THE DEVELOPMENT OF AN INDIVIDUALIZED TEACHING BOOKLET FOR MYOCARDIAL INFARCTION REHABILITATION

by

Mary A. Furrow, B.S.N.

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APPROVED:

[redacted]

May Rawlinson, Ph.D., Professor, Investigation Advisor

[redacted]

Barbara Gaines, D.Ed., Associate Professor, First Reader

Virginia Cory, M.S.N., Assistant Professor, Second Reader

[redacted]

Carol A. Lindeman, Ph.D., Dean, School of Nursing

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CHAPTER I

INTRODUCTION

Full recovery from a major life crisis such as myocardial infarction requires nursing and medical intervention, and involves approximately three months of intensive rehabilitation on the part of the patient. As the patients' hospital stay has become progressively shorter, rehabilitation information is presented in a shorter period of time. This continually shortening hospital stay made it clear that some alternatives were needed to adequately reinforce the education the patients required. This study was conceptualized as a result of the author's observations of this change in care.

As one solution to this problem, a booklet was proposed by the author which would provide in-depth information to patients during recovery after leaving the hospital. Specific elements of the rehabilitation literature were examined to identify content for inclusion in this booklet. In addition, a flexible format was devised for the booklet, so that information could be tailored to the patient's individual needs. Further, it was determined that following this development phase of constructing the booklet, a method of pilot testing should be instituted to verify its value to patients as a teaching-learning tool.

Theoretical Framework

The current trends in rehabilitation emphasize the multidimensional nature of the process (Moos, 1977). Cardiac rehabilitation has been defined as the process of actively assisting an identified cardiac patient to achieve and maintain his optimal level of physical capacity,

psychological health, social and vocational adjustment; as well as to prevent further disease through the reduction or modification of cardiac risk factors (Comoss, Burke, & Swails, 1979 and Monteiro, 1979). The professional assistance provided by the nurse is aimed primarily toward helping to identify problems, plan solutions, and provide support for the identified patient who has cardiac disease (Comoss, et al., 1979).

The process of rehabilitation begins with the patient's adaptive responses to being thrust into the crisis initiated by the onset of the myocardial infarction (Granger, 1974). The specific adaptations include dealing with the threat to life, pain and incapacitation, the hospital environment, and the professional staff. Some of the general adaptations involve the preservation of emotional balance, protecting the self-image, maintaining support systems, and preparing for an uncertain future (Moos, 1977). Each patient's response to his/her illness and the necessary adaptations will be unique.

An assumption, based on the crisis theory model (Rosenbaum & Beebe, 1975), is that the timing of rehabilitative processes needs to take into consideration the specific requirements of the patient. During the first few weeks after the myocardial incident, the patient may not be able to assimilate a preponderance of new material. Comoss, et al., (1979) have developed a model of rehabilitation for cardiac patients which includes four phases. Phase I involves surviving the initial impact of hospitalization and the coronary unit. Phase II includes the remaining portion of the hospital stay. It is during these first two phases that the nursing staff has usually begun the teaching aspects of rehabilitation. Phase III includes the first weeks at home, and is

focused on the task of adapting to the prior environment in the home. This phase may last 4-8 weeks. The last phase, phase IV, begins 6-12 weeks after the incidence of the acute event, and has as its focus the task of helping patients adapt to whatever lifestyle they have chosen. According to Comoss, et al., (1979), this last phase usually continues for about 12-24 weeks. It has been suggested that the patient becomes dependent on others for safety and health needs during the first phase, and then progresses through the remaining three phases of the theoretical continuum to maximum independence.

The first two phases, however, have become more abbreviated during recent years. It will be recalled that the patient may experience special learning difficulties during these early phases (Rosenbaum & Beebe, 1975). However, this is the time the patient is receiving nursing intervention including some information about their illness. Obviously, with the teaching time shortened, the method of getting information to persons with the infirmity must be altered to meet the circumstances. One variable that may also influence a patients' acceptance of the teaching would be the style in which the information is delivered. The health education literature was searched for the various styles which have been utilized in teaching patients.

Health Education Theory

Rehabilitation has been traditionally coupled with learning and patient teaching. The objective of the health educator's communication is to prevent further illness and to limit the disease process (Health Education Monograph, 1967), or secondary prevention. The various methods

have been identified with reference to style and results (Health Education Monographs, 1967; Douglass & Bevis, 1970). Table 1 shows some of the more common styles used to teach patients about their illness.

Table 1

Styles of Communication Used in Health Teaching

Style	Advantages	Disadvantages
Fear-Arousing	Motivating if little change is required, or if strongly supported. Can be initiated near critical event.	Can be inhibiting or immobilizing if great effort required.
Diffusion	Can take place over time. Easy to do in institutions.	Time consuming. Not systematic and may or may not be complete. Usually not consistent.
Power and Influence	Takes little time. Can motivate an initial change.	Requires an acknowledged expert to do the communicating. Momentary impact only. Changes disappear unless other environmental or behavioral support available.

There are other styles with which to teach patients, but Table 1 includes those most commonly used. Obviously, they have some serious draw-backs. One, for example, is that much of the teaching time which is required by these styles, needs to be spent in direct patient-professional contact. With the early phases of rehabilitation shortened, including the patient's hospitalization period during which there is the highest incidence of contact with the professional staff, other teaching alternatives must be made available. Further, if the assumption which

was made by Rosenbaum and Beebe is correct, even if teaching is done during the early phases of rehabilitation, some reinforcement is necessary if learning is to be effective. In order to identify and prioritize an effective rehabilitation program, learning styles must be identified and perhaps alter teaching to meet the specific requirements of the patients.

Learning Objectives

Learning has been separated into three principal domains. These are the cognitive, affective, and psycho-motor domains, and they appear frequently in the literature (Bloom, 1971; Redman, 1977). These domains can be used to incorporate the various theoretical issues in order to develop a teaching philosophy for nurses to use with their patients.

> Nurses commonly teach material pertaining to all three domains.....Each of these domains responds best to particular methods of teaching. Facts and concepts are basic to intellectual learning and are taught by written materials, audio-visual aids representing the concepts, lectures, and discussion. Learning of attitudes does not automatically follow from a knowledge of facts.....Attitudes can perhaps best be taught by discussing with patients, providing insight into their feelings and gaining acceptance of a new attitude, by providing a model to imitate, and by helping them to take actions. Motor skills are best learned through a demonstration of the skills, with subsequent practice until they are perfected.
>
> (Redman, 1976, p. 24)

Rehabilitation consists of the patient experiencing the crisis, learning some facts, and developing new attitudes. The impact of written materials on this process through which these elements are accomplished by the patient is the focus of the present study.

The learning objectives of this study are based on the assumption that the patient is the one undergoing rehabilitation. Thus, the specific areas which are important include the following: 1) identifying tasks and activities that are safe according to progressive changes in physical status; 2) knowing what to do in the event of angina; 3) identifying the signs and symptoms that require professional assistance; 4) identifying the necessary steps in seeking emergency help; 5) self-administration of medications that have been prescribed for the treatment of heart disease; 6) designating those habits and lifestyle activities that may have contributed to the infirmity; and 7) identifying steps that can be taken to prevent further debilitation.

Review of the Literature

Cardiac Rehabilitation Program

A review of the literature pertaining to cardiac rehabilitation programs was conducted for several reasons: One of the chief of these was the examination of topics that were particularly relevant to the teaching-learning of post-myocardial infarction patients in their early stages of rehabilitation. In addition, attention was given to the style of the teaching, the setting, the timing, the number of interventions, the type of evaluation and the overall cost of the programs that were reviewed. The studies and articles reviewed came from the programs reported between 1974 and 1978.

A summary of the review literature is listed in Table 2. Since this information was used as an overall basis for the content of the booklet, the literature which is cited contains information that is

Table 2

Literature Review With Emphasis on Material Presented, Process and Evaluation from 1974-1978 for Coronary Rehabilitation Programs

Author/Year/Title	Content	Process and Phase	Evaluation
Abbott, Zohman, Kistler and Weinheimer. 1978 Cardiopulmonary resusitation training for cardiac patients in exercise programs.	Cardiopulmonary resusitation training for heart patients who were in an exercise program.	Standardized basic life support instruction including class lecture, demonstration, and practice sessions. Phase IV	N=10 Pre- and post-test questionnaire on attitudes regarding emergency care. Measurement of heart rate, rhythm, and electrocardiogram.
Allendorf 1975 Teaching patients about nitroglycerin.	Anatomy and physiology of angina. Emergency treatment and when to seek help. Contributors to angina: smoking and stress. Pharmacology of nitrates.	Teaching method not reported. Phase IV	N=20 Standardized interview of knowledge.
Borgman 1975 Coronary rehabilitation - a comprehensive design.	Activity regimen for each phase of rehabilitation. Smoking cessation, sexual activity, return to work, lifestyle modification, and medications.	Teaching method: lecture and interview to determine specific needs. Phase I, II, III, & IV	Expository only.

Table 2 (continued)

Author/Year/Title	Content	Process and Phase	Evaluation
Bowar-Ferres 1975 Returning to work--Another stage in the recovery and growth for the MI patient.	Epidemiology of coronary artery disease. Focus on a return to work, including classifications of work capabilities.	Teaching method: lecture with support and counseling. Phase IV	Expository only.
Bracken, Bracken, and Landry 1977 Patient education by video-tape after myocardial infarction: An empirical evaluation.	Risk factors for MI. Medications, diet, MI symptoms, and lifestyle changes.	Teaching method: compared one group taught by lecture, one by video-tape. Phase II	N=76 Interview pre- and post-test.
Brammell and Niccoli 1976 A physiologic approach to cardiac rehabilitation.	Physiology of: deconditioning of bedrest, pain and pump failure, arrythmias, and psycho-social upset of inactivity. Healing of injured heart. Aerobic vs. isometric exercise. Inpatient and outpatient reconditioning.	Teaching method: written directions about exercise and lectures to individuals. Phase III	N= not reported History and physical, electrocardiograms, and stress test via treadmill.

Table 2 (continued)

Author/Year/Title	Content	Process and Phase	Evaluation
Brownlow 1975 Exercise training: One aspect of the rehabilitation of persons with coronary heart disease.	Exercise training program based on assessment of physical capabilities, measured by treadmill or ergometer stress tests. For both myocardial infarction patients and angina patients. Specific exercise regimen including walking and/or jogging with calisthenics.	Teaching method: demonstration of exercise tolerance during stress test. Individual lecture and counseling. Phase IV	N=36 Physiologic parameters: pulse, systolic blood pressure, work capacity, and myocardial oxygen consumption. Measured at pre-exercise, at 3 months, and 1 year.
Cohen 1976 How much exercise after a myocardial infarction?	General activity for reconditioning including defined exercise in M.E.T.'s and specific exercise program for each individual.	Teaching method: Structured program; lecture to individual, classes with general information and time for discussion, demonstration of exercise tolerance, and written instructions. Phase I, II, III	N=1200 Exercise testing on a treadmill.
Crawshaw 1974 Community rehabilitation after acute myocardial infarction.	Fear associated with myocardial infarction. Angina, purpose of tests in diagnosis, folklore, family difficulties, and psychological problems. Use of nitroglycerin and exercise to minimize difficulties.	Teaching method: pamphlets. Psychiatric referrals for counseling. Employment counseling. Phase IV	Expository only.

Table 2 (continued)

Author/Year/Title	Content	Purpose and Phase	Evaluation
DeBerry 1975 Teaching cardiac patients to manage medications.	Name, action, and purpose of specific medications: digoxin, lasix, quinidine, and nitroglycerin. Priorities for decision making about medications.	Teaching method: repetitive lectures to individuals and written instructions. When test showed weakness or misunderstanding, teaching geared to specific deficit. Phase II, III	N=29 Oral pre- and post-test for knowledge. When information correct on testing, teaching ceased.
Fuhs 1976 Smoking and the heart patient.	Smoking: risks to other diseases. Patho-physiology of smoking on the heart and cardiovascular system. Nature of the habit and patient motivators.	Teaching method: lecture to individual with discussion using behavior modification techniques. Phase I	Not reported.
Fuisz 1972	Blood pressure physiology. Essential hypertension, labile hypertension, and antihypertensive medications.	Expository, used as reference only.	Not applicable.
Garrity 1973 Social involvement and activeness as predictors of morale six months after myocardial infarction.	Variables affecting morale: age, activeness, health perception, and employment.	Descriptive study. Phase IV	N=62 Perceived health status per 6 month mailed questionnaire.

Table 2 (continued)

Author/Year/Title	Content	Purpose and Phase	Evaluation
Gordon 1974 Standards of cpr and emergency cardiac care.	Emergency treatment. Standards of care for basic life support and advanced life support.	Teaching method: lecture, demonstration, and practice. Expository for reference material only.	Not applicable.
Granger 1974 Full recovery from myocardial infarction: psychosocial factors.	Heart disease as a psychosocial crisis. Emotional reactions to heart disease. Maladaptive reactions, i.e. denial and depression. Family reaction to heart disease. Suggested crisis intervention, and risk factor modifications.	Teaching method: counseling. Phase I, II, III, IV	Not reported.
Griffith 1973 Sexuality and the cardiac patient.	Physiologic responses to sex in health and diseases. Suggestions of what to avoid.	Teaching method: discussion with patient and spouse. Phase III	Verbal feedback to physician.
Hackett and Cassem 1975 The psychologic reactions of patients in the pre- and post-hospital phases of myocardial infarction.	Delay seeking care during pre-hospital phase. Denial and depression during convalescence. Content of education: chest pain, depression, recognition of denial.	Teaching method: group and individual education and therapy. Nurse to follow up weekly by phone. Phase III and IV	Expository only.

Table 2 (continued)

Author/Year/Title	Content	Purpose and Phase	Evaluation
Heart Facts, 1975 American Heart Association Publication.	Cardiovascular diseases epidemiology, pathology, and treatment. Hypertension, atherosclerosis, heart attack, prevention, emergency care, and rehabilitation.	Descriptive only, for reference material	Not applicable.
Hurst 1974 The heart.	Physiology and pathophysiology of the cardio-vascular system. Healing of myocardial injury, and risk factor modification.	Expert reference material.	Not applicable.
Johnston 1976 Eight steps to in-patient cardiac rehabilitation: The team effort--methodology and preliminary results.	Diet: low cholesterol; Activity, including structured exercise, physiology of the heart, risk factors: obesity, hypertension, stress, and smoking. Bowel problems.	Teaching method: lecture to individual and group. Pamphlets, and brief written instructions about home care with one home visit, one week after discharge to assess risk factor modification. Phase I and II	N=350 Pre- and post-test for knowledge. Telephone interview to determine compliance with activity program.
Johnston, Cantwell, Wett and Fletcher 1978 Sexual activity in exercising patients after myocardial infarction and revascularization.	Physical exercise to ease fears about sexual exertion.	Descriptive study. Phase IV	N=87 Questionnaire about sexual activity post-myocardial infarction.

Table 2 (continued)

Author/Year/Title	Content	Purpose and Phase	Evaluation
Jones 1976 Hypertension: medical and nursing implications.	Hypertension: risks to other diseases and contributors such as smoking, obesity, stress. Teach treatment such as medication compliance, low sodium diet, and life style modification.	Teaching method: lecture to individuals, written pamphlets. Phase IV	N=not reported. Questions about medication compliance, blood pressure measurements.
Kannel 1973 Obesity and coronary heart disease. Framingham heart study.	Weight pattern as precursor to heart disease. Lipids: cholesterol and triglycerides as risk to heart disease. Prevention--exogenous obesity changed by altering social value of food.	Descriptive study. Phase I, II, III and IV	N=5029
Lawson 1974 Easing sexual fears of cardiac patients.	Sexual activity, encouraging questions and patient fears.	Teaching method: lecture to patient and spouse. Phase I and II	None
Leon 1977 Exercise rehabilitation of the coronary heart disease patient.	Exercise: purpose and benefits, structured vs. physiologic feedback. Types of acceptable exercise for post-myocardial infarction patients, and decision making.	Teaching method: lecture to patient. Group exercise. Phase IV	None

Table 2 (continued)

Author/Year/Title	Content	Purpose and Phase	Evaluation
Niccoli and Brammel 1976 A program for rehabilitation in coronary heart disease.	Activity and exercise--structured and physiologic feedback. Physiology of sexual activity, low cholesterol diet, healing process. Risk factors: hypertension, stress, smoking. Medications: nitroglycerin, and specific ones for each patient. Emergency treatment, depression, and return to work.	Teaching method: American Heart Association pamphlets. Discussion about questions. Phase I and II	None
Norum 1978 Some present concepts concerning diet and prevention of coronary heart disease.	Low cholesterol diets and obesity.	Descriptive only.	N=211 Mailed questionnaire to practicing professionals about their attitudes.
Pole 1974 Delays between onset of acute myocardial infarction and definitive care.	Emergency treatment prior to hospital admission. Incidence of death during pre-hospital phase of myocardial infarction, suggested heart ambulance.	Descriptive only.	N=1189

Table 2 (continued)

Author/Year/Title	Content	Purpose and Phase	Evaluation
Pozen 1977 A nurse rehabilitator's impact on patients with myocardial infarction.	Physiology, structured exercise, coronary artery disease. Medications: nitroglycerin and specific ones. Hypertension, smoking, stress and obesity.	Teaching method: lecture to individual and group. American Heart Association pamphlets. Phone follow-up when discharged. Counseling to decrease anxiety. Phase I and II	N=102 Anxiety scores. Symptom check list. Knowledge test. Self report of compliance for decreased smoking and level of work.
Rahe 1975 A teaching evaluation for post-myocardial infarction patients.	Physiology of coronary disease. Activity, sex, depression, stress, smoking, low cholesterol diet. Emergency treatment. Return to work, and schedule for gradual resumption of all activity.	Teaching method: lecture and prepared booklet. Phase I and II	N=24 Knowledge questionnaire.
Renshaw 1976 Impact on sexual activity.	Sexual activity following myocardial infarction: anxiety, anger, aging and depression.	Teaching method: lecture. Phase: Not reported.	None
Scalzi 1978 Sexual behavior in the coronary patient.	Aggressive sexual behavior in hospitalized male cardiac patient as sign of anxiety about sexual future. Warning about resuming sexual activity.	Teaching method: observation of unclear behavior which may be questions, discuss with individual. Phase I and II	None

Table 2 (continued)

Author/Year/Title	Content	Purpose and Phase	Evaluation
Shipley 1977 Teaching patients about nitroglycerin.	Action of nitroglycerin. Criteria for patient teaching: when to take, how it should be taken, storage, and cautions.	Not reported.	None.
Slay 1976 Myocardial infarction and stress.	Stress and grief as risk to myocardial infarction. Physiologic reactions to stress, behavior patterns, recent life events, definition of stress.	Teaching method: group discussion and booklets. Phase II	N=11 Not reported.
Spence and Lemberg 1974 Management of coronary artery disease--surgical and medical.	Angiography, graded exercise, transient ischemia, coronary bypass surgery.	Descriptive only.	Not applicable
Stamler and Lilienfeld 1970 Primary prevention of the atherosclerotic diseases.	Major risk factors: diet and serum lipid levels, hypertension, smoking, multiple risks, and modification of risk factors.	Expository, for reference material.	Not applicable

Table 2 (continued)

Author/Year/Title	Content	Purpose and Phase	Evaluation
Stern 1977 Life adjustment post-myocardial infarction.	Post-myocardial infarction depression vs. denial. Return to work, and sexual dysfunction.	Descriptive study. Phase IV	N=68 Interview, Zung depression scale, Taylor manifest anxiety, hospital readmission rate.
Tanner 1977 Heart failure in the myocardial infarction patient.	Signs and symptoms for congestive heart failure. Pathophysiology of congestive heart failure.	Expository for reference material.	Not applicable
Watts 1976 Sexuality and the middle-aged cardiac patient.	Physiology of the male sexual response--normal and in the cardiac patient. Cardiovascular response to sexual activity. Psychosocial factors affecting sexuality.	Teaching method: counseling with the couple. Phase II and III	N=not reported Telephone interview.
Waxler 1976 The patient with congestive heart failure.	Pathophysiology of congestive heart failure, related diseases. Signs and symptoms of CHF. Treatments: digitalis, diuretics, diet, activity. Education about understanding the disease, recognizing decompensation, medications, diet, activity and rest.	Expository for reference material.	Not applicable

Table 2 (continued)

Author/Year/Title	Content	Purpose and Phase	Evaluation
Woodwark and Gauthier 1972 Hospital education program following myocardial infarction.	Coronary artery disease and myocardial infarction healing. Objectives of convalescence: activities and warnings. Community based exercise. Effects of smoking, obesity, and other risk factors.	Teaching method: video-taped lectures. Group discussion. Phase II	N=38 Structured questionnaire, 2-4 weeks post-discharge. Estimation of compliance to regimen.
Zeluff, Suki and Jackson 1978 Hypokalemia--cause and treatment.	Causes of hypokalemia, signs and symptoms of hypokalemia. Physiology of the kidney and potassium. Medications: potassium chloride. Diet: rich in potassium, salt substitutes.	Expository for reference material.	Not applicable

clearly based on research, as well as scholarly expositions that comprise the opinions of professional experts in the field. This is indicated in the evaluation column of the table so that research data are differentiated from expert opinions. Timing, as a variable, was included to identity the patients' phase of rehabilitation, as defined by Comoss, et al. (1979). It is noteworthy that only one study identified cost of implementation. A more detailed account of those studies particularly concerned with the evaluation of rehabilitation are discussed in the following paragraphs.

Three of the programs reported in the literature described comprehensive rehabilitation programs for the myocardial infarction patient. All three focused on the first two phases of rehabilitation (phase I and II), and emphasized inpatient teaching that was either under development or fully operational. The areas of interest for the purpose of the present study include the methods of evaluation, and the two variables of knowledge and the mood state of depression, which were identified as having an effect on the outcome of the patients' rehabilitation.

Garrity (1973) found that perceived health status of the patients at the time of follow-up correlated significantly with the patients' return to work. Health perception was more predictive than the severity of the attack. Other variables found to be predictive of rehabilitation included socio-economic status, past work involvement and the influence of significant other people in the patients' lives. The presence of other chronic health problems, the patients' perception of the severity of the attack, age, and the number of dependents were not found to be positively correlated. The conclusion of this study was that a patient's

perceived health and objective clinical health may be different. Thus, patients may need some assistance in interpreting their actual physical health status. This is particularly important if patients are expected to make decisions about their activities, diet and medications based on their own observations of their changing health status.

Johnston, Cantwell, and Fletcher (1976) developed a team approach to inpatient cardiac rehabilitation which used an eight-step protocol for range of motion, activity, and exercise. Team members consisted of physicians, physical therapists, dieticians, recreational therapists, social workers, and nurses who were responsible for the educational aspects. Their study included 350 myocardial infarction subjects who were less than 70 years of age, and were free of other systemic disease. A pre-test for knowledge was administered prior to teaching, and then patients and/or families were provided with pamphlets and other educational materials (primarily supplied by the American Heart Association). Topics covered verbally by the nurse in either individual or group sessions included the anatomy and physiology of the heart, heart attack, atherosclerosis, and risk factors which contribute to heart disease. The material was reinforced just prior to discharge from the hospital, and discharge advice was given. The final evaluation of knowledge was the administration of the post-test just before discharge from the hospital. A home visit was made during the first post-hospitalization week, for the purpose of reviewing medications, discussing problems, and performing a brief cardio-pulmonary examination. Follow-up outcome data were obtained by telephone conversation at thirteen months, and the

findings at that time were:

56% actively working

66% adhering to a fat-controlled diet

77% continued an exercise program

70% lost excess body weight

91% had their blood pressure controlled

60% had stopped smoking

(Johnston, et al., 1976)

These results were based on the subjects' self-report, which may be biased by the subject's interpretation of the outcome criteria. The figures may also be subject to some inflation due to the tendency of patients to respond positively to the attention of the investigator since there was no control group for comparison of this placebo effect. The team concluded, however, that the rehabilitation program within the hospital was beneficial in helping patients to modify their contributing coronary risk factors.

Evaluation Studies with Knowledge as a Dependent Variable. Another study by Pozen, Stechmiller, Harris, Smith, Fried, and Boight (1977), described a program for coronary rehabilitation in which a nurse rehabilitator supplemented the usual physician/nurse routine in the coronary care unit, as well as during phase II of rehabilitation during which the patient was hospitalized in an intermediate care area. One hundred and two subjects were studied and classified according to a "low risk" (I and II) or "high risk" (III and IV) catagorization using the Killip Classification. The subjects were then randomly assigned to either a control or experimental group.

The methodology of the Pozen study involved the nurse rehabilitator visiting the study group of patients daily for 20-30 minute periods. The purpose of these nurse-patient sessions during the early hospital phase was to reduce patients' anxiety, and to provide reassurance and explain the ongoing procedures and events. The focus of the sessions was changed during the later hospital phase to emphasize knowledge about heart disease, its treatment, diet, activity, medications, risk factors, and early warning signs of further heart problems. The process included both verbal and written material emphasizing early return to work and minimizing anxiety. Follow-up at home was a physical assessment of the patient and questions for the purpose of facilitating rehabilitation. An evaluation of the program was conducted at three intervals, including one day after admission, one day prior to discharge, and six months after discharge. Two dependent variables, 1) the decision to return to work, and 2) the amount of work to be done per week, were analyzed with the assumed intervening variables. These intervening variables were thought to be knowledge, scores on an anxiety scale, the Hopkins Symptom check list, a self-report questionnaire regarding the patients' compliance with non-smoking and weight reduction, and the Bush scale to evaluate functional capacity compared to their pre-heart attack function. The findings of this study revealed that the nurse rehabilitator was effective in improving the patients' return to work (see Table 3). The table shows that there was a greater percentage of people employed in the study group despite the presence of high or low risk to complications. In addition, it was apparent that a large percentage of those in the control group were reportedly functioning at lower levels than their pre-infarction

work status. If the results are extrapolated, then it can be surmised that the impact of a consistant person who is present to facilitate the rehabilitation can have a positive effect on the patients' return to work.

This study was well designed to control for many of the customarily identified intervening variables. The self-reports of the outcome variables of this study were coroborated by reports from people near the patients. This served to validate the patients' self-report. However, desire to have a positive effect on the study outcome can bias anyone connected with the investigative process. There were patients lost in the sample due to a change in their "risk status" which may have eliminated some of the least compliant patients from the study. This problem is part of the difficulty in clinical investigations.

Table 3

Results of Pozen, et al., Comparing Physical Complications with Employment Outcome

Work Function	High Risk		Low Risk	
	Study N=32	Control N=27	Study N=17	Control N=12
% Employed at 6 months	81	61	75	67
% Function was equal to pre-infarction status	78	59	94	50

($p < .05$)

Rahe, Scalzi, and Shine (1975) published the results of a comprehensive educational program whose focus was to develop a booklet which would serve as an aid to learning for the patient who had experienced a

heart attack. Further, they developed a knowledge questionnaire with which to evaluate the overall teaching program. Content of the booklet and test included the nature of coronary heart disease, coronary care unit emergency care, diet, cigarette smoking, physical activity, psychological factors of importance in coronary heart disease, return to home and work, resumption of sexual activity, and the use of medications. The design utilized in this methodological study was a pre- and post-test which used the knowledge questionnaire they had developed. All subjects were under 65 years of age, had experienced an infarct for the first time, and were functionally able to return to work. The sample was further described as having had a college education and being in the middle class of the population. Their 24 subjects were given the first test between the fourth and seventh hospital day, and subsequently were given the booklet to look over at their leisure. Several teaching sessions took place over the next week, the purpose of which was to reinforce particular content areas of the booklet or to answer questions. Family members were included whenever possible, and a dietician helped with diet modifications. Shortly before discharge from the hospital, the knowledge questionnaire was re-administered (between the fourteenth and twentieth hospital day), and the scores were compared with the initial administration. The knowledge test was designed to test for accuracy of information, as well as to discriminate for possible misconceptions.

The mean data for the two administrations of the questionnaire were very similar. Scores ranged between 57-74% correct answers for the pre-test, and from 66-77% on the post-test. This was a small, but statistically significant increase in the total number of correct responses. The

individual test results were somewhat less clear. The lowest percent correct score was for Section F (return to home and work) on the pre-test administration. Some improvements were noted on all the post-test scores except on Section C (physical activity). Section F scores were significantly increased on the post-test and this may be attributable to the lower pre-test value which provided a greater range for possible improvement.

Rahe made some conclusions in the study that seemed poorly examined. For example, they had no control group with whom they could compare the results. This, coupled with a loosely organized criteria for subject selection, could have allowed many unaccountable intervening variables to effect the outcome. In addition, the study was two-fold. One purpose was booklet development, and one was questionnaire development to evaluate the teaching program. It is possible that the questionnaire was less thoroughly examined because emphasis was on the teaching program itself. For the purpose of the present study, the questionnaire does have face validity and the results are available from which to compare current findings. Also, the test was constructed in modules which facilitates the evaluation of a content that varies from patient to patient. The test was developed with the specific aim of disclosing learning misconceptions, as well as enhancing correct knowledge. For these reasons, it appears that the questionnaire has much to commed it and it could be helpful in evaluating the present teaching program. This was further supported by the literature since there were no other questionnaires published which tested for knowledge, and whose results were available for comparison.

Evaluation of Depression. Depression is one of the affective responses to the impact of a major illness on rehabilitation. A study which focused on predictors for life-adjustment following a myocardial infarction was conducted by Stern, Pascale, and Ackerman (1977). Patients were interviewed six times, beginning early in their hospitalization and ending one year post-infarction. Two groups were initially identified in this descriptive study: 1) those scoring high on scales to measure depression and anxiety, and 2) those whose denial was assessed by interview and then validated by Hackett and Cassem.

It was found that the patients depressed at six weeks remained depressed at six months, as determined by a score of 40 or more on the Zung Self-Rating Depression Scale. Seventy percent continued to report significant depressive symptoms at a one year measurement (Stern, et al., 1977). The significant items on the Depression Scale were a lack of fulfillment in life, an inability to do things as they did in the past, a sense of uselessness, and a decreased libido. Somantic complaints were rare. Furthermore, depressives failed to either return to or remain at work. Also, those with depression had a much higher readmission rate, and the mean age of this group was 46, as compared to the patients who scored high on the denial measurement, whose mean age was 56. It was concluded that patients depressed at six weeks post-infarction comprise the population at risk, and it was suggested that outside intervention is necessary in order to have an impact on this depression. Group and/or brief psychotherapy were postulated as possible interventions for such high risk patients, and the importance of physical conditioning was stressed as a result of the findings of Hackett and Cassem.

The purpose of the physical conditioning was to control depression by raising self-esteem, as well as to begin to return to their former position in the family heirarchy.

The study was tightly designed to determine some possible predictive variables for rehabilitation outcome. The results of a measurement of depression at six weeks into the rehabilitation process was validated, at one year follow-up, as a predictor of whether a person might be working. This finding further supports the idea that non-physical variables can have a significant impact on the outcome of rehabilitation. In this instance, a measurement which predicts early in the rehabilitation process will allow time for early intervention.

Therefore, patient education was shown to be helpful to people recovering from a myocardial infarction. Other important variables which had an effect on the rehabilitation outcome included socio-economic status, depression that persisted at six weeks post-infarction, and the patient's perception of his own health status.

In summary, while patient education has been helpful in the recovery of post-myocardial infarction patients, the timing of this teaching might be brought into question. Traditionally, this teaching has occurred during the crisis period of the rehabilitation. The education given in the hospital has had varying degrees of success. It may be that learning which takes place after hospital discharge would possibly have more impact on changing behavior. Even though it may be convenient for the staff to do teaching while patients are in the hospital, patients may simply not be ready to learn, or they may not have identified their own particular rehabilitation needs. Although Rahe's group demonstrated the

acquisition of some knowledge, the results of the scores were still in the modest range of 60-70% correct responses. Verbal instructions are often necessary to assist the patient in applying the information to his/her specific case, which was supported by Pozen, et al., (1977). However, written instructions have the added benefit of being available at home when the patient is confronted with the rehabilitation task and has immediate needs for the information.

Purpose of the Study

Since the literature showed that inpatient teaching might not be effective alone, the task of the present study was to develop a comprehensive, modular, individualized booklet which would be given to patients at the time of their discharge from the hospital. The objectives of the booklet in regard to the patient's learning were to provide the patient with information with which he/she could make safe, knowledgeable decisions regarding future health and lifestyle. It was intended that by individualizing the booklet, it would then provide needed information which would be relevant for the patient's study at home, as well as stimulate questions which may be answered in follow-up visits to their health-care provider.

The content of the booklet was evaluated through pilot testing which would assess its effectiveness to patients and provide information for necessary revisions prior to publication for clinical use. For these reasons, this study was particularly interested in the development and evaluation of the individualized teaching booklet.

Questions that were of interest for the evaluation of the booklet include:

1. What is the effect of the teaching booklet on the gain scores between the pre- and post-tests of knowledge?
2. What is the effect of a gain in knowledge on the patients' level of depression?
3. What is the effect of the demographic characteristics on the patients' knowledge or depression scores?
4. What effect will the degree of severity of illness have on the knowledge or depression scores?

CHAPTER II

METHODOLOGY

The purpose of this methodological study was to develop and pilot test a comprehensive, modularized teaching booklet designed for patients who have had a myocardial infarction. This chapter is written in two parts; first is the presentation of the content of the booklet which is followed by the methodology used to pilot test the booklet, including the general design, setting, subjects, identified variables and plan for data analysis.

Development of the Booklet

Using the reviewed literature, a teaching program was written which included content in such areas as the nature of heart disease, risk factor modification, diet, medications, and activities. Three features were distinctive in this program. One was its comprehensive range of rehabilitative factors. Second was its modularized format which allowed maximum flexibility. Third was the use of a page of key concepts preceding each module.

The teaching program was critiqued by physicians and nurses whose areas of expertise were either the care of cardiac patients or patient education. The booklet was revised in accordance with the recommendations of the clinical experts, as well as a further review of the information obtained from the literature. At this time, additional attention was given to the format and appearance of the booklet. Illustrations were obtained from both a medical graphics department and a local high school student with an interest in drawing caricatures. These

illustrations were placed in the text of the booklet to clarify information and to provide some visual relief for the reader. (See Appendix A).

Thus the focus of the booklet was to anticipate and answer many of the questions posed by patients during the latter part of their hospital stay and their first few weeks at home, as well as to help promote healthy, constructive attitudes about the possible impact of this major illness on their lives. The modularized format allowed specific areas, in which the individual patient had a need for information, to be addressed. In order to emphasize the most essential content, each section was prefaced by a page containing "Key Points." These headings served to cue the reader and to reinforce important teaching content. They also served as a modified Table of Contents for each section.

The review of the literature documented that the manner in which material was presented was as important as the content itself. Therefore, a table of specifications patterned after Bloom (1971) was utilized as a guide for developing appropriate teaching objectives. The goal was for the patient to obtain a knowledge of pertinent definitions, selected information, a means of dealing with that information, comprehension, and as much as possible, develop the skills necessary to apply this new knowledge constructively in their rehabilitation.

Once the booklet was completed, an introduction was added to explain its use. In addition, a reference list was included in order to acknowledge the sources of information which were used in compiling the booklet. Asterisks were placed beside the references that were readily available in bookstores, and of particular use to those patients who wished to seek further information.

Content of the Teaching Booklet

In the development of the booklet, areas of the teaching content included were as follows: The anatomy and physiology of the normal and diseased heart, healing after a coronary, risk factors, angina, emergency treatment, activity schedules, risk factor modification, diet, medications, and treatment of the complication known as congestive heart failure. The following paragraphs present the development of this content. Major references are cited in the text, since they guided both the form and content of the teaching modules. A complete list of the literature reviewed is presented in Table 2. In addition to the vast informational needs of the patient, the literature suggested presenting the content in small increments (Rahe, 1975; Redman, 1976; Wenger & Mount, 1974; Woodwark, 1972).

Anatomy and physiology of coronary heart disease. It is common for most post-coronary teaching programs to begin with the normal anatomy and physiology of the heart (Brammell & Niccoli, 1976; Johnston, et al., 1976; Niccoli & Brammell, 1976; Pozen, et al., 1977; Rahe, 1975). Generally, this information is intended to define terms and show the specific area of the body which is affected by the disease process. Frequently pictures, diagrams, and models of body parts are utilized to help clarify the content. As noted above, this information is available through a variety of sources due to its general nature, including the American Heart Association pamphlets and audio-visual programs. In addition, patients are introduced to information about atherosclerosis, myocardial infarction, and the healing process that occurs after an acute injury to the heart. It has been shown that even a general understand-

ing of the underlying disease process improves compliance with physicians' prescriptions (Woodark & Bauthier, 1972).

Based on these findings, the anatomy and physiology of the heart was used as the first section of the booklet. Segments within this content area were divided into the following sections: The Normal Heart, Coronary Heart Disease, The Heart Attack, Healing, and Risk Factors Contributing to Heart Disease. Since the booklet was designed to be given to patients about to be discharged, and for their use at home, it was assumed that much of the material in this section would have been presented in some form during the in-hospital phase. Some of these teaching methods might have included written information (such as an American Heart Association pamphlet), verbal information from physicians and nurses, or a video-tape used in the hospital teaching program. For this reason, the material included in these segments of the booklet were intended to be both a review and an adjunct to information already given, as well as for that unusual patient who received little or no information about the heart and its disease process during the hospitalization.

Post-myocardial infarction and its treatment. The physicians and nurses who were consulted prior to the final preparation of the booklet, agreed that it was important to differentiate between the conditions of pre- and post-infarction angina. Although this issue, from a patient teaching viewpoint, was not apparent in the literature, it was nonetheless decided to exclude pre-infarction angina from this section entirely, in order to simplify both the concepts of the condition and its treatment.

As a result of the lack of medical consensus of the causes and treatment of angina, the information used in the booklet was general in approach, but based on a variety of studies (Allendorf, 1975; Brammell & Niccoli, 1976; Brownlow, 1975; Crawshaw, 1974; Deberry, 1975; Shipley, 1977). The signs and symptoms known as angina were described consistently, but treatment of those symptoms varied according to many factors, including the philosophy and training of the physician, services available, and the severity of the patients' symptoms.

For the above reasons, a conservative approach toward the content of the booklet was chosen, so that the booklet included sections on the physiology of angina, common symptoms, and a summation of the alternatives available for treating the condition. These alternatives included risk factor reduction, medications, angiography, and coronary by-pass surgery. Secondary prevention was emphasized, with special consideration to the importance of the cessation of smoking, weight loss, an incremental activity program, and stress reduction. Specific guidelines for dealing with angina suggested rest, nitroglycerin, and other prescriptive medications.

Professional differences of opinion regarding the seeking of emergency care seem to focus on whether or not information about emergency care would encourage the development of a cardiac cripple due to the possible over-emphasis of the urgency of the situation. The American Heart Association urges family members to learn first aid for heart attacks (CPR), and it has been well documented that any delay in the seeking of care in the event of a heart attack is directly related to the fatality rate due to this illness (Pole, 1974). In addition, the

rapidly increasing costs of emergency care services demand the responsible utilization of such services as ambulances and emergency rooms and that their use be tempered by each patient's financial and physical circumstances. To effectively deal with these issues, and in the interest of both patient awareness and health, a decision was made to include specific emergency seeking steps in the booklet, and to encourage the patient and family to develop their own plan of action in the event of an emergency.

Activity regimen. Even though patients asked questions about acceptable levels before leaving the hospital, they were even more inclined to do so after their discharge (Winslow, 1976). The activity levels recommended for patients during the first week after discharge vary substantially from that recommended for the remaining weeks of the recovery period. The literature reviewed disclosed that the first six weeks following hospital discharge focus upon rehabilitation, and that specific elements of this are based on the assumption that scar formation is completed during the first eight weeks post-myocardial infarction (Williams, Amsterdam, DeMaria, Miller, & Mason, 1976). Most authors dealt with only one or two aspects of this recovery period, and the attempt to be complete in this presentation necessitated divisions of the content regarding activity. As a result, activities were delineated by successive time periods, with an emphasis on allowable activities as opposed to those which were debilitating.

Three activity sections were finally selected. The first concerned the initial two weeks at home, and emphasized rest, stress reduction, and the hope for resuming normal activities. The benefits of activity,

and some guidelines for decision-making in regard to what was beneficial versus what was deleterious were outlined. The next sections developed a program for gradually, yet safely, increasing activity, including areas of special concern to patients such as the resumption of driving their car and engaging in sexual intercourse. This led naturally into a regular exercise program which was based on data from Brammell & Niccoli (1976), and Cohen (1976).

Risk factor modification. Risk factors are discussed in various ways in the literature and practice. It was decided that this section of the booklet would emphasize the coronary heart disease risk factors that have been identified by the American Heart Association so that patients who read the Heart Association pamphlets would not be reading material of a conflicting nature. Smoking, hypertension, diabetes, obesity, and hereditary factors are commonly accepted as risk factors, and hazards like stress, a sedentary life style, and a high level of blood cholesterol are increasingly being accepted as related to coronary heart disease (Friedberg, 1976; Fuhs, 1976; Fuisz, 1972; Jones, 1976; Cannel, 1973; Slay, 1976). Hurst (1974) made a finer differentiation of risk factors, when he divided them into sub-categories of controllable and uncontrollable risks. This distinction in risk factors was incorporated into the booklet, since this awareness could help patients to be alerted to those factors over which they could exert some control.

Separate modules were included for each of the risk factors recognized as controllable (smoking, hypertension, obesity, stress, sedentary life style, and blood cholesterol), so that specific suggestions about behavior changes could be made. Patients were asked to identify a

single risk factor that they could alter during the first few weeks at home, so that by actively altering a risk, they were helping to prevent further difficulties. The initial selection of only one life style change allowed the patients an opportunity to constructively deal with their rehabilitation, and yet not overtax their self-control skills during an already stressful period.

The information in the following sections was designed to assist the patient in complying with prescribed treatments. Sections concerning low sodium diet, congestive heart failure, and specific medications were added to the list of optional modules available for the teaching booklet. Even though general diet information was included as part of the risk factor section, the number of questions regarding diet that were asked by patients seemed to demand further treatment of this subject.

Diet. There have been many studies and programs that have dealt with diet information (Eshleman & Winston, 1973; MacDonald, 1974; Norum, 1978). The American Heart Association, as well as other agencies, publish pamphlets which cover specific restricted sodium and cholesterol diets. For the purpose of this study, it was decided not to repeat that specific information, but to instead give some general tips and shopping hints that would be beneficial in helping the patients stay within the limits of their diets.

Congestive heart failure. Of the various sources of information on heart disease, only the American Heart Association has developed information on congestive heart failure for patient education. This information consists primarily of a small pamphlet on the nature and general treatment

of heart failure. Redman (1976) identified special teaching-learning problems for patients with this condition. Some of the more basic difficulties impeding this teaching-learning process are that often there is a decreased blood supply to the body which results in less energy, possibly worsened eyesight, as well as other difficulties. Also, this type of illness necessarily involves a multi-faceted approach by the profession. A general statement about the anatomy and pathophysiology seemed justified, in addition to discussions on activity modification, diet control, and over-all energy conservation techniques to allow conservative, planned activity. Guidelines for altering other activity regimens were also included.

Medication. Complications, such as angina, arrythmias, or congestive heart failure, may require the use of medications for effective treatment. Several of the sources covered information on nitroglycerin and digitalis (Allendorf, 1975; Deberry, et al., 1975; Hecht, 1974; Wenger & Mount, 1974; Schenk, 1977). Because the booklet was to be used on an individual basis, all medication commonly prescribed for patients in the study hospital were included as optional additions to the booklet.

Pilot Testing

After the booklet was completed, a pilot testing procedure was designed to evaluate its effectiveness. Even though professionals were consulted in regard to the content and presentation of the material, it was of course essential to validate the effectiveness of the booklet by pilot testing a group of patients who had received it. A description of the methods utilized for this pilot testing follows.

Setting

The study was conducted at a community hospital of 107 beds, which included four acute coronary beds. This hospital is located in a suburban city, near a greater metropolitan area with a population of one million people. The hospital nursing director, as well as the medical practice committee, granted approval for the data collection (see appendix F for a copy of the letter granting permission). All of the patients in the study had been admitted to the coronary care unit (CCU), and progressed to an intermediate care ward. The hospital staff consisted of RN's, LPN's, aides, and physicians. In compliance with the American Hospital Association Patients' Bill of Rights, the nursing staff answered questions and provided discharge instructions for each patient. It was common for all patients to receive at least some information about their illness prior to discharge, although there was no apparent systematic method for utilization of the teaching tools available.

Subjects

Each patient that was included met the following criteria: 1) had experienced his/her first myocardial infarction, 2) was at least 21 but less than 70 years old, 3) resided near the hospital during the data collection period (a three county area), 4) had completed at least eight years of schooling, 5) was able to read copy the size of the consent form, either with or without glasses, and 6) was in the CCU and intermediate care area for at least five days (including the day of admission, but not the day of discharge).

The occurrence of a myocardial infarction, for the purpose of this study, was determined by the attending physician's progress notes, having

indicated the diagnosis of myocardial infarction while the patient was still located in the CCU. In some cases, the diagnosis was made after the patient left the CCU, which excluded this patient from the study. It was necessary to exclude this latter group of patients to control for consistency in the experiences of the subjects in the study. Inpatient teaching methods vary according to the patient diagnosis which could cause a variance in the material presented to the patients if the diagnosis were not made at a consistent time in the rehabilitative process.

Patient characteristics. The selected demographic and health related characteristics of the patients were collected so that the sample could be described and compared to those of other studies. In order to do this, a data base was obtained for each patient by the use of a personal information checklist. (See appendix B). Notation was made of their level of education, occupation, age, sex, marital status, length of stay in the CCU and hospital, identification of contributing myocardial infarction risk factors, and the assignment of a Killip Classification. All data were either obtained from the patient's chart, or if unavailable, from the patient during the first interview. The inclusion of educational level as a control variable is of particular significance in this cognitive teaching approach, since it limits the sample to those patients who were most likely to be able to read the printed material. The Killip Classification (Pozen, 1977) is based on physical complications: A value of I = no complications; II = congestive heart failure without other symptoms; III = congestive heart failure and/or any one of five of the following complications: a) ventricular arrythmias, b) heart block, c) hypotension, d) prolonged pain, or e) prior myocardial infarction

within the last six months; and IV = congestive heart failure with two or more complications.

Instruments

The instruments used in this study consisted of the booklet used for the teaching program and the data collecting tools.

Independent variable. The teaching booklet, titled Living After A Heart Attack, was the independent variable in this study. The number of component modules making up the booklet varied for each patient, according to his/her particular needs. The total number of modules available for any one patient booklet was twenty-eight. A copy of the booklet may be found in Appendix A.

Dependent variables. The two dependent variables that were examined were knowledge and depression. While successful rehabilitation is dependent on multi-dimensional factors, two important parameters were chosen for examination in the present study; acquisition of health regimen-related knowledge and status of depressed mood.

Pre- and post-tests for knowledge. Since the number of modules contained in each booklet varied in accordance with the physician's assessment of patient's individual needs, the instrument utilized to evaluate the patient's knowledge likewise needed to vary according to the material presented. The knowledge test consisted of six sections which were in part adapted from Rahe (1975). The test contains questions on the Nature of the Disease (18 items), Physical Activity (8 items), Diet and Smoking (12 items), Psychological Factors (13 items) and Return

to Home and Work (19 items). The sixth section of Rahe's questionnaire was deleted, since it related to inpatient emergency care, which was not applicable to the present sample during the recovery period at home. One item in the Physical Activity section was also deleted, as it did not apply to the practice in the study setting. See Appendix C for a copy of the five sections of the questionnaire used for the pre- and post-tests. Each section was scored according to the number of correct responses, as compared to the total number of possible answers. These scores were then converted to a percent correct of the total.

In order to evaluate a patient's medication knowledge, a test developed by Deberry (1975) was used. A copy of those questions may be found in Appendix C. In essence, it contains six items which ask open ended questions about the action, purpose, side effects and safe administration of each medication that is prescribed for the patient. Deberry suggested a unique scoring method. Three points were given for a totally correct response, two points for a partially correct response. In order to uncover misconceptions, guessing was encouraged and one point was awarded for any response. Zero points were given if the item was left blank. This investigator reasoned that the information provided by the patient would help to clarify strengths and weaknesses in the content of the teaching booklet.

Zung Self-Rating Depression Scale (1965). Depression, the second dependent variable, was measured by using the Zung (SDS) Self-Rating Depression Scale (Zung, Richards, & Short, 1965). This was chosen to indicate a measure of the patients' psychological response to their

illness. The scale consists of 20 self-report items which the respondent answers as true of himself "None or little of the time,""Some of the time," "Good part of the time," or "Most or all of the time." These qualitative responses are given arbitrary numerical values of 1 to 4 respectively, which when added together and a percentage is taken, results in an SDS Index which has a range of 25-100 (Goodstein, 1972). Concurrent validity has been fairly substantiated by a correlation of the Zung with the D scale of the MMPI ($r = 0.70$), and the Clyde Mood and the Beck Scales (Zung, et al., 1965). Further, the Zung was determined to be stable for age, sex, marital status, educational level, and intelligence (Zung, 1967). The relative scores obtained for patients experiencing depression was 74 for inpatients, 65 for outpatients diagnosed with depression (Zung, et. al., 1965) and more than 40 for heart patients who had difficulty in rehabilitation (Stern, et al., 1977). For the purposes of the present study, the SDS score was determined in a pre- and post-test measurement. The difference between the pre- and post-test provided a gain score for each patient. In addition, the post-test scores were differentiated between those that were greater, or less than or equal to 40 for the purpose of providing a crude predictor of rehabilitation outcome. This was then compared with the outcome on the knowledge test and the demographic data.

Interview data. A structured interview was conducted which tapped the affective responses of the patients to their illness, and also attempted to validate the content of the booklet. The interview questions were based on a questionnaire used by Redman (1976), and provided a means to systematically obtain information from both the experimental

and control groups. Since home visits were a part of the procedure, the interview during these visits was structured so that the content was similar for patients in both groups.

Procedure and Design

The design of the present study was a randomized assignment to a control or experimental group and included a before/after measurement of the dependent variables (Selltiz, Wrightsman, & Cook, 1976). The two dependent variables were measures of the acquisition of knowledge and the status of a depressed mood. These were used to reflect the impact on the patient of the independent variable, the teaching booklet.

The procedure that was followed for the collection of data is shown in Table 4. Patients were screened to determine if they met the criteria established for inclusion in the study. Once eligibility was verified, a random assignment was made to either the control group or experimental group on the basis of a coin flip. An equal number in each group was sought. The physician consent form was completed and utilized to assemble the booklet and to select the appropriate sections of the knowledge questionnaire. The pre-test for depression and knowledge were administered. This occurred approximately two or three days prior to their discharge from the hospital. If the patient was a member of the experimental group, the booklet was compiled in accordance with their needs and then given to them. Brief instructions were given as to how to use the booklet. Patients in both groups were then asked for a tentative appointment for the first home visit. This initial home visit occurred about three to five days after discharge, and a structured interview format was followed to insure that the content covered was

Table 4

Procedure of Data Collection

Timing	Activity	Groups	
		Control	Experimental
Inpatient:			
Days 1-4	-Selection of subjects.	X	X
	-Randomization.	X	X
Days 5-7	-Demographic data.	X	X
	-Physician consent & consult form.	X	X
Days 8-9	-Present patient with consent form.	X	X
	-Pre-test for knowledge and depression.	X	X
Days 9-10	-Booklet presented to patient with brief instructions.		X
	-Tentative appointment made for the first home visit.	X	X
Days 10-14	-Discharge.	X	X
Outpatient:			
3-5 days post-discharge	-First home visit with structured interview.	X	X
6-7 weeks post-myocardial infarction	-Second home visit, structured interview, and post-test for knowledge and depression.	X	X

consistent. A second home visit was made about six weeks after the original hospital admission. The post-test was administered during this second home visit, and a structured interview format was again followed. This interview completed the patients' involvement in the study.

Statistical Analysis

The small size of the sample dictated the use of non-parametric statistical analysis. The data were then reported in both frequencies and percentages and analyzed using descriptive statistics which applied non-parametric inferential analysis. Emphasis was placed on the two dependent variables and direct feedback from the patient regarding the booklet.

Knowledge was evaluated by the gain in pre- and post-test scores. A "knowledge gain" score was obtained for both experimental and control subjects. The median test was then applied to compare control and experimental subjects to determine if their median gain scores were the same. The Fischer's exact probability was calculated to evaluate the relationship between each subject's pre- and post-test scores. In addition, an exact probability was calculated on the post-test scores only to compare control with experimental patients.

Depression was assessed using the Zung Self-Rating Depression Scale. The pre- and post-test scores were compared using the Wilcoxon's Matched Pairs (a two-tailed test) to verify a difference between the two scores for each patient. A sign test was also implemented in an attempt to test for any significant difference that may have occurred between the two groups in the post-test scores measuring depression. To determine the exact probability, a positive value (+) was assigned to scores greater

than 40, and a negative (-) sign assigned to scores that were less than, or equal to 40. Depression was then compared to total knowledge values.

The relationship between demographic variables and the dependent variables were tested for significance by using the Fischer's exact probability. The structured interview was conducted on two occasions. Each patient's response was analyzed for content, using inspection of the responses and identifying recurring words and ideas. These responses were then used to evaluate the content of the booklet.

CHAPTER III

RESULTS AND DISCUSSION

In the interests of both clarity and brevity, the results and discussion of the booklet pilot testing are presented together in this chapter. A description of the sample is first presented which is followed by the data relevant to the pilot testing of the booklet. Additional material, which was solicited from the subjects during an interview, is reported and applied to evaluate the validity of the booklet content from the perspective of a recovering heart patient. Pilot testing was conducted with the intent of using the resultant data for further development of the booklet.

Description of the Sample

Data pertaining to the subjects' age, sex, socio-economic status, and educational level are presented in Table 5. It should be noted that the mean age of the total sample was 55.7 years. The control group was slightly younger than the mean (50.2 years), and the experimental group slightly older (60.2 years), with an over-all range of 36-68 years. However, this difference in age for the patients in the two groups was not statistically significant. Additionally, there were twice as many males as females in each group.

The majority of the patients were living with either a spouse and/or dependent children. The level of education was similar for patients in both groups, or 11.9 grades were completed. The sample included individuals with a socio-economic index ranging from 15-65, and having a mean of 42, indicating primarily that the sample's socio-economic index

was of a middle class population. Although the control group had a slightly higher socio-economic index than the experimental group, it was not statistically significant. On the basis of this analysis, differences that may emerge between the two groups on the outcome measures can not be attributed to any differences in their demographic characteristics.

Table 5

Study Sample Demographic Characteristics

Characteristics	Study Groups		
	Control N = 6	Experimental N = 6	Total N = 12
Age (years):			
Range	36-64	55-68	36-68
Mean	50.2	61.2	55.7
S.D.	11.2	5.2	10.2
Median	50	61	58
Sex:			
Male	4	4	8
Female	2	2	4
Education (grades):			
Mean	11.2	12.0	11.9
S.D.	1.5	2.2	1.9
Socio-economic Status:			
Range	15-65	19-49	15-65
Mean	47	57	52
S.D.	18.9	13.3	22.3

Some of the recognized risk factors that contribute to heart disease were identified for each patient. Those risks that were assessed included cigarette smoking, heredity, hypertension, stress, obesity, diabetes,

sex, and an inactive lifestyle. As may be noted in Table 6, the most prevalant risk factor was history of smoking, in that all but one person had smoked prior to their illness. Family history of heart disease, hypertension, and obesity were present in 50% of the control subjects and in only 17% of the experimental subjects. The fact that the patients in the control group were slightly younger than those patients in the experimental group might account for the variation in the risk factor due to heredity (Hurst, 1974). The patients in the experimental group had double the incidence of pre-existing illness (67%) than patients in the control group (33%). These pre-existing conditions included diabetes, emphysema, asthma, cancer, ulcers, tuberculosis, and surgical hysterectomy.

Severity of illness. The severity of illness was measured by three variables: The length of stay in the coronary care unit; the length of stay in the hospital; and the Killip Classification. As may be observed on Table 6, the average number of days each patient was in the coronary care unit was similar for patients in both groups (3.5 days in the control, and 4.5 days for the experimental). The length of hospitalization varied from 7-14 days. The patients in the control group had an average of 9.2 days while those patients in the experimental group were hospitalized for 10.5 days. This difference was statistically singificant at the 5% level using Wilcoxon's matched pairs for a two-tailed test. The Killip Classification was applied to quantify the severity of the patients' complications. No one qualified for Class IV, as may be seen in Table 6; there was little difference between the two groups.

Table 6

Frequency of Illness Related Characteristics of the Study Sample

Characteristics	Study Groups		
	Control N = 6	Experimental N = 6	Total N = 12
Risks to Heart Disease:			
Controllable -			
Smoking	6	5	11
Hypertension	3	1	4
Obesity	3	0	3
Inactive lifestyle	2	1	3
Diabetes	0	1	1
Uncontrollable -			
Heredity	3	1	4
Male Sex	4	4	8
Presence of other chronic illness	2	4	6
Severity of Illness:			
Days in Coronary Care			
Range	3-6	2-8	2-8
Mean	3.5	4.5	4.0
S.D.	1.2	2.2	1.8
Days in Hospital			
Range	7-13	8-14	7-14
Mean	9.2	10.2	9.8
S.D.	2.0	2.2	2.1
Complications:			
Killip Class			
I	1	1	2
II	3	2	5
III	2	3	5
IV	0	0	0

In summary, the patients were randomly assigned to experimental and control groups. The two groups were slightly, but not statistically significantly different on descriptive variables. However, the patients in the experimental group were in the hospital a significantly longer period of time and had a higher incidence of chronic illness prior to their heart attack than those in the control group. In spite of the fact that there were some differences in the two groups, the Killip Classifications were comparable. There are probably many factors which may have influenced the findings that the number of days in the CCU and the total number of days in the hospital were not comparable in the two groups. Such factors as overall hospital and CCU census and the number of admissions to name two factors have little relevance to the present study, yet might have an effect on both the number of days a patient was in the CCU and in the hospital. A larger sample may have diminished the effect of the variances noted in the results. Thus, the two groups may be considered comparable as far as severity of illness is concerned. There were other factors in which they were comparable, such as sex, educational level, socio-economic level, and the presence of a significant family member who was present to support them during their rehabilitation.

Dependent Variables

Health Related Knowledge

The scores of the questionnaire which tested knowledge are shown in Table 7. Including the pre-test, the overall scores were very high, with most of them ranging between 70 and 90 per cent correct responses.

Table 7

Scores of the Knowledge Questionnaire

Sections*:	A	C	D	E	F	Total
# Items:	18	7	12	13	19	69
# Subjects:	12	12	9	9	4	46
Pre-test:						
Total Sample:						
% Correct	73	76	84	71	61	73
Mean	13.1	5.3	10.1	9.2	11.5	49.2
S.D.	1.4	1.2	1.1	1.5	2.6	1.6
Experimental Group						
% Correct	72	71	85	73	66	73
Mean	13.0	5.0	10.2	9.5	12.5	10.0
S.D.	1.5	0.6	1.2	3.5	2.5	2.9
Control Group						
% Correct	73	80	83	69	55	72
Mean	13.2	5.7	10.0	9.0	10.5	9.7
S.D.	1.1	1.5	0.7	1.7	1.5	1.3
Post-test:						
Total Sample:						
% Correct	76	80	83	74	66	76
Mean	13.7	5.6	10.0	9.7	12.5	51.5
S.D.	2.7	1.6	1.7	1.1	1.7	1.8
Experimental Group						
% Correct	75	74	77	77	71	75
Mean	13.5	5.2	9.2	10.0	13.5	10.3
S.D.	3.0	2.0	1.7	0.7	1.5	1.8
Control Group						
% Correct	77	86	92	72	61	78
Mean	13.8	6.0	7.3	9.4	11.5	9.6
S.D.	2.0	0.6	0.7	1.3	0.5	1.0

* A: Nature of the Disease, C: Physical Activity, D: Smoking and Diet, E: Psychological Factors, F: Return to Home and Work.

The percentage gain in knowledge, which was measured by comparing the difference in scores from the pre- and post-tests, showed no statistically significant difference between the control and experimental groups. Table 8 presents the percentage gained on the knowledge test, with both groups showing a positive improvement, even though the control subjects gained slightly more than the experimental subjects. Use of the median test, however, showed that the difference was not significant. Therefore, it was concluded that the teaching booklet had no effect on the patients' knowledge of the content of the instruction booklet as measured by the questionnaire. Since tests A (nature of the disease) and C (physical activity) were taken by all the patients, the results of these two tests were compared separately, and this is noted in Table 8 also. Again, the gain scores of the control subjects were slightly, but not statistically significantly higher than the experimental subjects.

The results of measuring the dependent variable did not show any effect on knowledge from the patients' use of the booklet. The knowledge questionnaire was given for the purpose of measuring the cognitive aspects of the patients' learning. Other studies evaluating educational aspects have demonstrated lower scores in measurements taken after two months post-myocardial infarction (Johnston, et al., 1976). Redman (1976) has stated that cognitive aspects of learning may not tap all the domains necessary for patient learning. In addition, it has been noted that many factors effect test taking. Such things as the learner becoming sensitive to specific information as a result of pre-test stimuli, the evaluative tool may not measure exactly what the learner has been taught, and some tests are most sensitive in a specific range of scores

(Redman, 1976).

Table 8

Percent Gain Scores on the Knowledge Questionnaire for the Study Sample

Sample % Gain	Complete Test	Test A & C Only
Total	2.8	3.5
Control	3.8	5.0
Experimental	1.4	3.0

It is possible that some differences existed between the patients in the control and experimental groups. That is, it could be that something either facilitated the patients' learning in the control group, or inhibited patients' learning in the experimental group. One possibility is that the patients in the control group experienced pre-test sensitization, thus resulting in similarity of scores between the two groups of patients. The administration of the pre-test may have prompted some of the patients to ask certain enlightening questions of their physicians. If this did occur, then the scores on the post-test could be higher than otherwise would be the case.

Another possible explanation for the results of the knowledge questionnaire could have been the test itself, in that it was not adequately discriminatory at the high scoring level achieved by the sample patients. Table 9, which shows a comparison between the overall scores of the present study sample and those of Rahe, clearly shows that the former group possessed a greater fund of knowledge prior to the instruction. There could be several reasons for this finding. One

distinct possibility is the difference in timing in the administration of the tests, with both of Rahe's tests given during the patients' hospital stay, while only the pre-test was given in the hospital for the present study (at approximately the same time as Rahe's post-test), and the post-test given approximately four weeks after hospital discharge. The present study sample was given information over a longer period of time. The reinforcement of material can facilitate learning (Comoss, et al., 1979; Redman, 1976). Another possible advantage the study population may have had over Rahe's sample was the hospital staff doing an exemplary teaching effort in the present study. However, this factor is difficult to measure and may have skewed the findings in this clinical research.

It was also noted that Rahe's sample had an average education level of 14.4 years, while the study sample was somewhat less, or 11.9 years. The patients in the present study had acquired considerable knowledge about their illness by the time they left the hospital. The difference between the two groups' education levels did not seem to have a deleterious effect on the outcome of the knowledge test. Areas concerning the nature of their illness, physical activities allowed at home, diet and smoking issues, and their return to work were topics that were scored particularly high by the patients in the present study sample. One significant factor influencing learning which was suggested by Redman (1976) and the review of Health Education, was the patient's cognitive learning style. More simply, the manner in which each patient learns may be a variable which is more predictably responsive or not responsive to a teaching style such as the booklet. The patient's cognitive learning

preference was not taken into account in the present study.

Table 9

Comparison of Scores Between the Rahe and the Present Study Sample in % Correct

Test	Rahe		Study Sample	
	Pre- N=24	Post- N=24	Pre- N=12	Post- N=12
A: Nature of the Disease	68	69	73	76
C: Physical Activity	62	60	76	80
D: Smoking & Diet	65	68	84	83
E: Psychological Responses	71	75	71	74
F: Return to Home & Work	57	66	61	66
Total:	66	69	73	76

Depression

The depression scale was used to obtain a measurement of the patients' morale and outlook on the future, or an aspect of the affective domain in rehabilitation. The mean scores are shown in Table 10. The difference between the pre- and post-test scores are significant at the 2% level, using a two-tailed test for the Wilcoxon's matched pairs. Actual Zung Index scores may be found in appendix D.

Table 10

Mean Scores of the Depression Index

Group	Pre-test	Post-test	Difference
Control	38.7	41.5	+ 2.8
Experimental	45.0	42.0	- 3.0*

*significance: $p < .02$

The depression variable had more discriminating results than the knowledge variable. In fact, the patients in the control group had an average gain of approximately three points in their post-test, indicating a measurable increase in their depression. The patients in the experimental group, on the other hand, showed an average decrease of three points in the post-test, indicating a lessening of their depression. There was no noticeable relationship between either the number of modules, or the content of the modules on the change in the depression scores for patients in the two groups. The Zung Index was chosen as a measure of rehabilitation outcome as a result of prior research. This research indicated that a score of 40 or less on the Zung Scale at a six week measurement post-myocardial infarction, was positively correlated with a patient's ability to work within a one year period following the onset of the illness (Stern, et al., 1977). The overall post-test scores for both groups was just slightly above 40.

Relation of knowledge to depression scores. In an attempt to determine the effect of knowledge on depression, a comparison was made between the patients' gain in knowledge and their degree of depression. Due to the small number of patients examined, the control and experimental group

data were pooled for the purpose of statistical analysis. The results were not significant ($p = .2$), indicating that the amount of knowledge had no significant effect on the degree of depression. The constricted range of the knowledge post-test scores may have contributed to these findings by also minimizing the effect on the depression scores.

Relation of demographic variables to dependent variables. The purpose of the last question posed in the pilot testing was to determine the effect of the demographic variables on knowledge and depression scores. The demographic variables examined included level of education, marital status, socio-economic status, age, and severity of the illness. While none of these variables showed a statistically significant impact on knowledge, patients with higher education and socio-economic levels also had higher scores on the knowledge questionnaire. Those who were married had higher scores on the knowledge questionnaire. Two other variables, age and the severity of the heart disease, did not seem to have any impact on how the patients scored on the knowledge questionnaire.

The variables which seemed to have some relationship to depression included marital status, socio-economic level, age, and the presence of dependent children in the home. Those who were married, had higher socio-economic level, and had dependent children in the home scored above 40 on the depression scale. An inverse relationship appeared to exist between age and depression. That is, those who were younger than the sample mean of 55 had scores higher than 40 on depression. According to the data available about the Zung scale, the relationship of these demographics to the patients' level of depression are not likely to be due to the scale (Zung, 1967). Rather, these variables may have had some

significance for rehabilitation motivation. The more that a patient identifies as a reason to live, the more they could lose if rehabilitation were not successful.

The patients in the experimental group had an apparent reduction in depression that may have been related to their environmental variables, such as decreased responsibilities in regard to child rearing and continued family financial support. That is, the experimental group may have been close enough in age to retirement that those issues, which were debilitating to the younger control group, did not affect them as greatly. This is speculative, however, and is more clearly shown by the anecdotal comments which were revealed during the interview, as regards to the value of the booklet from the participating patients' point of view.

Interview

The format of the interview was designed so as to provide a uniform content for each patient during the home visit. It was noteworthy that even though all patients could identify both the causes and nature of heart disease on a knowledge questionnaire, when they were asked the cause of their own illness the answers were quite diverse. In addition, the responses were not necessarily the same as the risk factors which had already been individually identified for each patient. The patients' responses as regards the risk factors they identified during their home interviews, are shown in Table 11.

Table 11

Cause of the Heart Illness as Identified by the Patient During the Home Interviews

Cause	First Home Visit		Second Home Visit	
	Control	Experimental	Control	Experimental
Fatty Diet	1	1	3	0
Lack of Exercise	1	1	0	0
Overwork	2	3	1	0
Stress or Worry	2	5	4	4
Hypertension	0	0	1	0
Smoking	1	1	1	2
Plaque	0	1	0	1
Other Illness	0	1	0	0
Fate	0	1	0	0
Don't Know	0	1	0	0

As shown in Table 11, it can be seen that the patients indicated a wide variety of causes for their illness. During the second interview, the patients in the experimental group identified four separate probable causes, while the patients in the control group identified six probable causes. The booklet had stressed the importance of identifying a single risk factor to focus on in the beginning, for the purpose of lifestyle modification, and it is possible that the clustering of experimental group responses is a result of this instruction.

When comparing the patients' responses in identifying their risk factors with those identified by the professionals, a discrepancy is

seen to exist (see Table 12). As can be seen in the table, most of the patients identified stress or worry as the primary cause of this illness. This risk was also the only one that was consistently identified by both the professionals and the patients. It was noted that eleven of the patients smoked prior to their illness, and this was identified as a illness-causing risk by only three of them.

Table 12

Comparison of Stated Causes to Heart Disease and Risk Factors Identified by Professionals

Control		Risk Factors	Experimental	
Professional	Patient		Professional	Patient
6	1	Smoking	5	2
3	0	Heredity	1	0
3	0	Hypertension	1	0
4	3	Stress	3	4
2	0	Inactive Life	1	0
0	1	High Blood Fat	0	0
3	1	Obesity	0	0
0	0	Diabetes	1	0
0	1	Plaque	0	1
0	1	Other	0	1

While the first question sought the patients' responses to the causes of their heart problem. The second through sixth questions were designed for the purpose of verifying the validity of the content of the booklet. It was found that the concerns expressed by the patients in the interview

coincided with the topics covered in the booklet. The following paragraphs will characterize their responses to this portion of the interview.

The question concerning how the illness affected the patients' normal way of life was intended to uncover those social-psychological problems which represented the major disruptive aspects of their recovery from a myocardial infarction. Fatigue, boredom, depression and being at home so much were frequently identified by patients in both groups; that is, factors which were related to losses in their levels of energy, and to increasing their confinement. Some patients focused on environmental changes, such as moving to a calmer setting or never being left alone by their family. Although several people suggested the possibility of changing jobs or retiring, two actually did lose their jobs during their convalescent period. Most of those changes mentioned above represent losses of one form or another. These losses may and probably do contribute significantly to the post-myocardial infarction depression syndrome (Garrity, 1974; Granger, 1974).

The third interview question concerned the patients' perception of the length of time before they would be returning to a normal lifestyle. This question was concerned with their view of the future, and people in both groups found that the time at which they felt they could resume their prior lifestyle varied according to when they were questioned about it. For example, the responses of the first interview ranged from one person who felt he would never recover to four people who expected to feel 100% normal within six to eight weeks following their myocardial infarction. During the second interview (at six weeks post-myocardial

infarction), everyone expressed that at a time in the near future they would be recovered. Six of the twelve even felt they had already recuperated. Of the six patients who expressed feeling recovered, three were in the experimental group and three in the control group. Of those in the control group, one identified the investigator's home visits and the information given to them at the hospital as being the most helpful. Another reported that the general information given at the hospital was helpful, and the last identified their religious faith as being the most supportive aspect in their recovery. In the experimental group, one person reported nothing. Another said that he felt permission to do little or nothing rather than being compelled to work despite his illness. The last person reported liking to work in the garden, the investigator, and the hospital staff as being important.

The fourth and fifth questions of the interview dealt with the patients' perception of the reactions of their family and friends. The patients in both the experimental and control groups felt that they had overprotective families. There was even a somewhat greater number of patients in the experimental group who expressed this view. This was an unexpected finding, since the information provided in the booklet could help to alleviate the families' fears. In two instances, patients reported themselves that they disregarded some of the advice given them in the booklet and by their physicians. Both instances of non-compliance included, driving against their physician's advice, and doing more physically demanding work than advised in the booklet. In addition, the families of these two people expressed concern over the patient's "overactivity." Nonetheless, it is conceivable that if a given patient was

behaving contrary to advice given in the booklet, it could serve to increase the family's anxiety and thus encourage overprotectiveness. The responses to the question about the effect on friends was found to be difficult to interpret. Friends were characterized as being generally supportive and helpful. There was no distinction noticed between the two groups.

The sixth question had several subsections to it. These were rest, elimination, nourishment, comfort, and personal hygiene, and were concerned with the effect the cardiac illness might have had on these areas of living. All the patients reported one or another kind of sleep disturbance. The patients in the control group had a slightly easier time sleeping than the patients in the experimental group. Many attributed the sleep disturbance to the usual waking and sleeping schedule they had adhered to while in the hospital. Perhaps more attention should have been placed on methods to cope with an alteration in their rest pattern in the booklet. Exercises to facilitate calm, relaxation, and natural sleep promoting activities may be helpful.

Most people reported no difficulties with their elimination. A few reported changes in bowel movements, which they attributed to the medication they were taking. In these cases the medication was known to have potential effects on bowel habits. In addition, all the patients in the study were fairly active, so that a bowel disturbance may have been prevented by the activity.

The responses to changes in nourishment revealed a variety of remarks. There seemed to be some confusion over the diet instructions given to both groups. Many of the people reported that they had

continued the diet they had been on while in the hospital. This dietary change may or may not have been recommended by the physician. Some were trying to lose weight, while those who had quit smoking reported having in many cases substituted food for their cigarette habit. It was concluded that the booklet was somewhat weak in dealing with the dietary needs of patients, and that even where their physician had made no recommendations, patients had independently changed their eating patterns. This conclusion raises a question that patient-oriented teaching should contain very specific guidelines regarding healthy dietary habits since the patients expressed a tendency for self-recommended dietary changes.

The question which asked about comfort elicited answers for which the patient had some concern. These included such things as a lack of energy, weakness, fatigue, and boredom were mentioned often. The absence of cigarettes was mentioned as uncomfortable by people in both groups, and only two people mentioned any kind of pain as a problem to them. Changes in mood were also acknowledged and a few people even reported feeling better than they did prior to their illness.

Personal hygiene was the last area covered in the sixth question. Only one of the males responded that this area had changed for him, and this was related to a reduction in his cigarette smoking. All the women commented on personal hygiene, with the remarks including comments on bathing, hair washing, sex, or hallitosis. Since the investigator was female, this question might have been answered differently by the males if the investigator had also been male. However, it could also be that the women were willing to identify personal hygiene issues as problems more often than the men. The one woman who brought up a question

concerning sex reported doing so because of an uncertainty regarding the content of the booklet. The booklet's content apparently treated a sensitive subject matter in such a way that the patient was able to raise a question. However, it is also likely that the message needed to be more clear.

The last three questions of the interview were asked during the second home visit only. Two of these questions concerned factors that had made the patients' recovery either easier or more difficult. The items that were identified by the patients as being the most helpful varied according to whether they were members of the control or experimental group. Those in the control group commented in particular that the information they had received in the hospital from the nurses had been very helpful. It is possible that even the control group after taking the pre-test, had been sensitized to ask certain questions. In light of the knowledge scores, it is also possible that the hospital nurses were effective in their teaching. Also, their friends and religious faith were supportive. The patients in the experimental group, on the other hand, commented on the activity they were allowed, such as walking and working outside. Obviously, these comments were quite different. It is possible that the patients in the experimental group were verbalizing some of what they had learned through the activity section of the teaching booklet, since those positive rehabilitation techniques were suggested there.

The areas which were identified as being more difficult for the patients in the control group were changes in diet, keeping quiet, family turmoil, and insurance difficulties. The responses from patients in the

experimental group were equally diverse. Some of them included not smoking, fatigue, the relative inactivity, and confusion over the instructions that were given them by their physician. Interestingly, these responses were similar to those given for the question about comfort, and indicated that the relative inactivity, cessation of smoking, and various family problems comprised a large part of their distress.

The final question of the interview asked patients to identify, if they could, any hint or tip they could give to others facing a similar illness. The responses were again different for each group of patients. The patients in the control group commented on a lack of specific information during the first few days at home, and expressed a wish to have material available. Incidentally, they had been told only that they were helping to evaluate a rehabilitation program and not that some patients received different information. They also suggested the importance of re-evaluating their lifestyle and habits, getting support through their religious organization, talking to others who have been through the same type of experience, and in general taking things less seriously. Each of the patients identified one thing that had been particularly helpful to them during this crisis. The patients in the experimental group commented on similar things, including needing a place apart in order to assimilate the requirements of making a major life change, that walking was inspirational, that fatigue was greater than anticipated (but that if they would be patient that things would level out), trying to quit smoking, and trusting those who cared for them. The patients in the experimental group commented more briefly than the comments which were made by the patients in the control group. The fact

that patients in the control group wanted more information during their early convalescence was seen as further support for the need of something informational like the booklet, especially since this need was not mentioned at all by patients who were in the experimental group. Since there was virtually no difference between the patients in the two group's level of knowledge, the request for more information may be a request for reassurance that their rehabilitative efforts are constructive.

Each of the patients in the experimental group volunteered some spontaneous remarks about the booklet. There was only one negative response, and that concerned the patient's feeling that the booklet content was too complex. This patient suggested that a glossary of terms might be helpful to make the booklet more understandable. It was interesting that this patient was the only one with medical background, and this comment was identical to some of the responses from the professionals who reviewed the booklet, even though the medically unlettered reviewers had no such comments to make. Another extreme response was that the exercise program was too easy, and although the patient found it interesting, he was not following it because it was too limiting. In one instance, a patient asked a great number of question to confirm the content of the booklet, because she had questioned the validity of the content. Two of the patients' spouses showed more interest in the booklet than the patients themselves. Both of these people were also of the opinion that the exercise program was not demanding enough. In one instance, the entire family read the booklet, and then passed it on to brothers and sisters. This family felt that the injury to their mother had inspired all of them to re-evaluate their previous life styles and

they were using the booklet to help to do that. This one case alone, makes the presentation of a booklet of this type both valuable and gratifying. By helping to alter risk factors in the children of patients who have had a myocardial infarction, rehabilitative efforts thus become both primary and secondary sources of prevention.

Although it is recognized that specific instances are not helpful in research efforts, it is nonetheless very helpful in identifying areas to be edited in this booklet. As a result of the interest shown by some of the families of the patients in this study, it is believed that patients in high risk categories should be directed to seek education services, such as the heart association provides, for the purpose of helping them to alter risk factors prior to developing a myocardial infarction. It is realized that part of the reason that post-myocardial infarction patients are willing and able to alter their life style, is due to the motivation the fear aroused which a heart attack brings forth (Comoss, et al., 1979). However, the preventive health-care content needs to be made available to all individuals at risk to heart disease.

Again, it should be emphasized that patients believed that stress and worry were major causes of their illness. The period following the heart attack, when inactivity and boredom become problems, could be used as a time when stress management principles are taught. In addition, more than one exercise option should be made available for inclusion in the booklet, so that activity regimens could be more closely attuned to prior activity levels. Certainly it is reasonable that a forty year old could be inherently more active than a sixty-five year old (Cohen, 1976). Further areas of the booklet were shown to need expansion, especially in

the area of diet and medication. Patients were found to be spontaneously changing their diets, which suggests that content on healthy eating patterns might be well received at this time. One possible problem of further expanding the booklet is that it is already lengthy, and cost of printing keeps increasing with each addition in content.

This study focused on patient education following the occurrence of a first myocardial infarction. There was substantiation of the booklet's content, since the rehabilitative factors that the patients identified as sources of difficulty were similar to those discussed within the booklet. On a subjective basis, the patients in the control group expressed a need for some written information for them to use at home. While these facts may indicate the overall usefullness of the booklet, the pilot testing did not demonstrate significant differences between those with and without the booklet. In fact, all the patients had a high level of knowledge about their heart problem. Perhaps merely the pre-test sensitization is the significant factor assisting the patient's knowledge. If so, it is a common teaching-learning tool that perhaps should be incorporated into rehabilitation programs. The time at which the teaching took place was not clearly important as a result of this study. But all the findings of this study are tentative due to the small sample size examined. The small differences between the two samples on the demographic variables would not be significant in a larger sample.

The results of the knowledge test may be supportive of the educational literature that identified cognitive learning style as the most critical variable in a person's specific learning behavior. This has been proven for children (Witkin, Moon, Goodenough, & Cox, 1977), and

apparently is true for adults as well.

Results of the depression scale are also somewhat confusing. Patients in the experimental group had a significant decrease in their depression, while patients in the control group did not. The booklet may have had an impact on the affective portion of learning. Also, the instructions which guided the patient on how to observe for improvements in their cardiovascular status coupled with the emphasis on activities, may have had a positive effect. Since the depression scale was chosen to help predict rehabilitation success, it is possible that the patients receiving the booklet may demonstrate a general rehabilitative success over time. It would be necessary to have follow-up data, however, before this could be conclusive.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The focus of this study was on patient's response to education following a myocardial infarction. A modular, individualized, and comprehensive teaching booklet was developed and pilot tested, using randomly assigned control and experimental groups, with a pre- and post-test design. The steps in the booklet development consisted of several literature reviews, the incorporation of many patients' inquiries, and the writing of a rough draft that was critiqued by several experts. The revised booklet was pilot tested for the purpose of evaluating the effectiveness of the booklet as a teaching tool and to assess the timing of the proposed intervention. The study setting was a 107 bed community hospital. Twelve patients between the ages of 21 and 70, who were diagnosed with a first myocardial infarction, were chosen from patients admitted to the coronary care unit. These patients met other study criteria. All selected patients were pre- and post-tested for knowledge and depression. Six of the patients (experimental group) received the booklet, and six (control group) did not. Two home visits provided follow-up information through a standardized interview format.

Findings from the pilot testing indicated that there was no difference in the gain scores of knowledge between patients in the two groups. All the patients had a high level of knowledge. However, the patients in the experimental group had a significant reduction in their depression.

Conclusions

All the patients had a very high level of knowledge. It was surmised that the pre-test sensitization may have contributed to this finding. Perhaps the administration of a pre-test should be incorporated into all rehabilitation programs. It was evident that the patients had some knowledge at the time of pre-testing. Whether this was present prior to the hospitalization or if it was a result of the inpatient teaching is not clear. In addition, the small difference between the pre- and post-test in both groups indicates that the knowledge questionnaire was not discriminating enough to evaluate actual effects of the booklet on patients' knowledge. It is known that patients who had the material in the booklet available were assured of having systematic information presented to them.

The patients who had benefit of the booklet demonstrated a reduction in their depressive mood. This supports the idea that teaching must be geared to patient's cognitive and affective learning needs. Thus, patients who were possibly vulnerable to stress and incapacitation during their transition from the hospital to their home, gained a level of independence which probably facilitated an improvement in their mood.

The patients' responses to the information in the booklet indicated support that a nurse who has knowledge of pathophysiology, family systems, exercise, nutrition, medications, and rehabilitation concepts is able to intervene to promote health and maximum independence. Patient teaching is within the role and scope of the practice of nursing. Rehabilitation and patient teaching need to be explored further as an independent as well as collaborative function of nursing practice in further anticipation

of patients' needs. In addition, a patient's cognitive learning style must be taken into consideration when developing a rehabilitative program.

Recommendations

Several studies are indicated as a result of this investigation, as well as further revisions of the booklet. The suggestions for the booklet revisions include the addition of information. There needs to be added information about diet which emphasizes basic nutritional information plus specific dietary instructions. Also, at least three ranges of activity routines need to be offered which reflect varying levels of a patients' previous physical conditioning. Since patients identified stress as a major causative factor to their illness, a section needs to be added on stress management with specific suggestions for stress reduction.

Replication studies are recommended to improve the developmental testing of the booklet. First, a larger sample would reduce possible confusion from intervening variables. It would be useful to replicate the study in another setting and to another hospital to compare different rehabilitation programs. In order to evaluate the booklet's impact on patients' knowledge, it is recommended that a study be done in which a questionnaire is developed which would test for content that is presented in the booklet. This would serve to clarify other important considerations such as the style and format of the booklet. A post-test only control group is suggested to assess the real impact of pre-test sensitization on patient's learning. Also, a replication study with four groups is suggested, where one group is controlled for learning

style, one has everything available to them, one has nothing added, and one has access to the booklet. This would serve to begin differentiation between interventions and pre-existing conditions. It would require a very large sample.

In addition to studies specifically related to the booklet and pilot testing, it is likely that patients with other chronic disabling illness could benefit from modularized, individualized, and comprehensive booklets which facilitate rehabilitation. The promotion of self-care concepts is valid whenever patients are facing long term treatment and potential changes in their lives as a result of prescriptions and treatments of health care providers.

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Appendix A

LIVING AFTER A HEART ATTACK

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My thanks to all the people who helped make this booklet happen. The heart illustrations by Geof Sauncy, and the cartoons by Nancy Grasley helped immensely. I received a lot of support and help from the physicians and nurses at Willamette Falls Hospital. And my special thanks to the patients who inspired me to compile this information and who taught me some of what it is like after a heart attack.

Mary Furrow

1979

INTRODUCTION

This booklet has been compiled with the purpose of providing you and your family with information that will be helpful in speeding your recovery from your heart attack. Your doctor has given specific instructions, and this booklet is to help you carry those out. The final responsibility for your recovery, however, is yours. Much of this booklet is of a general nature and can apply to everyone. Included also, is information specific to your treatment. It is hoped that with your efforts, this information will supply you with material that you can use in making responsible decisions during your recovery, and help you to return to a healthy life. This booklet is designed to assist you in healthy and safe ways to solve some of the problems you may face.

In the following sections the structure and function of the heart are described, including an explanation of the disease and healing process of the heart attack. Since it is nearly impossible to make provisions for all possible circumstances during your recovery, it is felt that knowing something about your heart will enable you to make safe decisions. Included are sections that are guidelines for your diet, activities, exercise, and specific details if your doctor has suggested a special diet or medications. The emphasis will be on how you can improve the quality of your life, and ways your family can help. Your doctor may give you instructions, but only you may carry these out. For some, the directions may suggest a significant change in your life style. These changes can improve the quality of your life to make it more enjoyable. Hopefully, with added knowledge, you will be able to make the best choices for yourself. Good luck and health to you all.

THE NORMAL HEART

Key Points:

---The heart's function is to pump blood throughout the body.

---The heart, like any pump, needs fuel in the form of oxygen in order to carry out its function.

---Oxygen is carried to all body parts by the blood.

---The heart receives its oxygen through a special set of blood vessels called coronary arteries.

---There are two coronary arteries, and they have many branches.

---The heart has an automatic timing mechanism.

---This timing mechanism stimulates the heart muscle to contract.

---The heart's contraction, or squeezing, is the pumping action.

The heart has one function in the body which is to pump the blood throughout the body. It is a muscle that stretches, squeezes, and then relaxes 60 to 100 times a minute. The blood flow through the body is essential to life to deliver nutrients such as oxygen, and carry away waste products of the tiny cells that make up the whole body. The heart receives blood from a large blood vessel (vein) and pumps it to the lungs, where it comes in contact with the air breathed. In the lungs, oxygen is picked up by the blood and then the blood is returned to another part of the heart. Oxygenated blood is then pumped to the rest of the body through a network of blood vessels (arteries).

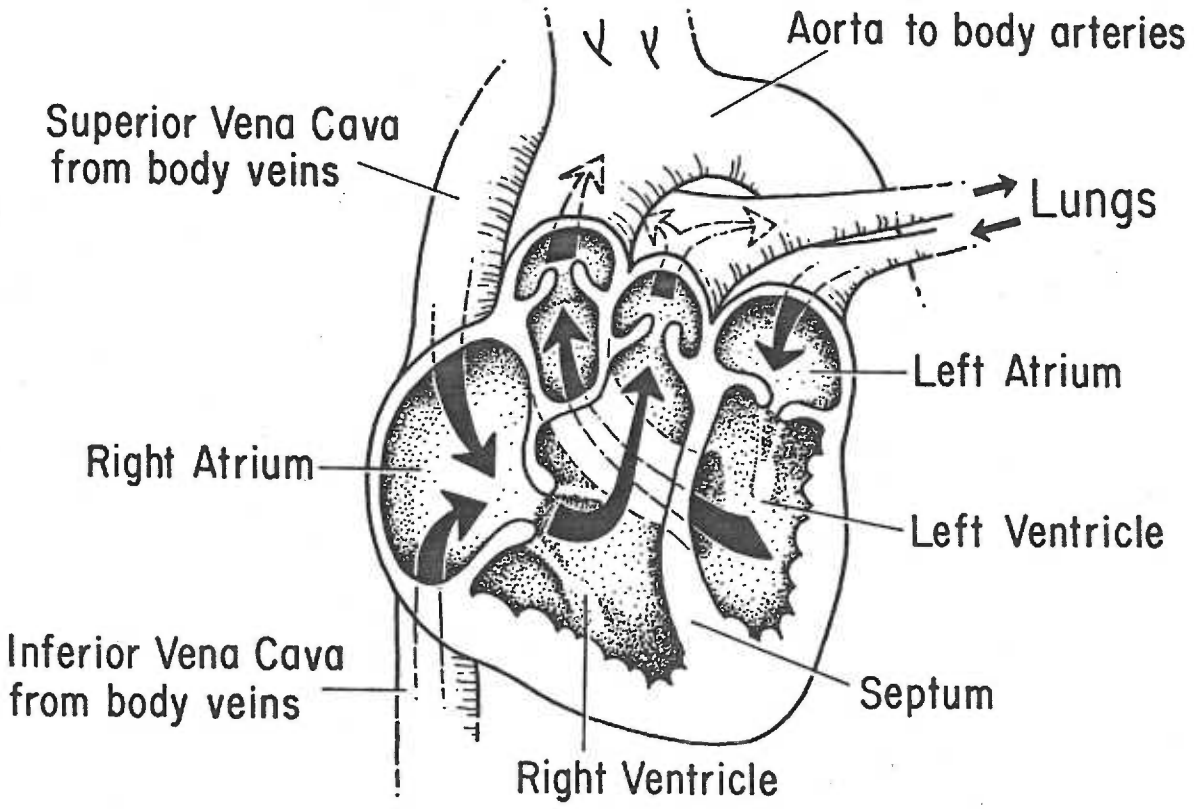


Figure 1. The direction of blood flow inside the heart is shown by the arrows.

The heart itself requires oxygen in order to carry out its pumping action. Oxygen is the fuel of the body and the fuel for the body's pump, the heart. The heart obtains its oxygen through a network of blood vessels whose only purpose are to supply the heart muscle with the blood and oxygen it requires for performing its life work. These blood vessels, called coronary arteries, are the very first ones to receive oxygenated blood from the heart as it pumps. Therefore the heart, providing oxygenated blood to the entire body, also pumps blood and fuel to itself. Nature provided the heart with two separate coronary arteries, each having several branches so that the blood and oxygen reaches the entire heart muscle. The branches of the coronary artery are very much like a complex of river tributaries. As the blood is further away from the two major arteries, the vessels are smaller and smaller.

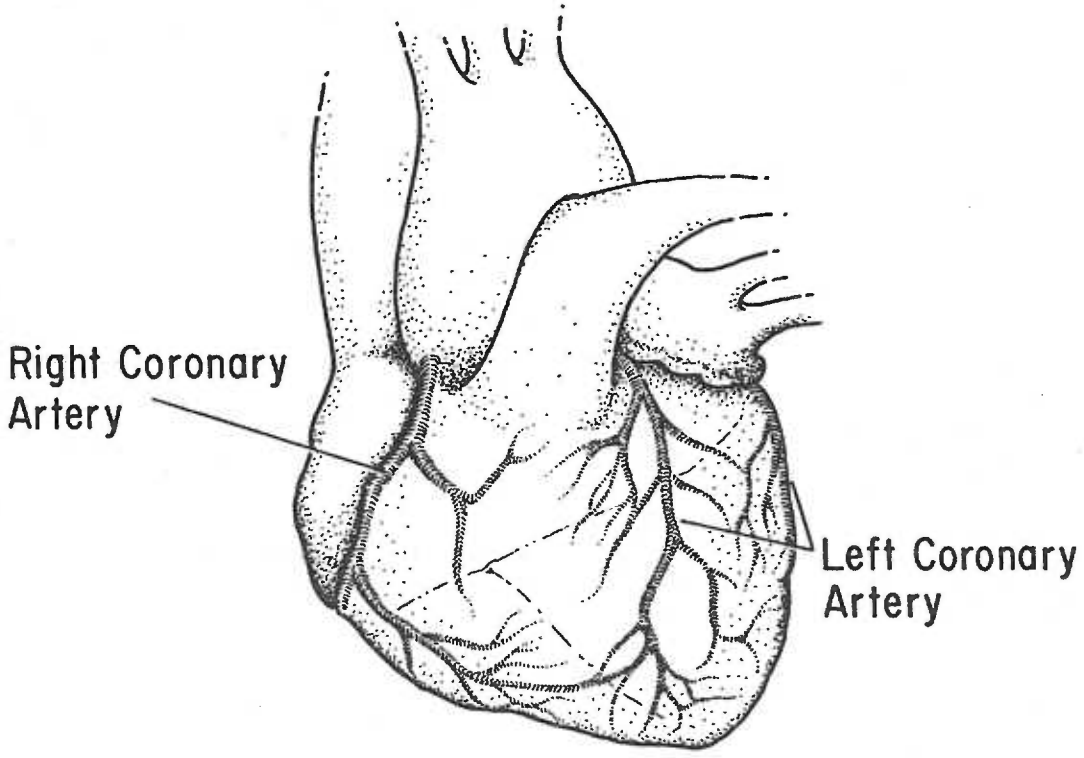


Figure 2. The coronary arteries appear on the outside of the heart. Note that the left artery has two main branches to supply the larger muscle mass.

When the heart is receiving its required oxygen through the coronary arteries, the pumping action carries on in its normal manner. Each squeeze is started automatically and is timed according to the demands the body places upon it. When the body is working, the heart is able to respond by beating more frequently. Likewise, when the body's activities are minimal as when asleep, the heart responds by slowing its pumping action. Like all muscles, it must be used in order to stay healthy.

When problems arise in the heart, it usually involves one of three functions:

1. There can be problems in the muscle itself or other areas affecting the pumping action.
2. Problems can arise within the coronary arteries (the blood vessels supplying the heart with oxygen).
3. Sometimes there can be a difficulty in the balance of the timing mechanism.

CORONARY HEART DISEASE

Key Points:

---Coronary heart disease involves the coronary arteries (blood vessels which supply the heart with blood and oxygen).

---Arteries are normally round and flexible.

---Arteriosclerosis is a disease which makes the arteries less flexible and they can become filled with a debris called plaque.

---In arteriosclerotic heart disease, the arteries become like rusty water pipes. The build up of debris is brittle and actually weakens the wall of the pipe (artery).

---As the plaque or debris begins to build up, the opening in the artery becomes narrowed.

---The narrowed artery prevents a sufficient amount of blood to flow through to the heart muscle that is needed for various activities.

---When the plaque builds up to significantly reduce the blood flow, warning symptoms begin.

---The warning symptoms of coronary artery disease include pains in the chest and sometimes the pain travels to the arms, neck, or shoulders.

---The chest pains which are a sign of coronary artery disease are called Angina Pectoris.

This section is about the type of heart disease that occurs as a result of a problem in the coronary arteries (the blood vessels which supply the heart with blood and oxygen). Disease in the coronary arteries is a result of arteriosclerosis, a word from the Greek arterio--meaning small artery, and sclerosis--meaning hardening. Arteriosclerosis is the medical word for hardening of the arteries. The normal artery is round and flexible, able to expand and constrict according to the amount of blood that flows through them. As the process of arteriosclerosis takes place, the artery accumulates material along its wall much as a rusty water pipe build up debris over the years. The debris inside the artery is called plaque.

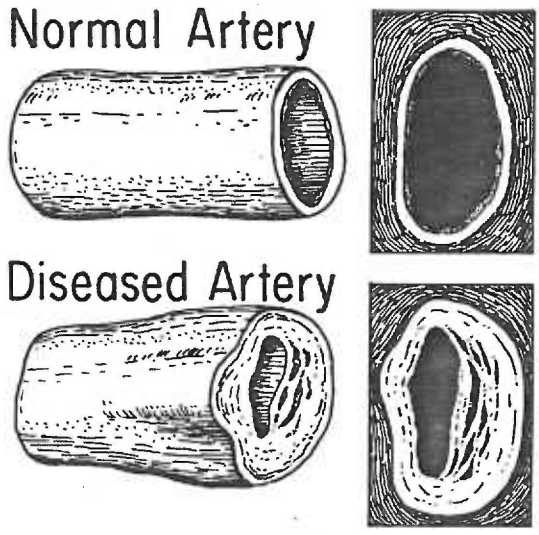


Figure 3. An example of a diseased artery as compared to the normal. Notice that the size of the opening in the diseased is less than half the normal.

As this disease process continues, blood flow is reduced and therefore a decreased amount of oxygen is delivered to the heart muscle. In addition to the reduction in blood flow to the heart muscle, the arteries become less flexible and therefore less able to adjust to fluctuating needs of the body. That is, as more work is required of the

heart as in the case of exercise, it is unable to get all the fuel it needs in order to do that work. When the plaque build-up blocks the blood flow to 70-90% of its normal size, symptoms can occur. When the narrowing reaches this point, the body is alerted to the danger. The danger of course is that the pumping heart muscle will not be able to have enough fuel to carry out its usual functions. The danger signals are usually first noticed when the heart is required to do more work, as in exercise, physical work, or stress. In other words, the first warning signs usually occur when the heart needs more energy in order to supply the total body with the blood and oxygen during high demand periods.

The warning signals of coronary artery disease vary for each person. The chest pains which are a sign of coronary artery disease are called angina pectoris. Following is a list of the more common signs of angina which have been reported:

1. Mild to severe pressure or pain in the chest. This can resemble a toothache, a crushing feeling, pressure, or even be a burning sensation.

2. The location of the pain is usually in the front part of the chest. Often it is felt near the breastbone or across the front portion of the chest, like a tight band wrapped around the body.

3. The discomfort may travel up the neck to the jaw, down one or both arms, and even into the upper back or shoulders.

4. Because each person experiences the discomfort in different ways, it is possible that other types of discomfort in the chest could also be a sign of coronary artery disease. However, each person usually has a typical way in which they are warned.

THE HEART ATTACK

Key Points:

---When hardening of one of the coronary arteries is severe, and the plaque build-up completely blocks the blood flow, a heart attack occurs.

---Signs of a heart attack include:

1. Severe heaviness, pain, or pressure in the chest or arms, that does not go away.

2. The pain may bring on nausea (being sick to your stomach) and sweating.

3. A feeling of fear or anxiousness may develop.

4. Sometimes difficulty in breathing develops.

When the disease of hardening of a coronary artery advances to the point where the plaque blocks the blood flow so that no blood gets through, a heart attack occurs. The area of the heart that had been supplied by the artery, no longer getting the oxygen it needs, soon becomes injured. Because each of the two arteries have many branches, this injured area is usually surprisingly small, and the other artery and its branches are able to supply the rest of the heart with oxygen needed while the body begins to heal the injured site. Because the heart muscle has been damaged, it alerts the person by signaling danger. These signs include:

1. Severe pain or pressure in the chest area which does not go away.
2. The pain may resemble indigestion or aching.
3. Because of the intensity of the pain, some people are nauseated and vomit.
4. The lack of oxygen to the heart muscle triggers a sense of lack of enough air, and some people experience difficulty breathing.
5. The skin may feel cool and clammy, and almost everyone feels a sense of great danger, fear or anxiety.

All of these signals indicate that the heart is unable to get all of the oxygen it needs. If the blockage in the artery is complete, a part of the heart muscle is injured.

THE HEALING PROCESS

Key Points:

---The heart can heal itself.

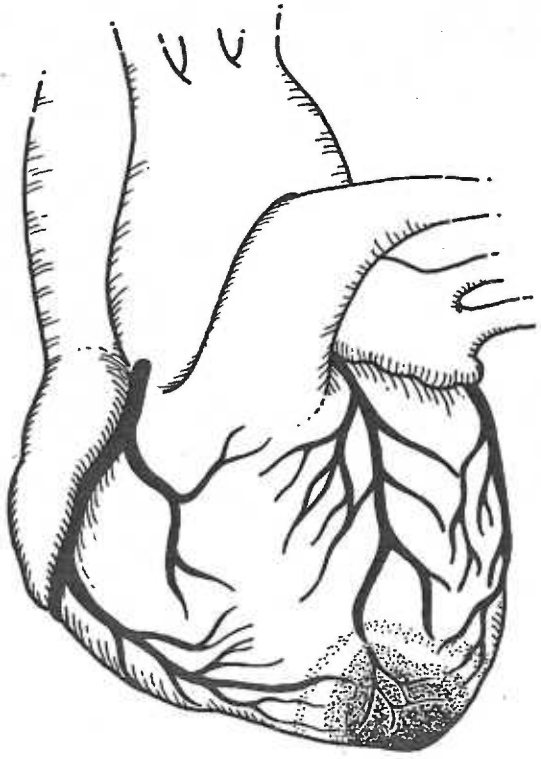
---Healing involves the formation of scar tissue where there was injury.

---The coronary arteries help the healing by re-routing or developing collateral circulation to continue supplying the heart with the necessary oxygen-rich blood.

---Healing is usually complete in nine to twelve weeks following the heart attack.

Healing begins immediately following injury to the heart. An inflammation around the injury develops into scar tissue. Like scar tissue elsewhere in the body, it is much stronger than the muscle itself, however it does not have any elastic qualities of muscle and therefore does not perform any work. The scar tissue maintains the system by strengthening an otherwise weakened area. This scar is evident in 10-14 days after the heart attack and is usually completed in three months.

In the meantime, the blood vessels to the heart are carrying out their part in the healing process. The branches of the artery near the blocked one begin to enlarge and alter their routes in order to continue supplying blood to as much of the heart as possible. This is called collateral circulation and depending somewhat on the age of the person, is developed by nine to twelve weeks after the heart attack.



Infarction with Collateral Circulation

Figure 4. This is an example of the infarcted heart. Notice that the other branches of the arteries reach into the injured area to re-supply the area with blood.

To explain this phenomenon better, an example from Nature applies. When a dam is built on a river, the water below the dam is greatly reduced or even stopped. However, the amount of flow above the dam does not change and therefore it must be redistributed. Each of the remaining streams feeding into the river becomes slightly larger and may even change their direction because of the increased flow. This process is very similar to what takes place in the heart. It is the collateral circulation and scar tissue formation that allows the heart to resume a relative level of normal function. And by the end of three months (twelve weeks) the person should be able to resume most former activities.

THE CAUSES OF CORONARY HEART DISEASE

Key Points:

---There are certain factors called risks which increase the chance of having a heart attack.

---These risks can be divided into uncontrollable and controllable factors.

---Those that are uncontrollable are: age, sex, and family history.

---The controllable risks are: smoking, being overweight, high blood pressure, diabetes, high level of fat in the blood, inactive life style, and perhaps stress.

---While these factors have been identified there may be many more unknown factors.

---When more than one of these risks are present in the same person, the chances of having a heart attack are more than doubled or tripled, they are multiplied.

---Therefore by eliminating or controlling even one of the risks can reduce the chances of having further heart attacks.

Heart attacks are usually caused by more than one thing alone. In fact, a single direct cause has not been determined. Possible causes are referred to as risks. These risks can be divided into two categories. Those one has no control over, and those which can be altered.

UNCONTROLLED

1. Age:
   The longer one is exposed to the effects of coronary heart disease, the greater is the chance of having a heart attack. A young person is not immune however, if other risk factors are present.

2. Sex:
   Generally, men have more heart attacks than women. Men begin to have a high rate of vulnerability to coronary heart disease between the ages of 38-54. After menapause, women and men seem to have an equal chance of having coronary heart disease.

3. Family History:
   If either of your parents, aunts and uncles, or your brothers or sisters, have had a heart attack before they were 50 years old, your chances of having a heart attack are increased.

CONTROLLED

1. Smoking:
   If you smoke and inhale, you run a two to six times greater chance of having a heart attack than a non-smoker. The nicotine in tobacco is an irritant to the heart muscle and can lead to an irregular rhythm of the heart beat. When smoking is stopped, generally the effects on the heart are eliminated, and the risk is completely gone.

2. Stress:
   Stress is experienced by each person in a different way. Often a major change in families precedes the heart attack. For example, when retirement begins, all family members have to make a few adjustments. Another example of stress is working long hours with many frustrations. Obviously, it is impossible to name all sources of stress. Some people increase their level of stress by taking on many projects at the same time or by always wanting to be in control.

CONTROLLED (continued)

2. Stress:
To summarize, heart attacks rarely occur when life is running smoothly.

3. Overweight:
Anyone with more than 30% excess of their ideal weight is considered obese. Obesity means additional body tissue to which the heart must pump blood. Often the fat person is less active than their thin counterparts. Thus, the heart is expected to work harder but is often poorly conditioned due to inactivity. For these reasons, it is thought that coronary heart disease is more likely to occur in the obese person.

4. High Blood Pressure:
Blood pressure is a measurement which indicates how hard the heart has to pump in order to get the blood through the blood vessels. High blood pressure indicates some resistance. Often a person has no indication that the blood pressure is elevated. It is thought that people who have uncontrolled high blood pressure have an increased chance of having coronary heart disease and strokes. By lowering the blood pressure to normal levels, the risks of having a heart attack are reduced.

5. Diabetes:
Diabetes is a disease which has to do with the body's use of sugar. People who keep their diabetes under control with medication, diet or both, the risk of coronary heart disease is lessened.

CONTROLLED (continued)

6. Inactive Lifestyle:
Most Americans get very little exercise. Many have desk jobs and may exercise a little on weekends or during certain seasons of the year. The absence of exercise results in very little demand made on the heart. Just like other muscles of the body, the heart needs exercise in order to keep its tone. Exercise also helps the blood vessel walls maintain a healthy tone. Without regular exercise, the person increases the chance of having a heart attack.

7. High Level of Fat in the Blood:
This risk refers to cholesterol and other blood fats. When the blood has abnormally high levels of cholesterol and fats, it is thought that the chances of having a heart attack are greater. This disorder is occasionally an inherited problem, but most often it is acquired and can be reduced by diet and exercise. Sometimes medications are needed to control the blood fats.

When two or three of these risk factors apply to the same person, the chances of having a heart attack are multiplied. For example, a woman over 50 who smokes has a twenty times greater chance of developing coronary heart disease than the same age woman who does not smoke. So by eliminating even one of the risk factors, the dangers of coronary heart disease are reduced many times. This fact is important to keep in mind when determining which risk to eliminate.

ANGINA OR CHEST PAIN

Key Points:

---Angina is a pain or heaviness in the chest or arms.

---Angina is not necessarily the same as a heart attack.

---Angina is different for each person.

---Usually, angina follows some exertion, exercise, or activity.

---Angina rarely lasts longer than five to twenty minutes.

---Treatment for angina can be highly individualized and could include:

1. Taking medication such as nitroglycerin or Inderal.

2. Rest.

3. Surgery.

4. Graded exercise.

Some people experience chest pain which is called angina. The chest pain that occurs before a heart attack is called pre-infarction angina. This kind of angina can be present from a few hours just prior to a heart attack, to an occasional episode over many years. Another form of angina occurs after a heart attack. It is the pain following a heart attack that will be discussed further.

Angina is a pain, pressure, burning or heaviness in the chest or arms. The discomfort may feel like indigestion. Because there are so many variations, it is important to learn to recognize what angina feels like for you. The pain of angina is located in the chest, just as the pain of heart attack is located in the chest. There are several important differences. First, the discomfort of angina is not causing damage to the heart. Angina is merely a signal that the heart is not getting enough fuel for the activity or demands placed upon it. Third, it occurs during exertion, exercise, or after a meal. Just as often, by stopping the activity, the pain goes away. Fourth, angina usually goes away in 5-20 minutes. The pain of a heart attack can last for several hours. Angina is uncomfortable, however, as you become familiar with your body, you can learn to be active inspite of the discomfort.

Treatment

There are four basic approaches to attain relief from angina. These include rest, medication, exercise, and surgery. Obviously this is a broad range and new treatments are developing all the time. Some physicians recommend some of these treatments alone or in combination. The following discussion will be general, however, for your specific treatment plan, please see the Table of Contents for the specific page number. These treatments are not in any special order of importance.

1. The first, and probably easiest treatment for angina is rest. That is, at the first sign of angina, stop what you're doing and sit down, or lie down if you feel like it, Allow your mind to relax and take a few minutes break. If this is done at the first sign of angina, rest will alleviate most pain immediately. This approach works because the demand for oxygen upon the heart is reduced during rest, and usually the pain occurs when the demand for oxygen exceeds the available supply. When the pain is gone, you can often return to your activity.
2. The second approach to angina is medications. These can vary from short action nitroglycerin which is taken after the pain occurs, to other pills which are taken to prevent the pain from starting. All the medications which could be taken for angina are prescription. Therefore, if your doctor has prescribed medication for you, you will find information about the specific pills in the section under medications.
3. A third way of coping with angina is to engage in a carefully prescribed exercise program. The purpose of this approach is to condition the heart and gradually increase the blood flow to the heart. The goal is to methodically increase the amount of activity which you can engage in before you notice any sign of angina, fatigue, or shortness of breath. The heart can be trained much as any muscle of the body. Even walking can have a training effect on the heart. By regular exercise you can increase your endurance for activity. (See section on activity for more specific details.)

4. The fourth and last approach to the treatment of angina is heart surgery. This treatment is becoming available for more and more people, however, it is not the answer for everyone. The surgery is called coronary bypass surgery because the coronary arteries are surgically re-routed in order to increase the blood supply to specific areas of the heart muscle. Usually this approach is indicated when other approaches have been unsatisfactory.

There are several approaches to the treatment of angina. Rest, medications, graded exercise, and surgery are the most common at this time. These treatments, alone or in combination according to your physician's recommendation, can usually allow you to do almost anything you desire.

WHEN AND HOW TO GET HELP

Key Points:

---Call your doctor if:

1. Your angina attacks suddenly occur more often.

2. Your angina is not relieved by three nitroglycerin tablets.

3. Your angina lasts more than twenty minutes.

---Go to the nearest hospital if:

1. Your pain lasts more than twenty minutes and you also are sweating, sick to your stomach, or short of breath.

This is a very important part of recovery from heart attack. Naturally, having to go back to a hospital is something people want to avoid. You may even wonder if you will have another heart attack. Some will push this possibility out of their mind. Others will have great fears of this possibility. There is a healthy and safe approach to this problem. If you know what to do, you do not need to live in fear.

CALL YOUR DOCTOR IF:

1. Your angina attacks are suddenly occurring more frequently. For example, if you have one episode a week and suddenly you have four or five episodes for two or three days, it may be a sign of some change in your heart's health.

2. Your angina is not relieved in twenty minutes.

3. Your angina is not relieved by three nitroglycerin tablets taken 5 minutes apart.

GO TO THE NEAREST HOSPITAL IF:

1. Your pain is not relieved within 20 minutes and it is accompanied by sweating, or nausea and vomiting, or extreme shortness of breath. If the pain is severe, call a coronary equipped ambulance or your local fire department. Having this number taped on the phone can save many minutes during a frightening period.

EMERGENCY PHONE NUMBERS:

Ambulance _____

Fire Department _____

EMERGENCY TREATMENT

Key Points:

---Knowing what to do in an emergency may save precious minutes and relieve worry of the possibility of the crisis occurring.

---Formal instruction may be obtained through the State Heart Association, or your local Red Cross.

---It is important to begin life saving measures immediately, it can help.

Knowing what to do in the case of a cardiac emergency is very important. This section includes information on what to do if this occurs. If the heart develops serious irregularities, or if a heart attack re-occurs, certain steps can be learned to help assist breathing and the heart's beating for short periods of time, until further help arrives. These steps are called cardio-pulmonary resuscitation (CPR) and are taught in classes sponsored by the State Heart Association or the local Red Cross. If you see someone stop breathing, or collapse, call your local fire department or ambulance, then follow the essential steps carefully. Training is most effective when practiced, so at least one of your family is encouraged to enroll in a basic life support class. Knowing what to do in an emergency can not only relieve much worry, but it can save your life or the life of a loved one.

ACTIVITY SCHEDULE

Key Points:

---The first two weeks at home (weeks 2-4 after the heart attack) are an extension of the hospital period. Your activities should be about the same as those you were able to do in the hospital.

---Periods of rest and exercise such as walking in the house are encouraged.

---You may have dramatic mood swings, your body may be less able to cope with extremes in temperature, and other changes in your life may affect your appetite and sleeping.

---During weeks five, six, seven and eight the heart is well on its way to being healed. Active involvement in an exercise program can help insure your recovery and help in improving your appetite and sleeping patterns.

---Walking programs can help condition your heart and the other parts of the circulation.

---Weeks nine, ten, eleven and twelve are an extension of the recovery period. Sexual activities can usually be resumed when you can walk up two flights of stairs without pain.

---Planning your return to work can make your return more successful. You may want to consider part time work, or there may be special activity demands of your job that you would want to prepare for.

When you were in the hospital, there were many people making decisions about what you could do and not do. Some limitations were imposed because of your health status at the time. Rest was the major activity, however some exercise in the form of casual walking was encouraged. This section is designed to enable you to take over the decision-making about your activity schedule. The goal during your recovery period is to gradually increase your activities while your heart is healing. These recommendations are guidelines only and a few alterations may be required. Your doctor may alter this schedule somewhat according to your progress. Some typical activities for the next ten to twelve weeks are suggested.

First Two Weeks at Home (Weeks 2-4 after the heart attack)

This period can be viewed as an extension of the hospital period. For a few days, you are likely to feel especially good. When you have been home for a few days questions may arise about certain activities or events. Often one of the biggest issues is how to spend your time. While you may have been working before the heart attack, now you will be home for a few weeks and that time could go slowly unless you are prepared.

Activities at home will be exactly the same type of activities you were able to do in the hospital. You should be able to walk around in the house, be dressed, take warm, not hot showers, eat cooked meals with the family, and enjoy quiet hobbies such as reading, watching TV, or writing letters. While there are other things you could do, remember that the heart's scar tissue will not be completed for another six or seven weeks. For this reason, it is recommended that your activities be carefully selected during this healing time. This does not mean you have to lay in bed all day or even sit around all day. Small, short periods

of activity actually can help by increasing the blood supply to the heart, thus actually helping the healing process.

Activities

Non-strenuous may be a term your doctor used to describe the type of activities that are okay. Besides avoiding obvious hard physical labor, there are two activities which should be avoided until scar tissue is completely formed.

1. Lifting, or other iosmetric exercise, and
2. Standing in one place for more than 5 minutes.

Lifting is classified as an isometric exercise. Isometric means that the muscles are tightened and held tight, working against themselves, for short periods of time. Often, because of the effort required, you have to hold your breath. As a result you are straining in order to do the work. Straining can cause irregularities in your heart's beating because the straining stimulates a nerve which directly affects the heart. This same situation occurs if you strain while having a bowel movement.

The problem with standing in one place is based on another situation entirely. The leg veins depend upon the movement of the large leg muscles to get the blood to move uphill back to the heart. Therefore, if you stand in one position for more than five minutes, the leg muscles are quiet and there is a tendency for blood to settle in the lower part of your legs. The heart tries to compensate for this by working harder. This type of exertion is discouraged. If something must be done that requires standing in one position for more than a few minutes, try to bend your knees, and move about from time to time. This will make standing much more like walking.

Activities which are encouraged for short periods only are:

1. Walking around the house.
2. Cooking a light meal.
3. Loading the washing machine, but not lifting out wet clothes to unload.
4. Dusting.
5. Knitting.
6. Repairing small appliances.
7. Watching TV.
8. Any hobby that can be done while sitting.

Rest

Obviously, there are probably many other things that could be included in the list. The key is that activities can be spaced so that you do not become fatigued. Rest is an extremely important aspect to your activity schedule. Your heart needs time during every day, in which it has a minimum of work to do. There are a few times during the day that rest is particularly recommended. After meals, for example, it is suggested that resting can be beneficial. In order to digest food, blood is concentrated near the stomach and intestines. This means that there is less blood available to the coronary arteries. Now, this does not mean that this is an all or none situation. Only that if the heart is exerted after a meal, often the demand is great enough that angina results because some of the needed blood is helping to digest the food. Resting is one approach to prevent angina from occurring after meals.

Heat and Cold

While you were in the hospital, the temperature was controlled so that it varied no more than about 10 degrees. While this is a rather

extreme control over the environment, some control is necessary. The body depends on the blood vessels to help in its temperature control. If the air is very cold, the blood vessels become smaller to help conserve body heat. And if it's hot, the blood vessels relax so that heat can be lost. For this reason, extremes in temperature require a rapid response from the blood vessels and the heart. This is fairly complex and, in fact, the effect from cold is probably a little more critical of the two extremes. If arteries become small in response to cold air, coronary arteries can tighten also. Sometimes this tightening can bring on angina pain. It is for this reason, that it is recommended that you stay indoors during these first few weeks. It was mentioned that hot showers should be avoided and it is because of the body's adjusting to heat and cold that this suggestion is made.

Changes in Your Mood

Your emotional reactions to a heart attack are both natural and expected. Since everyone has their own way of responding to a dramatic change in routine, it is difficult to describe what to anticipate. For this reason, an attempt will be made to describe a few of the more common reactions which have been reported by some patients.

Usually shock and disbelief are the first reactions to the fact of having a heart attack. Disbelief is merely one way of reacting, and this feeling may persist until your recovery is complete. Others may get frustrated, feel irritated, or feel helpless about the situation. Worry about your future and fear may contribute to feelings of depression. Often, there will be better or worse days, and the first few days at home can be very happy ones. As the days at home wear on, it is possible that when

awake, you may feel jittery, have difficulty with your memory or concentration, and have a poor appetite. In addition, it is common to have difficulty sleeping. People have described these circumstances as mildly uncomfortable to extremely miserable.

It is known that one or more of these responses are necessary in order to fully recover from a crisis such as a heart attack. This may even be a good time to re-appraise your priorities in life. This does not mean that if you have pleasant feelings that you won't recover. Instead, it is hoped that if you feel jumpy and are having mood shifts, that you won't be too critical of yourself. Most of these fluctuations are under control again in six to eight weeks, and your self reappears.

The way you contend with your reactions is as unique as the reactions themselves. You may want to talk. Your family, friends, a minister, or your doctor are usually available. Some people prefer diversionary tactics. It may be helpful to stay active within the recommended physical limits. As your physical activity increases, your appetite will probably improve and sleep may be easier. If your feelings become overwhelming or last beyond two months or so, don't be afraid to ask for help.

Another aspect that may affect you, is that your relationships with your family and friends may change temporarily. During your recovery, you may need to depend on your family to do things you normally would have taken care of. You may feel like disagreeing but find that your family is afraid to disagree with you. It can take more energy to hold everything inside than to express honest disagreements. It is important to tell your family how they can help without doing too much for you.

You will probably have your first office appointment with your doctor sometime during these first two weeks at home. Recommendations for increasing

your activities may be discussed. The end of this time period (3-4 weeks after your heart attack) marks about one-third of the recovery period. While you have been asked to be passive up to now, the future two months may be very busy. The following sections discuss ways to help you pace yourself within the limits prescribed by your doctor.

Weeks Five, Six, Seven and Eight

During the next four weeks, the heart continues the scar tissue formation, and at the end of eight weeks, the scar is nearly complete. The activities during this time period should be aimed at gradually increasing your activity and exercise endurance. The principles outlined in the section for the first four weeks still apply, however now you are encouraged to begin a more active conditioning program. This exercising must be gradually and continuously progressive. Walking is the best form of exercise at this time because it is easily increased or decreased, it aids both circulation and breathing, and it can be pleasurable. Prior to beginning a walking program, it is recommended that a few exercises be tried to ensure that your joints are limber. Some acceptable exercises include:

Standing:
1. arm circles (3 times).
2. bending from side to side (5 times).
3. raising knee to chest -- first one, then the other (5 times).

Sitting:
1. touch toes (4 times).
2. twisting trunk (upper body) -- 4 times).

When these flexibility exercises are comfortable and you can walk 50 yards and climb one flight of stairs without discomfort or excess fatigue, it is time to begin walking outside.

Walking Program

Begin by walking outside during a time of day that has moderate temperature. This would mean during midday in winter and in the morning or evening in the summer. Plan where you walk before you go so that the area is flat and try to avoid a windy day.

Wind is harder to walk against and also can account for a significant drop in the air temperature. To begin with, five minute walks once or twice a day is helpful and these can be at a leisurely pace (1/4 mile). When this is comfortable and your doctor okays a regular walking program, the following guidelines can be useful.

The levels are described so that you will be walking up to 2 miles in 30 minutes at the end of your recovery period. Before you begin, however, it is important to have a way to evaluate how your heart is tolerating your activity. There are three basic ways. One is your heart rate, or pulse. The second is breathing, and the last is the presence or absence of angina.

1. Pulse: Your pulse is a measurement of the number of heart beats per minute. To find your pulse, place the fingers of one hand on the inside of your other wrist (on the same side as your thumb). You will feel an alternating surging. Each of these surges, or pulsations, is one beat. Counted for a full minute, your pulse rate is determined. At rest your pulse is usually 70 per minute. It may actually be 50 to 90 beats per minute. The pulse rate immediately after exercise should be no more than 115 beats per minute. This can be determined quickly by counting your pulse following the exercise period for 10 seconds. If your pulse is felt 19 times or less during a 10 second period, then you are within the conditioning limits of your heart. When your pulse is less than 115 beats per minute at a given activity level for 4 to 5 days, then you may advance to the next stage of activity. If, however, your heart is beating more than 19 times in 10 seconds (115 beats per minute) immediately following the exercise period, you should return to the prior level of activity at which you had an acceptable heart rate. This kind of monitoring can take you safely through most other types of exercise as well, and indicate that you are maintaining a safe conditioning program.

2. Breathing: Any time you feel like you are not getting enough air, it is time to cease whatever you are doing and rest before returning. Athletes want to get winded in order to increase their exercise tolerance, but for now air hunger can be an early warning sign of too much, too soon.

3. Heaviness, Pressure or Pain in the Chest: This is angina. If you are exercising and angina starts, stop immediately and rest until the discomfort is gone. When it is gone, then you may either continue on or return home. In case the angina does not subside with rest, be sure you have some nitroglycerin tablets with you and take them as you have learned to do. Naturally, if the pain continues or becomes worse, call for help. Don't try to get home on your own as this could increase the demands on your heart beyond its conditioned level of work.

An example of an exercise program:

WEEK	ACTIVITY
5	Walk 5 minutes at a leisurely pace twice a day (total 1/2 mile).
6	Walk 10 minutes at a leisurely pace one time per day. (1/2 mile)
7	Walk 10 minutes at a leisurely pace one per day.
8	Walk 15 minutes at a leisurely pace (3/4 mile) once per day.
9	Walk 15 minutes at a leisurely pace (3/4 mile) once a day.
10	Walk 20 minutes at a leisurely pace (1 mile) once per day.
11	Walk 20 minutes at a moderate pace (1 and 1/3 miles) once per day.
12	Walk 30 minutes at a moderate pace (2 miles).

If you find that angina is regularly preventing you from proceeding with your exercise plan, try taking a nitroglycerin prior to the activity. You may find that by doing this, your exercise tolerance will increase dramatically.

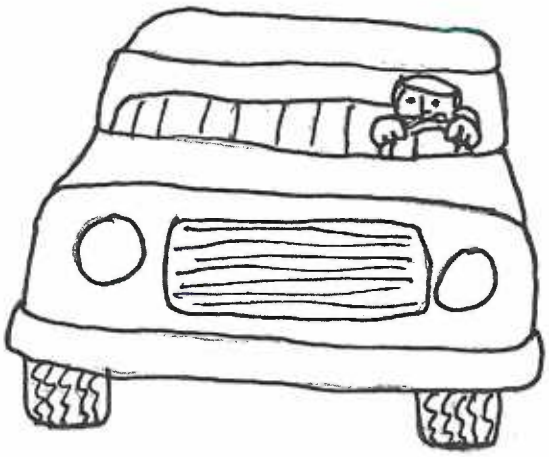
Another important point is to exercise before rather than after meals. You will have a better appetite. Also you will be less likely to get angina because your heart will be able to deliver blood it needs for the exercise without being expected to deliver blood to the stomach for digesting a meal. In fact, it is best to wait an hour after a meal before

beginning to exercise.

Your walks may be your time to be alone or a time to share with some family member. Either way, this should become a regular part of your day.

Driving a Car:

Occasionally, people have vision problems for awhile after a heart attack. In addition, driving can be very stressful, especially if done during heavy traffic periods. It is usually recommended to only take rides in the car until your conditioning program is built to walking 1 mile. Your doctor may okay driving sooner, depending on your individual needs and circumstances.



Weeks Nine, Ten, Eleven and Twelve

As before, continue previous guidelines for increasing your tolerance for exercise. By this time, most of you will be feeling closer to your usual self. If there are activities which you haven't tried yet, think through what is required in the way of energy and try to compare it to something you have already done. In this way, you will know whether to avoid it, carry it out in shorter time periods, or proceed without concern.

Sex

You may have wondered when sexual relationships may be resumed. You have been instructed to wait until your heart is well healed. Sexual

activity puts an increased work load on the heart and for this reason, it is recommended that your exercise tolerance be equivalent to walking two miles (or going up two flights of stairs). The pulse may reach 160 beats a minute and blood pressure also rises during intercourse. Therefore your heart and body must be as ready as your mind before sex is resumed. A few suggestions may help minimize yours and your partner's nervousness. But one of the most important aspects is the love and caring that can be shared while returning to a normal life.

One of the most important aspects at this time is the atmosphere. It is recommended that your relationships be with your usual partner, in familiar surroundings, and with plenty of time. While alcohol is a relaxant, the body must cope with its presence similar to the way it copes with digesting food. It is suggested that food and drink be several hours prior to, or perhaps after intercourse.

Because of the physical exertion involved in sexual relationships, it is important to conserve energy whenever possible. Some couples find one or another position more satisfactory. As in other forms of exercise, the isometric or straining types of activity are discouraged. Holding yourself up with your arms uses a tremendous amount of energy.

Occasionally, some people experience chest pain or angina during intercourse. While this could be disconcerting, there are some ways of dealing with this. First, it may be a signal that your heart is not conditioned sufficiently for the amount of work required by the activity. Going another step of your activity program may be the answer. Another aspect may be fatigue. It is important to have your sexual contacts when you are rested. Third, it may be necessary to slow down a bit. Remember there are many ways to express love and affection. The heart is very

sensitive to emotions so that it may be helpful to look at alternatives besides intercourse temporarily. Some folks have mentioned that becoming reacquainted with your partner much as when you were courting can be helpful and maybe fun.

Nitroglycerin can also be helpful if angina is commonly interrupting your efforts. Taken prior to sexual intercourse, nitroglycerin lasts about one hour. If you continue to have angina during activity of any kind, including sex, report this to your physician. There may be other approaches to alleviate the discomfort. Normally, intercourse makes your heart pound and makes you somewhat breathless. This is normal, remember?

Returning to Work

Sometime between 10 and 12 weeks after your heart attack, your doctor will probably tell you its time to go back to work. He may wish you to return on a part-time basis, that is half days or a few days a week. Nowadays, most employers are very understanding and are more than willing to abide by your doctor's orders. Your biggest problem may be convincing your employer that you are able to handle a full work load. In this case, your doctor may be able to help. Otherwise, just try to remember, the boss does not know how much work you have been doing at home in preparation for your job's physical and mental demands. In a few cases, your doctor will advise you to change your line of work. This is more often an exception rather than a rule. However, it is probably wise to begin planning your return to work about a month early. If a change is necessary, this time will enable you to begin early. Some people decide on their own to change jobs. If this refers to you, remember that new jobs or tasks can be stressful. It may be easier to postpone that kind of change until you try your present work load to evaluate its difficulty. You can always make a move later.

REDUCTION OF RISK FACTORS

Key Points:

---Stopping smoking eliminates this risk to heart disease.

---Exercise and diet can help you lose weight.

---High blood pressure can be controlled with diet, exercise, and medication.

---Diabetes must be kept controlled in order to aid healing.

---Reducing blood cholesterol can help prevent further heart disease.

---Your activity schedule is a start at changing an inactive life style. You can develop an interest in a sport or exercise after the recovery period.

---Everyone experiences some mental or emotional stresses. Relief from persistant stresses which are possibly self imposed can reduce the risk of heart disease.

---The commitment to reduce risks which contribute to heart disease is your responsibility.

---This booklet and your doctor can explain why risks should be controlled, and we can give you suggestions for ways to reduce the risks, but only you can do anything about them.

SMOKING

Smoking has a dramatic effect on the heart. It can increase the number of beats per minute (pulse rate), and use up oxygen the heart needs. When a cigarette is smoked, the nicotine has the effect on the blood vessels which is to constrict them and make them smaller. This effect lasts about one hour and as the body eliminates the nicotine, the blood vessels' size returns to normal. While the nicotine is still in the body, the heart must work harder in order to pump blood through the smaller opening in the blood vessles. If a cigarette is smoked more than once an hour or so, then the body has no opportunity to return to its normal state. Smoking also contributes to high blood pressure. For all of these reasons, your doctor and others have told you that you must stop smoking. This section is written for those of you who have already quit, and also for you who started smoking again.

How to Stay a Non-Smoker

There are some ways to help yourself remain a non-smoker. First, remember that the worst is over. You have taken the first steps, that of quitting. Give yourself some pats on the back for it! At first you may not have had any choice, but now you are making a choice for longer life and better health.

Many people fear that they will gain weight after they quit smoking. You may have used a cigarette when you had the urge to eat a snack and thus had avoided a few extra pounds. It is common to gain 2 to 10 pounds after quitting smoking. If more than this is gained it is usually because food is substituted for cigarettes. The hand to mouth

habit is hard to control. However, a few pounds are not going to endanger your health nearly as much as the constant effect of cigarettes on your heart and blood vessels. Many people, once they have quit smoking have enough more energy that they are able to be more active and thus reduce the effects of the 2 to 10 pound weight gain.

In order to keep the weight gain to a minimum, some substitutes can be useful. Sugarless candies and gum are helpful. These substitutes have a few calories so some control over their quantity should be maintained. It can also help to drink water, low calorie beverages such as fruit juices, diet drinks, and V-8 juice, etc. Coffee is often closely associated with smoking a cigarette so beware!

Another approach to averting the cravings of cigarettes, is to be active. Short walks, activities which keep your hands occupied such as writing letters, putting models together, knitting and so on can be useful diversions. You might call a friend. While occasional cravings can continue for some time yet, most of the urgent discomforts are soon behind you. The body is able to eliminate the built up substances in about 2 to 4 weeks. The lungs may take longer but as mentioned before, the worst is over. Setting short term goals (hours, days, weeks, months) can help you say no. For each time you are able to reject a cigarette, reward yourself.

A few months down the line, it is important to remember some of your original reasons for quitting smoking. Now that you have quit, there is a much less chance of having problems with chest pains or even another heart attack. Keep up the good work, its a great gift to yourself and to your family.

HOW TO BECOME A NON-SMOKER

There are three essential steps to quit smoking. First, you must find a meaningful reason to quit. Second, a decision must be made to try to do it and to succeed. Third, a change in smoking habits is necessary. This can be either to quit suddenly, or to go through some outlined steps to interrupt some of the developed smoking patterns. Remember, the harmful effects from smoking are related to the quantity smoked. If all else fails, you can cut down and still be helping yourself.

Following is a list of positive steps for you to take:

1. Write down all your reasons for wanting to quit smoking. Reduce this list to three or four of the most important to you. Concentrate on the positive benefits of not smoking.
2. Decide on a target date to stop. This could be a few days away or several weeks.
3. Make a cigarette tally. For a couple of days, each time you smoke, write down three things. First, describe your feelings at the time you reach for a cigarette, such as feeling bored, nervous, angry, hungry, etc. Second, write down what you are doing, for example, having a cup of coffee or tea or talking on the phone. And third, assign a number for each cigarette. On a scale from 1 to 5, with 5 being for the least important cigarettes and 1 for the ones you can't live without.
4. When you have your tally completed for two days, you are ready to begin quitting.

5. Each morning decide how many cigarettes you will smoke. Make this number progressively fewer each day so that by your target date you will have reduced the number to three or four cigarettes. You will probably want to cut out the least important cigarettes first, that is the #5's.

6. General Tips:

   a) Buy only 1 package at a time. Then when you near the end of a pack you will have to make a special trip.

   b) Carry your cigarettes in a different place than usual. If they are normally in your pocket, put them in a drawer.

   c) Never carry matches or a lighter with you. This is to make it longer between the time you think about smoking a cigarette and the time you actually light up. It may give you time to talk yourself out of it.

   d) Give away your ashtrays, or hide them.

   e) Develop substitutes such as artifically sweetened candy, gum, water, juices, and use toothpicks, or keep your hands occupied.

   f) Change brands at least weekly, moving to lower tar and nicotine brands. This will make them less enjoyable.

   g) Exercise frequently to relieve nervousness.

   h) Substitute opposite gestures. Example: instead of reaching for a cigarette, move something away from you.

   i) Refer to your list of reasons to quit smoking.

   j) Write down a list of good things about not smoking. Also record the times when you reach for a cigarette and don't light it. Each time you do this, reward yourself by looking at your list of good things about not smoking.

   k) At times relaxation can be helpful. Benson wrote a book called <u>The Relaxation Response</u>. It can assist you in easy ways to relax your body.

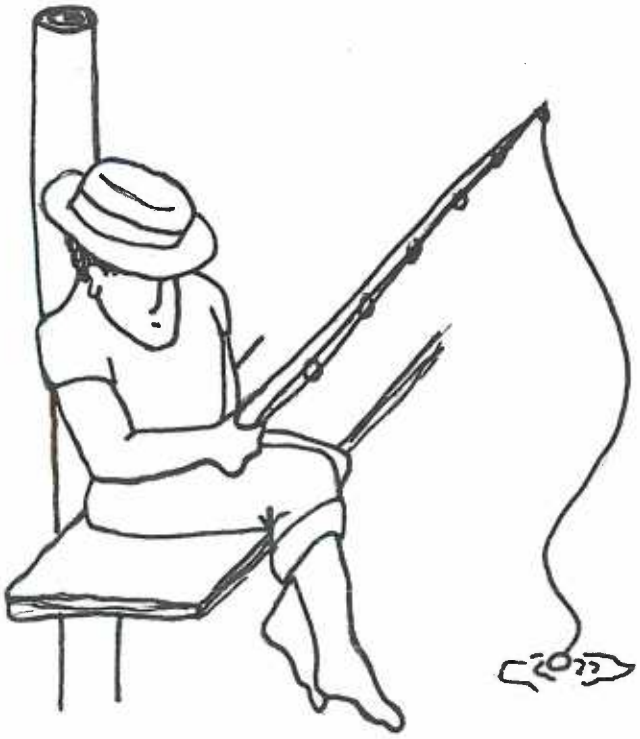
   l) Another book which may help is the <u>Stop Smoking Book</u>, by Margaret McKean.

7. Now that you have cut down the number of cigarettes you smoke, cut out the last few and join the non-smoking group.
8. Now refer to the section on "How to Stay a Non-Smoker."

If you continue to have difficulty in quitting smoking, the local lung association has many tips and sources of agencies in the area for alternatives. These can be helpful to you and may provide you with that extra assistance.

STRESS

Stress is present in all life. It is necessary unless one lives in a vacuum. Stress can have an effect on the body. The part that stress plays in heart disease has been defined in a couple of ways. The first is related to life situations. When many events pile up in a short period of time, it tests the individual's tolerance for stress. If this occurs in an individual who has one or more of the other heart disease risk factors present, it may have a significant impact on the body. In fact, most people who have had a heart attack can name an emotional crisis or unusual fatigue which occurred before the heart attack. While it is nearly impossible to predict which events might contribute to heart disease, it is strongly supported that the greater number of stressful events, the more likely it is to result in some kind of physical difficulty.



The second way that stress has been found to have an effect is found in your particular style of dealing with life's demands. If you have two jobs, work overtime, are constantly under extreme time pressures, have difficulty relaxing during leisure time, and have intense feelings over relatively small issues, then you may have an increased risk to heart disease. Certainly, if this is your nature and then you are faced with events that restrict your control over your time, the chances of you being at risk to heart problems is increased.

What can be done to reduce the effects of these stresses and your responses to them? Obviously, it is impossible to control all the events that may contribute to stress. Your reaction to events can be changed. When you have no control over the outcome of an event, such as retirement, a job transfer, or something similar, it is possible to examine your alternatives to minimize the effects on your body. For example, if you are asked to transfer, there are a number of possible choices. You could pack up and move, quit your job, or some compromise in between.

Another aspect to consider is how your time is being spent. Is there a balance between your leisure time and work? Do you allow yourself to enjoy some time off the job with meaningful activities? Exercise or sports can be meaningful, especially if they help reduce a risk for heart disease.

Relaxation techniques can be learned to minimize the effects of stressful events. This does not mean meditation or trance states. The body can be trained to relax when certain cues are present. For example, once relaxation is learned, you can initiate the technique whenever you develop a headache or an acid stomach. There is a book called Relaxation Response by Benson, which may be helpful in helping you learn some of these techniques.

The major point about reducing stress is to acknowledge its presence. If stress plays a part in your life, then it is even more important to reduce the effects of some of the other risk factors. Remember, the presence of more than one factor multiplies your susceptibility towards heart disease. By altering your reactions to stresses you can significantly reduce your risk to heart disease.

OBESITY

Overweight is related to a distinct increase in risk of developing a heart attack. The level of overweight at which heart problems will develop is not known. Obesity is considered to be present if you are 30% or more over your ideal weight. For example, if you should weigh 150 pounds, 30% of 150 = 45 pounds. A weight of 195 or greater would be considered obese for you.

The primary risk involved in being overweight is that you are usually less active than your thin counterpart. And when you do exercise, it is more work for your heart to rise to the demands. You may also have a fatty diet.

If you tend to be overweight, the period immediately following the heart attack may be especially difficult. You may eat when you're inactive or nervous and perhaps your usual diversions are temporarily taboo. To avoid gaining weight during your recovery period will be an admirable goal.

If you decide to reduce your weight, be sure to choose a balanced diet. Any special diet should be cleared with your doctor since some of these are high in animal fat, are unbalanced, or may be a stress for your healing heart. It can be helpful to keep low calorie snacks available and to time your exercise periods to help control your appetite. As your exercise or activity program increases, you will be burning up some of the calories. It takes a lot of activity, however, to burn up the calories contained in a glass of cola. You would have to walk 1 and 1/2 miles!

There are clinics and programs to assist you if you want to lose weight. TOPS (take off pounds sensibly). Weight Watchers, Diet Centers,

and many others can give you support. Sometimes by using these services, your weight loss will be noticed in different ways. These groups help by being available for extra support when you are having difficulties sticking to a diet. All of the alternatives should be cleared with your physician so that if any special circumstances are present, you will be able to include these.

HYPERTENSION --- HIGH BOOD PRESSURE

If you had high blood pressure before the heart attack, it may have returned to normal levels for awhile afterwards. This may be a temporary change and periodic checks are needed to determine if your blood pressure elevates above normal.

High blood pressure can be present without changing how you may feel. Some of you may have had high blood pressure before your heart attack and not have known about it. If this is so for you, your doctor may have started treating it during your hospital stay.

What is high blood pressure? Hypertension or high blood pressure is a condition involving the heart and the blood vessels. It is when the heart is forced to change its work load in order to pump blood against a more resistant blood vessel. The causes of this may be due to a hereditary factor, being overweight, a fluid and salt inbalance, or hormonal. While it is known that this list of problems contributes to high blood pressure, the cause is not known.

The effects are known, however, so that controlling high blood pressure is very important. Treatment for hypertension can involve medication, diet, exercise, weight loss, relaxation and quitting smoking. These must be individualized to you. If your doctor has prescribed medications for blood pressure control, information is included in the medication section.

INACTIVE LIFE STYLE

The effects of a physically inactive life style are most obvious when viewed along with other risks to heart disease. Inactivity or sedentary living is common in the American culture. If leisure time is spent watching TV, playing cards, riding a cart while golfing, etc. then you may have a life style which contributes to heart disease. Activity which is done once a week, or even more often during summer months only, is too erratic to have a conditioning effect on the heart and circulation.

To alter this may be as difficult for some as quitting smoking can be for others. Some ways that may be helpful are as follows:

1. Enlist the help of friends. If you begin on a walking program, take someone along. This may help provide some support to get you through those days when it would be easier to stay at home.

2. Try to stick to a schedule. For example, you may want to exercise on Tuesday, Thursday, Saturday and Sunday.

3. Give yourself planned weekly days off.

4. Joining a group or taking a class may be helpful. If the exercise is strenuous, however this should wait until after your recovery program.

5. Aerobics and Aerobics for Women are books that provide sound advice about exercising when your doctor has cleared you medically.

6. Other community resources may be found through community or junior colleges, YMCA's, and the Heart Association.

7. Sports such as golfing, tennis doubles, swimming, and particularly walking are beneficial to your heart's and total body conditioning. The major factor is regularity and routine.

DIABETES

If you are diabetic and are not sure how to control it, it is important now more than ever to learn to control the disease. If you become diabetic as an adult, chances are that control can be maintained by proper diet and exercise. Your doctor can help with the treatment program. Diabetes that is uncontrolled causes wounds to heal poorly, so in order for your heart to heal properly, carefuly control is necessary.

The diabetic foundation has information that may help you maintain control. Also, your diabetes may be unpredictable during the recovery period since your usual activities, diet, and rest may be different temporarily. As the healing becomes more complete, a more usual regime should be possible.

HIGH LEVEL OF CHOLESTEROL AND FAT IN THE BLOOD

A reduction of weight along with less fat and sugars eaten will lower the blood cholesterol levels. Although it is doubtful this change will effect the state of your blood vessels' plaque and debris that has already built up, it may prevent further build-up and deterioration.

In order to reduce blood fats, it is thought that diet fats not only need to be lowered or eliminated, but also more complex or unrefined grains and sugars need to replace the refined foods normally eaten. These dietary changes may be started slowly by just trying out a few recipes. Vegetable protein substitutes such as beans, lentils, and soy products can be tried once a week or month to replace meat. Poultry and fish are low fat alternatives to beef and pork.

For most people with a seriously high cholesterol level, diet alteration may not be adequate. Medication may be prescribed to help your doctor to help your body utilize the blood fats more effectively.

DIET

Key Points:

---Eating small, frequent meals puts less demand on the heart.

---Reducing salt, eating fewer calories, and cutting back on fats can help reduce risk factors.

---Using weight loss principles can help you keep off extra pounds during a relatively inactive time.

---Local agencies such as the heart association, the state and county extension services, and local universities can offer recipes and guides for meal planning.

---Caffeine is a heart stimulant, so that coffee and colas with high caffeine should be avoided.

Although many of you will have special diets to follow, there are several things that you can do to improve your eating habits in order to aid your healing heart. Eating behavior can have an effect on three of the risk factors discussed: obesity, high fat levels in the blood, and high blood pressure. By assuming healthy eating habits one can prevent three risks to heart attack. It is understood that changing a total way of eating may be easier said than done, however it is a very economical way of preventing heart disease.

Small, frequent meals are the easiest and most efficient way for the body to get its food. Digestion requires increased blood supply and oxygen to the intestines. This means that immediately following meals there is less oxygen available for the heart. While the heart is healing, this can make a difference. Oxygen that is needed by the heart can be shared in small amounts for the digestive needs rather than in the large amounts required to digest a large meal. In addition, fats require more energy to digest than proteins and sugars. You can prevent angina from occurring by eating smaller meals. Caffeine is a heart stimulant, and therefore coffee and colas should be avoided during the healing period. Caffeine may also make it difficult for you to sleep.

Another preventative measure is to reduce the amount of salt that you're used to eating. Salt plays an important role in the fluid balance of the body, and can affect the blood pressure. If you generally add salt to food at the table, you might consider leaving the shaker off the table. Or, leave salt out when cooking, so that if you like to add salt when eating, you still have reduced your intake. Everyone needs some salt and most of what you need is naturally present in foods. These modifications are only mild, however, any extreme reduction in salt that

is needed would be recommended by your doctor.

During the recovery period, you may feel that you are gaining weight. This could be due to a drastic change in your activity level. While your activities are limited it might be helpful to follow some of the principles of weight control.

1. Keep sugar-free candy, gum, and soft drinks available for snacks.
2. Fresh vegetables and fruits have fewer calories than cookies and candies.
3. Eating smaller amounts more frequently may help prevent over-eating.
4. Coffee is an appetite stimulant.
5. Broiled food has fewer calories than fried.
6. Trimming fat off meat can save many calories.
7. When eating out, the servings may be larger than you are used to. Doggie bags are usually available.

Dietary habits may be changed if you wish. Some changes can help reduce the effects of high blood pressure, overweight, and high blood fat. The heart association cookbook has many tasty recipes available. Also, the university extension service, or the county dietary services can help you with home canning information and food preparation for those of you on special diets. If you must follow a special diet, specific information follows.

LOW SALT (SODIUM) DIET

Salt is present in all foods. A normal diet contains all the salt necessary for life. In some instances, a reduction in salt is necessary. If you must limit your salt (sodium) intake, the following suggestions may be helpful. Diets low in salt must be obtained through your doctor.

There is usually a very high salt content in pre-prepared foods. Seasoned salts and spaghetti, stew, gravy, and sauce mixes also have high salt content. Since most people use these preparations because of their convenience, it is suggested that you consider two things. First, there are ways to prepare food quickly using raw ingredients. In the case of cooking, high heat, microwave ovens, and pre-mixing ingredients using low salt spices for favorite dishes can save time. Using real spices instead of spiced salt can reduce salt intake a great deal. Second, one can utilize more raw foods, such as raw vegetables, salads, and fruits. These tend to need less salt than when cooked.

Many canned vegetables, and a few frozen vegetables are prepared with salt. Home canning, and all raw vegetables are good alternatives. Most frozen vegetables do not have salt added.

Fortunately, most prepared foods have good labeling. But what do you look for? Ingredients are listed so that the greater quantity of substance is listed first, and the smallest amount is last. Actual quantities are very rarely listed. Some of the words which indicate salt are:

Salt	Sodium Cyclamate	Sodium Alginate
Baking Soda	(artificial sugar)	Sodium Propionate
Baking Powder	Sodium Saccharin	Sodium Benzoate
Brine	(artificial sugar)	Sodium Sulfate
Monosodium Glutamate (MSG)	Di-Sodium Phosphate	Sodium Hydroxide

Besides the foods that have had salt added, there are some foods that are naturally high in salt. Cured meats such as ham, bacon, or sandwich meats are very high in salt and should be avoided. Peanut butter, celery, milk, cheese, sauerkraut and pickles all contain salt. For many of these foods, it is enough to just limit them to small amounts or occasional use. Fresh fish may be stored in salt water, so you may want to rinse it before cooking.

Salt substitute may be used if your doctor okays it. Any extreme salt reduction may require further counseling. Diets are available by prescription from a hospital or from the heart association. Local agencies such as the county extension service can help you with cooking techniques, home canning for low salt diets and some recipes.

If you want to purchase foods containing no sodium (salt), most grocery stores have a dietary section with a small selection of low salt soups, vegetables and other canned foods, and low salt spices. Generally speaking, the price of these foods are more expensive. Health food stores are usually more expensive than this special food section in the grocery store. The selection in the health food store may include some more unusual items. If you have a great deal of difficulty finding an item, the grocery stores which are located near retirement neighborhoods and developments are more likely to have a broader selection. Good luck on your new diet, shopping, and cooking.

CONGESTIVE HEART FAILURE

Key Points:

---Congestive heart failure is the medical term for a reduction in the heart's pumping action.

---Fluids can build up in the lungs or legs.

---Signs of congestive heart failure include feeling short of breath, a dry cough, swelling in your feet, and tiredness.

---Congestive heart problems can be treated and controlled.

---Treatment usually includes strengthening the heart muscle and reducing the amount of total body fluid the heart must pump.

Congestive heart failure is the medical term meaning that the heart is not pumping efficiently and is causing problems for you. It does not mean that the heart is not beating. There is treatment for this problem and it depends on your help. To assist you, a brief discussion of the heart's action, as well as some common treatments are included in this section. If a specific diet or medication is prescribed, you will find that information under the diet and medication sections.

The disorder of congestive heart failure involves the pumping action of the heart. This type of congestion is somewhat like a flooding river. The rivers (blood vessels) can only handle so much water (blood) and when there is a slowing of the flow rate of water (inability of the heart to pump the blood adequately) and more water is added to the system than it can get rid of (through the kidneys), the water overflows into the surrounding lands (lungs or legs), resulting in flooding (swelling or congestion).

If the fluid build up is to the lungs, the water fills some of the air spaces so that breathing is made difficult. Often, it feels like you cannot get enough air. There may be a slight cough or you may have difficulty laying flat.

When the fluid builds up in the legs and feet, the skin becomes tight. Shoes are tight and may be very uncomfortable. At night, when the legs are more level with your heart, you may find yourself getting up to go to the bathroom because the fluid has shifted from your legs, and is carried through the blood to the kidneys which get rid of the excess water.

Treatment of Congestive Heart Failure

Increasing the strength of the heart muscle is usually one of the treatments. This can be accomplished with medication. The digitalis type medicines affect the heart by making each contraction or squeeze much

stronger. There are also medications which help the body get rid of excess water. By reducing the total amount of fluid the heart must pump, the heart can function more efficiently.

Another treatment is your activity regime. In one sense, the heart in this condition is lazy. You can increase its tolerance for work by making the work easier. For example, if chores are normally carried out in one hour of continuous work, it takes less energy to do the job 15 minutes at a time with breaks in between. Sitting instead of standing, and laying down or sitting with your feet elevated also puts less work on the heart. Try to avoid becoming overly tired since your reserves are lower.

In some cases, carefully prescribed activity may increase the heart's tolerance for increased demands. If you have congestive heart failure, you may work with your doctor to carefully condition your heart.

MEDICATIONS

Key Points:

---Know the name and dose of each medication prescribed.

---Know what the medication is for and when to notify your doctor.

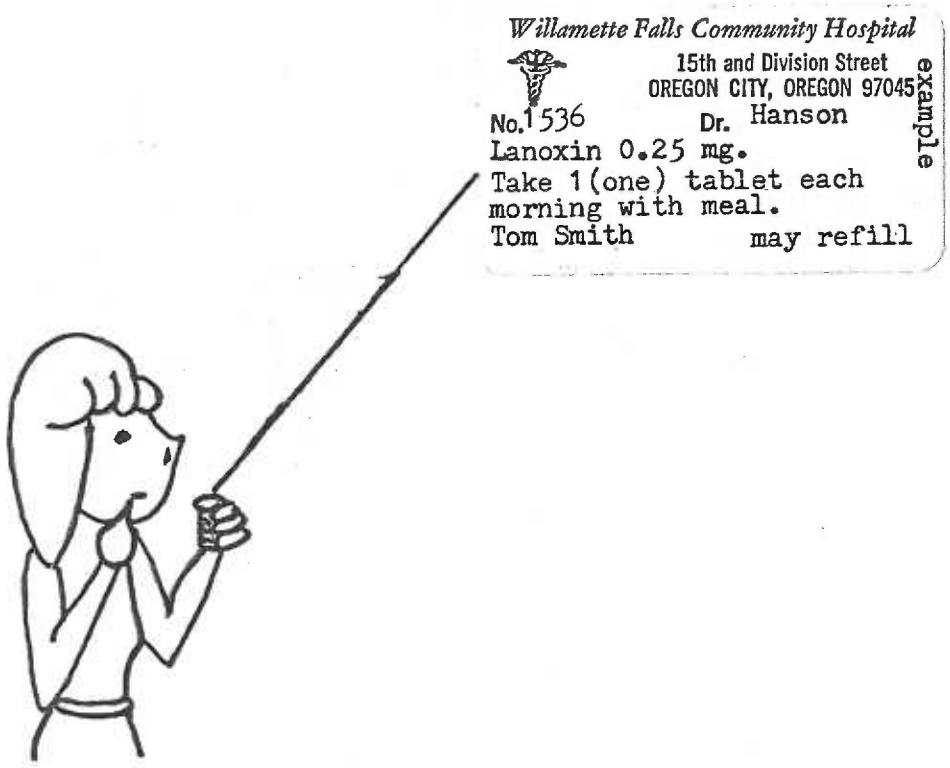
---Keep medications in the original prescription bottle to avoid confusion about their identity.

---Try to take the medications at a routine time of the day, for example, with meals, when brushing your teeth, or at bedtime.

---Keep all medications out of children's reach.

General Medication Information

All medications have desired and undesirable effects. The desirable effects are obtained by taking certain amounts at certain times. It is important to know the name of the medications you take. Also, it is helpful to know a little about the action or purpose of the medication.



On each prescription bottle there is certain information that will help you. Each bottle has your name, the name of the medication, the number of pills to take for each dose, and the number of times each day you should take the medication. Also, on each bottle's label is the name of your doctor, a prescription number, the name of the pharmacy, and if you may have the prescription refilled. Names of medications can be either in the form of a brand name or they can be the chemical name. For example,

Tylenol, is a trade name of the medication whose chemical name is acetaminophen. Sometimes, the doctor prescribes the medication according to a brand or trade name, and sometimes it will be prescribed according to the chemical name. In either case, the medication is essentially the same.

The dose of medication to take, is the number of pills to take, and the number of times per day that you should take them. Most often the dose is one tablet or capsule, but it is not unusual to take 1/2 tablet, or two or three at a time. The pills are manufactured in certain sizes and your doctor adjusts the number of pills to your body size and needs. The dose is usually given in a certain number of "mg.", which is an abbreviation for milligrams. A few medicines are listed in "GM" (grams), or "gr." (grains). Each of these are measured amounts.

The time that the medication should be taken is determined by your doctor so that the effects of the pills will be in your body at the time it needs to be in order to have adequate action. Some medications are most effective when taken with meals, some need to be taken on an empty stomach. All of the information will be included in the section about the specific medication.

If you take more than one medication, it can be confusing to remember day after day, if you have taken the pills. By taking the medicines at regular times each day, it can become a part of your normal routine. Some people set out their pills for the whole day so that they know if they have taken certain pills. Most drug stores have special boxes which have cubicles for your pills in which you can put the weeks' or days' pills in. This acts as a reminder and can confirm that you have taken the medication.

Except when you have a specific purpose, it is generally recommended that you keep all your medications in their original containers. Then, if for some reason you need to identify the pills, the name on the bottle is the actual name of the pills inside. Another reminder, keep all medications out of children's reach. Most of the druggists give you child-proof caps, but if you ask, they will give you a bottle with a regular cap.

How do you get drugs refilled? Some prescriptions can be automatically refilled by taking the bottle to the drug store. If you need the doctor's okay first, and you are almost out of pills, usually a call to the office will allow you to get the medication refilled until you can make an appointment. Most medications need to be taken continuously so that it is important to arrange for refills a little before you run out.

Medications are often expensive and when you are taking many of them at the same time, it can add up quickly. There are some drug stores which advertise lower prices. You can be sure that all medications must be dispensed according to what the doctor has prescribed. If you can find lower prices, you can trust that the medicine is the same as if you pay more. Some drug stores give senior citizen discounts. It pays to shop a little.

On the next page is a list of your medications. The name, dose, and time of day that they are to be taken, are written all on one page. Information about your medication is given separately for each drug. If you have further questions, be sure to ask your doctor.

LIST OF MEDICATIONS

NAME	DOSE	TIMES

DIGITALIS: Lanoxin, Digoxin, and Digitoxin

Digitalis is a medication that has a direct effect on the heart. It is prescribed for three main reasons. One is to treat and prevent recurrent rapid heart beats. Second, it can be used to control irregular heart beats. The last, and probably more common use, is to strengthen the cardiac muscle by helping it squeeze more tightly with each beat. Another effect of digitalis is to help the enlarged heart become smaller. These mechanically-related effects make the heart more efficient as a pump. That is, less energy is required by the heart to do the same amount of work when the heart muscle is stronger.

Digoxin (Lanoxin) is a very potent form of digitalis and is prescribed in fractions of milligrams (mg). Common doses taken daily are 0.125 mg., 0.25 mg., and 0.50 mg. Because of the very small doses needed to maintain the desired effects from the medication and because it takes 24-72 hours for the medication to be completely eliminated from the body, it is important that exact doses are followed. Interestingly, extra doses of digitalis above the prescribed ones may have the opposite effects from those desired. That is, in too high amounts, the digitalis may make your heart weaker. During the first few days of treatment with digitalis, you may be given a few extra doses. If this is done, it is to have the medication build up in the blood quickly. Digitalis has no effect on pain, so the only time to take extra doses is when your doctor specifically tells you.

The desired effects of digitalis are to strengthen the heart muscle and to slow the rate of the heart. A few side effects may occur. Side

effects are not dangerous usually, but are more often uncomfortable. The most common side effect from digitalis is an upset stomach at the time you take the pill. It is suggested that you take the medicine with some food, a glass of milk, or at least have something on your stomach to decrease the irritation. Many people have no difficulty at all.

If the digitalis builds up in your body faster than it is being eliminated, you may develop toxic effects. Toxic signs are things you may feel when the usual dose is not correct for you. This might be due to a dramatic change in your weight, in your overall health, or for many other unknown reasons. It is important to know the toxic signs so that you can report them to the doctor, should they occur.

The major toxic signs are:

1. An abnormally slow pulse for several days.***
2. Feeling very sick to your stomach or throwing up.
3. No appetite.
4. Persistent headache, that will not go away with your usual treatment of aspirin, etc.
5. Changes in your vision, especially changes in how you see colors, or seeing flickering dots, and sudden burning in your eyes.

The occurrence of any of these signs for several days are good reason to notify your doctor. Although there are other reasons you may be having these problems, digitalis is one possible reason and this needs to be checked.

***For Pulse Taking Instructions, see next page.

Pulse Taking:

Your pulse is a measurement of the number of heart beats per minute. The monitoring of your pulse is one way to observe the desired effects of digitalis. Normally, digitalis will have a slowing effect on your heart. However, if a sudden slowing occurs, it may be a sign that digitalis is building up in your body. It is difficult to tell you just how slow your pulse may become because each person is an individual situation. If, however, you take your pulse daily at a regular time of day, such as when you normally would take your digitalis, then if you notice a drop in your pulse of 10-20 beats per minute, then you have identified a sudden slowing. It is important to ask your physician what to do if you should find your pulse suddenly slower than usual. You may want to ask this at one of your regular appointments so that you know ahead of time. This circumstance is not an emergency but needs to be solved before all your digitalis is washed out of your body in 48-72 hours.

How to Take Your Pulse:

To find your pulse, place the fingers of one hand on the inside of your other wrist (on the same side as your thumb). You will feel an alternating surging. Each surge, or pulsation is one beat. Counted for a full minute, your pulse rate is determined. At rest your pulse can range from 60-100 beats per minute. A short cut, is to count your pulse for 10 seconds and multiply that number by 6. For example, if you count 12 beats in 10 seconds, your pulse would be 72 per minute.

DIURETICS (Water Pills)
(Potassium Sparing Diuretics)

Diuretics are given to get rid of excess body water. They may be used in the treatment of hypertension (high blood pressure) or congestive heart failure. The medication acts on the kidneys to aid the kidneys in getting rid of excess water. Excess water in the body may be noticed three ways:

1. Sudden weight gain. Water is very heavy and even 5 pounds of weight can reflect several quarts of water in the body.

2. Swelling in the feet or ankles. Although ankle swelling (edema) is noticeable on hot days or if you are on your feet a lot, the swelling referred to here is present at other times also.

3. Shortness of breath or air hunger. This sign can mean an imbalance of fluid with an abnormal fluid collection in the lungs.

Any of these signs may require treatment with diuretics. Some common names are: Aldactone, Aldactazide, and Dyazide.

Diuretics tend to wash out some of the body's salts when the water is washed out through the kidneys. The main salt, sodium, is desired to be lowered. Another salt, potassium, is not washed out by these particular diuretics. Instead, potassium may be spared. This is mentioned because some other diuretics wash out potassium along with the other salts. Because potassium is spared, occasionally it may build up. The signs of potassium build-up are: weakness, muscle aching, muscle cramps, stomach cramps, and mental confusion.

If you have signs of an excess water build-up, or signs of potassium build-up, then you should contact your doctor so that he can advise you.

DIURETICS (Water Pills)
(Potassium Depleting Diuretics)

Diuretics are given to get rid of excess body water. They may be used in the treatment of hypertension (high blood pressure) or congestive heart failure. The medication acts on the kidneys. There are countless types of medications which aid the kidneys in getting rid of excess water. Excess water in the body may be noticed three ways:

1. Sudden weight gain. Water is very heavy and even 5 pounds of weight can reflect several quarts of water in the body.
2. Swelling in the feet or ankles. Although some ankle swelling is noticeable on hot days or if you are on your feet a lot, the swelling referred to here is present at other times also.
3. Shortness of breath or air hunger. This sign can mean an imbalance of fluid with an abnormal fluid collection in the lungs.

Any of these signs may require treatment with diuretics. Some common names are: Hydrodiuril, Lasix, Diuril, and Hygroton.

Some of these diuretics wash out some of the body's salts when the water is washed out through the kidneys. The main salt, sodium (table salt) is desired to be lowered. However, the potassium salt, when washed out, can become a problem. The body will send out warning signs of not having enough potassium. These signs are: weakness, dizziness, lack of energy, muscle fatigue, leg cramps, loss of appetite, or vomiting. These signs may be prevented by eating foods high in potassium (see following list), or by taking a prescribed supplement.

Foods High in Potassium and Low in Sodium:

Oranges, orange juice	Squash	Watermelon
Other fruit juices	Sweet Potato	Raisins
but not fruit drinks	Bananas	Dried Prunes
Dry Beans	Avocados	Dried Apricots
Potatoes	Yeast	Cantaloupe

For those of you taking medication which washes out the body's potassium and who are also on a low sodium diet, these foods contain a limited amount of sodium, but are rich in potassium. You may eat these things a bit more freely.

If you are taking a water pill and you still have signs of excess water build-up (such as a sudden weight gain, etc.), or some signs of low potassium (weakness, lack of energy, leg cramps, or nausea and vomiting), be sure to contact your physician.

PROPRANOLOL (Inderal)

Inderal is used to treat irregular heart beats, recurring rapid heart beats, to prevent and control angina, and to lower blood pressure. Its main purpose is to decrease the amount of oxygen the heart needs in order to do its work. This is why it is used to prevent angina. (Please see the section in this Booklet about Angina.) The doses vary greatly between one person and another, and can range from 40 mg (milligrams) to 320 mg or more. These are usually taken in divided doses three to six times a day, depending on the desired effects.

Inderal is a very potent medicine. It can be extremely beneficial but it can also have marked side effects and should be taken only under the supervision of your doctor. Some of the side effects are:

1. Extremely slow pulse, less than 40-45 per minute. Inderal may have a slowing effect on your heart, but an extreme amount of slowing may become a problem.

2. Unusual weight gain of 5 pounds or more. This may occur because of fluid retention by the body. It is usually also noted that breathing is more difficult.

3. Asthma or asthma-like conditions. Asthma is experienced by wheezing while breathing and may be worsened by Inderal.

If Inderal is taken, it is extremely important that it not be stopped suddenly. For example, do not let your prescription run out or forget to take it for several days. Stopping suddenly, unless advised by your physician, may cause severe problems and may make your chest pains (angina) worse. In spite of these comments about Inderal, do not be afraid to take it. It has been one of the most helpful drugs for treatment of coronary artery disease and angina.

PRONESTYL OR QUINIDINE

Pronestyl and Quinidine are brand names for two medications that are used for the treatment of an irregular heart beat and certain kinds of fast heart beats. These irregularities are common during the first few days following a heart attack, however occasionally the problem persists and continued treatment is needed. When the heart does not beat in its normal sequence it may be less efficient in its work as a pump. These irregularities may occur for many of the same reasons angina occurs, that is when the heart does not have enough oxygen, the timing mechanism is altered. Pronestyl or Quinidine help to suppress the irregular beats so that the normal timing mechanism can take over again.

Pronestyl is generally used for short periods while Quinidine may be taken for indefinite time periods. The main problems from taking either of these two medicines are that they may cause stomach upset or diarrhea. These problems can generally be prevented by eating a cracker, drinking some milk, or having some other food in the stomach at the time the pills are taken. The diarrhea and stomach problems almost always go away after taking the pills for a short time. These are considered side effects, and generally are uncomfortable but not dangerous. Naturally, if either of these persist or you feel they are a problem, call your doctor. He may adjust the dose or have other suggestions to help.

Both Pronestyl and Quinidine are taken several times a day because the effects are maintained for only 4-8 hours. If you are supposed to take four doses a day, for example, it is a good idea to take one of them first thing in the morning when you get up, and last thing at night before you go to bed. In this way you can have the maximum benefits lasting

throughout the night as well as when you are awake. Pronestyl and Quinidine are very effective for controlling irregularities in your heart.

NORPACE

Norpace is a brand name for a medication that is used for the treatment of an irregular heart beat. These irregularities are common during the first few days following a heart attack, however occasionally the problem persists and continued treatment is needed. When the heart does not beat in its normal sequence it may be less efficient in its work as a pump. These irregularities may occur for many of the same reasons angina occurs, that is when the heart does not have enough oxygen, the timing mechanism is altered. Norpace helps to suppress the irregular beats so that the normal timing mechanism can take over again.

Norpace is a relatively new medication. Side effects are rare, but a few have been reported. Dry mouth, constipation and urinary frequency are the most common. Occasionally, urinary retention occurs. This is when urine in the bladder is unable to be passed out of the body. It is not due to an obstruction, but rather because of an inability to allow the urine out of the bladder. If you are taking Norpace and have not emptied your bladder for 16-24 hours, you should check with your doctor. Usually these effects are temporary but they need to be reported.

Norpace is taken several times a day because the effects are maintained for only 6-10 hours. If you are supposed to take four doses a day, for example, it is a good idea to take one of them first thing in the morning when you get up, and last thing at night before you go to bed. In this way you can have the maximum benefits lasting throughout the night as well as when you are awake. Norpace is very helpful in controlling the irregularities in your heart.

POTASSIUM SUPPLEMENTS
(Potassium Chloride)

Potassium supplements are prescribed when you are at risk or have been found to have a low level of potassium in your body. This may be due to the effects of other medication. Some of the brand names are: K-Lor, Slow-K, Kaochlor, KCL, and K-Lyte. Some of these are liquid, some powder, some tablet, and Slow-K is a pill. All of these, except the pill are to be dissolved in water or fruit juice. The taste is very bitter so some experimenting to find the best liquid for dilution is important. Cold water, orange juice, and grapefruit juice are the most common choices.

There are two primary side effects from potassium supplements. Stomach and intestinal irritation has occurred. The effects on your stomach can be minimized by taking the medication after your meals, while your stomach is full. If this is not possible, then eat some crackers or bread at the time you take the medicine. This will help decrease the irritation on your stomach.

Another effect from taking potassium supplements is a build-up of potassium in the body. You may observe this if you feel:

1. Listlessness,
2. Mental confusion, and
3. Muscle cramping.

If these signs occur, you should inform your doctor. The side effects from potassium supplements are uncommon. By replacing lost potassium, you are able to take medication that otherwise might not be available to you.

NITROCLYCERINS AND NITRATES

Nitroclycerins and nitrates are a type of medication which relieve the pain of angina. They are not addictive or habit forming. This is because they act to relax and expand the coronary arteries, and do not have an effect on the nervous system. The dilating action on the coronary arteries allows more blood to reach the heart muscle. This can relieve angina pains.

Nitroglycerin (Nitrostat) tablets are tablets that are taken by putting them under your tongue (sub-lingual) and letting them dissolve beneath your tongue. If swallowed, the stomach takes 45-60 minutes to absorb the pills into the bloodstream. The area under the tongue contains special pores called mucous membrane that absorb the nitroglycerin directly into the blood. This rapid action lets the medication reach the heart via the blood and relief of pain is obtained in about 5 minutes. Some people require a higher dose than one tablet, so that if the angina is not relieved in 5 minutes, you may take another nitroglycerin. This can be repeated yet again until three nitroglycerin tablets have been taken. If your pain is not relieved by three nitroglycerins, you should call your physician.

The effects from nitroglycerin usually last about one hour. Occasionally, people experience a headache after taking nitroglycerin. This is due to the arteries in the head being dilated. This effect usually is temporary and when your body becomes accustomed to the nitroglycerin, the headaches usually do not occur. Headaches can be minimized by keeping your head on the same level as your feet (laying down).

Storage:

Nitroglycerin deteriorates with time and when exposed to light and air. Tablets should be replaced every three to six months. The prescriptions come in small quantities and are supplied in brown colored bottles. It is a good idea to keep your main bottle in the refrigerator. A few tablets can be placed in a pill box or another tightly sealed container which you carry with you at all times. These need to be replaced once a week to insure that your tablets have all their potency.

Other Types of Nitroclycerin:

Sometimes a longer acting nitroglycerin is prescribed. The purpose of this is to prevent pain from occurring. Nitroglycerin ointment is one of the medicines for this purpose. Nitrates (Sorbitrate and Isordil) are also prescribed. These come in short acting forms (lasting 2-4 hours) and longer acting forms that have an effect for 4-6 hours. These are to be taken on a regular basis rather than after the pain begins.

All forms of nitroglycerins can help you in comfort and to be able to build tolerance for activities that otherwise might be uncomfortable. Angina is relieved quickly and effectively following proper use of nitroglycerin.

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Appendix B

Subjects

The criteria for inclusion into the sample are:

1. Patients 21 years or older, but less than 70 years old.
2. Patients having their first recognized acute myocardial infarction.
3. Hospitalization in the stated hospital, preliminary housing in the coronary care unit, and then on the intermediate care ward for at least five days hospitalization (including the day of admission, but not including the day of discharge).
4. Permission for the subject to be included in the study from the attending physician.
5. Voluntary agreement on the part of the patient to participate in the study, with the privilege of withdrawing at any time. This is in accordance with the criteria of the Human Subjects' committee, and the coronary care committee of the hospital.
6. Residence near the location of the study for the data collecting period (within the tri-county area).
7. Having completed eight years of school.
8. Having vision, with or without glasses, that enables them to read copy the size of the consent form.

INFORMED CONSENT

I, _____,
(First Name) (Middle Name) (Last Name)

herewith agree to serve as a subject in the investigation named, "Development of and Individualized Patient Teaching Booklet for Myocardial Infarction Rehabilitation" by Mary Furrow, RN, under the supervision of Dr. May Rawlinson (faculty advisor). The investigation aims at evaluating a teaching booklet which is used as an adjunct to the ongoing teaching program at the hospital. The procedures to which I will be asked to take part in are:

1. A paper and pencil test which asks questions about my mood in relation to my present illness, and questions concerning my knowledge about my illness and its treatment. These questions will be given to me while I am still in the hospital and require about 20-30 minutes to complete. Another brief questionnaire will be given which asks about my characteristic way of coping with health issues.

2. There will be two visits by the nurse to my home. These visits have the purpose of helping me ask questions and will be audio-tape recorded. The first visit will be within one to two weeks after I am discharged from the hospital.

3. The second visit to my home will be about six weeks after hospitalization and I will also be asked to answer questions about my mood and knowledge on a paper and pencil test. Each of these visits will last about one hour.

4. Members of my family are allowed to be present and ask questions if I desire.

5. I may benefit from these procedures by learning more about my illness.

The information obtained will be kept confidential. My name will not appear on the records and anonymity will be insured by the use of code numbers. Mary Furrow, RN, has offered to answer any questions that I might have about my participation in this study. I understand that I am free to refuse to participate or to withdraw from participation in the study at any time without effect on my relationship with or treatment at Willamette Falls Hospital. I have read the foregoing.

_____ _____

(Date) (Subject's Signature)

_____

(Witness' Signature)

DATA BASE

1. Chart #_____ 2. Sex: Male _____ Female _____
2. Date of Birth _____ 4. Date of Admission _____
5. Education _____ less than 8th grade
   _____ attended high school
   _____ completed high school
   _____ attended college
   _____ completed college
   _____ other _____
6. Occupation _____
7. Marital Status: Married _____ Single _____ Divorced _____
   Separated _____ Widowed _____
8. Length of stay in Coronary Care _____ days.
9. Length of hospitalization for this illness _____ days.
10. Illness other than heart disease:
    _____ diabetes _____ asthma
    _____ tuberculosis _____ ulcers
    _____ cancer _____ colitis
    _____ emphysema _____ other
11. Have you ever been hospitalized for any of the above illnesses?
    Yes _____ No _____
12. Risk Factors:
    _____ smoking _____ stress _____ inactive lifestyle
    _____ heredity _____ high blood fat level
    _____ high bood pressure _____ obesity
13. Complications: Killip Class I_____, II _____, III _____, IV _____

CONSULTATION SHEET

Name _____ Date _____

Diagnosis _____ Chart # _____

Indicate the specific areas in which you wish this patient to be instructed.

Home Care Instructions:

Anatomy of the heart _____

The heart attack _____

Angina _____

Seeking emergency care _____

Use of Nitroglycerin _____

Activity regime _____

Congestive heart failure _____

Risk Factor Modification:

Smoking _____

Weight reduction _____

Hypertension _____

Diets:

Low Na _____

Low Fat _____

Exercise _____

Stress reduction _____

MEDICATIONS:

Please indicate the dose and the major purpose of the medication (pain, CHF, blood pressure control. arrythmias--atrial or ventricular).

NAME	DOSE	PURPOSE

A home visit will be made to answer the client's questions.

Physician's Signature _____

Appendix C

Teaching Evaluation Form: A

Nature of your disease; circle the small letters for all statements you feel to be true:

1. The damage in a heart attack is due to:

   a. Too much fat in the blood.
   b. Too little blood to the heart muscle.
   c. Too little blood into the heart chambers.
   d. No heart damage; only damage is a clot in a blood vessel.

2. The pain involved in a heart attack is from:

   a. Heart irritability.
   b. Too little oxygen to the heart muscle.
   c. Too little blood to the heart chambers.
   d. Damaged heart muscle.

3. The damage to the heart muscle from a heart attack is:

   a. Similar to a deep cut.
   b. Similar to a muscle sprain.
   c. Similar to a bruise.

4. The healing of the heart following a heart attack is:

   a. Never complete, leaving a "soft spot".
   b. Totally complete, leaving no trace of damage.
   c. Leaves a scar.

5. The chances of a new heart attack:

   a. Decrease markedly over your first few days in the hospital.
   b. Can be influenced by things you learn to do here in the hospital.
   c. Are always increased if you continue to feel chest pain.
   d. Are reduced by a calm, quiet atmosphere.

Teaching Evaluation Form: C

Physical activity: Mark "T" for True; "F" for False:

1. T _____ F _____ After a heart attack one should stay at bedrest for two to three weeks.

2. T _____ F _____ After a heart attack a patient will very likely not return to his previous level of physical activity.

3. T _____ F _____ After a heart attack one's sex life has to be greatly reduced (in future years).

4. T _____ F _____ If one gradually increases his physical activity over the six months or so following a heart attack, he can obtain and may even surpass his previous degree of physical fitness.

5. T _____ F _____ After the amount of rest one gets in the hospital following a heart attack, one really feels "rarin' to go" his first few days at home.

6. T _____ F _____ Probably too much physical activity causes heart attacks.

7. T _____ F _____ It is important for the healing process of the heart to gradually increase physical activity.

Teaching Evaluation Form: D

Diet and smoking: True or False: (Mark T for True and F for False)

1. T _____ F _____ It was my last meal that led to my heart attack.
2. T _____ F _____ Even an occasional cocktail is bad for your heart.
3. T _____ F _____ Too much animal fat in your diet contributes to high blood cholesterol.
4. T _____ F _____ High blood cholesterol signals a proneness to heart attack.
5. T _____ F _____ As a rule, salt is bad for your heart.
6. T _____ F _____ Patients who develop heart attacks tend to be overweight.
7. T _____ F _____ Losing weight is relatively easy.
8. T _____ F _____ I won't be able to eat rich foods again.
9. T _____ F _____ Food prepared without salt is flavorless.
10. T _____ F _____ If you have been a long time smoker, quitting now won't be much help.
11. T _____ F _____ Smoking has definite psychological and physical side effects.
12. T _____ F _____ Smoking tends to keep your body weight down.

Teaching Evaluation Form: E

Psychological factors: In general, persons who develop a heart attack: (Mark "T" for True and "F" for False)

1. T _____ F _____ Work several hours "overtime" and/or take their work home with them.
2. T _____ F _____ Frequently look back upon their accomplishments with a high degree of personal satisfaction.
3. T _____ F _____ Tend to have jobs at the "top of the ladder".
4. T _____ F _____ Don't take time to relax.
5. T _____ F _____ Are hard-driving, competitive persons.
6. T _____ F _____ Take on high degrees of responsibility.
7. T _____ F _____ Have well-defined goals in life.
8. T _____ F _____ Take their work, and life in general, very intensely.
9. T _____ F _____ Not infrequently hold more than one job.
10. T _____ F _____ Are flexible people who can easily delegate work and learn new routines.
11. T _____ F _____ Tend to rush themselves and fight time deadlines.
12. T _____ F _____ Are persons who have made their "own way" in life.
13. T _____ F _____ May have family problems.

Treatment Evaluation Form: F

Return to home and work: Circle the small letter for all statements you feel to be true:

1. The first 2 to 3 days after hospital discharge are:

   a. Difficult for all family members.
   b. Surprisingly joyous and trouble-free.

2. Children at home (if any) will:

   a. Be on their best behavior over the first few weeks.
   b. See you in a different way when you are home and not going to work.
   c. Along with your spouse, tend to be overprotective of you.

3. Your spouse:

   a. Should always be in the house with you during your first 2 to 3 months at home.
   b. Should understand your illness and what you're supposed to do to avoid a future heart attack.
   c. Had to cope with many stresses during your hospitalization.

4. Your medications:

   a. You should not become dependent on them as a "crutch".
   b. It may help to carry nitroglycerine tablets in your pocket.
   c. Once you leave the hospital, the medications you are given are not apt to be changed in the future by your doctor.

5. About physical activity:

   a. You must rest for the first month or more before starting walking outdoors, etc.
   b. You can begin a graduated physical activity program within the first few days after you arrive home.
   c. The walking you normally do at work can suffice for future physical exercise requirements.

6. If chest pain should re-occur after hospital discharge, you should:

   a. Call your doctor immediately.
   b. Immediately return to the hospital.
   c. Try a nitroglycerine tablet (under your tongue).

7. When you are ready to return to work:

   a. If you don't change to a different kind of work, it will be very difficult to alter any previous work stresses.
   b. Most employers don't understand about heart attacks and won't allow persons to gradually readjust to their work.

Instructions: Please answer each of the following questions for each medication that is prescribed by your doctor. A separate sheet is provided for each medication.

1. What is the name of your medication?

2. Describe what the medicine is for.

3. Describe the action of the drug in your body.

4. When would you need to call the doctor?

5. When do you take your medicine and how much do you take?

6. Is there anything special you need to do before taking your medicine?

Structured Interview: Ask each patient during the first home visit.

1. What do you feel caused you to get sick?

2. How has this illness affected your usual way of life?

3. How long do you think it will be before you are back on your feet again?

4. How has this illness affected your family?

5. Has it made any difference in terms of your friends?

6. These questions have to do with how you are getting along in more personal ways. (If the response is yes, ask, In what way?)

   a. Has your illness had an effect on your rest?

   b. Elimination?

   c. Nourishment?

   d. Comfort?

   e. Personal hygiene?

Structured Interview: To be asked at the closing interview (six weeks post-infarct).

1. What do you feel caused you to get sick?

2. How has this illness affected your usual way of life?

3. How long do you think it will be before you are back on your feet again?

4. How has this illness affected your family?

5. Has it made any difference in terms of your friends?

6. These questions have to do with how you are getting along in more personal ways.(If the response is yes, ask, In what way?)

   a. Has your illness had an effect on your rest?

   b. Elimination?

   c. Comfort?

   d. Nourishment?

   e. Personal hygiene?

7. Is there something that happened to you either in the hospital or in the doctor's office, or here at home that has been especially helpful in your recovery?

8. Was there something that really seemed to make things more difficult?

9. Is there any topic or warning that you could pass on to another person faced with a similar problem?

Instructions: Put a check mark on the line according to how it related to you and your feelings during the past week.

	None OR a little of the time	Some of the time	Good part of the time	Most OR all of the time
1. I feel down-hearted, blue and sad.	_____	_____	_____	_____
2. Morning is when I feel the best.	_____	_____	_____	_____
3. I have crying spells or feel like it,	_____	_____	_____	_____
4. I have trouble sleeping through the night.	_____	_____	_____	_____
5. I eat as much as I used to.	_____	_____	_____	_____
6. I enjoy looking at, talking to, and being with attractive women/men.	_____	_____	_____	_____
7. I notice that I am losing weight.	_____	_____	_____	_____
8. I have trouble with constipation.	_____	_____	_____	_____
9. My heart beats faster than usual.	_____	_____	_____	_____
10. I get tired for no reason.	_____	_____	_____	_____
11. My mind is as clear as it used to be.	_____	_____	_____	_____
12. I find it easy to do the things I used to.	_____	_____	_____	_____
13. I am restless and can't keep still.	_____	_____	_____	_____

	None OR a little of the time	Some of the time	Good part of the time	Most OR all of the time
14. I feel hopeful about the future	_____	_____	_____	_____
15. I am more irritable than usual.	_____	_____	_____	_____
16. I find it easy to make decision.	_____	_____	_____	_____
17. I feel that I am useful and needed.	_____	_____	_____	_____
18. My life is pretty full.	_____	_____	_____	_____
19. I feel that others would be better off if I were dead.	_____	_____	_____	_____
20. I still enjoy the things I used to do.	_____	_____	_____	_____

Appendix D

Raw Zung Self-Rating Depression Scores

Control Group N = 6		Experimental Group N = 6	
Pre-	Post-	Pre-	Post-
36	41	53	54
33	34	31	31
41	35	41	45
49	50	56	49
43	48	34	38
30	41	55	35

Appendix E

Scoring Key for the Teaching Evaluation Form

T = true; F = false

Section A:
1. a-F, b-T, c-F, d-F
2. a-F, b-T, c-F, d-F
3. a-F, b-F, c-T
4. a-F, b-F, c-T
5. a-T, b-T, c-F, d-T

Section C: 1.-F; 2.-F; 3.-F; 4.-T; 5.-F; 6.-F; 7.-T

Section D: 1.-F; 2.-F; 3.-T; 4.-T; 5.-F; 6.-T; 7.-F
8.-F; 9.-F; 10.-F; 11.-T; 12.-T

Section E: 1.-T; 2.-F; 3.-F; 4.-T; 5.-T; 6.-T; 7.-F
8.-T; 9.-T; 10.-F; 11.-T; 12.-T; 13.-T

Section F:
1. a-F, b-T
2. a-T, b-T, c-T
3. a-F, b-T, c-T
4. a-F, b-T, c-F
5. a-F, b-T, c-F
6. a-F, b-F, c-T
7. a-F, b-F

Scoring Key for the Medication Questionnaire

Items 1 through 6:

Left blank: 0 points

Some response, but wrong: 1 point

Partially correct: 2 points

Specifically correct: 3 points

Scoring Key for the Zung Self-Rating Depression Scale

Note: Each item is given a point value for marks as indicated below.

	None or a little of the time	Some of the time	Good part of the time	Most or all of the time
1.	1	2	3	4
2.	4	3	2	1
3.	1	2	3	4
4.	1	2	3	4
5.	4	3	2	1
6.	4	3	2	1
7.	1	2	3	4
8.	1	2	3	4
9.	1	2	3	4
10.	1	2	3	4
11.	4	3	2	1
12.	4	3	2	1
13.	1	2	3	4
14.	4	3	2	1
15.	1	2	3	4
16.	4	3	2	1
17.	4	3	2	1
18.	4	3	2	1
19.	1	2	3	4
20.	4	3	2	1

Appendix F

Attachment 3

Willamette Falls Community Hospital

MEMO

TO: WHOM IT MAY CONCERN

DATE: 11 DECEMBER 1978

FROM: DR. CORDOVA
CHAIRMAN, CCU COMMITTEE

RE:

The CCU Committee has authorized Mary Furrow, R.N. to initiate the attached Myocardial Infarction Rehabilitation Program.

[redacted]

Lee, J. Cordova, M.D.

cc: Mary Furrow, R.N.

AN ABSTRACT OF THE CLINICAL INVESTIGATION OF

MARY A. FURROW

For the MASTER OF NURSING

Date of Receiving this Degree: June, 1980

Title: THE DEVELOPMENT OF AN INDIVIDUALIZED TEACHING BOOKLET FOR MYOCARDIAL INFARCTION REHABILITATION

Approved: _____
May Rawlinson, Ph.D., Investigator Advisor

This study focused on patient response to education following myocardial infarction. Since patients' hospital stays have become progressively shorter, the rehabilitation information they require must necessarily be presented in a shorter period of time. To facilitate this, a modular, individualized and comprehensive teaching booklet was first developed, and then pilot tested for the purpose of providing supplemental information following the patients' hospital discharge. The study design consisted of both pre- and post-tests for knowledge and depression, using both experimental and control groups. Twelve patients, between the ages of 21 and 70, who had incurred their first myocardial infarction and met the other study criteria were randomly assigned to either the experimental or control groups. Half of the patients received the teaching booklet, and half did not. Two subsequent home visits were

employed to provide follow-up information by means of a standardized interview format. The results of the pilot test indicated that all the patients had a high level of knowledge, and that there was no significant difference between the gain scores of knowledge in the two groups. However, the patients in the experimental group did show a significant reduction in their level of depression.