing for very limited inpatient intervention, and requiring that most of the patient's recovery is spent in outpatient rehabilitation (Blumenthal, 1985; Carter, 1981; Fletcher et al., 1992).

Cardiac rehabilitation is broadly defined as the "process of development and maintenance of a desirable level of physical, social, and psychologic functioning after the onset of cardiovascular illness" (Squires, Gau, Miller, Allison & Lavie, 1990). In most cases, the goals of such programs are to return the patients to work, or a reasonable level of function in society, as well as to prevent future events (Fletcher et al., 1992; Wilson, Fardy, & Froelicher, 1981). Most programs described in the current literature are considered the sum of efforts from specialists in several key areas: exercise training, patient education, smoking cessation, nutrition counseling, and psychobehavioral techniques for risk factor modification, stress management and coping skills (Blumenthal, 1985; Blumenthal & Wei, 1993; Fletcher et al., 1992; Mullen, Mains, & Velez, 1992; Wilson, Fardy & Froelicher, 1981). Despite the advancement of cardiac rehabilitation, there is a need to document the benefit of these programs. Several outcome variables for cardiac rehabilitation programs will be reviewed in the following sections.

Mortality

Mortality, the traditional outcome of the medical model, continues to be the focus of attention in several of the large-scale analyses of cardiac rehabilitation efficacy. Based upon these data, the effects of cardiac rehabilitation have been overwhelmingly successful. Lau and colleagues (1992) performed a meta-analysis of controlled interventions for coronary artery disease. They reported cumulative odds ratios that indicated a 20% reduction in mortality accounted for by cardiac rehabilitation, with significant reductions also found with anti-coagulant and beta-blockade therapies. Oldridge, Guyatt, Fishcher and Rimm (1988) performed a meta-analysis of ten randomized controlled trials of cardiac rehabilitation for post myocardial infarction (MI) patients, and found a significant reduction in overall mortality (24%), and mortality due to cardiovascular disease (CVD) (25%) in groups assigned to rehabilitation compared with controls. Similarly, O'Connor and colleagues (1989) performed a meta-analysis on 22 randomized clinical trials of rehabilitation in patients status-post MI, and found significant reductions in total and CVD-related mortality, sudden death and fatal reinfarction for the rehabilitation group at one year follow-up. Further, there were significant overall and CVD mortality reductions at 3 years. Aggregated across studies, overall mortality in treatment groups at 3 years follow-up was reduced by 20% in comparison to the control groups. The only non-mortality based variable measured in these meta-analyses was non-fatal reinfarction, examined in the Oldridge and O'Connor studies, for which neither study found significant reductions for the rehabilitation group compared to controls.

These meta-analyses clearly demonstrate the efficacy of cardiac rehabilitation on death rates of patients with CVD. However, results such as these should be interpreted with caution. Mortality measurement does not consider levels of wellness among those who survive. A very ill person and a very healthy person are scored as though they were in the same state. Neither morbidity nor quality of life of these patients is accounted for in the mortality model.

As described earlier, the purpose of rehabilitation has been defined as including many aspects beyond pure mortality outcomes. In fact, the return of a patient to full functioning often includes components of psychosocial adjustment, behavioral change, and quality of life outcomes. Although clearly indicated as outcomes variables in studies of cardiac rehabilitation, the measurement of psychosocial and quality of life variables have been inconsistent across studies, as well as plagued by validity and measurement concerns (Blumenthal & Emery, 1988). The following literature review includes these variables as outcome measures and as mediators in cardiac rehabilitation.

Psychosocial/Behavioral Variables

In recent years it has become common to report psychosocial variables to characterize outcomes of medical illness. Cardiac rehabilitation has been no exception. Variables range from social support to emotional distress to perceived health status, and vary from study to study with regard to their utility. Some studies are interested in the predictive validity of such variables, while others use emotional and behavioral measures as outcome variables.

Type A Behavior Pattern. To date, there is one meta-analysis in the literature that addresses psychological interventions for patients with CAD. Nunes, Frank and Kornfield (1987) presented a meta-analysis of eighteen studies for interventions targeted at modifying Type A behavior patterns. The results of the analysis showed non-significant reductions in overall mortality for the intervention groups. However, intervention groups were shown to have significant reductions in recurrent MI, as well as in a combined recurrence of MI and mortality (Nunes, Frank & Kornfield, 1987). This study confirms the trend of positive outcomes based upon psychosocial intervention, and has shown a reduction in morbidity which is an important step away from the traditional medical model with mortality as a sole measurement tool.

Social Support. Social support can be defined as the availability of people on whom the patient feels that he/she can depend (Blumenthal, 1985). The "buffering" effect of social support on general illness has been well-documented (Cobb, 1976; Dean & Lin, 1977). According to the buffering model, the impact of stress is reduced through the presence of a support network. Several studies have attempted to quantify the social support system of the patient, and have found that social support is protective for cardiac recovery. One study showed that post MI patients who were socially isolated had a four times greater overall risk of death than their less isolated peers (Ruberman, Weinblatt, Goldberg, & Chaudhary, 1984). In another study, such a protective influence was found in terms of the decreased development of "cardiac invalidism," and better psychologic and physical adaptation after acute MI (Riegel, 1993). In addition, Moser (1994) and Yates, Skaggs, & Parker (1994) reviewed the literature and found social support to be a significant factor in overall physical and emotional recovery for cardiac patients who are post-MI or post-CABG.

Emotional Distress/Mood State. It is reasonably well-documented that emotional distress can adversely affect the cardiac recovery process, and that psychological assessment and treatment are necessary components of rehabilitation (Blumenthal, 1985; Fletcher et al., 1992). For instance, anxiety has been shown as a predictor of long-term cardiac outcome in men who are status-post acute MI (Frasure-Smith, 1991). In a similar study, Denollet (1993) claimed that emotional distress, including depression, fatigue and reduced energy, may identify those patients at high risk for increased cardiac mortality and morbidity. In fact, diagnosis of depression in post-MI patients was shown to actually increase risk of overall mortality at 6-month follow up in these patients (Frasure-Smith, Lesperance, & Talajic, 1993). Finally, in a correlational study of patient compliance to cardiac rehabilitation in Johannesburg, Digenio, Padayachee, & Groeneveld (1992) found that their patients scoring high on hostility scales were the most likely to drop out of the program or to show poor compliance with exercise prescriptions.

Blumenthal & Wei (1993) reported that several different methods of psychotherapeutic interventions for emotional distress, including group and individual therapies, significantly affected patient psychological adaptation, return to work/normal functioning, subjective and physician-rated emotional distress, health care utilization, and even overall mortality due to CAD. Specifically, cognitive-behavioral therapy for risk factor modification and decreased emotional distress has been shown to significantly increase in effective coping strategies and reduce psychological distress in cardiac patients (Bennett & Carroll, 1994). Similarly, a structured behavioral pain management program showed significant reductions in chest pain episodes in treated patients (Payne et al., 1994). However, several of these authors warn against the typically short-term effects of many behavioral and psychological interventions, and state that cardiac recovery will necessarily include the long-term adherence to protective psychosocial and behavior changes.

Self-Efficacy. A widely measured psychosocial variable in the cardiac rehabilitation literature is self-efficacy. Self-efficacy has been defined as a patient's perceptions about his or her capability to perform a specific activity (Oldridge & Rogowski, 1990). Self-efficacy has been shown to be a good predictor of health behaviors in several studies (Hickey, Owen, & Froman, 1992; Lemanski, 1990). Self-efficacy has been used as both a predictor of other outcome variables in cardiac recovery and as an outcome variable in itself. Lemanski (1990) reports that self-efficacy for exercise can function as a mediator of compliance with an exercise prescription. Further, in a randomized clinical trial of an efficacy enhancement group, Ruiz, Dibble, Gilliss, & Gortner (1992) showed that self-efficacy beliefs at the time of patient hospitalization accounted for 21% of the variance in several recovery variables at 8 weeks. A related study examined the effects of pre-discharge self-efficacy levels as they related to physical activity during the first three weeks, and found that self-efficacy is as important a predictor of patient activity levels as cardiovascular response to exercise (Brown, Laschinger, Hains & Parry, 1992).

Finally, several studies have shown that inpatient cardiac rehabilitation (Oldridge & Rogowski, 1990), outpatient cardiac rehabilitation (Conn, Taylor, & Casey, 1992; Gulanick, 1991), and patient education/phone contact (Gilliss et al., 1993; Gortner & Jenkins, 1990; Mullen, Mains, & Velez, 1992) had significant effects on enhanced perceptions of cardiac, exercise, and "daily living" efficacy, leading to better compliance and overall recovery.

In conclusion, it appears that many areas of psychosocial and behavioral functioning have been shown to be important predictors of cardiac recovery, as well as outcome variables that are strongly influenced by the rehabilitation process.

Quality of Life Variables

In the era of managed health care, there has been an increasing call for consumer based measures of patient outcome. In the past, if a patient survived the procedure, it was considered a success. Cardiac patients are not the only individuals that suffer debilitating limitations after clinical events (i.e., myocardial infarction) or subsequent surgery. However, they continue to account for a large percentage of patients with disability in the United States (American Heart Association, 1994). Patients' subjective report of "quality of life" may be the single most important outcome measure by which to judge efficacy of a program (Bittner & Oberman, 1993; Prevost & Deshotels, 1993; Wender, 1992). However, definitions of quality of life vary. Some approaches emphasize generic questions of function, psychosocial adaptation and physical symptoms, while others feel that these questions are too general, and that a disease-specific questionnaire should be administered to each diagnostic group. This point is illustrated by a review of quality of life measures as outcome variables in cardiac rehabilitation. First, there were surprisingly few studies that concentrated on quality of life as a primary outcome variable. Further, each study reviewed defined the construct slightly differently, used different measures, and assigned different importance to its findings. Several authors designed new instruments to measure quality of life in their cardiac populations. As a result, generalizations across studies are difficult.

Research groups that concentrated on the validation of new instruments for the measure of quality of life in cardiac populations generally found that their patients' subjective quality of life improved after cardiac rehabilitation interventions of various types. For instance, Oldridge et al. (1991) found improvements on their disease-specific Quality of Life After Acute Myocardial Infarction Questionnaire, as well as on a well-validated generic health-related quality of life measure, the Quality of Well-Being Scale [QWB] (Kaplan & Bush, 1982) twelve months after cardiac rehabilitation. Others have found similar trends for other instruments of disease-specific quality of life, including the Quality of Life Systemic Inventory (Duquette, Dupuis, & Perrault, 1994).

Another group tended toward the use of a tool that is well-validated for generic measurement of health-related quality of life, the Medical Outcomes Study 36-item Short Form Survey [SF-36], and found generally decreased scores due to CAD, and similar improvements in scores during cardiac rehabilitation (Jette & Downing, 1994).

In conclusion, although the few studies that measure variables of quality of life after cardiac rehabilitation are difficult to interpret due to the variability in measurement, there is some consensus that rehabilitation is effective in increasing quality of life in CAD patients.

Quality-Adjusted Survival and Cost/Utility Analyses

There has been increasing interest in the use of quality of life measures in medical outcomes research to quantify risks, side effects and benefits of medical treatment. Health-related quality of life measures are generally categorized into profile or utility tools, with the former providing a profile of scores for the patient, and the latter allowing for a single score that is used in cost-utility analysis (Kaplan, 1990). In cardiac rehabilitation, several meta-analyses have been performed that show mortality is lower for patients undergoing the service in comparison to controls (Lau et al., 1992; Nunes, Frank, & Kornfield, 1987; Oldridge, Guyatt, Fischer, & Rimm, 1988; O'Connor et al., 1989). However, these studies addressed mortality as a dichotomous variable and did not address quality-adjusted survival benefit, that is, mortality data adjusted for quality of life (Kaplan, 1990). It may be important to use general health outcomes measures that provide this information in the estimation of benefit of cardiac rehabilitation, or any type of patient treatment program.

In a related issue, even with the quality-adjusted survival benefit of cardiac rehabilitation programs is defined, managed health care will demand cost/utility studies that provide justification for insurance reimbursement. Cost/utility analyses compare the monetary value of a service provided to a patient and the quality of life produced by the use of that service. This type of analysis is contrasted with other commonly used measures in studies of health care expenditure, such as cost/effectiveness analyses, which compare the monetary value of a service provided and its clinical results, and cost/benefit analyses, which compare the monetary value of a service and the monetary value of resources saved or created by the use of that service (Kaplan & Ries, 1995). Despite the clear importance of the need for economic evaluations of cardiac rehabilitation, only one study in the literature to date has shown economic data for cardiac rehabilitation after acute myocardial infarction (AMI). Oldridge and colleagues (1991) examined 201 patients who were status-post AMI with presenting secondary anxiety and/or depressive symptomatology. They were assigned to either 8-week comprehensive rehabilitation or standard care. Patients were followed for one year, and the intervention group gained .052 more quality-adjusted life years, and showed significantly fewer hospital visits than did their control group counterparts (Oldridge et al., 1993). Further, this group reported a cost/utility ratio of $9,200/quality-adjusted life year gained with cardiac rehabilitation while they followed the patients, and concluded that rehabilitation is an economically efficient use of health care resources (Oldridge et al., 1993). In a related review of the cost/benefit of pulmonary rehabilitation, Kaplan & Ries (1995) found that the costs of comprehensive rehabilitation programs for lung patients have been shown to be balanced by the financial savings incurred with drop in hospital days post-treatment.

An Alternative Model

In order to measure estimations of both quality-adjusted survival and cost/utility, there has been a trend toward general health outcome measures that take into account a patient's quality of life, as well as mortality data. Such tools have been called measures of health-related quality of life (HRQOL).

DEFINITIONS AND DIMENSIONS OF HRQOL

Quality of life is defined differently by different investigators. Kaplan and Bush (1982) distinguished those aspects of life quality specifically relevant to health status and health care the broad concept from more general quality of life. HRQOL is now commonly used to mean the measurement of life quality from a health or medical perspective. Recent definitions of the HRQOL demonstrate more agreement among investigators.

TYPES OF INSTRUMENTS

Measures of HRQL can be either generic or disease-specific. There are also measures that are specific to particular ethnic or cultural groups. Generic instruments allow for comparisons across populations and diseases. Population-specific measures may be more sensitive to change, but do not allow cross-population comparisons. Specific HRQL measures range from single indices (e.g., the Karnofsky scale (Hutchinson, Boyd, & Feinstein, 1979), to profiles which yield dimension-specific and summary scores (Sickness Impact Profile (Bergner et al., 1981), Nottingham Health Profile, Hunt, McEwen, & McKenna, 1985) to profiles that yield dimension-specific scores with no summary scores (e.g., MOS Short-Form 36, McHorney & Ware, 1993), to batteries of separate measures for several dimensions or individual dimensions. Three examples of common quality of life measures will be offered.

SF-36. The SF-36 grew out of work by the RAND Corporation and the Medical Outcomes Study (MOS) (Stewart & Ware, 1992). Originally, it was based on the measurement strategy from the RAND Health Insurance Study. The MOS attempted to develop a very short 20 item instrument known as the Short Form-20 or SF-20. However, the SF-20 did not have appropriate reliability for some dimensions. The SF-36 includes eight health concepts. Limitations in physical activities, limitations in social activities, limitations in usual role, pain, general mental health (psychological distress and well-being), limitations in usual role due to emotional problems, (vitality and energy), and general health perceptions. The SF-36 can either be administered by a trained interviewer or self-administered. It has many advantages. For example, it is brief and there is substantial evidence for its reliability and validity (McHorney et al., 1993). The SF-36 can be machine scored and has been evaluated in large population studies. The SF-36 has been applied in nearly every major disease group. Ron Hays and Cathy Sherbourne of the RAND corporation have recently complied a list of 71 publications on the development and application of the SF-36.

Despite the many advantages of the SF-36, there are also some disadvantages. For example, the SF-36 does not have age-specific questions and it is unclear whether it is equally appropriate at each level of the age continuum. For example, the items for older retired individuals are the same as for youth and adolescents (Stewart and Ware, 1992). Further, the SF-36 was not designed for use in cost/utility studies and economic analyses using these measures are difficult. Nevertheless, the SF-36 has become one of the most commonly used functional outcome measure in contemporary medicine.

Quality of Well-being Scale (QWB). The Quality of Well-being scale is one of several different approaches for obtaining quality-adjusted life years (Kaplan & Anderson, 1990). Using this method patients are classified according to objective levels of functioning. These levels are represented by scales of mobility, physical activity, and social activity. In addition to classification into these observable levels of function, individuals are also classified by chief symptom or problem. On any particular day, nearly 80% of the general population is optimally functional. However, fewer than half of the population experience no symptoms. Symptoms or problems may be severe, such as serious chest pain, or minor such as taking medication or a prescribed diet for health reasons.

Human value studies have been conducted to place the observable states of health and functioning onto a preference continuum for the desirability of various conditions, giving a "quality" rating between 0 for death and 1.0 for completely well. A quality adjusted life year is defined as the equivalent of a completely well year of life, or a year of life free of any symptoms, problems, or health-related disabilities.

The QWB has now been used in a wide variety of different studies. These studies demonstrate high reliability as assessed with several different methods. Separate validity studies have been reported for conditions such as sinusitis, Alzheimer's disease chronic obstructive pulmonary disease, AIDS, cystic fibrosis, diabetes mellitus, atrial fibrillation, lung transplantation, arthritis, cancer, schizophrenia, and several other conditions. Further, the QWB method was proposed for health resource allocation modeling and has served as the basis for an innovative experiment on rationing of health care by the state of Oregon. Although Oregon eventually dropped the explicit use of the preference data, they have implemented a prioritization scheme for their Medicaid program (see Kaplan, 1993 for overview).

One criticism of the measure states that important information is missing due to the lack of mental and physical health "profiles" on the QWB. However, it appears that mental and physical health symptoms are a function of the same disease process in diverse patient groups, and that a single, utility score does not necessarily lack any pertinent patient information (Squier & Kaplan, 1995).

Using a measure like the QWB, cardiac rehabilitation programs could be effectively compared, both with regard to quality-adjusted survival and cost/utility analysis. The General Health Policy Model (Kaplan, 1990) has been proposed as a method by which the patient's score on the QWB is multiplied by the number of years affected by the treatment or illness, to provide a number of quality-adjusted life years. These figures are then compared across treatments to estimate the best use of monetary resources (Kaplan, 1990).

Health Utility Index (HUI). The Health Utility Index Mark I (Torrance 1987; Torrance and Feeny, 1989) generates scores that can be used to quality adjust survival data. The HUI Mark I assesses four major concepts of health-related quality of life: physical function which includes mobility and physical activity; role function which includes self-care and role activity; social-emotional function which includes well-being and social activity; and health problems. The concepts and levels of function within the concepts comprise a health status classification scheme. Individuals are categorized into one and only one level within each concept according to their functional status at the time the data are collected.

The HUI group has developed two additional versions of the HUI. These are known as the HUI, Mark II, and the HUI Mark III. The most recent version (Mark III) contains eight attributes: vision, hearing, speech, ambulation, dexterity, emotion, cognition, and pain. Each of these attributes has five to six levels. A preference study involving 503 members of the general public is under development but has not yet been published. Preferences are measured using a visual analog scale and standard gamble instruments. Questionnaires are available in three formats: face-to-face interview, telephone interview, and self-administration. Overall, the HUI is a widely-used and well-validated measure (Feeny et al., 1995; Torrance et al., 1995).

In conclusion, the use of an overall, general utility model for health outcomes may have many advantages. In particular, it can be used to assess such important and relevant interventions as cardiac rehabilitation programs. Using this model, the cost/utility of cardiac rehabilitation can be compared with the same metrics derived from competing health services, in an attempt to allocate resources to the most beneficial service. There is a clear need for further research that addresses the important areas of psychosocial, quality of life, and economic evaluations in patients with cardiovascular disease, who continue to lead the United States in mortality and to need the services of cardiac rehabilitation programs as part of the recovery process.

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