THE ROLE OF THE NURSE PRACTITIONER IN REHABILITATION OF CARDIAC PATIENTS

by

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PREFACE

The research cohort presented here, and the subsequent results of more than two year's work, are amply set forth in the Abstract and introduction to the thesis. What is not presented elsewhere is the appreciation due to the many individuals who made this research posible. In the Preface, I would like to speak personally to those individuals and express my gratitude.

This thesis is presented through the Department of Community Medicine, University of Glasgow, Scotland, and has been supervised by the chairman, Professor Gordon Stewart, who has provided the insight and motivation to pursue the study and to venture out into an unknown world.

That unknown world, for me, meant not only an area of science and medicine both sensitive and important, but also Scotland and its society, to which the American nurse was rather unfamiliar. In helping me to bridge the cultural gap both professionally and personally, Professor Stewart and his wife played an invaluable role.

The studies for this degree centred around course work initially in the Department of Community Medicine, and under the direction and individual help of Dr. Andrew Curran, I was able to sustain my credibility as a student and to find individual support for the research as well as academic pursuits. To these doctors, I owe a special thanks, and to their department, I am grateful for the collective support of instructors, secretaries, and particularly those students in the DPH programme, 1976-77, who befriended a stranger.

Of great importance was the help, guidance, and professional advice given by the staff at Southern General Hospital, Glasgow, Scotland. Without the cooperation and supervision of the cardiologists and Coronary Rehabilitation Team, this research would have been impossible. Dr. G.B. Shaw, Chief Consultant and Cardiologist in Charge of the rehabilitation team, provided initial clinical supervision, presented the cohort study (and gained approval for it) through the Hospital Ethical Committee, and has personally taken the time to guide me in the research. He has also provided valuable comments for the results of the study and has been a worthy critic

of my work.

Dr. J.F. Robinson, Consultant Physician, provided first-hand supervision of the cohort rehabilitation project, directed my work as nurse counsellor, and added the cohort patients to his already busy workload for clinical assessment, exercise testing, and evaluation. Dr. L.D. Naismith, Assistant Registrar, became the example for the nurse practitioner. She had just finished a larger research project together with the team members at SGH, and her insights for methodology, nursing roles, intervention, patient needs, and the good and bad points of the SGH study, along with personal opinions for counselling became the format for much of the cohort research. Much of the SGH work is replicated in the cohort study, and much of the SGH results are reported and compared here. The latter is a considerable bonus to me, and such help as well as sharing of information truly reflects the collegial dedication of the entire Southern General Hospital rehabilitation team.

A focal person in the rehabilitation team at SGH was Sister Mary MacIntyre who ventured into the field as a nurse counsellor on the team, and from her base of experience, she shared many hours of conversation, guidance, and support to me. There is not a small difference between nursing in Great Britain and the United States, and she contributed tremendously to educating me in how to approach nursing in Scotland, expectations of the field work, and the protocol required for success. In addition, there were a number of SGH staff personnel and consultants who aided me directly or indirectly. All of these individuals have my sincere gratitude and my pledge to remain a colleague and responsible nurse practitioner.

I would like to thank Dr. Eric Schiller, Physician in Charge, Cardiac Rehabilitation Unit, Prince of Wales Hospital, Sydney, Australia. Dr. Schiller not only made available to me his data results and unpublished research findings in his continued work on a Coronary Rehabilitation Index, but he personally endorsed the cohort project, particularly the investigation of the role of the nurse in cardiac rehabilitation.

Lisbeth Hockey, Director of Nursing Research Unit, University of Edinburgh, Scotland, has my personal admiration and gratitude. She received me graciously and offered several important points for

initial guidance in the research as well as personal conduct in sensitive areas of nursing in Great Britain.

Francis Sinclair, formerly of the Department of Community Medicine, University of Glasgow, did the rough typing of this thesis and helped tremendously to sort out characteristics of language both medically and in cultural differences for an American in Scotland.

There are several groups of individuals that deserve my thanks and love and appreciation more than any others. Those are the patients and families who participated in the cohort research study and my family.

The patients are those who deserve any sort of attention as they worked hard to rehabilitate themselves, they are the successes of the study. Each patient and his family invited the nurse into their lives and placed great responsibility on us to help them. We took that responsibility seriously because the patients and families took rehabilitation seriously. We were not the ones who stopped smoking, walked to endurance levels, changed our eating habits, reduced our weight, or suffered the pain and stress of myocardial infarction. Those who did, those who are now needing help, and those who will need our help in the future are the ones deserving our attention.

Finally, I hope all who read this thesis first read this final passage. It is about my family. Without the support and sacrifice of my husband and three small boys, aged now 7, 4, and 2, I would not have attempted studies at the University, attempted research outside required guidelines, nor would I have finished my work sanely. The boys gave up much of Mum's time, love, and attention, and generally had to live with a certain insanity for work schedules and Mum's temperament.

We gave up literally all our worldly goods to move to Scotland and pursue graduate degrees. That is not an understatement as we auctioned all that we could not carry with us to finance our trip and studies. To all this, good and bad, I must thank my husband whose strength and encouragement motivated me at times when all energy was gone. He is beloved and has continued to fulfill his marriage promise of "never a dull moment". My three rambunctious sons epitomise this promise. To these men in my life, I dedicate this research effort.

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A B S T R A C T

This thesis is concerned with the role of the nurse in coronary rehabilitation. The primary hypothesis is that a nurse practitioner, trained in coronary medicine and experienced in relevant medical nursing, can intervene independently of team efforts to help rehabilitate the patient who has suffered and survived a myocardial infarction. The term nurse counsellor is used in the study to better represent the actual role of the nurse in intervention which includes assessment, patient and close family counselling for adaptation and rehabilitative efforts, aid in adjustment to social conditions, and reinforcement for psychological recovery.

The study is a longitudinal cohort effort which embodies several methods of empirical research. Those methods include the clinical classification of data, assessment, description, and measurement through statistical analyses of variables derived from data. The cohort is comprised of male patients between the ages of 30 and 64 who could be returned to work, and the study takes place in Glasgow, Scotland, through Southern General Hospital.

Several prognostic indices are employed together with various assessment tools to include: the Schiller Index, Modified Schiller Index for Paramedics, Norris Prognostic Index, Rahe Life Change Unit procedure, Middlesex Hospital Questionnaire, and the Southern General Hospital Outcome Assessment Evaluation. The results focus on the primary emphasis of the research, which was to intervene for secondary prevention and therefore to reduce risk factors among individual patients through counselling and reinforcement of systematic programmes of rehabilitation.

The results for the nurse's cohort reflect similar or better success rates compared with published data and parallel studies by team intervention. These results and comparisons are analysed with statistical procedures as well as descriptive information. A case is therefore put forward and supported by the research which endorses the nurse practitioner for coronary rehabilitation intervention. There are several interesting implications as well involving the roles of general practitioners, patient behaviour patterns, family situations

and associated problems encountered during the research.

The thesis is presented through the Department of Community Medicine, University of Glasgow, and therefore it reports a community medicine approach to rehabilitation. However, the thrust of the work and results are strongly nurse oriented and have the greatest application to the fields of nursing research, nursing theory, nursing education, and specifically coronary nursing specialisation.

Every attempt is made to hold to established procedures for intervention, yet the nurse entered this study with the clear idea of caring for patients who had suffered and survived a myocardial infarction. That is to say, the responsibility and commitment to nursing care was foremost in the intervention while research procedures were subordinated to the needs of the patient. With that in mind, there are limitations to the conclusions, limited mainly by small numbers in the cohort (31), yet control groups and parallel studies by team efforts at Southern General Hospital provide much greater numerical qualification. The results and conclusions are specific to outcomes for secondary prevention, including smoking control, weight control, lipid levels control, and exercise programmes.

The nurse's role is in part validated by the results, but also in part by qualitative survey data from patients, wives,family, and general practitioners who commented on aspects of the intervention programme and the nurse's performance. Return to work data are provided with case-by-case analysis and risk factor interaction analysis. Specific comments are made. General conclusions are concerned with the future role and feasibility of the nurse practitioner working as a coronary rehabilitation counsellor, and that role is found to be acceptable, feasible, and economic use of health care personnel.

CHAPTER I

INTRODUCTION TO COHORT STUDY

Introductory Remarks

The primary emphasis of this thesis is to investigate the role of the nurse practitioner as an active and responsible counsellor in cardiac rehabilitation. The underpinning philosophy of the thesis is that the well-trained and experienced nurse can become an intervention specialist to provide the care and continuity of treatment required for rehabilitation of coronary heart disease patients. While the term "specialist" may evoke rather strong feelings among nurses and doctors as to the capabilities of the nurse who works in the professional areas of rehabilitation, the term is not used lightly here and is meant to connote the crucial aspect of care, of intervention on a personal level, and of the ability to deal with CHD problems related to patient recovery, adaptation, and subsequent re-entry into the mainstream of his community.

This position is not meant to be an antithesis to any existing literature, nor is it an attempt to carve out a new field for the nursing profession. The thesis is not argumentative. It is an investigation of the nursing role in rehabilitation. It is very much an attempt to establish that a need exists for care and for professional intervention, particularly in those cases where patients who have suffered a myocardial infarction are released from hospital with little help or guidance for rehabilitation.

The implication of the thesis is that each MI patient faces a critical, and perhaps prolonged period, of readjustment to his disease, to possible disability, to a world suddenly limited by a physical disorder, to possible emotional and psychosocial stress, and to reevaluation of one's priorities in life. Clearly, the nurse (nor any other single professional person) will sort out this array of difficulties and provide for the patient a smooth path towards complete adaptation. However, it is the contention here that the nurse counsellor can intervene to help, thus filling a gap in care and treatment which now stands as a void.

It is also suggested here that a rather wide gap exists between in-hospital care, information, and guidance for the patient, and the social world of the patient in which he or she as a family member has job responsibilities, marital commitments, parental obligations,

and personality centred goals and objectives. Those points taken together suggest that each patient needs continuity of care and communication regarding his disease and adaptation, but it also suggests that each spouse, and family, needs similar guidance and perhaps essential help for assuring the patient's rehabilitation and adaptation. It suggests that the patient cannot be treated clinically and left to recovery in a complex home environment without considering the ramifications of his social networks and life style. The nursing role defined here is one of community care and nursing, of intervention at the family level on the patient's home ground, of assuring information and communication beyond the hospital, beyond the clinic, and beyond the measurable criteria for rehabilitation.

A vital part of this study is concerned with secondary prevention. That is to say, once the void is at least partially filled by intervention for rehabilitation, one must consider why the patient suffered from coronary heart disease and also how best to prevent a second, premature crisis,if possible. That requires an investigation into risk factors, controllable and uncontrollable, of definitions of causes, of delineation of potential cures, and of a clear direction one might take to reduce risk of future or continued heart disease problems. This study is greatly concerned here and relies on an epidemiological approach to risk identification, prevention, and subsequent rehabilitation of patients through control of risk factors.

These points and philosophy of nursing will be set forth in the thesis and more appropriately treated and investigated in proper order. At this point the overview is essential to understand the logic of the study, the development of the research, and the focus of the thesis on nursing intervention.

Rationale

As the study progresses, the review of historic literature will reveal rather little information on coronary heart disease and even less on rehabilitative efforts prior to World War II. In the post-war period there has been an increasing attention to the problems of CHD patients and to research, both in primary and in secondary medicine. This increased attention has become most apparent

only in the late 1960's and early 1970's. Moreover, the emphasis has been on clinical factors of CHD, medicial advancement in treatment, and the technology of coronary medicine. However, a very strong movement has begun in coronary medicine which uses the science of epidemiology and integrates the social and behavioural sciences for treating the "whole man" in his pattern of life and culture so that CHD can be reduced in the population in general and reduced as a risk of life and living for the individual specifically.

The historic overview which follows in the review chapters indicates rather clearly that coronary heart disease is a primary concern today, and that rehabilitation is (or has been) a grossly neglected area of treatment. With those points in mind, the rationale for this study has two distinct aspects to be considered. The first aspect is the rationale of intervention. The second is the rationale for this particular research project.

While a more complete statement of intervention exists under the review of literature and the methodology of this study, it is necessary for clarity here to say that very little intervention work has evolved beyond fundamental research efforts. That is to say, intervention has been research oriented rather than treatment oriented, and, like this study, has been only rudamentary to include the initial steps for qualifying the needs of intervention.

The World Health Organisation (158, 1967) made a rather sweeping statement of the existing efforts in rehabilitation and concluded that while every person with heart disease can be, and should be, rehabilitated, there appears to be an attitude of no-action-without-proof. It would appear that while awaiting research to show us how to reduce or eliminate factors leading to heart disease, and while awaiting proof that intervention has significant benefits for society (or a quantifiable, validated patient population), we are doing rather little to use what scarce resources we do have to help now. Clearly this statement will not stand alone, and it is taken up in chapters that follow.

Richard W.D. Turner puts the case succinctly forward as reported in a recent Internation Symposium on Preventive

Cardiology,(74, 1975; pp.71):

> "Coronary care units and coronary arterial surgery, at immense expense, can do little to reduce overall mortality, and the cardiac laboratory, although important for research and necessary as a preliminary to surgery, makes no contribution to prevention."

Turner calls for a definite effort toward action rehabilitation and full commitment to intervention, but at the clinic level, and at the community level. He goes on to say (74, 1975; pp.72):

> "Let us therefore hear no more statements such as, 'further evidence is awaited' or, 'presumption of benefit should not be encouraged', but rather decide that, since conclusive evidence is unlikely to become available, probability of benefit is high, and the possibility of harm negligible, action should be strongly encouraged."

It is with that rationale and understanding that the nurse ventured out on her own course of action to intervene, with proper consultant supervision, to not only help rehabilitate patients but to help add to the evidence that rehabilitation is important and that a nurse cast in the role can deliver the health care crucial to the patient. It must also be stated here that with the exception of the helpful cardiologists and rehabilitation team at Southern General Hospital (where the study took place), and the support and belief of the academic supervisor, there seemed to be very little support for the nurse in this situation. That is to say, while everyone with whom the nurse had contact (both Scottish and American) felt rehabilitation was important and intervention essential, the notion that a nurse could fulfill part of the requirements for care and treatment was clearly reserved--and in several instances outright discouraged. This paper is not an answer to the critics, nor support for those who favoured the research, but the patients and doctors reported comments in the results and discussion chapters of the paper <u>are</u> answers to those critics and support for those supporters.

The rationale of the nurse, specifically, as an interventionist in coronary rehabilitation stems directly from the comments above,but

it is also founded on more objective criteria. Physicians are of course a scarce resource, much more so than nurses, and they require greater training, service, and specialisation than most nurses. The economics of the manpower division of labour between nurses and doctors is fundamental: Doctors are in short supply and currently overburdened in most areas of the world; Nurses may be in short supply, but they are more flexibly assigned tasks in and out of hospital environments, and in any event, they are not in the same demand as trained, experienced physicians. Given these criteria, it follows that the costs of nursing services in a counselling role will be less, both in terms of explicit time and money outlay and in terms of foregone services elsewhere.

Therefore, if an economical programme of cardiac intervention counselling, even one requiring additional training for current experienced nurses, could be developed, the potential savings over other acceptable manpower sources would be justified. Moreover, if such a programme is feasible, then it paves the way for more rigorous analyses to measure the social and community benefits of nursing intervention by measuring impact on such outcomes as back to work statistics, reduced mortality, increased secondary prevention, and many other factors yet to be defined. This study is not one of measuring these criteria, but it is one of paving the way to these more measurable investigations.

The study was unstructured from the outset in that no prior procedures were developed which could be used as definitions of the nurse's responsibilities and duties. However, through the cooperation of Southern General Hospital's consultants and the Rehabilitation staff in coronary medicine (themselves involved in an extensive study), the nurse was given many guidelines and, in particular, the pitfalls of protocol and procedure. It was within the S.G.H. guidelines that the study proceeded, and the rationale of procedure follows that of Southern General Hospital.

Cohort Study

The thesis is based on results from an intensive cohort study of 32 patients. The number is small, admittedly, yet the study was designed to provide an intensive effort with limited numbers of patients. This weakens the statistical analyses, yet a target group

of 30 to 35 patients was initially chosen for two important reasons. In the first instance, the nurse fulfilled two roles during the study period, one of nurse practitioner and one of student. The former may be modified for terminology to coronary nurse counsellor, interventionist, coronary nurse specialist in rehabilitation, or other preferential titles, yet the message is the same. The nurse was responsible for direct, important work with a number of human beings, and regardless of the research or study requirements, she was responsible in her intervention for assuring the best care possible first. Statistical validity would have to take second row preference. In the latter instance, the nurse was a student taking course work as well as researching beyond patient care. Time became a limitation. This is treated in more detail along with the sampling frame and population data under the sections within methodology.

The methods used here in the study are also detailed elsewhere in the thesis, but as an overview, they include clinical classification of data, assessment using recently developed indices, measurements through statistical analyses, descriptions of results both behavioural and clinical, and evaluation of the cohort results through comparisons with published data.

Aims and Objectives

The purpose in undertaking this study was to provide a new direction, a fresh approach, to the process of cardiac rehabilitation. The nurse's experience in research and in practice in cardiac care, from a CCU viewpoint and community viewpoint, led to the position that the two are often widely separated and that the patient is left in a gap. In a spirit of enthusiasm, the nurse was determined to bring the two viewpoints together so that the patients in the cohort received care needed and that the efforts would prove worthy of consideration by the profession for further implementation. With that in mind, several goals, or aims, were developed for the study, and they are expressed in the following objectives:

1. To examine and extend the current body of knowledge in cardiac rehabilitation, specifically in that area of nursing care through intervention following a myocardial infarction.

2. To investigate the feasibility of extending the nurse's role in cardiac rehabilitation, specifically the role of the nurse practitioner trained and experienced in coronary heart disease.

3. To further the potential as well as examine the unknown limitations of the nurse practitioner working in the crucial area of nurse counsellor in and out of hospital settings.

4. To provide a framework for future work and research in cardiac rehabilitation, specifically for the area relevant to nursing care and intervention counselling.

Hypotheses of Interest

Within the presentation chapter on methodology, four very definite hypotheses are put forward. They are found under the section "analysis of data", and they will be introduced here with a general position statement. The position is that the nurse's role is that of an independent practitioner able to make judgements and assessments that benefit the patient and family in terms of both subjective and objective measures of rehabilitation. The overall goal of the cohort study is the achievement of maximum recovery for the patients in the minimum amount of time while fostering in the patient and family understanding of the condition, confidence in the future, and motivation to regain independence therefore taking part in active community life and work.

The hypotheses are therefore:

1. The nurse can successfully intervene to significantly improve the rehabilitation progress of patients who have suffered from, and survived, a myocardial infarction.

2. The nursing intervention can significantly alter behaviour in the patient toward better health care during a cardiac rehabilitation programme.

3. The time, effort, and training required of the nurse is not so specialised nor so burdensome that it is beyond the scope of current resources to implement a successful programme developed around the nurse practitioner as the field counsellor and interventionist.

The hypotheses listed above are in part testable and in part subject to descriptive results. There are also questions of interest which are not put into hypothetical framework, yet in each there is a paradigm worthy of study even if in a heuristic manner. These questions follow below:

1. Are physical and psychological prognostic measurements useful in cardiac rehabilitation?

2. Are the indices reviewed and used in this study useful to the nurse practitioner working in the field of cardiac rehabilitation?

3. Do the several indices measure, explain, or predict the patients' rehabilitation outcomes?

A full treatment is afforded each of these points, the methods used to test, and the analyses followed, under the appropriate sections in the chapter on methodology. Clearly some of the points noted are not directly testable while several others can be well determined and submitted to evaluation.

Organisational Comments

The thesis presents two chapters on literature review, one which deals with coronary heart disease, research important to rehabilitation, current efforts in the field, and prevention. In the second chapter of the two reviews, nursing becomes the focus so that theory of nursing is explored, relevant work in cardiac rehabilitation is presented, and the philosophy important to this study is clarified.

A separate chapter on methodology details the study, the cohort, the population and sampling data, the format for analysis, and the formal procedures employed here for the research study. It also includes the procedures used by the nurse in her intervention work along with limitations and assumptions of the study. This is followed by an extensive presentation of the results of the study and the analyses.

The final section, or area, of the study is concerned with discussion of the results and conclusions of the research. In it the nurse attempts to speak of the limitations and as well, the

successes of intervention. Appendices provide replications of instruments, indices, and assessment procedures used in the study and the various letters of approval for intervention, or use of indexed data, from appropriate sources. The bibliography has been trimmed to manageable size and content, and it is with some reservation that a number of articles have been omitted. This should in no way reflect on the value of those omitted articles or the work involved but only on the choice of articles made by the researcher to adequately represent the study and implications of the research.

Summary Comments

The impact of coronary heart disease with its high incidence (and increasing effect) on younger people combines with the high costs associated with care (or loss to society) to make cardiac rehabilitation essential. Given the rapid advancement of medical techniques which make survival of an acute condition or incident more probable today, it would appear fundamentally necessary to move toward a workable programme of rehabilitation that restores the myocardial infarction patient (specifically) and similar patients with acute disorders (in general) to an active way of life.

Secondary prevention now requires additional emphasis and through epidemiological efforts as well as primary research in medical treatment, the patient deserves the best probabilities we can derive for continued survival after his primary treatment. It is in this framework that the nurse has taken an enthusiastic attitude toward helping, toward care, toward recovery for the cardiac patient. It is with this in mind that the nurse hopes those who read the results of this study will not argue the philosophy of rehabilitation, or the need, no matter how fearsome they may be in evaluating the researcher's deficiencies in procedure.

CHAPTER II

REVIEW OF LITERATURE IN CORONARY REHABILITATION

Introductory Remarks

The epidemiology of coronary heart disease bears witness to the growing concern in the 1970's that it may be the epidemic of our time. Clearly the few scattered articles and reports on heart disease in general prior to World War II do not allow a statement of the magnitude of CHD at that time; conversely, the many current articles do not suggest the disease is more developed today. There is a strong body of current literature that does suggest Coronary Heart Disease is receiving growing attention for treatment, diagnosis, prevention, and rehabilitative efforts toward victims of acute illness.

The review of literature tries to account for a relevant overview of key work in the field of Coronary Medicine reflecting the thesis of rehabilitation. This and the following chapter are two sectors of the same problem. In this chapter, the review takes form in terms of the history and incidence of CHD, the epidemiology of the disease, recent trends in rehabilitation efforts--primarily in Great Britain, Cardiac Rehabilitation today including specific prognostic indices and classification systems, and a treatment of the aims of future rehabilitation efforts. The chapter that follows narrows the literature review to the field of nursing in terms of theory, role of the nurse practitioner, nursing education, and the particular emphasis of cardiac rehabilitation.

Historical Perspective

Early in this century various vague terms were attached to diseases of the heart or heart maladies which provided little focus on the incidence of Coronary Heart Disease. Smith (144, 1951) provided an early post-WWII review of the situation in his Report to the Secretary of State; Coronary Thrombosis, in which the Registrar General's reports years 1931-1949 attributed the highest number of deaths in Great Britain to "diseases of the heart." More to the point, Smith showed that in 1931 only one per cent (1.0%) of all deaths were attributed to coronary heart disease yet in 1949, the figure was put at nine and one-half per cent (9.5%). Smith's report also indicated that in 1949 as many men in Great Britain died of the disease between ages 50 and 55 as had died in 1939 between ages 70 and 75. Smith's report further suggested that coronary thrombosis

could no longer be considered a disease of the elderly as some evidence was clear that a significant number of men were dead from the disease between ages 35 and 45.

The knowledge that Smith made public in his report of 1951 is not surprising today. The same statistics, if applicable today, might be good news. A 1967 World Health Organisation (WHO) report listed coronary heart disease as the leading cause of death in Europe representing ten per cent (10.0%) of all deaths in age groups under 34, and sixty per cent (60.0%) in age groups over 37(158, 1967). In a series of British Medicial Journal editorials (39, 1973; 32,1975; and 42,1976) the overall mortality rates for England, Scotland, and Wales for CHD accounted for one-third of all premature deaths prior to age 65. The same article series underscore the statistics that show through 1972, mortality had increased five times over the past 50 years and doubled since 1952. For Great Britain, CHD accounted for 40% of deaths in men aged 30-to-60 years, or put a different way, the average mortality rates for years 1952 to 1972 showed that in any given year coronary heart disease was likely to result in deaths which would equal the number of fatal casualties in the six years of World War Two for Britain.

While these statistics are dramatic, several articles suggest the indicence of CHD mortality has levelled off, perhaps even began to decrease since 1972. Florey, Melia, and Darby (54, 1978) show that for Great Britain in general the death rates for men since 1972 have stabilised with some evidence of a decline after 1976. No similar decline was noted for women by the authors, and no evidence was put forward that Scotland's mortality rate for CHD was stabilising or declining and in all age groups, both sexes, mortality was significantly higher than the rates for Great Britain. Schvacabaja (142, 1964)'has suggested that some WHO report statistics may have been misleading and overstating the case for mortality in post-WWII years. A rather intense study by Bauer (2, 1977) indicated that an encouraging downward trend in previously spiralling incidence of cardiovascular deaths in Australia since 1974 is apparent. Bauer suggests that the active intervention (or attention) by family and volunteer organisations such as the National Heart Foundation (Australia) have created a better environment for victims of CHD to rehabilitate.

Bauer's work also notes that the male death rate for ages 30-49

increased about 37% between 1950 and 1974. So while he takes a position that mortality has perhaps decreased in Australia in the last few years, he suggests the evidence is rather tentative. The question of a declining coronary mortality rate is reviewed for Australia and the United States in a British Medical Journal editorial (29, 1976). The BMJ article points out several important characteristics of declining death rates. First, the fall in the coronary mortality rate lacks specific data which would support a decline in the disease but rather only implies better treatment for associated causes of death linked to CHD. Those include a decline in mortality since 1968 in the U.S. from influenza and pneumonia, a significant decline since 1968 in Australia in death from hypertension, and a reduction in complications of CHD arising, for instance, in women from use of oral contraceptives. The BMJ also called into doubt the classification of deaths and noted that while several countries reported declines in mortality rates for heart diseases, the same countries noted increases in death due to cancer, violence, and hepatic cirrhosis. The BMJ editors suggest that the 1968 change in International Classification of Diseases coupled with reduced deaths through better treatment of respiratory diseases associated with CHD may account for the variance in data over recent years.

The Current Perspective

It would appear that to date there is no clear evidence to suggest a definite decline (or increase) in CHD mortality, yet there is ample evidence that the disease is highly lethal, is usually silent (undiagnosed) until angina or infarction resolves the issue, and accounts for between ten and forty per cent of deaths in most Western countries. The following passage from an international symposium on preventive cardiology is perhaps enlightening:

> "And death is indeed the problem. If we convert life-expectancy figures in Britain now into their even gloomier reciprocal of death-expectancy, we have to acknowledge that 300 out of 1,000 men now aged 30 will die before their proper expectancy of 68 years and that about 80 of these deaths will be attributed on present evidence to CHD....What little data we have on evaluation of medical care whispers disconsolately

that some who die in hospital might survive if left at home and that the provision of more and more fully manned and devotedly womanned CCU's are not improving the situation.In other words, half of all attacks are unpredictable, half are instantly fatal and half die without medical aid. Finally, medical aid can't do much if anything for at least half of the half that survives. Halves seem to be the units of measurement in CHD." (146,1975; p.27)

Kannell (79,1975) notes that in the U.S., the results of the famous Framingham, Massachusetts, study show that about 30% of first myocardial infarctions will result in a four per cent (4%) per annum death rate with reinfarctions occuring at six per cent (6%) per year. Kannell suggests that cardiac failure ensues at 10 times the rate of the general population (in the U.S.) and strokes at fives times the rate; specifically, that the risk of CHD disease in men under 60 in the U.S. is one-out-of-five. Kannell (80, 1975) indicates that diseases of the heart account for 38.2% of all deaths in the United States, as of 1973.

The current perspective for Coronary Heart Disease and Cardiovascular Disease is not encouraging. Figure 2.1 below provides a visual summary approximating mortality rates per 100,000 population for men, aged 45-54 for nine selected countries.

Country[a]	CHD	CVD	All Causes
Sweden	124	189	522
Norway	164	218	566
Japan	51	251	733
Israel	214	302	572
Italy	133	234	717
Great Britain	254	341	734
Northern Ireland	324	465	804
United States	354	477	964
Finland	442	579	1,129

a Sources: Irish Heart Foundation(ed), International Symposium on Preventive Cardiology, Irish Heart Foundation, Dublin, 1975; pp.151. Also see Semple,T.,Myocardial Infarction, Boehringer Mannheim, Brussels,1973;pp.16.

FIGURE 2.1
MORTALITY RATES PER 100,000 POPULATION FOR MEN,AGE 45-54.

Considering the focus of this thesis, the incidence for Great Britain and the United States is not at all encouraging, yet there is substantial difference in mortality rates between various countries. The suggestion is that perhaps some evidence exists for a cultural hypothesis in which differences are noted among varied groups having peculiar, or unique, sets of risk factors that combine to give one more or less better odds of survival in one culture or another. This is precisely where the evolution of epidemiology concerning Coronary Heart Disease has become vital to identification of risk factors, prevention, and rehabilitation among CHD victims.

Rahe and Tores (122,1974) found that psychosocial characteristics of MI patients in Stockholm,Sweden, allowed a more relaxed re-entry into the normal community life style followed an acute attack. Kannell (79,1975) suggests that for U.S. study results, a trend toward motivating changes in behaviour is required to control risk factors. Kannell particularly points out that one of the four primary risk areas he identifies is the set of environmental factors which determine the level of atherogenic traits which can precipitate attacks in those predisposed to CHD(79, 1975;p.10).

In a study by Friedman and Rosenman (55,1959) a hallmark article described coronary-prone behavioural patterns in which the personality characteristics of individuals are examined for risk, hence for potential preventive measures based on psychological profiles of CHD patients. Rosenman (127, 1978) follows this point with rigorous, and current research to classify behaviour patterns for patients with ischemic heart disease.

Kannell (80, 1975) indicates that prevention of CHD is a matter largely of public health in which the risk factors are minimized through changing life styles, hygienic factor control (such as adequate diet programmes and education), reduced smoking, a rational approach to exercise, and similar changes for cardiovascular health. Stewart (146, 1975) similarly takes a definite stand in supporting the importance of identifying behavioural risks, of putting forward a concerted effort for epidemiological research, for recognition of coronary heart disease as in part a behavioural disorder, and for a frontal attack on CHD through peer pressure, environmental change by family, media support, and full services of an adequate health

service.

Living patterns and variances in life styles are noted as high correlates to CHD morbidity in Finlayson and McEwan (53, 1977). The authors particularly note that there is a community impact in which statistics for London and Edinburgh revealed parallel incidences of disease and percentage mortality rates for hospital deaths, home deaths, and subsequent death following an MI in five years or less. The rates were high for both London and Edinburgh (on the order of 8.4/1,000) compared with hamlet studies with more rural life styles and closeness of relations. Oxford, England is referenced by Finlayson and McEwan as having a 4.5/1,000 annual coronary incidence rate.

Another interesting study is one by Morris,(103, 1964) in which the psychological make up of men and women were compared.He found that in Britain men between the age of 45-67 years were much less likely to consult a general practitioner than women of the same age range--even when there was cause for investigating coronary heart disease symptomalogy. The Joint Working Party in the Prevention of Coronary Heart Disease (124, 1976) supported both Morris and Finlayson and McEwan results. Specifically, the Joint Working Party findings showed that of those reaching the hospital about 20% die in the first few weeks, another 20% die suddenly, and of those surviving the hospital, at least 20% die within the next five years. Moreover, those reaching the hospital may account for less than half those with CHD in acute stages.

The current perspective is not rounded out without mentioning the economic impact of CHD. McEwan (53,1977) puts forward the case for Britain, and briefly stated, there are an estimated 15 million working days lost per year reported due to coronary heart disease. More importantly, inspite of the aged old notion that heart disease was the "executive's disease" (in itself a hint of environmental factors), Finlayson and McEwan, the Joint Working Party report noted above, and the several references on mortality noted earlier reflect that working time lost most often occurs for men between the ages of 37 and 55 -- the prime period in their careers. The implication clearly is that of those massive numbers of working hours lost, they are lost among the peak performance classification of workers. This

thesis is not primarily concerned with the economics of heart disease, however the point must be made that tremendous economic resources are used up in treating coronary incidents.

In a BMJ editorial (32, 1975) the coronary costs are not alluded to (no precise data), but the point is made that since 1939 in the U.S. alone, there has been a quadrupling of costs and services associated with MI patients (holding inflation at a constant) so that oxygen, analgesia, ecg, biochemical tests, radiological facilities, nursing time per patient, and many more factors have increased tremendously--yet the mortality rate for in-hospital MI patients has changed little. Figures for Great Britain put the cost of hospital facilities alone at more than £25 million in 1970 and rising (74,1975; p.83).

The U.S. case is in part put forward by Pozen (119,1977) in which 650,000 survivors from among 1 million or more reported MI patients per year re-enter the job market at suboptimal levels of performance. Some 25% of those fail to return to work at all, and 35% are between the ages 40 and 67, their productive and experienced years. The point is well taken that upward of 25 million man days are lost annually (given 1975 data) among the survivors who could possibly return to work; the costs associated are not even remotely assessed.

Coronary Rehabilitation--An Historic View

As defined by the W.H.O. (156, 1964), coronary rehabilitation is the sum of activity required to ensure the coronary patient of the best possible physcial, mental and social conditions so that they may, by their own efforts, regain as normal as possible a place in the community and lead a productive life.

Earlier definitions than the W.H.O. 1964 contribution are reflected by the several selected references which follow in the discussion of past efforts to rehabilitate CHD. It is interesting to note that while scientific studies of the heart have ensued since William Harvey's 1628 papers on circulation, the current generation of heart specialists is considered the first to actively consider prevention, extended treatment or rehabilitation. This point is rather definitively treated by Williams (154, 1970) and reinforced by Semple (135, 1968), Groden and Semple (61, 1970), and Mair (92, 1972).

Naughton (110, 1969) provides a review of several post-WWII efforts toward coronary rehabilitation. He provides the comments on the classic study by Levine and Lowe in 1952 in which patients were systematically mobilised earlier than usually practiced. The researchers noticed post MI patients recovered quicker when allowed up in a chair and to be active after ten days in bed; this opposed to standard three-to-six-week bed rest normally used as a guideline to recovery. Naughton noted several variations on the theme to include Blumgart's 1959 experiment in which post MI patients spent their three-to-six-weeks in bed but then were rather quickly returned to work, many in less than 12 weeks from infarct. Another variation was the 1963 trial by Friedburg in which Naughton noted a bedrest period of two-to-five weeks and return to work by a target date six weeks following infarct. By 1968, Harrison and Reeves were encouraging patients to use the commode from the onset of illness when possible and to sit up for meals, and finally to seek return to work according to progress in hospital between six and ten weeks. All these earlier efforts were marginally more successful than allowing patients a sedentary recovery, however Naughton points out that these efforts were practices rather than scientific inquiries, hence little power remains to conclusions drawn from the studies or from the limited data.

Semple (135, 1968) described early ambulation trials as first attempts at rehabilitation in the modern sense of getting patients back to work and into the community. Semple compared U.S. efforts to German and Eastern European cultures' regimens and found that MI patients were often allowed up and around within a week of infarct when possible in the U.S., yet generally in the other countries compared, the patient could expect a full six weeks of total bed rest regardless of severity of infarct. He noted that in Britain in 1968, the norm was somewhere between two and five weeks and clearly more conservative than the U.S. trend.

Shaw (141,1972) recalled that clinicians in Great Britain and Scotland in particular were slow to respond to ambulation trials.It was about mid-1967 according to Shaw that the first Scottish trial took place with controlled rising around the 14th day following infarct. He also noted that by 1972 the bed rest period in Scottish hospitals had become 7-to-8 days or less. The crucial point made by

Shaw was that comparative statistics just prior to 1972 showed a 80% return to work figure for British patients within six months of infarct while for the same period in Eastern European countries having a conservative, long bed rest period, the return to work rate was less than 50%.

O'Rourke (117, 1977) traces history of treatment of the infarct patient and notes that much recent work occurs since 1958 when Kouwehonen and his colleagues at John Hopkins Hospital introduced closed-chest defibrillation which made the most lethal moments in treatment less risky. O'Rourke relates that shortly after that in 1960 the first well-defined coronary care units were established, and that it was only during the last decade that acute-antiarrhymic drugs, advances in pacing techniques, and cardiac surgery has been implemented. O'Rourke emphasizes that treatment has made dramatic progress, but only lately, yet aftercare remains largely an undefined and somewhat neglected area of treatment of the total disease. Shaw (140, 1970) noted as well that while great strides were made in treating the MI patient in hospital, many patients had been sent home with minimal instruction for rehabilitation and left generally to their own devices. He noted that many of these same patients have little or no follow-up either through general practitioner visits or cardiac clinics.

The W.H.O. (158, 1967) identified four general reasons why coronary rehabilitation, aftercare of MI patients, and follow-up were lacking:

1. Cardiac deficiency is less visible than other chronic disabling diseases and therefore arouses less compassion;

2. Patients are often older and less objects of concern;

3. Prognosis thought to be less hopeful and therefore a cultural ignorance prevails which stresses little rehabilitation;

4. The medical profession generally avoids the added responsibility of rehabilitating the cardiac patient.

It was on the last point that the W.H.O. Expert Committee in 1967 focused several comments aimed at informing doctors and patients that an organised effort had to be made to develop rehabilitation management. In a follow-up report, the W.H.O. (159, 1973) reported no substantial progress in the areas considered vital to rehabilitation in 1967. However, much work was going on in

isolated studies around the world, the Framingham Study (81,1977), studies by Elizabeth Cay, et al (12,1972; 14,1973), and Shiller's early work (130,1972) to name a few.

Hellerstein and Hornstein (67, 1966) made an early attempt to write a short, practical guide for the physician which stressed therapy of the cardiac patient which would return him to an active life style in his community. This was particularly interesting for similar statements about treating the whole man, risk counselling, and secondary prevention appear in comparatively recent articles and imply little significant progress over time.[1]

Semple (135, 1968) reviewed rehabilitation efforts of that time frame in which general hospital advice, early mobilisation after infarct, re-evaluation of the patient at six-week cardiac clinic visits after discharge, and industrial rehabilitation units were all beginning to be implemented. He also noted that little consistency between practice existed for countries, areas within countries, or even areas within cities. Specifically, Semple felt that Britain generally did not get involved in rehabilitation efforts on more than an individual basis and at the time, 1968, only 13 hospital centers in the United Kingdom existed in which organised effort was made to provide follow-up care or rehabilitation.

Shaw and McNiven (139,1974) actually set up a pilot study and rehabilitation clinic, and even though typical of most efforts being temporary and personal efforts, proved to have measureable results the authors considered highly successful. They improved the return-to-work percentage from about 80% in six months to about 75% in 12 weeks post infarct. They were able to stop 44% of their smoking patients from further smoking. Elizabeth Cay and colleagues in a series of controlled trials (12,1972; 13,1972; 14,1973; and

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1 Clearly this is a very general statement meant to highlight the apparent slowness of organised response to rehabilitation and should not be taken to reflect lack of effort by many individuals. For three general references concerning lack of organised rehabilitation effort and arguments for commitments by government or medical associations, please see Mair (92, 1972), Joint Working Party of the Royal College of Physicians of London (76, 1975), and Mulcahy (106, 1975). Two particular works by Groden, Semple, and Shaw are recommended (60,1971 and 61, 1971) which critically look at British Cardiac Rehabilitation.

15,1976) emphasized the psychological rehabilitation of the MI patient, coronary care unit progress, and programmes aimed at systematically easing the patient back into mainstream work and community activity.

The literature is extensive in terms of individual efforts, however several additional articles are presented here for clarity of direction. Bruce (7,1973)provides a readable overview to the particular area of exercise testing. Bruce, et al, (6, 1976) takes a critical look at several existing (then) programmes of cardiac rehabilitation. A B.M.J. editorial (30, 1975) reviews several key efforts for aftercare following a coronary. Colling (19,1977) provides a report of a working party on cardiac rehabilitation in Teeside, U.K., while Colling, et al (20, 1976) provides an rather brief but intense epidemiological statement about the Teeside results. The W.H.O. series of reports using Expert Committee studies reviews and evaluates in depth in their 1972 effort (49, 1972) comprehensive rehabilitative and preventive programmes for patients after acute MI.

Of particular interest to this thesis is the work done by the Joint Working Party of the Royal College of Physicians of London and the British Cardiac Society (76, 1975). A summary of the JWP findings are worth clear reference here. Several of their main points and recommendations follow:

1. Hospitals are unsuccessful in conveying their beliefs about rehabilitation information to patients. Patients were found to have little understanding of diagnosis, treatment, of long-term implications of myocardial infarction.
2. Relatives had much less contact with medical and nursing staff than anticipated in a rehabilitation atmosphere and were overawed and in general dissatisfied with patient's care. Specifically, relatives criticised the vagueness of information and inconsistencies for rehabilitation after discharge.
3. The general practitioners were seen as more approachable than hospital staff. However, the GP's studies appeared to considerably differ in their care of discharged patients--most waiting for the patient or wife to visit the clinic rather than seeking out the patient. It was also noted that most of the GP's had little information about the patient and

it was not uncommon to find certification procedures or prescriptions to be written on first visits by patients (or patients' spouses) to the surgery without discharge information.

4. The outpatient follow-up, when used, was seen by the patient as a positive and important stage in recovery, yet the follow-up almost always resulted in disappointment for the patient, short time visits with a doctor who may have only seen the patient in hospital once on rounds.

5. Being discharged home was viewed as an encouraging confirmation of progress by the patient and family, yet this was often found to be the patient's first significant confrontation with the realities of a disability. The first few weeks following discharge was found to be a period of anxiety for family and the patient.

The two main recommendations of the Joint Working Party were concerned with the role of the general practitioner and trained nurse support services. Specifically:

1. The general practitioner was found to be the key person for coordinating and supervising rehabilitation after myocardial infarction. It was recommended that he take an active role with regular consultations, follow-up, and advice for both patient and family members during the transition period following discharge particularly and for long-term care when necessary.

2. The JWP recommended the evaluation of use of trained nurses to supervise and coordinate convalescence with the general practitioner and to be able to provide the communication and visitation necessary during periods of patients' social immobility.

The role of the general practitioner in the communication process for rehabilitation is treated by Mayou (96, 1976) in which the underpinning assumption of pessimism by patient and family is to be treated as much as the disease itself. Finlayson and McEwan (53, 1977) suggest that communication of convalescense and exercise in terms that will positively reinforce rehabilitation is a complex and important aspect of rehabilitation itself. In both of these

references, the authors repeat cautions about individual expectations of patients and relatives and the gentle need for intervention by professionals at the community and family levels of care.

A backward glance over the past few pages of the thesis reveals an historic treatment of rehabilitation, yet the period of that history and the relevant literature seems to centre on no more than two decades -- 1958 to 1978. Clearly, much of the work has been accomplished since about 1967, and the overall progress of coronary rehabilitation programmes leaves one in doubt about the state of the art today. The section which follows is a review of current strides in rehabilitation from the viewpoint of scientific inquiry, including use and assessment of risk assessment systems, prognostic indices, and intervention programmes.

Prognostic Indices and Classification Systems

As treatment progressed, aftercare and the concepts of needed rehabilitation matured so that current emphasis is placed on the development of scientific procedures. These procedures take the form of prognostic indices and classification systems of acute coronary patients, of predictive classifications of traits and environmental factors which may allow systematic identification of risk prone individuals before actual diagnosis of disease, and instruments for guiding rehabilitative efforts following MI and primary treatment. There are two areas to be concerned with here: preventive trends in public health and post-MI rehabilitative treatment--secondary prevention. For clarity, this thesis is most concerned with secondary prevention and the rehabilitative stage of CHD, and the brief presentation of relevant literature in this area is the focus of the remainder of this chapter.

Physical Indices

Severity grading of patients according to degree of infarct has been a primary concern of several studies in an attempt to standardise among hospitals classifications of patients and the similarities of approaches toward rehabilitation. The Joint Working Party (76, 1975) found that a long-term survival prognosis is associated with the severity of attack. The JWP report indicates that initial attempts were made to correlate severity classifications between hospitals in Great Britain and to use these severity data

at about the second week following infarct to guide rehabilitation follow-up programmes. No specific severity index was recommended as being satisfactory but several were reviewed by the JWP. These are treated in part separately below.

Elizabeth Cay and colleagues (12,1972; and 14,1973) reported that a series of studies on indexed physical conditions do not by themselves predict significantly the success or failure of a rehabilitation effort. The usual classification system used, or used in modified form, has been the Peel Coronary Prognostic Index.[1] The index is initially developed at 48 hours post infarct and takes into account age of patient, previous cardiac history, a weighting scale indicating extent and severity of infarction, and arrhythmic evidence of myocardial instability. Originally it was used to try to predict or assess 28-day mortality and the physical ambulation programme needs for individual patients.[2]

The Peel Index included three basic grades. Grade I was a classification of uncomplicated, least severe infarct patients, and the JWP review of past uses of the index showed about 45% of all patients treated fell into this category. Grade II patients were those needing more detailed assessment, usually more severe infarct patients with a history of cardiac problems, yet they were not those who would represent a special and immediate problem to the clinician. Grade III patients were clearly those in immediate danger of not surviving the critical primary treatment period. The JWP review indicated that about 80% of the Grade I patients might be expected to return to work and also to survive a minimum three-year follow-up period. In contrast, Grade III patients had a high mortality rate in which less than 25% survived the three-year follow-up period and approximately half did not survive the primary treatment period.

An index similar to Peel provides a more specific example of physical indexing and is the Norris Coronary Prognostic Index (112, 1970). The Norris index includes initial radiological information

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1 This is reported and reviewed in the Joint Working Party Report (76,1975; pp.282-345), and includes results since 1962 of nine researchers and approximately 70,000 MI patients. For more detail the reader is referenced to that study or Naughton (110,1969) and several editorials in the B.M.J. (36,1976; 39,1973; and 42,1976).

2 See Semple (135,1968) for greater detail on mortality and grading.

and directly identified information such as age, heart size, pulmonary oedema or congestion, and presence or absence of previous infarction. A grade classification was used by Norris with three groups similar to Peel described as a survival scale. The following is taken from R.M. Norris (112, 1970, pp.485):

Survival Scale

Grade I - Mild, uncomplicated myocardial infarction with absence throughout of any of the features mentioned in grades II and III.

Grade II- Absence of the features mentioned in grade III but any of the following, even if temporary and responding to treatment:

sinus tachycardia (over 100 per minute) at rest persisting longer than one hour but less than 48 hours,
dyspnoea during ordinary activity,
temporary abnormal cardiac impulse(dyskinesia),
moist sounds persisting after coughing or
pulmonary venous engorgement on x-ray calling for oral diuretic therapy.

Grade III- Presence at any time of one of the following:

sinus tachycardia at rest persisting for 48 hours,
arrhythmia still present at time of grading,
dyspnoea at rest,
alveolar or interstitial pulmonary oedema on x-ray,
third heart sound,
continuing palpable dyskinesia or ventricular aneurysm,
definite cardiac enlargement,
persisting heart block, left bundle-branch block or bifascicular block.

In terms of this thesis, the Norris scale will be treated again under methodology and was used in research. However, here in a brief review of literature, it is important to note that several modifications of the Peel and the Norris scales, or indices, have appeared in research. For a somewhat more detailed review of procedures, see

Duncan, et al (27, 1976), Kannell (81, 1977), Royal College of Physicians of London (124, 1976), and W.H.O. (159, 1973).

Psychic Classification

In contrast to the physical emphasis of classifications for coronary patients, a body of work has been developed around the psychic adaptation of patients following infarct. The behavioural emphasis on patient classification has led to several models that deal with a variety of psychological aspects of care and treatment of the coronary patient.

Friedman and Rosenman (55, 1959) studied behavioural patterns of patients to hypothesize a susceptibility model in which persons could be identified as more or less at risk for cardiovascular disease. They used three categories which dealt with observations of stress and personality. Type A individuals being those with intense ambition and having a driving sort of personality. Type B included the more placid, rather easy-going personalities who showed no overt signs of intense ambition or drive. Type C persons were similar to Type B personalities but distinguished by a clinical definition as being in a chronic state of anxiety or insecurity.

The Friedman and Rosenman studies resulted in identifying several times more persons with coronary artery disease in Type A than in either Type B or Type C categories. The authors imply a blending of the categories at the margins of definition, the Type A and Type C models being polarised definitions. Clearly the three categories are subjective in definition, and several writers have drawn attention to the possibility that replication of research using the Friedman and Rosenman definitions is open to a wide interpretation. For several points on the model, see Wintner and Kellerman (155, 1976) and Rahe and Tores (122, 1974).

Research by Rahe and Tores (122, 1974) made use of behaviour classifications, in part similar to those by Friedman and Rosenman, but also included distinct definitions for the patient's degree of dissatisfaction with work, marriage, or social stability. The latter included disturbance characteristics such as recent death of spouse, life-long behaviour resulting in status incongruence (such as lack of education or open social conflict). Dissatisfaction could be with work, such as job change, overtime, and on-job conflicts which the patient could express. The point is that the research was

an attempt to classify stress given the dominant patterns of work and family (or social) activity. The results of several studies by the authors are reported in Rahe (120, 1974), Rahe and Romo (121, 1974), and Rahe and Tores (122,1974). The conclusion in each series was that observation and classification of these characteristics would support a stress hypothesis and provide predictive power for myocardial infarct patients. More important to this thesis, the results indicated that the information derived from the research could be reasonably well replicated and would be a positive value in rehabilitation of patients.

The particular findings of Rahe and associates include a high positive correlation between a Life Change Unit (LCU) score and severity of illness. The LCU was calculated for the year prior to a patient's diagnosis (time of research contact). In studies of myocardial infarct patients only, the severity of the infarct was found to be associated strongly with the higher LCU score as well.

A corresponding study by Bruce, et al (6, 1976) made use of a rating scale similar to the LCU of Rahe's then coupled the work to a physical training programme aimed at rehabilitating patients. Their findings were that intervention through physical training reduced stress and favourably affected the morbidity rate among a large group of subjects. The primary point, supported by Rahe and his colleagues, was that perhaps it is not the amount of stress in one's life style but rather a function of how one copes with stress which impacts on prediction of myocardial infarction. More specific, it may be the adaptation behaviour which must be identified rather than the stressful characteristics of the individual. The implication here is that for rehabilitation, programmes that adapt the post-infarct patient to his sudden change of life style with minimum stress will speed recovery, perhaps impact on secondary prevention.

The adaptation process is treated by Zaitseu (161, 1976) in which a psychic classification is put forward. Zaitseu used the Minnesota Multiphasic Personality Inventory to distinguish between neurotic and normal psychological reactions of patients to their disease. These two classes of reactions are summarised below:

Normal Psychological Reaction

(a) Successful -- Patient's mental state differs very little from that of pre-infarction. He has a positive attitude

and has resumed an active life unrestricted by his illness.

(b) Sufficient -- Patient exhibits some fixation about the disease but has followed medical advice concerning his work regimen and leisure, and he lives an active life. A reaction not uncommon in angina patients.

Neurotic Reaction

(a) Neurosis -- Patient is irritable, experiences sleep disturbance, anxiety about his condition, exhibits a general weakness and is easily exhausted. He is well aware of these factors and is trying to cope with them.

(b) Cardiac Invalid -- Patient has a pathological development of personality hypochrondriasis causing emotional and physical liability. He expresses good intentions about overcoming this but acts completely opposite to what he expresses. He appears content with this state of affairs.

In close relationship to the psychic classification system and several similar reports, the rehabilitation effort takes form and emphasizes exercise training as a theraputic treatment which may alter the process of psychological adaptation. An exercise programme requires at the outset some measure of exercise tolerance for implementation, and Naughton and Hellerstein (111, 1969) provide guidelines for classifying individuals with coronary heart disease following MI in terms of performance abilities. The guidelines are based in part on testing of healthy athletes and in part by diagnostic testing for ischaemic heart disease. The tests take the form, generally, of:

1. Diagnosis of the aetiology of previously undefined chest pain;
2. Evaluation of an individual's capacity for work or sport;
3. and Evaluation of a patient's response either to therapeutic or rehabilitation regimen.

Bruce (7, 1973) notes that in cardiac rehabilitation, the purpose of exercise testing is not to diagnose the cardiovascular disease but to evaluate the severity of the disease, reveal unexpected responses to exertion, and provide an appropriate baseline by which the effects of rehabilitation may be assessed psychologically. Bruce's objectives for exercise testing take the form of:

1. Definition of impairment of functional aerolic power or

maximum oxygen uptake (VO_2 maximum);

2. The determination of the mechanism of impairment;
3. The provision of a baseline to assess future changes with the natural history of the disease and its modification by clinical management.

Bruce further notes that the VO_2 maximum measurement becomes an observation on the pumping capacity of the heart. He suggests the importance of assessing the ambulatory cardiac patient both as far as maximal testing to pre-determined symptomatic limits of capacity (target heart rate) and estimating the pumping capacity of the heart by measurement of the oxygen uptake.

Muir and Williamson (105, 1977) developed a Work Classification Study in which a measurement based on Metabolic Units (MET) is defined. The MET is the unit of energy expended per kg of body weight per minute, and it is being used as an observation of the required amount of physiological work to undertake certain activities. The authors found that a middle-aged man can do about eight-to-nine MET's three months after an uncomplicated myocardial infarction. The progress was such that the man would be able to do one MET one week after infarct, on average about two MET's over the next three weeks, and between three-and-seven MET's over the following three weeks. Muir and Williamson put this MET progress in simplier terms and suggest that at 8-to-9 MET's, the patient is replicating activity normally expended when walking three miles in one hour or swimming 40 yards.

Naughton, et al (110, 1969) developed an MET index which relates a number of values to common physical activities. The general position of Naughton and Muir and Williamson is that a patient can follow a progressive exercise programme, realise his progress, and gain a great deal of reassurance about his physical recovery. The related psychological adaptation follows the logic of the several preceding pages of review.

The Schiller Rehabilitative Index

In Sydney, Australia, Eric Schiller (131, 1977) has developed a rehabilitation index, or rating scale, to be used as a predictive instrument. Schiller and his associates have been involved in a series of research efforts to predict prognosis in relation to rehabilitation of MI patients for return to work, classification of problem cases in rehabilitative efforts, potential for early prevention of disability

after myocardial infarction. See specifically, Schiller (131, 1977), Schiller and Baker (132, 1976), Schiller and Morris (133, 1971), and Schiller (130, 1972).

There are several interesting aspects of Schiller's rating scale. It has been used to assist in referral of patients to the Australian Cardiac Rehabilitation Units where the main emphasis has been to get patients back to work, or retrained for appropriate work giving full consideration to the limitations of the patient. The scale has also been used to correlate financial costs to the patient with severity of disease and complications of rehabilitative efforts. Moreover, the index data has allowed prediction of those patients not able to return to work and those unlikely to respond to existing rehabilitation efforts.

The Schiller rating scale is based on the Prognostic Index developed by Norris, Caughey and Mercer (112, 1970). However, it also includes scoring criteria on age, stability of work history, type of occupation, educational background, family and social stability, psychological factors, ethnic considerations, and financial situation. A further refinement of the rating scale in an unpublished work, Schiller (131,1977), indicates that smoking history, occupational history, job availability, levels of anxiety, and depression proved highly predictive of the patient's success with rehabilitation, specifically return to suitable work. The rating scale is derived from a multiple regression procedure fitted for modelling two sets of dichotomous variables. The first set includes two "risk" factors of inadequate rehabilitation and non-return to work. Two major variables became significant to the equation and included Previous Work History and the Patient's Estimate of Job Availability. Minor, but significant factors also included in the work were Number of Cigarettes smoked per day and Previous Education Level.

The Schiller Rating Scale is used in this thesis and will have greater attention in the sections on methodology and discussions on the results of the cohort study. The Norris, Gaughey and Mercer Coronary Prognostic Index will also be used in this thesis, and in addition to the review comments on these studies here, a rather definite treatment and discussion follows in later chapters.

Rehabilitation Objectives

The previous sections provided a number of instances in which individual researchers developed patterns of rehabilitation, or criteria for assessing treatment and care. In the several paragraphs that follow, a brief review of relevant rehabilitation objectives are put forward. The choice of topics covered and the information supplied is far from comprehensive! The field is vast. The topics are meant to be relevant to secondary prevention and rehabilitation which are directly related to the content of this thesis. The points covered for measurement and assessment are those directly applicable to this thesis.

Return to Work

Getting the patient back to work, or returning the patient to previous activity levels such as active retirement, has been a primary aim of rehabilitation. Brewerton (5, 1977), and Groden (60, 1971) note that return to work, or occupational resettlement, has come to be a common measure for successful rehabilitation because it provides a definite direction and a measurement outcome for the rehabilitation effort. Cay (12, 1972), Schiller (130, 1972), and the W.H.O. reports (158, 1967) offer general guidelines that appear to represent the literature and research within the field. Specific time frames include an early return to work success between 10-12 weeks, programme success as approximating results of studies which show on average 74% of a cohort group returning to work by the end of a six-month period following infarct. The references above all allude to low and high figures for previous studies indicating that for Britain and the United States, a maximum expectation for return to work success for a group under study would be 80% in six months; the low figure could be no more than 45%. Obviously there is considerable variance in results to date, particularly on low achievement groups.

The previous discussions have a great deal of impact here. That is to say, social conditions (noted by Schiller, Friedman and Rosenman and others earlier), cultural differences (reported by W.H.O. in 1967 and 1973) for countries and peoples, and a variety of physical criteria all impact on, and alter return-to-work results by groups. While these factors are generally included in the articles and points made in earlier sections, it is of primary interest here to look at

success and failure for return to work so that guidelines can be reinforced for the thesis study. Several particular findings are treated below.

Muir and Williamson (105, 1977) report on a series of case histories in Britain and the U.S.. They found that studies done in the 1940's in the U.S. resulted in successful return to work for between 60-70% of patients by six months. The authors reflect of studies over time, 1950's, 1960's at the Cleveland, Ohio, U.S., Area Work Classification Study in which , overall, only 50% were back to work at six months and no more than 75% back to work in a year. These studies focused on men with MI rehabilitation follow-up, aged under the retirement age, generally under 60. The same series of results reported by Muir and Williamson show that in an intense insurance survey for 1970-1971 in the U.S., 25,000 case studies were assessed by occupational group. Steelworkers averaged 270 days off the job before returning officially to work while all other blue-collar occupations averaged, by occupation, between 70 and 100 days return to work. The same report also showed that of all patients referred for rehabilitation, 50% returned in six months and 25% in one year; the non-referrals were those capable of returning to work without rehabilitation or incapable of rehabilitation for work.

The interesting points of the Muir and Williamson reports are that groups with rehabilitation generally had high success rates for return to work (60-77% ranges reported), and those who had monetary support (insurance policies or pay protection, such as U.S. steelworkers) had <u>low</u> success rates regardless of rehabiliation programmes in progress. The implication is that rehabilitation <u>measurement</u> data may reflect tremendous differences in social legislation (welfare programmes, security insurance, and so on) rather than differences in return to work success with rehabilitation in various settings. It was particularly on this point that Muir and Williamson's presentation of MET activity measurement, independant of social or political conditions was set up.

Other six-month averages for return to work statistics include results reported by Groden, Semple and Shaw (60, 1971) with 44% return at three months following MI and 82% maximum return at six months for Britain in 1967 studies. McEwan (53, 1977) reports British statistics for the early 1970 studies in Edinburgh and

Oxford cohorts at 58% at three months and 83% maximum at six months. Joint Working Party results for Britatin, 1975 study, (76, 1975) assesses British rates at between 50-60% for three months and 80% maximum at six months. The same study provides a six-month overall mean expected U.K. return to work figure for formal cohort rehabilitation to be 74%.

Psychological and Social Aspects

In contrast to the relatively quantifiable aspects of return to work, the psychological implications and social environment, both with resulting impact on rehabilitation, are subjective, behavioural, and not directly quantifiable. Measurement of success for dealing with psychological and social rehabilitation is found by using a variety of questionnaires, observations, and evaluations of several key aspects of life. The survey of recent efforts in the field of rehabilitation reveal few consistent results. Specifically, the section on Psychic classification systems earlier in this chapter provided the fundamental arguments and work of researchers. These are not presented a second time here, but the composite results and recommendations are summarised.

Wintner and Kellerman (155,1976) provide a recent survey on psychological and social aspects of rehabilitation, and they conclude that no systematic measurement is used, or implied, from the research to date. They note that about 20% of all relevant studies use a form of individually designed questionnaire to assess the patient's attitude toward the disease prior to rehabilitation and post-care intervention. The same procedure is used by another 20% of the researchers in the field but with the Minnesota Multiple Personality Index questionnaire format. Wintner and Kellerman review seven other less-used methods, three of these having similar formats for predicting cardiac personalities, as noted earlier here by the Eysenck studies (50, 1972), Rahe and associates (121,1974; 122,1974), and Zaitseu (161, 1976).

The common threads of research appear to center on identification of anxiety, fear of the disease(treatment, conditions, recovery, and even the CCU atmosphere), depression, stress (both internally contrived, perhaps consistent with a personality characteristic and exogenous to the patient such as social conditions, finance, job responsibilities, and so on), family conditions, occupational fitness,

rejection, and community pressures. Within this, such factors as age, sex (women have different patterns of behaviour than men), educational levels (higher education correlated with propensity to adapt to disease positively), attitudes by doctors in secondary stage follow-up, family characteristics, type of occupation, capacity to find work (or patient's perception of chances to return to work), and stress (measured clinically) have come to be standard areas for investigation.[1]

Success and assessment of rehabilitation programmes in these areas are such that Wintner and Kellerman conclude that "Up to the present day, no better criteria have been established for defining success in rehabilitation of cardiac patients than those of 'return to work'"(155, 1976; pp.165). The authors suggest only that an assessment takes the form of behavioural statements for relative changes in attitudes measured through questionnaires or relative changes in clinical observations, such as reduction of dependency on antidepressant drugs. This leaves one with little to work with except the knowledge that treatment of the psychological aspects and social pressures are imperative to rehabilitation, and any intervention which (a) reduces stress, (b) reduces anxiety, (c) relieves financial difficulties, (d) improves the patient's chance to return to work, (e) softens the impact of CCU treatment and return to the community, (f) assures family understanding, (g) educates the patient and reduces his fear of the disease, and (h) helps the patient cope with risk-prone personality traits will enhance the rehabilitation of the patient.[2]

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1 A series of references treat the topic here and the discussion is presented as a composite picture for clarity. See Naughton (110,1969), Friedman and Rosenman (55, 1959), Hellerstein and Hornstein (67,1966), Mulcahy (106, 1975), Mulcahy, et al (108, 1975), Khosla, et al (84, 1975), Thompson, Wark and Garland (151, 1976), and Stewart (145,1972) for commentary and discussion on most of these points.

2 In addition to the researchers noted above and in the text of the discussion, these conclusions reflect points made by Stewart (146, 1975), the W.H.O. reports (156, 1964 and 158, 1967), Bauer (2, 1977), Bruce, et al (6, 1976), Cay, et al (12, 1972), Cay, et al (15, 1976), Clarke (18, 1974), and Finlayson and McEwan (53, 1977). Substantially these recommendations appear explicitly in most of the works.

Social Attitudes and Networks

Closely associated with the patient's psychological and social situation is the topic of an expanded social environment with which the patient is in direct contact following a myocardial infarction. This includes the formal network of relationships not normally part of his environment such as the physician, social workers, therapists, and other professionals directly connected with his recovery and rehabilitation. It also includes the informal network of his family, particularly in the case of a male patient, his wife, or in the case of a women, her husband, their children, and other relatives close by and friends.

Work by Finlayson and McEwan (53, 1977) suggest that these networks play tremendous parts in rehabilitation and make up the dominant human contact for the patient following infarct. Thus, the social attitudes toward the patient, his disease, and the impact of the incident on the family is extremely important to total rehabilitation. The objective of assessing social attitudes and networks is therefore to determine whether the relationships the patient has are helpful or hurtful. Finlayson and McEwan suggest that elements of both exist. Specifically, a survey in Britain found that communications between doctor and patient was often of less help than anticipated due to short clinic visits and a lack of understanding on the part of the patient about his disease. The general practitioner was found to often lack insight to the patient's personality, his family problems, his work situation, or his need for psychological help in adjusting to the disease. In all fairness, the authors did not indict the GP as unusually hurtful, but merely suggested that the social and psychological aspects of rehabilitation were not considered nearly as much as direct treatment for clinical problems, with a growing emphasis on increased exercise.

Finlayson and McEwan did find substantial numbers of cases in which the patient was in a stage of chronic role conflict during the critical stage of home recovery. This role conflict was manifested in several particular ways. First, when the patient had a positive attitude toward recovery, the spouse seldom held similar expectations and often treated the patient as a cardiac invalid. If the patient had gained insight to the disease from professional help, often the family had little understanding of the disease or how to help the

patient cope with stress, anxiety, depression, or rehabilitative programmes. Sexual intercourse was often seen as an exertive and potentially hazardous activity so that whether or not general practitioners advocated abstention, patient and spouse seldom returned to normal behaviour at an early stage of recovery. And on return to work, employers often viewed the patient as less capable of work and altered relationships with the patient whether justified or not.

Mayou, Foster, and Williamson (96, 1976) had several rather specific observations about the formal relationships of patients and their general practitioners. They found that patients were seldom informed about the nature or implications of the disease to the extent required for normal adjustment. The same authors found in a separate study (97, 1976) that advice by GP's was often vague and conflicting, often not optimistic, and seldom took account of hospital information or reports. In still yet another study by the authors (98, 1978), they found wives of male patients to be generally overprotective, uninformed on the nature and implications of the disease, and suffering from stress, anxiety, and depression as well.

Schiller (130, 1972 and 131, 1977) found the stability of family social networks to be highly predictive of rehabilitation outcome and return to work ratings. A primary aim in his work for rehabilitation suggests intervention for stabilising the home and formal (professional contact) networks. Clearly an assessment of the factors involved is yet to be developed to any extent or substantially tested. Schiller is continuing his research here, and it forms part of the work in this thesis. The criteria becomes highly subjective, but some assessment is possible by administering questionnaires and developing observations about the spouse, GP recommendations and attitudes, family relationships, and behaviour patterns during the initial rehabilitation stage prior to return to work.

Mayou and colleagues suggest intervention to inform and educate spouses on the patient's disease and condition, and to actively try to reduce the spouse's psychosocial disability, which they found to be substantial in several British studies. They also suggested that rehabilitation might include development of primary

referral services so that families could be aided in special problems such as financial strain, social welfare needs, even the very basic perplexing problems such as shopping and transportation services. There would appear to be a wide range of considerations to deal with here, and it would appear equally likely that little work has been done in the field to date. Any measurement of success reduces to a subjective evaluation based on attitude surveys or questionnaires developed in each case for progress during rehabilitation,to include information from and about the general practitioner and support professionals.

Smoking & Rehabilitation

There is little doubt that ideally an objective of preventive medicine and particularly rehabilitation in coronary medicine is complete cessation of smoking in the general population. Aside from this ideal, there are tremendous arguments why rehabilitation of the coronary heart disease patient is vitally concerned with stopping smoking. The several major points will be reviewed here and the main objectives of a secondary prevention and rehabilitation effort will be highlighted.

The Surgeon General's report of the U.S. (148, 1965 and 1971) finds wide reference for its reaching conclusions and general position that smoking causes cancer and contibutes to other ailments. Those include specifically cancer of the lung and other respiratory sites, emphysema, pulmonary heart disease, and associated diseases.

Doll and Peto (25, 1976) provide a 20 year historic treatment and follow-up of smoking related problems and conclude that ischaemic heart disease in heavy smokers (over 20 cigarettes a day) was found to be fifteen times greater than among non-smokers. They also found that mortality rates for smokers with ischaemic heart disease increased progressively from light to moderate to heavy smoking for all ages, men and women, under the age of 65. Kannel (79,1975; 80, 1975; and 81, 1977) reported that in the now famous Framingham study, conclusive evidence was found that more coronary attacks develop among smokers than non-smokers, and more important, among those who stop smoking after myocardial infarction, the mortality rate drops significantly.

Clearly there are a number of highly respected reports and very

convincing research which could be noted here concerning the disease, smoking, and all the ramifications of smoking, yet one hardly needs to go beyond these several very well documented papers to set the point out clearly. What is more important to this thesis is research centered on rehabilitation.

The epidemiological evidence is clear that an association exists between cigarette smoking and the increased risk of coronary heart disease, and conversely, this risk is reduced systematically by a reduction or cessation of smoking.Several authors provide substantial case statistics to support these points including Semple(136, 1973), the Joint Working Party (76, 1975), Kannel (80, 1975), Carruthers (9, 1974), and Mulcahy (106, 1975).Semple and the Joint Working Party reports indicate that smoking as a coronary risk factor is one of several vital risk factors which, when found in patients, combine to increase the likelihood the individual will develop CHD regardless of history of heart disease, and when reduced, will improve the chances for successful rehabilitation following an attack.

The progmostic indices used in this thesis, included Schiller's (131, 1977) and Norris' (112, 1970) identify smoking as a primary risk factor which must be dealt with through rehabilitation. The only logical objective for rehabilitation is complete cessation of smoking for the MI patient, however any reduction in smoking will reduce risk, particularly in Britain or the U.S. where other risk factors (discussed below) are prevelant. This is particularly illustrated by a B.M.J. editorial (43, 1977) in which advanced hyaline thickening was found in 90% of those persons who smoked over 20 cigarettes a day, yet less than half of those who smoked between 10 and 20 cigarettes a day. A complete absence was noted for those who never smoked or smoked only rarely.

Carruthers (9, 1974) provides a summary of reasons why people smoke and suggests that efforts to stop patients from smoking must begin with identification of, and change in, the motivation to smoke. Specifically, smokers clearly can be addicts--those who will feel physically ill if not smoking a cigarette every 20-to-30 minutes during waking hours. There are also stimulation smokers who find they can suppress stress symptoms and override fatigue by smoking. These two categories, Carruthers suggests, account for the

majority of smokers in Western societies and at the same time, these two categories of smokers are the hardest to deal with in terms of modifying behaviour. Other categories, less difficult to treat according to the author, include psycho-social smoking which occurs only in company of others, tranquillisation smoking, which is a form of gratification of oral needs, and indulgent smoking, seen as a reward in addition to other pleasures such as eating and drinking.

The recommendations of these researchers provide a composite picture of the need to first identify the motivation for smoking, second, to modify behaviour by altering that motivation, and in particular for rehabilitation professionals, including doctors and nurses in CCU's to reinforce behaviour be advocating a full no smoking environment, educating individual patients and their families about the risks of smoking, and seek social sanctions against smoking in general.[1] In terms of the myocardial infarct patient, it becomes crucial to his chances of recovery and rehabilitation to eliminate smoking. Doll and Peto (25, 1976) estimate that the risk factor is reduced nearly 70% for those who do cease to smoke. Kannel (80, 1975) suggests the post-MI chances of receovery are enhanced between 30% and 50% once smoking is fully stopped, provided other risk factors are not increased by the stoppage (such as stress).

The objectives therefore are primarily to stop patients from smoking when at all feasible; to reduce smoking in all cases; to replace smoking with substitutes if cessation is not possible; to educate the patient and family as to the risks of smoking; and to reinforce the positive aspects and the progress of the patient in terms of efforts to stop smoking.

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1 There are several particularly interesting articles which deal with doctors smoking, hospital policies, or the lack of policies, on smoking, and recommendations for professional behaviour. These are not directly relevant to the thesis, yet worth further study. See Crofton (22, 1977) and Mulcahy(106, 1975) for details and rather disheartening findings on practices and policies in British hospitals and CCU's. Recommendations for no smoking policies, for reinforcement, and for social sanctions (particularly within the professions) are provided by these authors and Royal College of Physicians report (124, 1976) and the W.H.O. reports (157, 1966; 158, 1967).

Diet--Weight & Lipids

Objectives for rehabilitation also include considerations for patients' dietary functions and overall weight. However, there is no consensus on the importance of diet, lipids, obesity, or related factors in terms of incidence of coronary heart disease and subsequent treatment. The thesis is less concerned with these factors than others, however as noted in later chapters, weight and dietary considerations were observed in the cohort study and patient conditions were recorded. Review of the literature here takes a more passive form but without comment on the relative importance or unimportance of the factors.

Weight

There is a controversy over obesity, and particularly over weight factors at the margin where patients are not overtly heavy. Mulcahy (106, 1975) provides a general review of several authors in the field and concludes that obesity clearly is a risk factor but is considered an unimportant contributor to coronary heart disease because there is a very weak association of obesity to heart disease when compared with other risk factors. Similarly, Semple (136, 1973) provides a focus on obesity and the fact that it is linked as a risk factor with other risk factors, such as plasma lipid levels and physical inactivity, which are all in turn rather complexly interwoven with other conditions such as alcohol intake, oral contraceptive usage, serum cholesterol levels, glucose and uric acid factors, and measures of hypertension. Khosla and colleagues (84, 1977) have found significant correlations between smoking and obesity, in an inverse relationship, and they also note some concern about measurement of weight factors against uncertain norms for a given society.

Perhaps more to the point, a B.M.J. editorial (35, 1977) noted that research has found associations between obesity, raised concentrations of triglycerides, and insulin and glucose intolerance with higher blood pressure. Thus, obesity was thought to be a common factor explaining the prevelance of raised lipid concentrations among hypertensive patients. The B.M.J. editors suggest that there is a strong case for a synergistic effect among the factors which together increase the risk of coronary heart disease. This synergism effect was investigated and supported by Thomas, et al (150,1977) and

the Royal College of Physicians (124, 1976) conclude that while obesity per se as a risk factor may be argued, the combined effect and association of the disease with obesity should support a clinical effort to reduce weight in general as a way to reduce risk of coronary heart disease.

The objectives of rehabilitation might therefore be to reduce weight when a clinical definition of overweight is diagnosed. The Joint Working Party report (76, 1975) provide several recommendations which are summarised below:

1. Obese people should be screened for the presence of other more potent risk factors; e.g., hypertension, diabetes, hyperlipidaemia. History of family CHD and smoking should be similarly ascertained.

2. Treatment and emphasis on weight reduction should depend on the presence of the other associated risks. Priority should be given in rehabilitation to reduced cigarette smoking, control of hypertension, reduced high blood cholesterol.

3. All inclusive reduction type diets are recommended with less calorie intake, CHO, and reduced alcohol coupled with regular exercise through a planned programme.

Lipids

Research on lipids has been primary and well documented through chemical tests and laboratory observations. Harvard (63, 1966) set forth a lipid hypothesis as a cause for atherosclerosis where atheroma is regarded as a reaction of the arterial wall to invading lipids and that myocardial infarct patients showed abnormal serum lipids. High cholesterol levels from saturated fat intakes (3-22% of total calories) have been correlated (0.8 to 0.9 correlation values)with coronary heart disease patients. Several authors are of interest in these discussion points including Harvard (63,1966), Mulcahy (106, 1975), and Morris, et al (102, 1953; 104,1977).

There are several strong debates about measurement of lipids; the linkage of coronary heart disease to plasma concentrations, and determination of total body cholesterol levels as significant to coronary heart disease. Several of the major points are found in Morris, et al (104, 1977), a Lancet editorial (47, 1977), a B.M.J. editorial (44, 1977), and Joint Working Party Reports (76, 1975).

Shaper and Marr (138, 1977) provide what appears to be a rather balanced presentation of the pros and cons of dietary controls. They point out that the state of knowledge about the interrelationships between coronary heart disease, plasma cholesterol concentrations, and dietary factors(on which most recommendations are made) provide far-reaching areas for mass controversy. A point they say that is not contended is that in most Western cultures and nations, the percentage of total energy derived from fat has risen progressively at the expense of such foods as fibre cereals, and that the same countries have witnessed a similar progression of increased coronary heart disease.

Particular recommendations come out of the Shaper and Marr studies, and a summary is provided below which refects their work and the reports which support the recommendations found in Semple (136, 1973) and the Joint Working Party (76, 1975).

1. Total Energy Intake: National dietary habits should be changed toward reduction in total energy intake. Control of contributory aspects of dietary regimen for less risk of coronary heart disease should follow a reasonable and safe programme of prophylactic regimen.

2. Total Fat Intake: The total amount of fat in diet should be reduced from present levels in Western countries of about 40% to about 25-35%.

3. Total Dietary Cholesterol: In general, foods high in saturated fats are high in cholesterol and should be reduced or substituted by diets with polyunsaturated fats. However, given a great deal of controversy over individual needs, diet should be considered after the patient has had clinical and biochemical examination, and recommendations should follow these results.

These recommendations have been set in specific terms by the Royal College of Physicians (124, 1976; pp.20) for patients with hypercholesterolaemia:

1. Eat less meat; eat more poultry and fish. Choose lean meat and remove visible fat. Grill rather than fry.

2. Use soft margarine high in polyunsaturated fats instead of butter or other margarines.

3. Use oils high in polyunsaturated fat for cooking; avoid

hard margarines or lard, or oils labelled 'vegetable oil'.

4. Use skimmed milk; avoid cream.

5. Eat no more than three eggs a week.

6. Keep cheese intake down; use cottage cheese.

7. Restrict intake of cakes, pastries and biscuits unless they are made at home with suitable fats.

8. Eat more vegetables and fruits of all kinds.

9. Reduce average fat intake over a period of time; exceptions can be made for special occasions.

The recommendations are meant to be guidelines in both instances and clearly rely on individual circumstances. The Royal College of Physicians recommendations indicate that no special diet will assure success as taste, instinct, and cultural factors must be fully considered as well as clinical necessities. For the purpose of this thesis, these guidelines are kept in mind as general objectives for rehabilitative efforts, but as discussed later, implementation has been passive.

Exercise

The effects of an organised exercise programme cannot be overstated as proper physical activity for rehabilitation has been substantially supported in nearly three decades of research. That research will not be reviewed here as it formed a vital part of the historical perspective section presented in the first half of this chapter. The focus here is on the recommendations that have come from this body of research for implementation of cardiac rehabilitation programmes.

To re-establish the conclusions of exercise research, Naughton (111, 1973) and Hellerstein and Hornstein (67, 1966) recommend a formal physical conditioning programme as part of the comprehensive rehabilitation for cardiac patients. This includes setting a pre-assessed level of physical activity under which the patient can gradually and progressively work with supervision. There are many supporting points and interesting discussions on this which the reader may find by referring to the earlier work in the chapter.

Semple (136, 1973) provides the general framework in which one finds exercise programmes in Western societies. Specifically

they include four graduations of supervision as follow:

1. Patient is left to his own devices; no supervision.

2. Advice, verbal or written, is afforded the patient on how much exercise to take during convalescence, and some cardiac function test provides a basis for tolerance.

3. Supervised group classes are held where the patient is trained but exercise is submaximal and conservative.

4. Laboratory gymnasium classes are held under close supervision. Patients are encouraged to progress to peak levels of fitness tested by cardiac function equipment.

The authors noted suggest that for Britain, the norm is probably category (1) in which the patient is left to his own devices, and this is the least desired method for rehabilitation. Yet category(2) is rapidly becoming generally endorsed as more GP's come into contact with cardiac rehabilitation concepts.

The Joint Working Party (76, 1975) suggested several types of exercise for rehabilitation programmes and for recommendations by doctors following adequate tolerance testing. They include brisk walking, jogging, cycling, swimming, squash, tennis, and badminton which provide favoured rhythmic dynamic effects. A return to normal sexual relations was also mentioned. The JWP provided general principles for physical conditioning of cardiac patients which are summarised below (76, 1975; pp.324):

1. Gradual progression of exercise intensity, lasting from seven to ten days per graduation for patients in age of middle and late-middle groups. Age-related target fitness may take up to six months to attain.

2. Exercise testing should serve as an assessment tool, as well as patient evaluation for progress.

3. Aspects of motivation should be evaluated within the context of the programme and as the patient progresses.

4. Location of the programme should depend on both patient and physician needs. Suggestions for early training include hospital locations where supervision and emergency equipment are available if needed.

5. Psychological aspects should be kept in mind throughout the programme, assessed and documented along with physical factors.

6. The exact nature of the exercise is not critical, within reason, but must produce at least slight dyspnoea and sweating with increase of heart rate to the patient's target.

7. Calisthenic exercises gently and sympathetically performed can help maintain good co-ordination and joint mobility and improve muscle strength. Avoid isometric type exercises.

8. Continued education of the patient and family to accompany physical conditioning as to the effects and the contributions of the programme so that physical conditioning may become a continued individual effort following rehabilitation.

9. The programme should involve patient choice as much as possible to encourage active participation on his part.

These guidelines become the focus for physical conditioning in this thesis; however specific targets and assessments are treated separately in later chapters.

Hypertension

One of the risk factors is hypertension which has been generally mentioned under comments on weight and lipids subsections above. It is regarded as a concern of primary prevention rather than seconary and does not impact on this thesis directly. Nevertheless, within the study, hypertension was observed even though not an objective of rehabilitation efforts.

Stress

As in the case of exercise, stress has been reviewed in some detail as the topic was crucial to an historic perspective of the development of rehabilitation and preventive medicine. In this section, stress will be discussed in terms of objectives of cardiac rehabilitation, again, with emphasis on secondary prevention.

To re-state the situation for researchers, stress is considered a derivative of two conditions. The first is personality linked whereby an individual may be risk prone to coronary disease, and Friedman and Rosenman (55, 1959) suggest patterns of personality traits which might aid rehabilitation teams in their efforts. The second general class of conditions is linked to crucial life changes, particularly those stressful events that have occured in a cluster of time (perhaps one year prior to infarct) and to which the patient has reacted. This position is put forward by Rahe and associates

in a series of articles (120,1974; 121,1974; 122, 1974). A controversy arises in terms of measurement, and therefore in terms of rehabilitation objectives. Naughton (111, 1973) notes that a number of researchers have dealth with stress as a physical problem (rather than strictly environmental or psychological) in which clinical treatment can counteract the chemical imbalances created by stress through drugs and exercise. A second body of literature is reviewed extensively by Naughton in which the psychological aspects become the foci and treatment follows a path of dealing with reducing environmental problems and the psychosocial implications of coronary heart disease. Naughton further suggests that the controversy is one of method of treatment rather than a method of stress identity. Furthermore, the environmental and psychosocial implications are generally in the purview of secondary prevention.

The focus of this thesis suggests emphasis on the latter, of course with full recognition of the necessity to treat patients in acute stress situations at the primary level or with drugs during the initial phase of recovery given diagnosis which justifies the practice. The Joint Working Party (76, 1975) suggests that while it is possible to alter some of the stressful situations arising from occupational or domestic circumstances, there is yet a lack of evidence that these efforts will reduce the risk of coronary heart disease. The JWP recommends that management of stress is an important consideration in rehabilitation as it will impact on the success of the patient being rehabilitated in other vital areas.

Specifically, the areas of concern by the JWP include reducing fear of the disease itself through education programmes or better communications between patient and those involved in the rehabilitative effort. Second, a positive effort should be made to reinforce the patient's perception of constructive life planning, including an adjustment to work if necessary or retraining. Third, the family atmosphere can be better harmonised by information services to the spouse and relatives, assurance of proper support for the patient's efforts at self help, and reinforcement for specific efforts such as reducing or stopping smoking. Fourth, management of stress can take the form of specific help such as providing job counsellors, financial assistance counselling, and feedback on actual progress

in other rehabilitation efforts (such as exercise progress).

Cay, et al (13, 1972) suggests that stress as an environmental factor is present by the very nature of CCU's as well as release to home, both critical periods in the patient's illness. They recommend counselling and information which reinforce the patient and reduce fear and anxiety during these crucial periods so that rehabilitation in terms of stress may well begin in the coronary care unit. Recalling the work by Bruce and her colleagues(6, 1976), coping with stress begins as early as possible after MI.

The net effect of reviewing the literature and recommendations does not clearly reassure readers that active intervention to reduce risk caused by stress will increase chances of a patient's recovery and rehabilitation. However, in all recommendations, coping with stress is taken as a serious problem for the cardiac patient and regardless of clinical proof, active intervention is suggested as essential to the overall rehabilitation effort. The objectives become behavioural in nature and subjective in measurement yet include reduction of fear and anxiety, family stability, social adaptation, job or occupational counselling, reduction of financial worry, and education about the disease itself and the patient's prospects for a full and meaningful life.

Summary Comments

The review of literature in this chapter has been an attempt to provide a general overview of research and concepts in coronary medicine, specifically reflecting the thesis of rehabilitation. The treatment of authors and their contributions has focused on work in Britain and the United States and the general atmosphere of rehabilitation in these Western countries. There is every reason to believe that any professional in the field of coronary medicine could read this chapter and recommend a dozen more key articles in each of the several topic areas discussed. In the interest of relevancy and brief presentation, those which expressed the main stream concepts were selected that would enhance the particular focus of the thesis. The chapter that follows provides a review of the literature peculiar to nursing and rehabilitation in coronary heart disease.

CHAPTER III

REVIEW OF LITERATURE IN NURSING THEORY AND PRACTISE

Introductory Remarks

The introductory remarks to this thesis provide a clear philosophy that the nurse can be a vital asset in rehabilitation, and as an intervention specialist, she can provide the care and continuity required for the cardiac patient. The use of the term "specialist" may evoke rather strong feelings by nurses and doctors, both pro and con, which would reduce the thrust of this thesis to an argument about the direction nursing is taking today. As a plea for clarity, the thesis is not such to provoke these arguments or to establish a case for specialisation, but it is rather to establish the need for rehabilitation of coronary heart disease patients and to investigate the productive role a trained nurse might play in fulfilling the needs of society for cardiac rehabilitation.

These points are not meant to be editorial here but rather to provide the reader a clear statement of the direction of the thesis and to determine the framework for a review of nursing literature which is relevant to coronary rehabilitation. With that said, a review of the literature specific to coronary rehabilitation is extremely limited; few authors have spoken of nursing in coronary rehabilitation and few research efforts have included the nurse as an active member of the rehabilitation team. By "active member", the term implies responsibility for actual nursing care rather than support staff for physicians who take the entire responsibility for rehabilitation or intervention.

The structure of this chapter begins with a review of recent rehabilitation studies in which the nurse was an active team member. It progresses to examine the fundamental theory of nursing, then to explore nursing roles envisioned for rehabilitation which include the role of the nurse practitioner, the nurse counsellor in cardiac rehabilitation, and future trends in nursing which are relevant to coronary heart disease and rehabilitation.

Nursing as an Active Role in Rehabilitation

The Joint Working Party study (76, 1975) noted that given time, one doctor could see a rehabilitation programme through to a full and successful conclusion, if he also had knowledge and resources. The study also noted the unbearable cost and complications this would

include, therefore the team recommendation emerged in which a full staff of personnel would be committed to the rehabilitation effort often requiring colleagues, paramedical personnel, and various non-medical personnel needed to help patients regain their places in society. The role of the nurse is highlighted by the JWP statement which follows (76,1975; pp.330):

> "The well-trained nurse comes high on the list of those qualified to help. The coronary care nurse may have good liaison with the physician and physiotherapist, informing them about the patient's psychological reactions and helping with mobilisation and ambulation. At follow-up, the nurse can help with simple social and psychological problems and, if trained in modern principles of cardiac rehabilitation, she can act as nurse counsellor, performing valuable work in a group practice or health centre. In the few places where this system has been in operation, the nurse has proved to be an invaluable member of the team. She is in a position to supervise graded exercise and to supplement advice received from the doctor and from a booklet. The occupational nurse working in industry is in a unique position to help cardiac patients return to work by observing progress and advising the works doctor and management accordingly."

The JWP also noted that within the Coronary Care Unit setting, it was quite often the nurse who had the crucial information about patient progress, attitude, family situation, adjustment, and general behaviour, and that often she was taken into consultation due to her close approximation to the patient and the nature of his illness. The nurse's role was particularly mentioned in terms of early stages of recovery and in assisting in the transition from hospital to general practitioner.

Dunn and Matthew (28, 1971) found that the community nurse could fill a vital gap in after care when the patient has suddenly left the intensive atmosphere of treatment, nurse care in CCU, and around-the-clock supervision. The after care period being marked by general automony of care through the family and self-help, the nurse can provide the continuity of care and help with the resettlement at

home. In a similar context, Clarke (18, 1974) describes the role of social worker in cardiac rehabilitation as a primary source for communication and continuity.

Unfortunately, as Mayou and colleagues (97, 1976) suggest, knowing what resources are needed and getting them to the patient are two entirely different things. The authors suggest that the demands on doctors, particularly general practitioners and family doctors, requires allocation of responsibility in rehabilitation among many others. They support the need for use of trained nurses to supervise and coordinate convalescence, to improve communications with family and between patient and the general practitioner, and to reduce the overwhelming demands on hospital staff.

Colling (19, 1976) reported on the Teeside Coronary Survey which described home and hospital care aspects for myocardial infarct patients and found that nurses used in extended care roles provided vital rehabilitative care to the patients. Specifically, the author found that the nurse cast in the role of a coronary nurse counsellor, usually a sister-grade nurse with coronary care unit and community care experience, could act to complement the general practitioner and the hospital physician. Even though the nurse was not directly involved in conventional curative care, she could provide for the patient advice, information, reinforcement, and practical help (such as arranging follow-up and exercise sessions). On the other side of the matter, the nurse was able to provide the general practitioner information and assessment on the patient, clarify patient need, act as a liaison with employers, social service offices, disablement resettlement officers, and employment departments.

In a similar study by Mather, et al (95, 1976), the survey findings of Colling were reinforced and the value of the nurse counsellor was found to have particular value for social rehabilitation. Pozen (119, 1977) reported on the nurse cast in the role of rehabilitator in which her work was to supplement the routine physician and nurse duties of the hospital coronary care unit. The particular responsibilities of the nurse in this study were to optimise the patient's social rehabilitation and efforts toward full recovery. The period and extent of responsibility covered pre- and post-discharge of the MI patient and was an aggressive programme of

psychosocial support and education for the patient and his family. The authors report that initial findings show the nurse was effective in reducing smoking among patients and shortening the period between infarct and return to work.

Nursing services became the primary focus of developing a rehabilitation team around the general practitioner in an unpublished paper by Illingsworth and Pepper (73, 1977). The issue discussed was whether or not a trained nurse could provide risk factor screening services for the GP with subsequent patient follow-up and family visits. The conclusions were that a community nurse practitioner could very well visit patients in hospital for acute phase counselling, follow-up on pre- and post-discharge visits at hospital and home, and generally implement secondary prevention measures under the supervision of a rehabilitation specialist in support of the general practitioner.

Christopherson (17, 1974) provides insight to several U.S. studies in which nurses were used in the rehabilitation process. One particular study by Barbara Kos in Christopherson's work (17, 1974; pp. 367) reveals several case studies of nurse intervention in which a nursing index was used(similar to a nursing history) which provided information by the patient and feedback from the nurse on specific adaptation problems and social and psychological adjustment difficulties encountered following discharge. Kos indicates the studies were a tremendous success in which re-entry to the job market was facilitated, positive exercise plans were instituted, ambulatory problems were overcome, patient and family fear and anxiety were reduced (determined by series of pre- post- attitude surveys), financial assistance was developed, and social adjustment was reinforced (through conversation, education about the disease and convalescence, and family counselling).

Nursing Theory

The very fundamentals of nursing philosophy reinforce the role cast for nursing in cardiac rehabilitation. Virginia Henderson in her book The Nature of Nursing (68, 1966) explores the gentle history of nursing from the classic comments of Florence Nightingale to the turmoil of the 1960's. Nightingale's approach to nursing in the 1860's was simple,to put the patient in the best possible

condition, attend him, and allow nature to act. This was a "caring" situation rather than a "curing" one in which the nurse's role was to assist the individual toward recovery and provide the warmth of attention to help mend the psychosocial aspects of illness. Henderson notes that in 1934 Effie J. Taylor cast a more modern role for the nurse as one of patient-centred care -- a role that went far beyond bed pans and cleaning to include counselling, supervision of recovery, rehabilitation of mind and body under physician's care, and aiding the patient to a peaceful transition to life (or death) in addition to the stereotype nursing duties. This was expanded by Henderson to include the function of nursing as assistance to the individual, sick or well, in the performance of those duties contributing to health or recovery (or a peaceful death) that the patient might do for himself if he had the strength, knowledge, or will; thus to assist the patient to regain his independence as rapidly as possible.

Ferguson (51,1976) indicates that nursing is at a crucial crossroad junction, splintered between technical development in support of the curative health care delivery systems and its primary responsibility of care for the individual patient. Put another way, she suggests that nursing has possibly drifted into a less personal atmosphere of technical expertise where the individual, the patient, is less important than the procedure.This may have led to less emphasis on care and the restorative processes of nursing help. Hockey (70, 1968 and 72, 1977) warns against the possibility that nursing will become so specialised and rather fragmented as a profession, that care will disappear, replaced by a series of technical functions tied closely to primary medicine and hospital-oriented technical expertise. In short, these authors seem to be suggesting that while specialisation is necessary in many areas, while education and expertise are essential, the basic needs of patients for care, attention, and empathy are in the balance of becoming secondary--if emphasized at all.

Leopoldt (89, 1977) makes a rather strong point in favour of the changing role of nursing in which the nurse is becoming a stronger, more clinically and research-oriented professional who can work in partnership with doctors, each providing complementary

skills. The doctor-nurse relationship noted by Leopoldt includes the aspects of shared responsibility, rights, and above all, a mutual respect for contributions to the total health service. At first glance Leopoldt's position seems to collide with the rather general philosophies noted by the earlier authors. This is not the case as Henderson, Hockey, and Ferguson point to a very cricial need for nursing to become more responsible and more independent as a profession, thus to become an enhanced partner to medical practitioners. The positions appear to be the same and there is no implication that a clinically and research-oriented nursing profession will necessarily splinter or become fragmented, or that care will become a second-rate function of nursing responsibilities.

Hockey's position is better understood in her 1970 article (71, 1970) in which it is the individual nurse she is concerned about. The nurse of today, Hockey points out, must be better qualified, better educated, and more in-step with social needs--she cannot exist in a vacuum--yet she is in danger of loosing sight of her basic responsibilities due in part to the complex and overwhelming structures of organisations through which health care is delivered today. The fragmentation, she suggests, is in the context of change in which the nurse stops being concerned with people and is preoccupied with the treatment.

Chapman (16, 1976) states that nursing should be a mixture of behavioural and biological sciences, not one or the other, and the discipline cannot develop in isolation of human interests nor the fundamentals of scientific inquiry. In the same context, Nuttal (114, 1976) implies that nursing will come full cycle by the year 2,000, from its beginnings as empathetic care to technical competence, to institutionally centred specialisation, thence on to a social and community profession. The latter, the step toward year 2,000 nursing, requires the nurse to be oriented to human needs and the total requirements of health care. That in turn suggests, she says, that many nurses will not be doing nursing at all in terms of direct patient contact while much nursing may be done by those not in nursing. Nuttal proposes that nurses stop looking inward from within institutions and begin reassessing the craft in total terms, specifically outward from the institution.

Hockey (70, 1968) reasserts that hospitals should be places where those in need of skilled attention can receive treatment and care as part of a continuum of intensity having the basis of the community from which the patient comes and to which they should return. Kratz (86, 1976) recounts the fact that in the community, patients are persons first, individuals with personalities and social networks. They are patients second. She points out that a nurse operating in a clinical environment or a community environment cannot lose sight of these facts and care for the individual patient as if he is an isolated aspect of life, invisible to the world about him.

The discussion thus far, and authors' comments presented, reflect the general aspects of nursing care models. Hockey (72, 1977) reviews the general models and finds her own CARE model fits the philosophy and character of nursing responsibilities today. The CARE model takes the initials of the four areas of nursing care: Continuity and Coordination, Availability and Appraisal, Reassurance and Rehabilitation, and Education and Empathy. Within this framework, the potential for a nursing intervention specialist for cardiac rehabilitation strikes a very technical tone -- the notion of specialisation, a complex field of work , and a narrow range of sensitive responsibilities all connote mysterious roles for nurses. This is taken up in the sections that follow with the emphasis that the intervention specialist is at once more technically trained, better educated, more experienced, and yet committed to the fundamentals of nursing philosophy for care for the patient as a human being.

The Nurse Practitioner

The nurse practitioner is seen by Ferguson (51,1976) as an associate of the physician capable of a high degree of decision making and considerable independence. The physician is cast in the dominant role as "curer" while the nurse practitioner is cast in the dominant role of "carer." Levinson (91, 1976) suggests the nurse practitioner should be an agent of change and a patient advocate with emphasis for responsibility placed on tasks rather than roles. He specifically speaks of the qualifications and skills of the nurse practitioner which the reader may be particularly

interested in reviewing for forming opinions about this thesis and the author's ability to intervene in cardiac rehabilitation. The Levinson points are summarised below (91, 1976; pp.1292-1293):

Qualifications:

1. Decision-making ability
2. Family and community orientation
3. Critical Judgement ability
4. Knowledge of health and deviations from health
5. Recognition of knowledge as well as need for knowledge

Skills; Areas of Work:

1. Physical and Psychosocial data collection
2. Therapeutic Management
3. Developmental Assessment
4. Interviewing, Observation, and Counselling techniques
5. Health Maintenance and Promotion
6. Treatment and Management of physcial, psychosocial health deviations and developmental crises
7. Patient-oriented experience and approach

The implications for the nurse practitioner, specific to the cardiac rehabilitation area, would not seem to be significantly different than Levinson's general summary except that each general term might be tied directly to knowledge and expertise in coronary heart disease, CCU nursing, and epidemiological aspects of the disease.

Aside from defining roles, qualifications, skills, and future directions of nursing--whether in terms of the independent nurse practitioner or a general staff nurse--the evidence today points to a pronounced change in nursing practises. Duberley (26, 1976) reviews a number of articles in a general survey to show that in the U.S., a marked specialisation has occured for clinical nurses but that the practise has preceded the theory, organisation, and training. More to the point, the author indicates that many nurses have become clinical specialists through need for expertise in areas such as coronary care, hence with the specialisation has come the form. Yet while the term and use of clinical nurse specialists date back to the late 1950's and certainly with impact in the mid-1960's, it was not until 1977 that the American Nurses Association attempted to

define the characteristics of the clinical nurse role or to set out educational programmes which would enhance the actual knowledge needed in the field. As a result, according to the author's findings, the U.S. nursing field is suffering from a general misdirection of effort, unorganised educational programmes, and poorly defined nursing duties. Duberley goes on to comment on various areas to which clinical nurse specialists have been found to work which include consultants in intense medical areas, teachers both in hospitals and educational institutions, supervisors on CCU and ICU wards, administrators, team leaders in rehabilitation programmes and community action centres, ward sisters (or the equivalent), and independent practitioners.

Kratz (86, 1976) took a very strong position in favour of well-defined clinical nurse specialists, nurse consultants, and the need for nurse practitioners in Britain. However, she took a stand just as strongly against implementing programmes or following the U.S. example, which she considers in shambles. Kratz views the nurse consultant as very much different from the clinical specialist suggesting that the consultant is an authority on her specialty but would be called in to give advice only after validation of her competence. The specialist is similarly an authority on her area of clinical work but is given extended responsibility within the organisation (or task area)to take nursing action.

In all these comments, the implication for knowledge and expertise beyond normal nursing expectations is fundamental. This is crucial to future directions of the profession for education in nursing is undergoing tremendous upheaval both in the U.S. and Britain. Chapman (16,1976) summarises the new stages of development in nursing for Great Britain since the middle 1960's. In her summary education and expertise stand out as the two more dynamic areas of change. These include (pp.121-122):

1. More university departments of nursing and an increase in graduate programmes for nurses in clinical specialisations;
2. An increase in nursing research which in the past decade eclipses efforts of the previous half century;
3. An expansion of community and specialty nursing roles to include a wide range of tasks previously performed by medical staff and research clinicians.

4. The expansion of nursing in administration, and on a personal basis, the increasing responsibility for ordering their own affairs and those of the profession.

This emphasis on education, upgrading expertise, specialty training, ordering of the profession, and administration is reflected in the recommendations for a radical change in overall nursing education set forth by the Briggs Report, summarised in Collins (21, 1977; pp.85-86) as follows:

1. Greater emphasis on basic nursing education which should concentrate on skills which will better enable the nurse to see the patient as a whole person in relation to his family and society. Thus more emphasis on combining the biological sciences with the behavioural sciences.
2. Preparation for team work with the future pattern of learning being aimed at more interchange between clinical staff and community nurses and teaching for better understanding of each other's role and problems.
3. Better preparation in adaptation of nursing care through the various stages of training and experience with more realistic practise in care of patients in different and more varied environments.
4. Emphasis on continuing education and nursing research; sharpening the skills and experiences of nurses in relation to that which is currently required in the specific field of endeavour.
5. More training in the skills of patient care management to include assessment techniques, setting objectives, decision making and creating environments suited to learning and fostering of a spirit of enquiry.

The essence of these comments reflect the opening comments to the section on Nurse Practitioner, and while they do not specifically include remarks on the practitioner, one cannot read through the sources without feeling perhaps that a definite direction for the future of nursing involves individuality, expertise, and education. All these seem to reflect on the consensus that nursing is leaving

the period of stereotyping in which unskilled and semi-skilled staff dominant the environment to do unskilled, semi-skilled and "pooled" tasks -- much like the stereotype of a government typing pool with masses of similar tasks pooled for masses of similarly trained individuals to carry out. To where, what direction, the nursing profession is going is best left to the reflections of individual readers and their conclusions, but the evidence and recommendations reviewed here would suggest that in the future the nurse will be identified and evaluated individually for her independent ability and effort, and that she will become an associate with medical staff to provide expertise in the area of care.

Aftercare and Nursing Concepts

Aftercare in general is closely associated with the potential role for nurses as coronary intervention specialists. So little has been done specifically in the area of cardiac rehabilitation nursing that treatment here must centre on aftercare in general and several key studies which support the notion that nursing can provide a crucial service to health care.

Hockey (70, 1968) conducted a rather extensive survey in Britain to study the role of district nursing and aftercare for patients discharged from hospital. Three particular findings stand out from her results:

1. One-quarter of the discharged patients studies returned for readmission to hospital within two weeks after discharge.
2. Upon discharge, most of the nursing and household tasks needed were done by the family with little use made of home help services.
3. Communication between hospital staff and district nursing service was at best sparse and often nonexistant.

Hockey concluded from her initial work that there was little evidence of a rational distribution of care between hospital and home, little continuity of service, and practically no communication between various health care agencies for assessing patient needs.

In Hockey's later work (71, 1970), she reported on a study in which she placed district nurses in hospitals and medical centres to coordinate discharges and to provide continuity of care for

surgical patients. The results reported indicated an improved standard of care, fewer readmissions, better understanding by hospital staff and community health service agencies, and better assessment of patient progress and needs.

Skeet (143, 1974) conducted a survey among 533 patients discharged to home (most of these were maternity), and found that health services and continuity of care were in a state of complete disarray. Specifically, 63% of the patients were sent home with instructions to take some type of medication, yet only 15% had any explanation beyond the dosage provided. About 60% of the patients had discharge letters sent out within one week, yet nearly 10% had no discharge letters and another 10% had their discharge letters sent later than one month after discharge. Of the 533 patients interviewed, none had contact from or visits by district nurses in hospital prior to discharge, and only about 45% had contact within one month following discharge. Of the 533 discharged, 37% were given notice of discharge within less than 24 hours of departure and left entirely to their own devices to contact family or arrange transportation--less than 10% had access to telephones to facilitate these arrangements. Finally, 45% of the patients responded in interviews that their nursing needs were not met upon or following discharge.

In another recent study dealing with post-discharge communication and continuity, Roberts (125, 1977) found that the discharge letters generally failed to provide information needed for proper care or assessment, and use of the letters followed no systematic pattern which would provide adequate follow-up for problem patients. She also suggests that little information is passed between hospital and community services so that aftercare is generally dependent upon the patient's initiative.

Kasteler (82, 1978) noted that in the U.S., the trend is to discharge patients as early as possible, and the length of stay in hospital is narrowing very rapidly. With that in mind, Kasteler suggests that the number of patients needing aftercare and close follow-up has increased and will continue to increase. The author calls for a full redefinition of services and priorities for health care following discharge. This also forms a basis for the author to emphasize the role of nursing beyond hospital walls and the need for

nursing education adequate to prepare nurses for more than the strictly clinical aspects of patient care.

Keywood (83, 1977) studied patterns of care in communities of different sizes and locations in Britain and found that the quality of health care nursing may be substantially better in the rural areas. She particularly noted the combined roles for nurses in which a rural nurse might serve throughout the range of care needed--from hospital to district nurse, midwife to health visitor, nurse counsellor to housekeeper. More importantly perhaps, Keywood found that among nurses interviewed, those in the complex job areas of rural districts expressed greater job satisfaction while patients generally felt they received full health services needed.

A consensus of after care recommendations are paraphrased from the works by Hockey (70,1968; 71, 1970; and 72, 1977), Skeet (143, 1974), Roberts (125, 1977), and Keywood (83,1977):

1. After-care programmes planned well in advance of the patient's discharge, organised with necessary community services and in conjunction with the patient's general practitioner.
2. Research into the use of an after-care coordinator to institute the above programme and to provide routine discharge counselling for patients.
3. More interchange at teaching and practise levels between hospital nursing staff and community nursing staff to increase awareness of role functions.
4. Extension and exchange of both hospital nurses' and community nurses' duties to ensure closer cooperation with better facilities in surgeries, health centres, and community hospitals for primary and secondary care.
5. More use of the nurse practitioner to expand access to health care and integrate the care between hospital and home.

Rehabilitation and Cardiac Nursing

Retaining the focus of secondary prevention and rehabilitation of cardiac patients, nursing research and in particular the use of nursing services in cardiac rehabilitation are in their infancies. It was not until recently that the nursing role as a professional member

of a rehabilitation team was acknowledged. An overview of these points is presented in the W.H.O. reports (157, 1966; 158, 1967), and more recent testimony is provided by Givan (58, 1977) and Colling (19, 1977).

The W.H.O. 1966 report stressed that rehabilitation and prevention of disability was a nursing task that could be best performed by trained nursing staff working in community settings. Colling, as reviewed rather clearly earlier in this chapter, saw a very definite role for nursing services, and in particular the rehabilitation nurse counsellor. In the Teeside studies, reported by Colling, selected nurses were used as active interventionists for rehabilitation, supervision of planned programmes, assessment, evaluation, and communications between the rehabilitation team and patients.

Girvan provides a rather interesting comment on her experience as a rehabilitation counsellor. It follows (58, 1977; pp.1281):

> "People quite often ask me what training I have had to become a full-time rehabilitation counsellor. They often expect me to answer that, over and above counselling training, I am a doctor or have a degree in psychology. They seem surprised when I reply that I am a nurse."

A report from the RCN Society of Occupational Health Nursing provides a list of techniques required of a rehabilitation nurse, found in Nurse (113, 1977; pp.3):

1. Purposeful listening
2. Controlled emotional involvement (required sensitivity, empathy, and understanding)
3. Acceptance of the patient's dignity and worth
4. Recognition of each patient's individual and unique qualities and situation
5. Non-judgemental attitude (an evaluation assessment)
6. Self-determination to help and to allow the patient to make his own decisions
7. Confidentiality preservation of the patient's private and personal information.

What has not been clearly established here is whether or not the nurse is the preferred change agent or interventionist given that intervention is essential in coronary rehabilitation. Clarke (18, 1974) finds value in the support given social workers in their roles in rehabilitation, but also notes that it is not an "either-or" situation in which a social worker or nurse is used, but rather it is a team requirement in which both have very definite roles and responsibilities. Each can do certain things well at different times in the progress of the patient's rehabilitation. The social worker is probably better suited for providing continuity for community services, such as communications with employment consellors, and to help with family affairs. Yet the social worker is not qualified, per se, to intervene with the physical rehabilitation, adaptation from the CCU or hospital settings, or to provide assessment for risk factor control. The nurse has a further responsibility in communications and liaison with the general practitioner and hospital which would require specific education in coronary heart disease and associated CHD rehabilitation concepts.

Dunn and Matthew (28, 1971) assess the role of the community health nurse in cardiac rehabilitation and determine that the community orientation supports efforts to better the quality of life that has been restored -- as contrasted to the CCU nurse effort to help restore life. The authors suggest this is precisely where the nurse practitioner, trained in rehabilitation and in particular, cardiac care, can intervene best. In the delivery of care, they suggest, the nurse practitioner can play a pivotal role in medical treatment and patient interaction.

To reiterate the recommendations (reviewed earlier) of the Joint Working Party, Royal College of Physicians (76, 1975 and 124, 1976), the well-trained nurse with coronary heart disease knowledge, CCU experience, and community health orientation may be among the highest qualified on the list to help with cardiac rehabilitation.

The Teeside studies follow the JWP recommendations and in Colling (19, 1977), a recommendation emerged for nurse counsellors that were well-trained sister-grade nurses. In the Teeside study, nurses were used in a limited way. Nurses provided patient assessment,

family counselling, post-discharge adaptation intervention, programme supervision, and early home help services--all, of course, under the direction of the rehabilitation physicians. The ability of the nurses to take independent decisions, to take counselling duties, to actively intervene with patient and family resulted in recommendations that further intense study be done to evaluate the nursing role in rehabilitation for future, formal programmes.

Summary Remarks

There is everything in the existing literature to suggest that the nurse specialist can become an important member of a well-formed coronary rehabilitation team. Clearly the research is limited as to exactly how she can be used, when and where her efforts can be best applied, or the extent of knowledge and expertise she might be required to have. But then, it isn't at all clear what resources are needed in terms of other medical personnel, community specialists, or counsellors.

It is clear that nursing as a profession is rapidly changing, and the thrust of change has occured only recently through greater emphasis on education, specialty training, integration of hospital and community related concepts of health care, and actual impact of needs through which nurses have been pressed to service given the limitations on other medical staff to intervene in recovery and rehabilitation phases of health care. It is also just as clear that the traditional role of nursing, that of care for the human being, is now just as vital as ever. It may regain primary importance as rehabilitation efforts for acutely ill patients receives the emphasis and resources required for total health care in our communities. The role of the nurse practitioner is particularly interesting but so little research has come about that few clear statements can be made concerning her role, tasks, qualifications, or future place in society. Given the seriousness and high mortality of coronary heart disease, the literature fully supports the coming of the well-trained nurse as a yet untapped resource in health care and rehabilitation. Future trends in nursing seem to strongly support this and the role of the nurse as pivotal in future cardiac rehabilitation programmes.

CHAPTER IV

METHODOLOGY OF STUDY

Introductory Remarks

The role of the nurse in coronary rehabilitation is not a clear notion at this point in time, yet the concept noted in literature reviews for nurse practitioner--specifically one acting as a coronary intervention consellor--comes close to the fundamental issues of this research. In this chapter on the methodology of the study, this concept underpins the decisions to intervene, what criteria to study, extent of nurse responsibility, and the use of various indices for conselling and measurement.

The organisation of the methodology chapter begins with a presentation of the general design of the study, the population from which samples were drawn, data base and qualifications of the nurse for intervention, prognostic indices and measurements, and the procedure and analyses used to evaluate results. It is important to note here that there exists no pre-written scripts for this type of study of the role of a nurse for intervention. A larger study was observed and guidelines were derived from other work, clearly, but no specific nursing study provides more than general information on the role of a nurse in coronary counselling.

With these points in mind, the methodology which follows represents an attempt to use several of the available indices for assessment, to counsel and make judgements generally through an intuitive feel for rehabilitation, and to test new waters as an independent researcher and coronary nurse interventionist.

General Research Design

This is a longitudinal cohort study which embodies several methods of empirical research. Those methods include clinical classification of data, assessment, description, and measurements through statistical analyses of variables derived from data. The size of the cohort sample is small, 32, yet rather large for a personal intervention over a short period of time. More precisely, from a statistical point of view the sample could have been as large as perhaps 60 patients (given one nurse intervening) and the patient base from which to choose in the time period. However, a limit of about 30-35 was chosen for two important reasons. The first and most important reason being that the nurse fulfilled two roles in this study -- one of student and researcher and the other as a

conscientious human being and coronary intensive care nurse. The researcher in her suggested to go for numbers and statistics, but the nurse said to assure the best care first for these patients while researching. Given the limitations of study, motherhood, somewhat explored but unknown ground, and 30-35 lives of these patients and their families, in retrospect perhaps 40 could have been managed, but there is no doubt that the 32 in the study were recipients of conscientious care as patients -- not research subjects alone.

Each patient in the cohort was registered at the time of admission into hospital for the study. Each has survived an initial myocardial infarction. The period of study for each patient was six months following infarct. All patients were from the Glasgow area served generally from the facilities of Southern General Hospital on the south side of the city.

Population Area

The particular area of Glasgow, Scotland, and the service area of Southern General Hospital includes a core industrial concentration which includes shipbuilding of Clydeside, steel fabrication,foundries, heavy engineering, textile manufacture, and a variety of other heavy, basic industries. The service area of the hospital also includes a wide, rambling array of small and new housing areas, old, established communities, and several incorporated towns and villages both residential and agricultural.

Sampling came from male patients aged 30 to 65 admitted to Southern General Hospital, which will be presented below. The social classifications of the patients follow Registrar General's coding based on the patients' occupations at time of infarct, and Classes II, III, and IV are represented in this study. One patient was coded in Class II, non-manual, sales, clerical, or management occupations. Six more were classified in Class III(a), which is an RG code breakdown for manual but skilled workers. Twenty-three patients were placed in Class III(b), manual semi-skilled, and two were in Class IV, coded only as manual and related usually to unskilled persons.

Sampling

The sample became age-specific so that all patients between the ages 30-65 and male were included in the cohort who were

also patients of two cooperating cardiology consultants at the hospital. Of the five cardiology consultants at Southern General Hospital in 1977, two more allowed patients to participate in the project during the second half of the sampling time frame. Thus, all patients qualified under two consultants (male and between 30 and 65 years) who were admitted during the period June 1, 1977 to December 1, 1977, were part of the total sample. All similarly qualified patients admitted between September 1, and December 1, 1977,from two more consultants were also included in the sample. Obviously this method of obtaining a sample does not suggest a statistical sampling procedure but amounts to a sample generated through the cooperation of the cardiologists.

Figure 4.1 below provides a graphic picture of the relation of the sample drawn in 1977. The data in the figure for total admissions, ages, and sexes, are 1976 data which, to summer 1978, is the best information available short of actually counting and sorting all hospital admission files for the year. The Scottish Health Services, Common Service Agency, is the primary sort of information here and as the data serve to provide a general view of the sample in relation to approximate admissions for myocardial infarction, it is offered as such without qualification.

Simply put, the sample used was 32 patients which represented 45% of the estimated total first-diagnosis myocardial infarct male patients admitted to Southern General Hospital for the period of June 1 to December 1, 1977. That total estimate of 71 patients is as noted above, age specific to those 30 years old but not yet 65, and it also includes in the 71 patients those of all consultants in cardiology. The 32 sample represents 76% of the patients to which the nurse had access, patients of the participating cardiology consultants for the relevant periods of the study.Those patients excluded were the seven who came from outwith the service area of the hospital and beyond the ability of the nurse to actively involve them in the study. Two other patients died after being registered for the study, but before discharge, and one other who had been registered and discharged moved to England.

The figure 4.1 data also show an estimated 159 male survivors aged 30-65 with first-diagnosis myocardial infarction as estimated for the year 1977. This was an assessment from records and two consultants

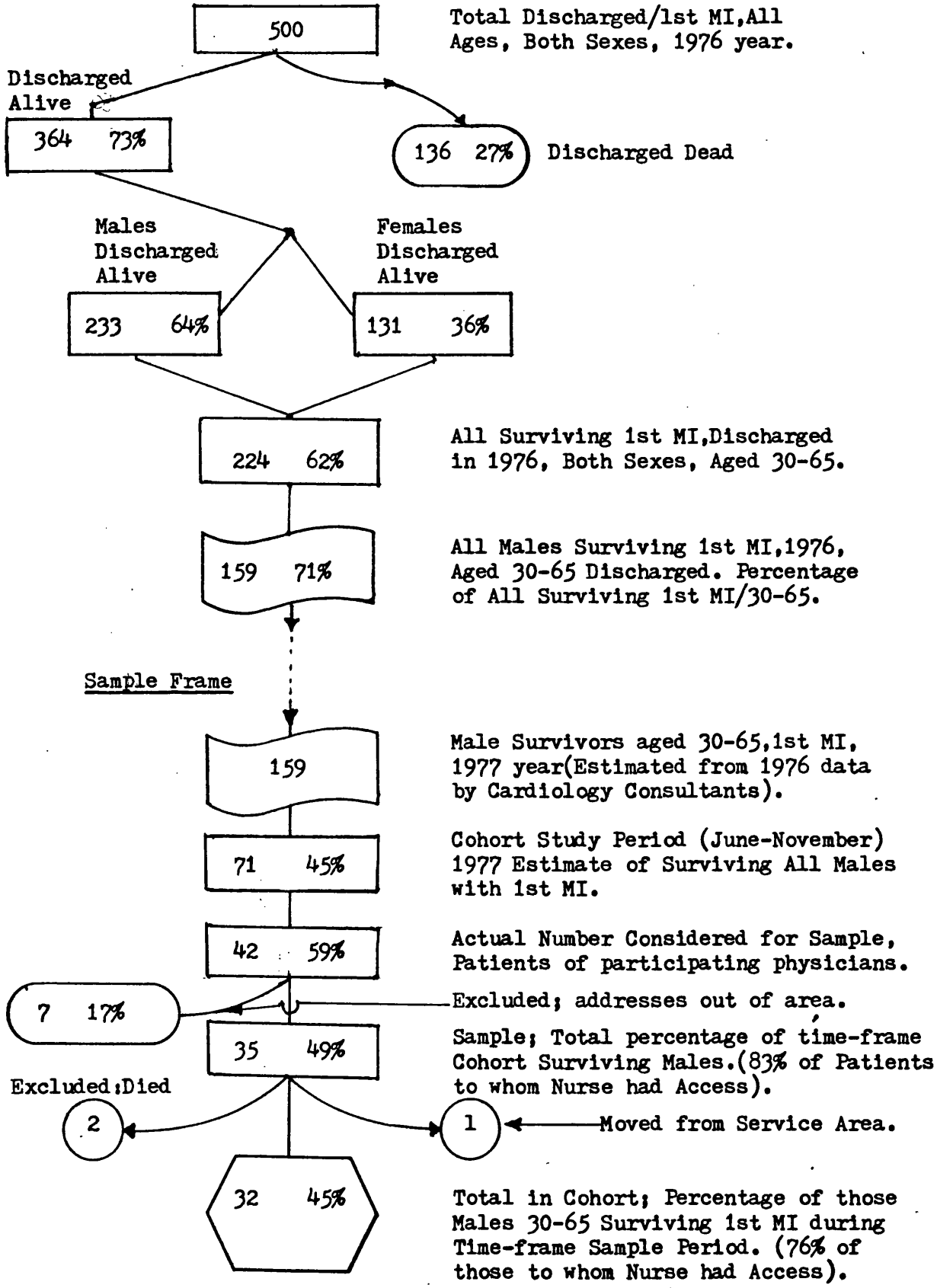

FIGURE 4.1

Study Sampling Frame in 1977 Cohort based on Estimated 1976 Data; Source: Scottish Hospital "In Patient Statistics",SHS, Edinburgh

directly involved in the rehabilitation study.

Study Format

As a rehabilitation study, the 32 patients form a core of survivors from an initial (first-diagnosis) myocardial infarction who were first contacted after leaving CCU at one of three medical acute receiving wards. They were registered at that point with data and cohort time study running from date of infarct. The patients were seen throughout three stages of rehabilitation that included:

Stage I -- (Acute) -- From release from CCU until discharge from hospital.

Stage II-- (Convalescent) -- From hospital discharge to the first six-week clinic evaluation.

Stage III-- (Post-convalescent)-- From the six-week clinic to time of starting back to full-time work & six months post infarct.

As noted earlier, 35 patients were involved in Stage I, two died and later (on discharge) one moved. Of the 32 remaining, one more patient died at home during the early Stage III phase. The death was a result of a cerebrovascular accident, and as noted in Table 4.1 below, he was in age category 55-59, Social Class 3(b), married, and clinically categorised as "Severe". The information

Table 4.1

Cohort Patient Information and Profiles

Age Grp.	f	Social Class				Marital Status[a]			Clinical Category[b]		
		2	3a	3b	4	Sin.	Mar.	D/Sep.	Mild	Mod.	Severe
30-34	1	-	-	1	-	-	1	-	-	-	1
35-39	0	-	-	-	-	-	-	-	-	-	-
40-44	6	-	-	6	-	1	5	-	1	3	2
45-49	5	-	1	3	1	-	4	1	3	2	-
50-54	7	-	2	4	1	-	7	-	4	2	1
55-59	8*	-	2	6*	-	1	7*	-	2	1	5*
60-64	5	1	1	3	-	-	4	1	1	2	2
Total	32	1	6	23	2	2	28	2	11	10	11

[a]Single, Married, and Divorced or Separated were only relevant groups

[b]Clinical "Mild","Moderate", and"Severe" followed Southern General Hospital study guidelines as determined by the rehabilitation team.

*Death of patient in Stage III of rehabilitation

provides an overview for all patients who were all caucasian, all but one employed prior to the infarction with an average age of the cohort of 52 years.

The time periods of the study, specifically the six-month overall period and the six-week post-infarct evaluation, followed previous studies reported by the W.H.O. (158, 1967) and Cay, et al (14, 1973); the times also replicated the larger study conducted at Southern General Hospital. All rehabilitation work and counselling fell generally under the medical supervision of a cardiology consultant at Southern General Hospital. The SGH study team provided data collection guidelines and both the format and results of much of their work, and this study reflects a parallel of data and patient profiles. Dr. J.F. Robinson was supervising cardiology consultant in charge of the work in this study; Dr. Lorna Naismith and Sister Mary MacIntyre formed the SGH core rehabilitation team.Dr. Gavin B.Shaw was Cardiologist Chief.

The usual objective criterion for rehabilitation success has been return to work, as reviewed substantially in earlier chapters, and it is used here as well. This is complemented by the criteria of success of the nurse interventionist through subjective, or qualitative data, based largely on questionnaires and observations which will be explained in detail later in this chapter. Specific measurements for assessment, progress profiles, and other prognostic information came from the several indices reviewed earlier which will be detailed in a later section of this chapter. They included Schiller's (130, 1972 and 131,1977) Cardiac Rehabilitation Index, Norris, Caughey and Mercer's (112, 1970) Coronary Prognostic Index, Crown and Chrisp's (23, 1966) Middlesex Hospital Questionnaire, and Rahe's (120,1974) Life Change Unit scale. A Final Outcome Score was also derived, to be detailed later in this chapter, and was based on goals of:

1. Regular physical activity to the maximum of the patient's ability (clinically determined).
2. The resumption of work suitably modified if necessary.
3. The absence of need for psychological support.
4. The ability to cope with social stress.
5. Modification of risk factors if relevant.

Consistent with the primary aim of this thesis, some emphasis was placed on evaluating the nurse's role in cardiac rehabilitation. To these ends, the supervising cardiologist was not directly involved in field work, the study, or the counselling of patients beyond his hospital responsibilities. He was, of course, well informed of all progress, reports, and counselling on behalf of the nurse and provided invaluable assistance and supervision and testing along with the medical staff at Southern General Hospital. This study was unique from others, and particularly deviated from the larger Southern General Study, in that the nurse intervened as an independent practitioner. The SGH study included a team approach with field doctors and nurses in addition to the hospital-based cardiology consultants and medical support personnel. The point is, that this study was specifically aimed at determining the feasibility and limitations of the nurse's independent performance of most other duties of counselling and patient contact beyond primary care and necessary testing and care in clinical areas.

Another aspect of the format of the study was to investigate communication difficulties, if any, between the various agencies and professionals involved in the patient's rehabilitation.This included specifically the general practitioner of each patient, Disablement Resettlement Offices, Medical Social Services, and psychiatric services. In general it included the patient's family, peer group, and employer. This particular aspect of observation was not formalised but rather taken to be a heuristic exercise, a fact-finding, unstructured observation of conditions.

Qualifications of the Nurse Interventionist

The nurse was 33 years of age at the beginning of the research study, married with three sons under the age of seven years. She holds the U.S. B.Sci. Degree is Nursing from Florida State and was an Honor Student. Her experience includes 12 years in Coronary and Intensive Care Medicine, two years in staff nursing and consultancy and experience teaching specific courses in university in Coronary Care and Nursing. She has accrued university credits in the U.S. in Coronary Care nursing and Heart Medicine, and as this cohort study entered the first stage of inquiry, she successfully

completed the taught programme phase of the Diploma in Public Health, Department of Community Medicine, University of Glasgow.

Legal Considerations and Protocol

The implications of a nurse, particularly one from another country, researching cardiac rehabilitation through actual intervention created several rather sensitive situations. The primary consideration of doing hospital-based research, of finding a cooperative consultant supervisor, and therefore having a cohort of patients were made simpler by the courage of Southern General Hospital and its staff to endorse such research. Approval for the project came after intense interviews at SGH and among several medical sectors. It was approved formally by the Hospital Ethical Committee and the method of research, supervision, and extent of intervention defined.

A formal relationship was also established with the hospital consultants, the rehabilitation team, and general practitioners of the individual patients. These hospital-based relationships are documented by the Hospital Ethical Committee. The general practitioner approval for intervention is in writing, individual, and was developed in two ways. An initial letter was sent out to each general practitioner as patients were registered voluntarily for the project. The medical supervisor also corresponded with each general practitioner. In several instances, the GP's were invited to discuss the study in advance, and several did so by telephone or in person. There was full cooperation and support by the individual general practitioners as a result. Community agencies were contacted individually as the need arose through patient care or counselling. In every instance, the nurse's qualifications were underwritten by verified documentation on file at University of Glasgow.

Validity and Reliability

As a research report, the cohort data and analyses followed as closely as possible established methods and tried to provide replication ability for future studies. The concept of validity used in this study is concerned with the extent to which measures used will in fact measure that intended. These points are taken

individually here before the tools of the study are introduced and detailed.

Validity

The indices selected are those which have come into rehabilitation literature most recently. In the case of Schiller (131, 1977), the researcher took the precaution to write to Australia for permission to use the index and to inquire as to problems associated with measurement. Both approval and comments were returned including an unpublished "modified" index which the author suggested improved on assessment measurement and answered critical points about the original index. Clearly, the index will only be validated by repeated research results which reinforce the initial findings, and perhaps this cohort study will lend itself to those ends. However, this thesis is not concerned with specifically validating any of the indices used but in using them as the best tools currently available for the rehabilitation effort. The Schiller approval was unique as it was largely unpublished material requiring formal cooperation. The remaining indices listed were replicated from existing published works in professional journals.

The validation of techniques used to assess nursing practices is quite another problem. The techniques used include interviews, open-ended discussions with patients, family, and interested parties, both professional and associated with the patient's rehabilitation programme, and the supervisor and staff at Southern General Hospital. However, interview forms, evaluation questionnaires, feedback information were all formally reviewed before used, standardised to each patient and his family, and critically compared across groups and individuals throughout the study. Documents are reproduced in the appendices to the thesis. Many of these forms and questionnaires, such as those sent to general practitioners and those used at Southern General Hospital by the consultants, were derived from the SGH study in which similar forms and survey instruments were used in larger inquiries and for field work.

There are limitations to reporting results from much of the data. One of those limitations is the confidentiality of patient information, subjective or otherwise, and the reports by general

practitioners on their patients. Neither could be used externally but have been used by the nurse internally--and in confidence with medical staff directly concerned with the patient.

Reliability

The test here is whether or not this study or similar efforts can be repeated using similar techniques and similar instruments to evaluate and help rehabilitate patients. This is as yet undiscovered for the field work in general is new and untested. In those terms, the intervention by a nurse will be much like exploratory surgery--one knows the area and the costs at the limits, but one has little idea of the outcome. This is not merely a cute phrase to enhance the thesis but has very real parallels. It would have been far easier had the researcher had several previous studies to be guided by, yet the originality of the study is adequate recompense for the exploration.

The indice usage can be repeated. The data are objective and measurable in very concrete terms. There are precedent studies reviewed in an earlier chapter. The nurse counselling efforts are also repeatable if one chooses to use the questionnaires and letters of inquiry presented in the results and appendices. But it is anticipated that any future research would be able to improve on the techniques from several viewpoints. First, each survey provides insight as to the shortcoming of words and phrases, and there are reservations about the documents used here as being anywhere near optimal. Second, the method of data collection, of approaching respondents (other than the patient), and of asking questions can be improved. It was extremely time consuming and resulted in awkward conversations to seek help, advice, and answers to vital questions from among an unfamiliar population in an unfamiliar area, using unfamiliar devices.

In effect, the research instrumentation leaves much to be desired, yet it would appear to meet the qualifications for both validity and reliability. This position stems in part from the method of analysis used in the study, to be explained later in this chapter. The indices are quantified and the objective results are submitted to statistical inquiry. Theseare then repeatable and provide the basis for judgement as to validity. The nursing intervention results are evaluated in a discussion format using

descriptive terms and measurements of success. These methods and results are then less repeatable. They are behavioural results and subjective evaluations.

Cohort Study Procedure

The nurse met with each patient upon transfer from the intensive care unit, usually on the acute recovery wards about 3 to 4 days post-infarct. The visit lasted less than 30 minutes in all cases and was meant to be a simple introduction with registration for the cohort rehabilitation programme. During this initial visit, a rather light discussion was held about the patient's disease in an effort to reduce anxiety, provide reassurance, and inform the patient about his care and general treatment. Most patients had at least several questions about the disease, recovery, return to work, and hospital procedures.

Many of the questions were answered directly by the nurse, or when appropriate by staff who were available. Patients were also given information pamphlets provided by the hospital which were informative of the disease, recovery, risk factors, and included suggestions for health care. Wives of the patients and relatives close to the patients (particularly for those who were single or separated or divorced were similarly seen during this early Stage I process, but that will be treated apart from direct patient contact in a following section of this chapter.

The first contact in Stage I was rather important from the rehabilitation standpoint and patient anxiety. Most patients were highly motivated and receptive to the discussions. They listened seriously and were eager to learn about risk factors and further prevention measures. In particular, anti-smoking literature was provided and discussed (in a non-affronting manner) to encourage the patient to restraint or quit smoking. This was seen as vital since at Southern General Hospital, at the time, there was no restrictions on smoking in any area except those required for safety (such as oxygen usage areas). Also during the initial visit, patients were interviewed by pre-coded questionnaire with open-ended questions. This was done to establish previous smoking habits, a brief social and occupational history, family information, and other information used later on the various prognostic index

assessments. The patient was given a brief dietary questionnaire to be completed by his wife, self, or relative(whichever was most relevant) which was collected during the second visit.

The nurse visited the patient two more times during the Stage I hospital stay, hence three visits in all. The two successive visits were informal, relaxed, and conversational lasting between 30 and 45 minutes each. These visits focused on providing more indepth information on the disease and risk factors, rehabilitation and expectations, and took an unstructured and social pattern of behaviour on the parts of both patient and nurse. The discussions included illustrations from pamphlets on heart disease to increase the patient's awareness of the heart's function and coronary health. Anti-smoking was reinforced while other risk factors were discussed such as weight problems, stress in daily living, physical activity at work and leisure, diet, and necessary prophylaxis. In each visit throughout rehabilitation the major risk factors were discussed, reinforced, and information repeated so as to reinforce healthful behaviour be the patient with family support.

The in-hospital visits were also opportunities to determine a simple dietary regimen and, with appropriate supervision and advice, to establish this regimen for the patient over the period of recovery with advice for future dietary health. The patient was also undergoing clinical evaluation and tests throughout the period, and the nurse coordinated her data with that of the patient's cardiologist to determine medical history, clinical classification, potential for returning to work (and appropriate occupational needs), and other data used on the various indices which are discussed later in this chapter.

A particular series of short psychological tests (and basic questionnaires) were used at the end of the second visit. The total time involved for completion of the tests did not exceed 20 minutes for any patient and averaged about eight-to-ten minutes. These were also used in assessment indices, which again will be presented here later.

A vital part of these in-hospital visits was to encourage ambulation as early as feasible. All patients were mobilised by the tenth day following infarct while 18 were mobilised by the fourth or fifth day. A Target weight was established clinically

based on height and consultant's information, and during the clinical phase of testing, instructions were given and explained by the nurse for simple home exercises and daily physical activities. In most instances a graduated form of physical activity was advised in which patients were to walk various distances and begin basic exercises prescribed from the Canadian Air Force Physical Fitness Manual (129, 1977).

The patient was prepared for discharge at the time of his third visit from the nurse, and emphasis was placed on providing information about exercise, diet, adaptation, and follow-up schedules with general practitioners, the hospital, and the nurse. The patient was given instructions about return of chest pain, normal and abnormal, and what to do to summon help. He was also advised about fatigue, its side effects, and other symptoms of disease-related problems so that proper attention would be given to them by the patient and family without undue anxiety. It was also at this point that the Disablement Resettlement Officer was contacted in several cases were relocation of housing might be a concern (high-rise buildings and those without elevators and patients flats being high in the buildings).

In all instances of advice, dietary controls, exercise programmes, and information passed on to patients, the supervising cardiology consultant was directly involved. All information of relevance to be given to patients was thoroughly discussed and approved before interviews; all information of importance from interviews was provided the consultant. This tightness of supervision also holds for interviews with family members which is discussed below.

Family Interviews

Visits with wives and families of patients were arranged at the hospital during Stage I, and all such visits were kept separate from the patient. There were two reasons for this. First, patients and wives felt information provided by them should be kept confidential to the individual, and that confidentiality was maintained. Second, the nurse felt that each person would behave differently in isolated interviews, providing more realistic information about attitudes, patient and family history, and stress situations that would impact on the rehabilitation effort.

Information pamphlets and hospital-provided literature were given to wives and family, as they were to patients, and discussions about risk factors, rehabilitation exercise, diet, and objectives of recovery were discussed at length. At the same time, the initial questionnaire interview given to the patient was replicated for family (wives specifically) which was useful in corroborating information received from patients. Most wives were initially in a state of anxiety greater perhaps than the patient, and each one interviewed expressed feeling helpless about her husband's condition and her ability to help him recover. Each also expressed opinions in the initial interview which would indicate an overprotective attitude. The results led to immediately attempting to reduce anxiety through information and knowledge about the patient's condition and the disease. Specific instructions were formed in conjunction with the consultants to counteract the wife's urge to be overprotective

While the patient was visited three times during Stage I in hospital, the wives were visited at least twice; once in the hospital and once at home in the family surroundings. This was an important step to take as it provided information about the physical situation of the patient upon discharge and to reinforce the concept that the nurse would be active in home adaptation and helping the patient in his adjustment. In the atmosphere of the home, wives and family members expressed themselves much more openly, the visit talking on an air of socialising, and many unstructured discussions led to answering vital questions for family members. Advice on the use stairs followed exercise assessments for the patient. The most common suggestion was to encourage the patient to use stairs gradually increasing his activity. Clearly some premises, such as a 32-story Council building, posed problems due to frequent elevator failure.

The family visits also allowed the nurse an opportunity to broach the problem of finances, and in several instances it was essential to contact social welfare workers for immediate attention to financial needs. Much of this was accomplished apart from the patient's presence.

During the initial Stage I interviews and counselling, the nurse was generally quite busy. The format of work required an

intensive early effort to establish the concepts of rehabilitation, of healthy attitudes toward the disease, of reducing risk, and of making discharge and adaptation as easy as possible on both patient and family.

Part of this facilitation process involved discussions with ward sisters, nursing staff, and general practitioners when at all possible. The ward personnel were informed of risk factors, the study procedures(generally), and the arrangements for visits. It was also important to try to convey to them the content of advice and recommendations so that they, in their daily contact with the patient and family, would reinforce these recommendations assuring consistency in information. A request was made of ward personnel that they support the anti-smoking efforts of the patient by reducing the visibility of smoking on the ward when possible. This was well supported. General practitioners were contacted upon patient registration, and they were kept informed of relevant patient information when it was deemed advisable by the supervising cardiologist. In any event, the general practitioner was given much more information than normal upon discharge of the patient and in several direct telephone and personal conversations for patient assessment.

Post-discharge Visitation

Following discharge from the hospital, each patient was scheduled for a minimum of two home visits by the nurse during the Stage II period (discharge and prior to six-week evaluations). The nurse was also present at discharge when possible to assure continuity. The two scheduled home visits in each instance were during the second or third week (first visit) and fourth or fifth week (second visit) following infarct. Each visit was scheduled for 30-45 minutes although most often they were much longer as patients and families encouraged a social atmosphere. Nothing new in terms of knowledge, advice, or information was offered during these visits, yet the various sorts of information provided during Stage I counselling were reinforced. An informal assessment was carried out in each visit, and this information was documented when relevant for the respective GP or cardiologist. Progress toward exercise targets, smoking commitments, and weight control was noted in each instance.

The nurse made available her home telephone number and encouraged patients and families to call for information and help if needed. During the course of the six months of field work, seven individuals did call, and several of those called a number of times. Usually these calls involved very little time or trouble for the nurse and were usually questions or matters indirectly related to the disease, such as how to get family assistance for transportation to clinic or how to contact social welfare offices for financial advice. These comments will not be treated elsewhere.

Clinical Evaluations

Three formal clinic visits were scheduled for each patient for assessment and evaluation. The first visit came at six weeks following infarct, the second at 12 weeks, and the third at 24 weeks. The six-week and 24-week clinic evaluations were similar and included the cardiologist evaluation, physical assessment tests, interviews, and other clinical observations which will be described below. The 12-week evaluation was conducted solely by the nurse and excluded the formal tests and clinical evaluations requiring supervision by the consultant and other medical staff.

Six Week Clinic

The evaluation was a medical follow-up by the supervising cardiologist, held in the Electrocardiograph Department where an exercise tolerance test was the primary requirement for the patient. Following an initial interview and examination, the patient was given bicycle ergometer and oxygen uptake tests. The exercise tolerance test was performed using the Elema Schonander EM-369 Ergometer under the supervision of the cardiologist. There was constant ecg monitoring and a cardiac resuscitation trolley was available but never required.

Cycling was at 50 rpm for nine minutes during which time the work load was increased at three minute intervals, usually in a planned sequence of 40, 70 and 100 watts depending on the patient's capacity and ecg monitoring. Indications for stopping the test were angina, undue dyspnoea, fatigue, palpitation, a target heart rate determined by the consultant for the patient's age, ST changes on the ecg monitor, or arrhythmias. On completion of the test, the

maximum heart rate was recorded and an ecg test was run again immediately after the exercise.

The supervising cardiologist advised the nurse as to the patient's classification for exercise results from which a pre-arranged set of exercises or suggestions were made available to the patient. The classifications derived included; Normal for Age (or better) with recommendations for 5BX exercises from the Royal Canadian Air Force manual and or graduated walking; Poor Exercise Results (no evidence of myocardial impairment), with recommendations strongly made for the 5BX plan and graduated walking; and Myocardial Impairment, with recommendations to walk to capacity daily. Of the 32 patients included, only 22 were given formal exercise tolerance tests, which was the choice of the patients' cardiologists. Those unexercised were not given recommendations for 5BX due to lack of information needed, however, the supervising cardiologist reviewed each of the unexercised patients and recommended various degrees of graduated walking.In each instance, the choice of exercises and walking, and the level of participation was left up to the patient, even though monitored throughout the study.

Other clinical tests at the six-week evaluation included a chest x-ray, laboratory tests for serum cholesterol levels, triglycerides and electrophoretic lipoprotein estimations. The nurse took weight, amount of smoking, dietary, and other information related to the several indices used in the study. At this time, the supervising cardiologist also made a recommendation from his medical examination for primary treatment changes (such as drug dosages) and estimated whether or not the patient would likely be able to return to work following the examination.

Wives were interviewed with the patients during the six week examination using a Phase II Questionnaire (reproduced in the appendices). This instrument provided documentation of the clinical data, cardiologists' evaluations, return to work estimates, the laboratory results, and the entire array of risk factor data for all indices used in the cohort. This was a lengthy document and therefore is not reproduced here.

Twelve-week Clinic

The nurse counsellor held the 12-week clinic in the Coronary Rehabilitation Unit at the hospital. All patients were reassessed using the Phase II Questionnaire and wives were invited to participate. The fundamental observations for physical examination were noted, replicating the procedures used at six weeks, but no exercise or cardiologist examination was included. The results chapter will indicate that many of these patients were back to work by this time so that much of the assessment focused on their reactions to return to work and problems associated with work.

The 12-week follow-up was primarily low-keyed, social in behaviour, and while the formal follow-up using the Phase II document was completed, the visits were open-ended and informal allowing more time for the patient and family to reflect on progress to date or future needs.

Twenty-four Week Clinic

The final evaluation was a repeat of the six-week session with cardiologist examination, exercise testing as recommended by the patient's consultant, and interviews of the patient and family by the nurse. The laboratory tests were replicated as well as the associated Phase II documentation of information and results.

In addition to the six-week information, patients were interviewed with their wives for an assessment of progress, attitude changes, risk factor changes, results of testing, success of exercising, and clinical observations (such as weight reduction). Each wife was asked to evaluate her husband's progress and estimate his present physical and emotional state with a comparative estimation of pre-infarct status. Also at this time, the initial battery of three psychological tests (given in Stage I) were repeated for each patient. Several wives had to be contacted at home in this phase as they did not all attend due to work schedules or other obligations.

Communications During Clinic Visit Stages

Communications beyond the nurse-cardiologist relationship took form at two levels; one with patients and family, and the other with the general practitioner. An overview to the nurse-

patient relationship would include, in all stages, three personal visits in hospital (over an approximate two-week period), two home visits following discharge (over a four-week period), and one home visit on average following the six-week evaluation (over a six-week period). Several patients were not visited following the six-week evaluation as they were back to work without other problems. Several more were returning to work following the evaluation and only telephone follow-up was used to assure continuity of care. However, for several more patients at least one visit was necessary due in part to the severity of the infarct and subsequent slower progress in rehabilitation and due also in part to poor adaptation to the disease and psychological problems in adjustment (one patient was referred to psychological treatment). Following the 12-week evaluation, the several severe patients were visited once and families called on (or where called by) the nurse for telephone follow-up. In the case of the one death, family was visited.

From this presentation, one can see that the focus of the nurse for counselling was early in the recovery and rehabilitation stages, tapering off quickly as patients regained their normal pattern of work and life.

Communications with general practitioners took two forms. The first was a short reporting procedure used, in letter form, following each of the clinical assessments and when necessary after home visits(seldom used). At the end of the 24-week evaluation, a summary of the entire cohort progress procedure for the patient was sent to the general practitioner. This summary did not include assessments and comments by family considered confidential, but it was comprehensive for clinical evaluations, progress in rehabilitation, and helpful comments accumulated from the nurse's visits with patient and family.

Prognostic Indices, Assessment Instruments,and Measurements

The prognostic indices,associated coding scales, the three psychological and social assessment instruments, associated rating scales, and the data base questionnaires together amount to many pages of information. These coupled with the letters of inquiry and questionnaires sent to physicians for evaluating the nurse's

role in rehabilitation intervention are reproduced in the appendices to the thesis. Here a brief explanation of each index used, together with assessment total scoring will be presented. In the section which follows, the methods of analyses used for measurement will be presented separately to maintain clarity.

Coronary Prognostic Index

The CPI is a predictive instrument developed by Norris, Caughey, and Mercer (112, 1970) used for three-year survival data for those surviving acute myocardial infarction. This was reviewed in the literaure sections and is used in conjunction with physical and clinical information. Observations included medical history, x-ray reports, age, heart size, pulmonary oedema or congestion, history of previous infarct, and these data related to a four-sector index field. The categories, or sectors, included a weight factor from 0.0 to 1.0 in each area including Age, Heart Size, Lung, and Previous Ischaemia.

All cohort patients were evaluated using the CPI during the Stage I, in-hospital study. The results were used not to predict patient rehabilitation progress but to compare with other index data through correlation analysis.

Coronary Rehabilitation Index

Two separate indices fall under this title. One developed as a predictive instrument by Schiller (130, 1972) is a numerical rating scale to predict success or failure in returning to work or active life-style following a myocardial infarction. The second is a modified and simplified index by Schiller (131, 1977) which was provided specifically for this study. It is a predictive rating scale for use by paramedics.

Schiller's CRI is a three-category, 16-variable rating instrument which includes as one variable the Coronary Prognostic Index described above. It also includes in the CPI an associated variable for accompanying diseases besides CHD for the patient to conclude a Physical Classification category. The second category is Social Classification. The variables included are: Age, Educational Level, Stability of Work History, Occupation by Social Class, Recreational History before Infarct,Marital Status, Family or

Social Stability, MI-Personality Factors(with two sub-sections for present symptoms of MI and severity of MI), Changes in Life Experience, Inhibiting Social Service or Other Financial Factors, and Excessive Patient Dependence or Over-protective Family Attitudes. The third category of Risk Factor History includes Smoking (and age of onset), Obesity, and Hypertension.

Schiller's modified index includes four categories of observations including: Work History, Previous Job, Amount Smoked, and Education Level. High risk is predicted in this modified scale at a maximum score of 10.0 points and a minimum of 0.2 points. For his major CRI, a maximum of 47 points presents the high risk factor predictive index while, an integer scale, at minimum is 0.

Use of the two Schiller scales was made in the cohort study and determined during Stage I, in-hospital visits. Clinical data was of course gathered from the physical examinations and reports from cardiologists while social data and risk factor data was gathered using the Phase I Questionnaire developed by the nurse. The social classification and risk factor data were corroborated from patient response by using wives' or family members' responses to the same questionnaire as noted earlier. These are replicated in the appendices.

The cohort study made use of the scoring and outcomes in a comparative analysis with other indexed scores and data. However the Schiller classifications also were used directly by the nurse and cardiologist in assessment of progress throughout the study and for counselling guidelines in hospital and home visits with both patients and family members. The results sections will reflect this usage and eventual outcomes, and in discussions later in the thesis, the Schiller scales will be considered in detail.

Life Change Unit Score

During Stage I visitation, each patient was evaluated for a Life Change Unit (LCU) score using Rahe"s (120, 1974) scale for indexing potential stress and anxiety problems for the year prior to myocardial infarction. On the LCU table are 38 variables to be weighted through interviews with the patient and family. The data base instrument was the Phase I Questionnaire used throughout the

Stage I processing. The list of all 38 variables are presented concisely in the appendices, but as examples, the single highest observation would be Death of Spouse, weighted 98 (0-100 scale), while the single lowest observation would be Change in Living Conditions, weighted 10. Rahe has attached weights from several extensive studies so that each of the 38 items carry a unique integer value. The interpretation of the scale suggests that a total value or "upset score" of 100 or more equates to maximum risk. Lower scores become correlations for return to work observations and for evaluating stress and relative measures needed to reduce stress and anxiety. These points were reviewed under the literature section earlier and shall be treated in the results and discussion chapters later.

Patient, wife (or family member) questionnaire responses were corroborated for deriving individual observations which were then incorporated into a composite LCU score. The information was used in two ways. First to help identify stressful situations which the nurse would consider in intervention counselling, and second to compare relative predictive power of the LCU table with the cohort patient outcomes.

Eysenck Personality Inventory

In addition to the Rahe LCU score which was considered in part representative of the psychological aspects of the patient for rehabilitation, the Eysenck Personality Inventory questionnaires were administered in the cohort study. These were developed by H.J. Eysenck and S.B.G. Eysenck (50, 1972)to quantify results from measuring "neuroticism" and the dominance of either extrovesion or introversion among groups who can be tested and retested. The Inventory procedure requires administration of two questionnaires, identified as Form A and Form B. Each contains 57 individual questions but the questions are worded quite differently to obtain measurement on similar variables. Answers are of a "yes-no" format, and the results are developed into two scales.

One scale is called the neuroticism scale (N) containing 24 items from the questionnaire. It is described by the authors as measuring general emotional stability. Then a second score, or scale, called Extroversion (E) measures socialability and impulsivity, mobility, and aggressiveness given a high value of

the score. The (E) scale also is used to express a measurement of introversion, taken to be reserved distant behaviour, well-ordered serious mannerisms, reliability, and perhaps pessimism if the value of the score is low.

A unique feature of the Inventory is a separate scale called a Lie Scale (L) which weights the respondent's tendency to answer questions according to the favourable light which an answer series might throw on the subject. On this, the authors suggest there is little criteria for interpretation but that in general there is a cutting point at which inventory answers cease to be acceptable.

This scale interpretation, coding data, and the questionnaires are not replicated in this thesis or in the appendices. The Eysenck Personality Inventory questionnaires and coding data are copyrighted and not subject to replication or other reproduction. However, Southern General Hospital obtained the right, in writing, to use the forms and administer the tests under the Coronary Rehabilitation Unit to which the nurse was attached. The results of administering the tests will be provided in a following chapter together with published data from the Eysenck studies (50, 1972). The published data is a complex series of tables for occupational, and other, group outcomes among 2000 recipients of the test and retest trials.

The basic criteria for the N, E, and L scales involve a result from computer analysis yielding a unique group mean and standard deviation(for N, for instance, on the order of 9.365 for normal patients, std.dev. 2.456). To this group result, individual scores can be compared statistically with relative inferences about the outcomes.

In the thesis, these scores were compiled by administering Eysenck Form A during the initial Stage I, in-hospital visit. The Form B results were those administered at the exist evaluation at 24 weeks. The two are statistically compared over time, and the results of the cohort are compared with the Eysenck and SGH data.

Clinical Diagnostic Self-rating Scale

This scale is better known, and reference to it by the authors as the Middlesex Hospital(or Health) Questionnaire (MHQ). Crown and Chrisp (23, 1966) developed the questionnaire to measure

free-floating anxiety, phobic anxiety, obsessive compulsive behaviour, somatic symptoms, depressive behaviour, and hysteric traits. It is a self-rating instrument which requires the patient between 5 and 15 minutes to complete. It is pre-coded on integers (0,1,and 2)and includes 48 questions. The 48 questions are arranged for six sub-sections' scoring to reflect the measurement categories noted above. The MHQ procedure provides a qualitative profile that expands the general factor of "neuroticism".

The results of the MHQ provide a descriptive profile of a patient's tendency to phobic, and in a clinical sense, this provided some criteria for determining whether or not the cohort patients were likely to create anxiety about their disease. The MHQ published data provides quite an array of guidelines for comparisons to psychiatric outpatients as well as normal subjects. The cohort results were compared in a behavioural sense of discussion but rigorous statistical analysis was considered beyond the scope of the thesis.

The MHQ was administered twice during the cohort study, once during the Stage I, in-hospital visit, and again at the exist evaluation, the 24-week visit. These results were compared internally for the study, and detailed outcomes are discussed and presented later in the thesis.

Southern General Outcome Scoring

Working within the guidelines of the larger Southern General Hospital study, The outcomes scores involved assessment in four general areas including Physical, Return to Work, Psychological Dependence on Doctors and/or Drugs, Dependence on Social Networks' both Formal and Informal. Three observations, or scoring levels, of success were made in each of the four areas. Scoring on each item was with integer values of 2, 1, or 0; a score of 2 indicating successful assessment, a score of 1 indicating marginal success, and a score of 0 indicating failure. Maximum scoring was then a full eight points on this scale for full success.

A Secondary Prevention Outcome Score was also developed which included four areas of risk factors to be assessed. These included observations on Smoking, Weight, Lipids, and Exercise. An integer

scale was also used here with three classifications of relative success or failure for three of the areas; the Smoking area had four classifications of success or failure. For Smoking, integers of 3,2,1,and 0 were used; the value of 3 attached to a Non-smoker while 2, 1, or 0 used for smokers who stopped smoking after MI, made substantial progress(reduced), or had no reduction. Similar 2, 1, 0 scoring was used in the remaining areas of risk factors. A Non-smoker could therefore accrue success rating of nine points maximum, and a smoker who successfully stopped could accrue eight points maximum.

The individual classifications of scores were also used to develop five categories of assessment which were used to monitor progress, assess the impact of SGH rehabilitation intervention, and to compare results of SGH study subjects (n=68) with a control group also at Southern General Hospital (n=75). These five scores for assessment were simply called "Total Scores" and assigned category numbers of one through five (T1, T2, T3, T4, and T5).

The appendices have a full replication of the SGH score categories, coding, and risk factor assessments. Here, the T Scores categories are presented for clarity and continuity. They were:

Assessment Category:	Maximum Score:	Area Assessed or Monitored:
T1	6	Return to Work, Psychological Factors, and Dependence on Social Networks
T2	6	Weight, Lipids, and Exercise Assessments
T3	9	Weight, Exercise, Lipids, and Smoking (Total of Secondary Risk Factors)
T4	12	Return to Work, Psychological, Social, Lipids, and Exercise assessments
T5	15	Return to Work, Psychological, Social, Weight, Lipids, Exercise, and Smoking assessments (Total of all categories except a sub-category in the Outcome Score which assessed potential to return to work--implicit in Return to Work results).

The Southern General Hospital procedures are not further investigated here as they were provided to the researcher in order that she devise a similar, parallel programme, and the SGH results and study will be forthcoming in publication. The cohort

procedures replicate the scoring, outcome, measurement criteria, and patient profile developments. The data base for the cohort was the clinical data from initial (Stage I) examinations, six-week (Stage II) examinations, and 24-week exist (Stage III) examinations. In addition, assessment of the non-clinical data such as social networks and similar items, risk factor progress, and family situation came from the Phase I and Phase II questionnaire interviews. Both of these lengthy documents are, as noted earlier, part of the appendices.

The Phase I questionnaire (in-hospital initial interview) provided a base from which to gauge progress throughout the rehabilitation programme. Phase II exist interviews (24-week) provided a comparison of total progress over the period. The final T scores were derived from the 24-week interview outcome assessment.

Nurse Intervention Assessment

Two fundamental sets of survey responses formed the basis for assessing the role of the Nurse Counsellor. The first set of responses came from patients at the 24-week Clinic in which patients were asked to assess consultation visits, medical support and information services, home consultation, spouse' response to consultation, and attitudes by both patient and wife toward aspects of rehabilitation.

The second set of responses came from a formal inquiry by letter to general practitioners who were directly involved with the patients' care. They were asked four short questions about their assessment of the clinical summaries and information sent by the nurse (following six-week and 24-week clinics), patient appreciation of counselling, the GP's attitude toward using similar nursing services, and assessment of the rehabilitation effort. In both patient and general practitioner responses, there were a substantial number of additional comments and suggestions which were solicited by open-ended questions by the nurse on the respective data base documents.

Given the small number of subjects in both response areas, there is little support for a statistical evaluation, however, the nurse will present the results as thoroughly as possible in

the results section. The statistics will follow descriptive efforts at assessment but are also supplemented by feedback by the supportive cardiologists' assessments from Southern General Hospital and others directly involved in the rehabilitation intervention effort.

Analysis of Data

There were several specific areas of concern to be evaluated in the cohort programme. These are not set up as formal hypotheses, yet for those with significant data, statistical analyses were used with criteria for determining success or failure. The major concerns include the following questions which were set forth at the beginning of the thesis:

1. Does nursing intervention significantly improve the successful rehabilitation of the patient?
2. Does nursing intervention significantly improve the patient's behaviour over time?
3. Are physical and psychological prognostic measurements useful in cardiac rehabilitation and nursing intervention?
4. Do the indices measure, explain or predict, the patient's rehabilitation outcome?

These areas of concern are evaluated with the methods and indices set out in the preceding section of the chapter. The interpretation of results and analyses follow a series of procedures as noted below:

1. Nursing intervention is in part measured by the descriptive data and survey results. It is also evaluated in terms of comparing cohort results with both the Southern General Hospital results and the SGH control group. Specifically:
   a. T1, T3, and T5 scores are compared through one-way analysis of variance testing with contrasted coefficient matrix designs (pooled and separate variance models), and both F ratios and t values are used with decision rules set at the 0.050 significance levels.

2. Improvement in patients' psychological behaviour is in part assessed using the several relevant indices. The Eysenck A and B neurotic and extrovert scores are compared yielding a comparison of patients' changes in behaviour from Stage I to Stage III examinations. The MHQ scores reflect similar time frames and are compared. Specifically:

   a. A two-tailed correlation probability analysis was used in each result for similarities or differences between initial test administration and final clinic examination. Pearson Moment (r) and R^2 results significant.

   b. The published Eysenck scores for normal and mixed-neurotic groups were compared to the cohort results using Eysenck standard deviations are boundaries for explicit success changes(or failures). These are relative scalings for more or less better fit of cohort to Eysenck data.

3. Nursing intervention (areas of concern 1 and 2 above) is concerned with Social Independence. As such, the comparative scores of SGH and cohort become one measure while the relevant sections of Rahe LCU, Schiller, Mod-Schiller, and Norris indices become validation bases.

   a. Descriptive results of SGH and the cohort are compared without statistical data for relative similarities or differences using the control group results as reference guidelines.

   b. Specific correlation results are derived for cohort to SGH T1 and T5 variables.

   c. Schiller's Index scores are correlated with SGH T1 and T5 variables and with cohort results.

   d. Modified Schiller results of the cohort are compared with SGH T1 (work) results using correlation analysis.

   e. Rahe Stree Scores are compared with T1 and T5 cohort results.

   f. Scattergram analysis is used to supplement the correlated results between studies for specific variables.

4. Are the indices predictive or explanatory of patients' total outcome results? This is investigated through the same correlation procedures described in paragraph (3) above.
5. Nursing intervention is in part measured by success or failure in changing risk factor assessments (patient's behaviour specific to the risk factors).
   a. Statistical comparisons are made between cohort results and SGH controls, but more importantly, the progressive changes made in risk factors (such as smoking) for patients over the programme period are provided and described. The limitations to outcomes in these areas include the small yet intense sample.
   b. Pre-infarct risk data is compared to exist (Stage III) examination risk data using simple statistical measurements and guidelines from the various prognostic indices.
6. Validation of the nurse's role is in part measured by the results of the cohort study as compared and described in paragraphs (1) through (5) above, but also by the results of general practitioner surveys, patients' responses, family responses, and feedback from Health Visitors working closely with the patients.
7. Value of indices for intervention is assessed by the relative predictive values of the indices, as noted in procedures described in paragraphs (2) through (5) above, but also through description of the use of the indices as being helpful to the nurse.
8. Success of the rehabilitation effort reflects the overall outcomes noted above, but also more specifically in the return to work results. These are presented through use of comparative histograms for patients given pre-infarct history, actual work history, and week returned post-infarct.

The analyses made use of Fortram-based SPSS computer statistical procedures for the majority of testing. However, the relatively small numbers in the cohort sample made many of the comparisons with high-powered statistics unacceptable. Therefore, the descriptive data, discussions, and observations for several areas of concern

were based on simple calculations and progress charts. Return to work data, for instance, or number of cigarettes smoked per day (and changes), weight changes, physical activity, all were more realistically presented and discussed in terms of patients' progress over time.

Control over data was established in several ways. All index scoring was accomplished within the Southern General Hospital Coronary Rehabilitation Unit by third persons in conjunction with the nurse. All procedures and questionnaires were cleared through the unit and, when necessary, through SGH offices. The results of the questionnaires, individual responses, and data from clinical examinations remained confidential to those who were involved in the rehabilitation programme, the consultants concerned, and general practitioners. Clearly not all information was distributed to all these persons, even though all were involved, but necessary results and information for patient care were freely communicated in the best interests of the patient consistent with hospital policy.

Summary

The methodology of this study has as its focus the assessment of the nurse counselling and intervention in coronary rehabilitation. As such, the procedures, tests, analyses, and format for results and discussions to follow reflect that effort. Secondary concerns for implications of using prognostic indices, psychosocial scoring procedures, and outcome measurements are of direct interest, but not considered essential to the thesis.

As was noted in the introduction to this chapter, the role of the nurse in coronary rehabilitation is not clearly defined. There are few published criteria for measuring success of intervention by a nurse counsellor, and therefore several of the analyses and results which follow reflect descriptions rather than statistics or quantitative measurements for success.

CHAPTER V

RESULTS OF COHORT STUDY

Introductory Remarks

The results are displayed as often as possible in table or figure form so that summary review can be made by those interested in direct comparisons of data. A discussion chapter follows and is kept separate from the presentation of results here. However, clarity requires substantial explanation which will take the form of brief presentations here. Source data base documents are provided in the appendices.

Medical Assessment

The cohort group of 35 patients (original base) had all received treatment in the CCU. All patients were dispersed to medical wards, yet three patients were returned to CCU for further treatment of severe pain and arrhythmias. One patient showed an extension of his initial infarct while the other two were merely treated -- no re-infarctions. One more patient had a cardiac arrest three days after his initial discharge from the CCU (to ward), but was successfully resuscitated. As described in methodology, the cohort group numbered 32 upon discharge from hospital as two of the 35 died prior to intervention and one was relocated out of the area. Of the 32, only 31 formed the core of the study as one death occured in Stage II of rehabilitation.

Of the 31 patients in the study for which overall results are recorded and statistical analyses performed, six were diagnosed with inferior myocardial infarcts while 25 suffered anterior or antero-lateral infarcts. The entire cohort was assessed by the consultant supervisor using rehabilitation guidelines as follows: Ten patients as "mild" infarcts, ten as "moderate", and eleven as "Severe." The one patient death was initially a "moderate". The criteria for classifications are displayed in appendices.

Medical history revealed eight patients with hypertension in previous GP screening, three of those under treatment. Nine patients had been evaluated for angina in the past with histories ranging from one to seven years. Only one patient had a history of a mild cerebrovascular accident which had left no recorded residual damage.

Medical treatment of patients after leaving CCU varied with the policy of the medical teams and cardiologists involved, and of

course with the medical evaluation. Average time for mobilisation for all patients in the cohort was 6.5 days after infarct. Most were being eased into mobilisation by three days, but one remained on bedrest for 15 days. The average discharge time after infarct was 18 days. Three patients were readmitted to hospital after discharge (no re-infarcts) for chest pains, but all were treated and released within a week. One patient was readmitted for a hypertension crisis which required hospital care for a fortnight.

Risk Factor History

As part of medical assessment, as well as a guide for programme rehabilitation, risk factors were observed and recorded on each patient. Table 5.1 below shows Pre-infarct as well as Post-infarct (6 month) observations and summaries of factors.

The most prevelant risk factor present pre-infarct was smoking (87% of patients) followed by family history of coronary heart disease and sedentary life-styles (both 61% of patients). Of the 19 patients with "family history" three had older brothers die of heart attacks (based on survey response). The deaths were also apparently men in mid-40's. There were 12 patients with a history of obesity. As mentioned earlier, nine had histories of previous coronary heart disease (although no infarcts), and eight were previously treated for hypertension.

These histories were evidenced by patient and family responses and validated with general practitioners when possible. Table 5.1 also shows a summary of multiple risk factors present, and as noted, 30 of the 31 patients (97%) had two or more risk factors present at pre-infarct.

The results of rehabilitation for risk factors are summarised by the post-infarct data in Table 5.1. Each area is treated in more detail later in this chapter. The assessment provided the nurse a focus for rehabilitative efforts in which the modifiable risk factors were separated for realistic intervention. Table 5.2 which follows provides a series of pre- and post-infarct outcomes for patients with multiple risk factors. Put another way, since all but one patient had two or more risk factors present, and all but four patients had three or more risk factors present, it was felt that rehabilitation had to systematically treat these multiple areas for

Table 5.1

Secondary Prevention, Cohort Risk Factor Summary (n=31)

Risk	Pre-Infarct	Six Months Post-Infarct
Family history of coronary heart disease	19 (61%)	19 (61%)
Smoking (pipe, cigar, or more than one cigarette daily)	27 (87%)	9 (29%)
Obesity (more than one stone above desired weight for height)	12 (39%)	7 (23%)
Hypertension (treated or untreated as per medical history)	8 (26%)	8 (26%)
Sedentary life-style (no regular exercise taken)	19 (61%)	6 (19%)
History of previous coronary heart disease (angina or previous myocardial infarction)	9 (29%)	31 (100%)
Combination of Factors:		
One risk factor present	1 (03%)	31 (100%)
Two risk factors present	11 (36%)	10 (32%)
Three risk factors present	10 (32%)	10 (32%)
Four risk factors present	4 (13%)	4 (13%)
Five risk factors present	5 (16%)	1 (03%)
Six risk factors present	0 (0%)	0 (0%)

secondary prevention. Four modifiable risk factors from the list were included and were: Smoking, Obesity, Hypertension, and a Sedentary Life Style. Only 4 patients (13%) had all four factors in evidence prior to infarct, 4 more had three factors present, 15 patients had two factors present (only), and 8 had only one of the modifiable risk factors present. Table 5.2 figures do not sum to 100% in the upper portion as the data describes the various combinations and patients had more than one listed combination in several instances.

The results of rehabilitation cohort studies for patients and families (verified medically when necessary) reveal that post-infarct risk information is dramatically different than pre-infarct history. The cohort smoking results showed the greatest change with only 9

Table 5.2

Combinations of Modifiable Risk Factors for M.I. Cohort Study Patients with Summary (n= 31)

Category	Pre-infarct	Six-months Post-infarct
Smoking, Obesity, Hypertension, and Sedentary Life-style	4 (13%)	0 (0%)
Smoking, Obesity, and Hypertension	5 (16%)	0 (0%)
Obesity, Hypertension, and Sedentary Life-style	4 (13%)	0 (0%)
Smoking, Hypertension, and Sedentary Life-style	6 (19%)	0 (0%)
Obesity, Smoking, and Sedentary Life-style	5 (16%)	0 (0%)
Smoking and Obesity	9 (29%)	2 (06%)
Smoking and Hypertension	7 (23%)	1 (03%)
Smoking and Sedentary Life-style	17 (55%)	2 (06%)
Obesity and Hypertension	6 (19%)	4 (13%)
Obesity and Sedentary Life-style	6 (19%)	1 (03%)
Hypertension and Sedentary Life-style	6 (19%)	1 (03%)
Summary of Risks Present:		
Zero risks present	0 (0%)	12 (39%)
One risk present	8 (26%)	9 (29%)
Two risks present	15 (48%)	9 (29%)
Three risks present	4 (13%)	1 (03%)
Four risks present	4 (13%)	0 (0%)

patients (29%) still smoking at six-months post-infarct. The risk category of Sedentary Life Style was second greatest in change on the period with only 6 (19%) patients so classified. Obesity as a factor was reduced over the period as well, but still sevem of the 12 patients with weight problems at six-months post-infarct were considered obese. More is presented in each area concerned which will show that data in Tables 5.1 and 5.2 are definition summaries of periodic classification while significant progress was made by many patients so that reduced risk requires analysis.

Psychosocial Assessment

As detailed in methodology, the cohort group comprised men aged 30 to 64, average age of 52, three were single and 28 were married, on admission records. However, it was determined that only two were single, 27 married, and two divorced or separated (the latter incidents came about during the six months prior to infarct). All but one patient was working prior to infarct. For a complete profile, the reader should refer to methodology, and particularly Table 4.1 for social classifications.

Prognostic Indices

Table 5.3 below provides an overview to mean scores and standard deviations according to rating scales of several of the available indices for rehabilitation usage. The Rahe LCU is a life-change assessment scale for rating liklihood for a person suffering serious illness or death correlated to the LCU scale. Each of 38 categories made up the scale with each scoring a maximum of 100 as the "highest upset" indicating maximum stress assessment. The Coronary Prognostic Index (Norris CPI in brief) deals mainly with physical prognosis in which higher mean scores imply greater risk due to physical assessments. The Coronary Rehabilitation Index (Schiller CRI), and Modified CRI, both have separate scales for overall assessment of coronary patients. The Mod Schiller CRI has a maximum score for greatest risk of 10.0, but the remaining scales noted require interpretation in terms of comparative group outcomes. These will be treated more thoroughly in later sections of results. The criteria for all scales are found in methodology as well as appendices which reveal fully the scaling process and assessment areas.

Table 5.3
Summary Statistics for Cohort Scoring
Using Prognostic Indices (n = 31).

Index	Mean	Std. Dev.	Range
Rahe LCU Outcomes	133.03	70.73	48 to 354
Norris CPI Outcomes	3.79	2.79	0.98 to 12.26
Schiller CRI Outcomes	16.52	5.00	10 to 30
Schiller (Modified)	1.60	2.14	0.6 to 9.7

While the cohort study results are noted in Table 5.3 above, these results are correlated later with Southern General Hospital Outcome scores and control group observations for a realistic assessment. It should be mentioned here that the rather wide ranges of scores for each outcome do not suggest anything unusual and later comparisons will show similarities for these statistics. The interpretation of the results according to the individual indices are generally as follow:

For the Rahe, LCU scale, a mean in excess of 100 implies a greater probability of serious illness or death among the cohort patients (with mean 133.03). The cohort had 22 patients above the 100 score outcome. The Norris CPI for physical aspects indicates a rather low group mean (3.79), yet several of the severe infarct patients were near maximum scores (high at 12.26). The Schiller CRI and Modified Schiller outcomes indicate rather low group risks for all, yet in each instance there were several patients near the maximum. The Schiller and Norris scales are usually interpreted in terms of prognosis for early return to work.

Rehabilitation Outcomes--General Intervention Results

With the main focus of this study being the assessment of the nurse counsellor, results reported above serve to introduce the primary emphasis of assessment and study. Much of the assessment, the major results of the study, comparative data, and outcomes for progress of patients follow the Southern General Hospital Rehabilitation Outcome Guidelines. These guidelines are set forth in Table 5.4 with the rating outcome at six months for the cohort patients. There are two areas treated in the results based on this table and the S.G.H. methodology. The first is concerned with overall assessment of return to work with consideration of the physical factors and social conditions for the patient. This is noted at a "T1" outcome and includes assessment of scores from categories (a), (b), and (c) in Table 5.4. Secondary Prevention, or Risk Factor assessment is noted as "T3" and includes categories (d), (e), (f), and (g) in the table. A Total Outcome is used as well and includes all categories in Table 5.4, and is noted at "T5". These outcome scores become the basis for comparative statistics and an overall evaluation of rehabilitation. The results of the cohort study

Table 5.4

Cohort Patient Scoring Based on Southern General Hospital Rehabilitation Outcome Guidelines (n=31)*

Outcome Area: (T1= a,b,&c)(T3=d,e,f,& g)(T5=all)	Score Rating	Cohort n (%)
*Physical (not in outcome calculations)		
Fit to Return to Work by 6 Months	2	29 (94)
Not Fit to Return to Work by 6 Months	1	2 (6)
(a) Return To Work		
Returned to Suitable Work	2	19 (61)
Returned to Unsuitable Work	1	4 (13)
Retired	1	1 (3)
Not Returned to Work	0	7 (23)
(b) Physical & Emotional Stability		
Independent of all but minimal medical assistance and/or drugs	2	14 (45)
Lessening Dependence on above	1	12 (39)
Strong or Increasing Dependence on above	0	5 (16)
(c) Social Stability		
Minimal Dependence on Social Networks	2	17 (54)
Lessening Dependence on above	1	7 (23)
Strong or Increasing Dependence on above	0	7 (23)
(d) Smoking		
Non-smoker Before Myocardial Infarction	3	4 (13)
Stopped After MI	2	18 (58)
Progress in Stopping (Reduced)	1	8 (26)
No Reduction or Increased Usage	0	1 (3)
(e) Weight		
D.W. Target Achieved and Maintained	2	19 (61)
D.W. + 2 St. Target Not Achieved(Progress)	1	11 (36)
Weight More Tham D.W. + 2 St.(No Progress)	0	1 (3)
(f) Lipids		
Target Achieved or Maintained	2	9 (29)
Progress Toward Target	1	14 (45)
No Progress	0	8 (26)
(g) Exercise		
Strenuous Exercise(to Target Capacity)	2	14 (45)
Ambulatory (progress but suboptimal)	1	12 (39)
Sedentary (or no exercise)	0	5 (16).

*Data excludes one death; cohort began with 32, all results are reported on 31 cases who substantially participated in cohort.

Table 5.5

Summary of Cohort Outcome Scores & Statistics

Outcome Area: (S.G.H. Base Data)	Highest Score Possible	Mean (n= 31)	Std Dev.
T1, Work, Physcial & Emotional, Social	6	4.06	2.11
T3, Smoking, Weight, Lipids and Exercise (Risks)	9	5.58	1.73
T5, Total of seven categories observed	15	9.65	3.41

are provided in Table 5.5 above for each category of observation. It should be noted that the first category in Table 5.4 (Physical) is not included in the outcome scores but was used as an indicator at S.G.H. to summarise fitness to return to work.

The determination of outcome scores is a matter of consultant valuation for (a) Return to Work and "fitness" to return with validation through follow-up of results. The guidelines for clinical assessments and targets (such as Weight, Lipids, and Exercise) are detailed in the Appendices. For clarity, they rest generally with the evaluation of the hospital consultant using established criteria for clinical measurement. Once criteria were established and the assessment determined, the nurse followed the patient through the hospital Stage I, post-discharge Stage II, and post six-week clinic, Stage III rehabilitation. The clinical factors were then evaluated by standard measurements or laboratory results. The remaining categories (generally nonclinical) were assessed and scored through questionnaires by patients, family members, and general practitioners.

The cohort results show that six months post infarct all but two patients were fit to return to work (94%); however only 19 (61%) returned to suitable employment. Four more returned to unsuitable work; 74% or 23 patients were returned by six months. This is taken up in detail later in this chapter and in the discussion. The value judgement of "suitable" or "unsuitable" work has been qualified in the coding criteria in the appendices.

A vital point to the return to work data is that most of the patients had been given permission to return to work by hospital consultants prior to 12 weeks post-infarct, yet the general practitioners' permission generally lagged by several weeks and was openly withheld in several instances even beyond the six-month final clinical assessment in hospital. This too is treated separately in later sections and the discussion.

In category (b) of Table 5.4, the physical and emotional stability was in part determined objectively by observing whether or not the patient was independent of drugs or direct medical assistance. It was also determined in part by subjective results of psychological scoring methods including the Eysenck Inventory and the Middlesex Hospital Questionnaire (to be treated separately later). While all patients started at Stage I dependent on medical assistance and drugs (CCU treatment), only 5 (16%) had not made substantial progress toward independence at six months. Of the 12 with only lessening dependence, eight appeared to be emotionally stable and could be independent, but there is no criteria for supporting a statement to place them in the minimal category as they were following GP advice beyond individual choice.

Category (c) for social stability took as the main emphasis the degree of dependence on formal grounds (rehabilitation staff or social welfare workers) and informal grounds (family, wife, and friends or employers). The Rahe stress score was considered in terms of possible residual problems along with relevant sections of the Schiller scales. The main concern was with patient adaptation or adjustment to his disease including problems beyond his control, such as an invalid wife who required care as well. The nurse used the S.G.H. format to develop home visits and interviews with the several questionnaires (see methodology and appendices) for assessing social conditions, environment, stress problems, and patient-wife relationships. Wives were interviewed as well as patients at most stages of rehabilitation.

Only seven patients were rated as strongly dependent at the end of six months. These patients showed no significant adjustment toward their disease, toward home or environment conditions, or were faced with exogenous problems (one patient's wife died suddenly mid-way through the six month rehabilitation period and adaptation

clearly became a major problem).

Categories for smoking, weight, lipids, and exercise are risk factors considered modifiable. As noted, progress was made by patients in all areas. The most notable result being the smoking category where 27 (87%) of the cohort smoked prior to MI. At six months post infarct, only one had made no reduction of smoking (or had increased slightly). Eighteen (58%) stopped and stayed stopped over the rehabilitation period. Eight more had reduced significantly, several of those being "restarts" after initial attempts to stop. These results are detailed later in very specific terms.

In terms of weight problems, significant results were also achieved in which substantial progress in reducing was made or target weight achieved for all but one patient. These outcomes require comparative pre- post-infarct and historic treatment which will follow as well. Similarly, very good results were found for exercise programmes and counselling. Fourteen (45%) of the patients were exercising regularly and strenuously (to target capacity or better if unrestricted physcially). Twelve more (39%) were in an ambulatory status, exercising regularly such as taking brisk walks, but not reaching targets for their individual exercise programmes. Only 5 revealed no progress toward changing sedentary life styles or taking regular exercise.

The results for Lipids category is not as clear. By the clinical definitions progress was made or targets achieved for all but eight, yet that is not considered necessarily high success. More will be presented here as well, but for clarity, it might be noted that the lipid laboratory results were at best variable for each patient and one suspects the significance of the tests or the procedures.

Comparison of Outcomes

Table 5.6 provides a comparison of cohort results using the Southern General Hospital (SGH) criteria with the SGH rehabilitation project results and a control group of patients also at SGH. The group means and standard deviations provide a distribution analysis with associated 95% confidence intervals for the comparison. The more formal analyses were concerned with differences between groups. If the hypothesis is set up to establish all groups being significantly

different on Total (T5), Secondary (T3), and Primary (T1) factors, one can test using the analysis of variance. The results show that a One-way Analysis of Variance(which corrects for size differences between groups)provides an F ratio and probability of differences. For the top scored outcomes in Table 5.6, the T1 results were significant, similarly for the T5 scores (third group) although the T5 outcome comparisons could be interpretative at the 0.07 level. For the Secondary area, T3, there appears to be no significant difference between groups. What is not revealed here is which groups vary, if any, with others. The analysis of variance procedures allowed paired contrasts of group means (corrected for size under the separate variance results). These are reported in Table 5.7.

The cohort results compared with SGH control for T1 results show a significant difference (0.01) under pooled variance, (0.03) under separate variance analyses. However, for T1, the cohort was not found significantly different than the SGH study. These results reinforce the heirarchical ranking of means for T1 outcomes.

The same is not true of the T3 results for risk factors. The cohort results were not significantly different than the control or the SGH study. These findings are <u>not</u> supported by the mean score rankings or the general results reported elsewhere in the study. There appear to be two reasons for this, although neither are reported statistically in the study. The first is that a group of 31 with only marginal application of the Central Limit Theorem can only require use of the <u>t</u> statistic, a less sensitive measure than other significant testing procedures. Second, the standard deviations of all groups become distorted for small numbers of cases so that a small difference in deviation (such as the cohort relative to the SGH study) magnifies the variance unporportionately in a statistical procedure. A heuristic test was run simulating slightly larger groups (n=100 in each case), and the implication is that the small differences in mean outcomes could force the models to a significance level beyond 0.001 (holding all else equal). With that in mind, the individual risk factor outcomes are treated separately (such as smoking results, weight, lipids, exercise) for a more detailed discussion later in the chapter.

For the T5 outcomes, the contrasts of cohort to SGH study showed similarities while the cohort to control group results were highly

Table 5.6

Comparison of Outcome Scores;Southern General Hospital Scoring Procedures(T1,T3,& T5) Analysis of Variance(One-way)(Sign=0.05)

Research Group:	n	T1= (Work/Physcial/Emotional/Soc.) Mean	S.D.	95% C.I.	F Ratio	F Prob.
Research Cohort	31	4.06	2.08	3.30-4.83	3.26	0.05
S.G.H. Control	75	3.08	1.78	2.67-3.49		
S.G.H. Study	68	3.43	1.72	3.00-3.84		
Research Group:	n	T3= (Secondary Prevention-All Risks) Mean	S.D.	95% C.I.	F Ratio	F Prob.
Research Cohort	31	5.58	1.73	4.95-6.22	1.17	0.31
S.G.H. Control	75	5.16	1.91	4.72-5.60		
S.G.H. Study	68	5.54	1.40	5.21-5.88		
Research Group:	n	T5= Total Outcome (Combined Scores) Mean	S.D.	95% C.I.	F Ratio	F Prob.
Research Cohort	31	9.65	3.41	8.39-10.90	2.72	0.07
S.G.H. Control	75	8.24	3.03	7.54-8.94		
S.G.H. Study	68	8.97	2.64	8.33-9.61		

Table 5.7

Outcome Scores, Tests for Differences Between Means Using Paired Contrasts; t tests (Sign.= 0.050)

Contrast: (T1 Outcome)	Pooled Variance t value	t prob	Separate Variance t value	t prob
Cohort with S.G.H. Control	2.54	0.01	2.31	0.03
Cohort with S.G.H. Study	1.62	0.11	1.49	0.14
S.G.H. Study with Control	1.14	0.26	1.18	0.24
Contrast: (T3 Outcome)				
Cohort with S.G.H. Control	1.16	0.25	1.11	0.27
Cohort with S.G.H. Study	0.10	0.92	0.10	0.92
S.G.H. Study with Control	1.35	0.18	1.38	0.17
Contrast: (T5 Outcome)				
Cohort with S.G.H. Control	2.23	0.03	1.99	0.05
Cohort with S.G.H. Study	1.05	0.29	0.98	0.33
S.G.H. Study with Control	1.47	0.14	1.54	0.13

Table 5.8

Correlations of Prognostic Indice Results with S.G.H. Outcome Scores on Cohort Study

Index and Outcome Score	R	R^2	Significance
Rahe Stress Scale with T1	-0.524	0.275	0.009
Rahe Stress Scale with T3	-0.148	0.022	0.427
Rahe Stress Scale with T5	-0.349	0.122	0.054
Modified Norris Index with T1	-0.761	0.213	0.002
Modified Norris Index with T3	-0.305	0.093	0.095
Modified Norris Index with T5	-0.476	0.226	0.007
Schiller C.R.I. with T1	-0.599	0.359	0.0003
Schiller C.R.I. with T3	-0.377	0.142	0.037
Schiller C.R.I. with T5	-0.569	0.324	0.0008
Modified Schiller C.R.I. with T1	-0.524	0.275	0.002

significant (0.03 and 0.05). Again, these are summary statistics, but given the substantial drawback of small numbers in the cohort those comparisons which are significant are enhanced by the use of t testing; greater numbers or more sensitive z score testing would only assure greater significance to the differences.

While the implications of these results will be formally discussed in the proper place and a later chapter, it is necessary for clarity here to note that the control group and SGH study results revealed less high outcomes. The cohort and SGH study outcomes for the Total T5, and T1 results were very similar; T3 requires some further interpretation. The cohort compared to SGH control results for T1 and T5 strongly support the hypothesis of this thesis that intervention has a significant effect on patient rehabilitation. The marginal differences between SGH study and cohort also suggest that the nurse intervention throughout the six-month rehabilitation programme (rather than clinical observation and intervention by a team initially only as in SGH studies) provides marginally better results in patient outcomes.

Prognostic Indices Compared to Outcomes

Table 5.8 above provides the Rahe, Norris, Schiller, and Modified

Schiller results using the criteria of the SGH Outcome scoring. The method of comparing unique scales was correlation in which observations by patient for each index was correlated with the SGH outcome scores for the cohort. The pearson moment correlations reported in Table 5.8 are "negative" in value showing an inverse relationship between the indices and the SGH outcome procedure scores. This is proper as the SGH outcome scale is based on highest score relating to lowest risk (or greatest progress), while the indices use the highest value as a measurement assessment for highest risk (or least progress).

If one reads across Table 5.8 results for each outcome (T1, T3, T5) for each index, one finds that the results quite strongly support the analysis of variance findings and the earlier index data. Specifically, T1 outcomes are highly correlated with each index (Rahe = 0.009; Norris = 0,002; Schiller = 0.0003; and Mod Schiller = 0.002). Using the same procedures, the T5 outcomes are strongly correlated with the indices (Mod Schiller only applies to prognosis for back to work physical factors). Yet T3 outcomes are not correlated well (Rahe = 0.427; Norris = 0.095; and Schiller = 0.037). The same implications hold here as above noted for the paired contrast t testing; Small numbers in the cohort may account for the insensitivity in deviations. However, the correlation results provide a stronger case for supporting a hypothesis that intervention makes a difference in terms of the T3 risk factors as the Rahe, Norris, and Schiller results (being rather greater and more reliable than first-used outcome scores) imply better prognosis for success than cohort outcome scores indicate -- and those will be substantially treated later in the chapter.

The remaining correlation results strongly support the combined use of these indices and the cohort outcome procedures for commenting of success of intervention. Put another way, the correlations do suggest consistency in outcomes and assessments so that results of the individual indices and outcomes reported and discussed later will have reinforcement, hopefully treated as reliable and valid measurements of the overall results and conclusions of this study. The individual risk factors and outcomes become the major area for treatment given these results, and the following section deals with these factors.

Assessment and Individual Outcomes

As great emphasis exists on return to work results in rehabilitation, this will be treated first in a series of points and results which also include Psychological Assessment results, Smoking results, Weight, Lipids, and Exercise results.

Return to Work

Table 5.9 provides a summary of return to work data at six months post infarct, classified by age and severity of infarct. In the footnotes to the table are explanations for those individuals not returned to suitable employment (4 cases). What was primarily interesting in these results is that age and severity of infarct made little difference to the return to work classifications.At the same time, there was no pattern to those not employed (or not permitted to return to work).

Table 5.10 reveals more detail in which return to work is broken down by week returned according to severity. Once again,one might suspect the severe patients to be returned later but in fact the more severe patients returned to work relatively early compared with moderate patients. All groups were dispersed in time for return to work, however, the 12th week post-infarct seemed to be a pivotal period in which seven patients returned with GP permission.

In Table 5.11, return to work is classified by age of patient and actual week returned. Again, no pattern emerges which would indicate that older men returned later. These two tables literally become visual scattergrams of reference points, and the only clear indication seems to be that between 12 and 16 weeks, patients are receiving general practitioners' permission to return to work.

Return to work data in Table 5.12 show difficulties at work or modifications in hours worked or conditions of work. The majority returned to work with similar hours and about the same responsibilities for work load and physical activity as experienced in pre-infarct employment. Of the 23 returned, 14 said they had no difficulties, and 6 more said they had initial difficulties. Only three said they had continuing difficulties. Two of those three were severe patients who had returned to unsuitable employment, experienced no reduction in physical demands of the work, and consequently admitted to having difficulties. These two were referenced in the Work Summary as having returned to work as (1) a Glazier with need to climb heights and (2)

Table 5.9

Cohort Return to Work Summary, Position at Six Months Post Myocardial Infarction Used for S.G.H. Outcome Scoring Criteris (n=31)

Comment Area:	Successful Outcome (Score Rate = 2)		Moderately Successful Outcome (Score Rate = 1)		Unsuccessful (Score Rate=0)
	Return to Former Employment	Working in Different Employment	Retired	Working in Unsuitable Employment	Not Working
	n (%)	n (%)	n (%)	n (%)	n (%)
Severity of Infarct:					
Mild 11 (36%)	8 (26)	- -	1 (3)	1 (3)[c]	1 (3)
Moderate 10 (32%)	6 (19)	- -	- -	1 (3)[c]	3 (10)
Severe 10 (32%)	5 (16)	- -	- -	2 (7)[a,b]	3 (10)
Overall 31 (100%)	19 (61)	- -	1 (3)	4 (13)	7 (23)
Age of Patient:					
30 - 39 1 (3%)	- -	- -	- -	1 (3)[a]	- -
40 - 44 5 (16%)	4 (13)	- -	- -	- -	1 (3)
45 - 49 6 (19%)	4 (13)	- -	- -	1 (3)[b]	1 (3)
50 - 54 7 (23%)	4 (13)	- -	- -	1 (3)[c]	2 (7)
55 - 59 7 (23%)	6 (19)	- -	- -	- -	1 (3)
60 - 64 5 (16%)	1 (3)	- -	1 (3)	1 (3)[c]	2 (7)

[a] Returned to Work as Glazier with need to climb heights and exposed to weather conditions

[b] Returned to work as Heavy Goods Vehicle driver

[c] Returned to work with heavy lifting and pushing; manual labour jobs.

Table 5.10

Return to Work: Week Post-Infarct by Severity

Category of Infarct	Week Returned: (n=23) 6	8	12	13	16	17	18	20	22
Mild	-	1	3	1	3	1	-	-	-
Moderate	1	-	3	-	-	1	-	1	1
Severe	1	-	1	1	2	1	1	-	-

Table 5.11

Return to Work: Week Post-Infarct by Age Group

Age of Patient	Week Returned: (n=23) 6	8	12	13	16	17	18	20	22
30 - 39	-	-	-	-	1	-	-	-	-
40 - 44	1	-	-	-	1	1	-	1	-
45 - 49	-	-	3	1	1	-	-	-	-
50 - 54	-	-	2	-	1	1	-	-	1
55 - 59	-	1	2	1	-	1	1	-	-
60 - 64	1	-	-	-	1	-	-	-	-

Table 5.12

Return to Work Difficulties or Modifications following M.I., Position at Six Months(n=23)

Comment Area:	Total n (%)	Mild n(%)	Moderate n (%)	Severe n (%)
Hours of Work:				
Reduced	9 (39)	2(09)	3(13)	4(17)
Remained the Same	13 (57)	6(26)	4(17)	3(13)
Increased	1 (04)	1(04)	0(--)	0(--)
Physical Activity at Work:				
Light(modified)	8 (35)	1(04)	3(13)	4(17)
Moderate (about same)	12 (52)	6(26)	3(13)	3(13)
Heavy (above same)	3 (13)	2(09)	1(04)	0(--)
Difficulties Summary:				
No Difficulties at all	14 (61)	8(35)	4(17)	2(09)
Initial Difficulties	6 (26)	1(04)	2(09)	3(13)
Continuing Difficulties	3 (13)	0(--)	1(04)	2(09)

Table 5.13

Return to Work Comparisons for Research Cohort and S.G.H. Study and Control by Those Returned in Six Months and Those Unemployed in Six Months.

Group and Status:	Fit to work and 6-Mo. Returned; Mean Week				Fit to work and 6-Mo. Unemployed. *			
	n	%	Mean	S.D.	n	%	(Pre-Infarct)	
Research Cohort	23	74	13.95	4.03	1	03	1	03%
S.G.H. Study	51	74	14.06	6.50	9	13	17	25%
S.G.H. Control	58	77	16.46	5.98	9	12	8	11%

*The fit-to-work data represents those fit prior to infarct and who were fit to work post-six months infarct. Clearly this excludes those who died, unable to work due to other causes, or who were retired and not in employment.

Table 5.14

Status of Patients Not Returned to Work(n=8) by Six-Months Post-Infarct in Cohort Study*

Reason for Not Returning to Work by Six Months:	n	%-Non	%-All
Physically unfit to work	2	25	06
Retired	1	12.5	03
Unemployed but Fit/Not Explained	1	12.5	03
Fit by Hospital Assessment;Not permitted by General Practitioner	4	50.0	13

*One death excluded, as in all other data, Total n=31; all percentages rounded so that nearest half is used. The use of percentages as noted elsewhere is for convenience and one is aware of the small numbers and restrictions.

Table 5.15

Return to Work by Number of Weeks Post Infarct for Cohort Study (n=23,74%)

Number of Weeks at Which Patients could return and had G.P. consent:	Number Returned n	Adj % Ret.	Cum. % Ret.
Six (6) Weeks	2	9	9
Eight (8) Weeks	1	4	13
Twelve (12) Weeks	7	31	44
Thirteen (13) Weeks	2	9	53
Sixteen (16) Weeks	5	22	75
Seventeen (17) Weeks	3	13	88
Eighteen (18) Weeks	1	4	92
Twenty (20) Weeks	1	4	96
Twenty-two (22) Weeks	1	4	100

the Heavy Goods Vehicle driver.

One individual's hours of work actually increased on his return, and three others said they had heavier work physically, but only one of those reported continuing difficulties. There does not appear to be inconsistencies in these findings as prior research by others have found adjustments to lighter work loads and fewer hours as well as instances of increased loads and hours in return to work data. More precisely, employers may not be aware of implications for the disease or job requirements are variable enough to suggest maladjustment initially. One might care to review Cay, et al (14, 1973), Finlayson and McEwan (53, 1977), or Groden, Semple and Shaw (60, 1971) for more on return to work expectations.

Return to Work Comparisons

Table 5.13 provides a comparison of cohort, SGH patients, and control group information for return to work. As shown, the SGH study and the cohort results were quite similar with the mean week returned respectively of 14.06 and 13.95. The control group mean week returned was 16.46. This result would not have been an expected one as the control group statistics with 77% returned actually appear between than either rehabilitation effort (74% for each group), yet the control group patients generally returned to work at later periods.

Unfortunately there is no clear way to present results that separate endogenous results of patient rehabilitation separate from exogenous effects of the economy and GP influence. This is not the place to make an extensive comment although these particular findings will be discussed further in later chapters. It is vital to point out that in Britain at the time of this study, one could be off work and be financially rewarded beyond net pay when at work, with medical permission. While there is no evidence for the studies other than the cohort, in the cohort interviews at least eight patients implied they were better off not working as long as the GP withheld permission, thus allowing claims for various monetary assistance from government sources.

Status of Those Not Returned

There were eight patients not at work at the end of six months in the cohort results. Table 5.14 summarises the reasons for being unemployed. Only two patients were physcially unfit to

work. One patient happily retired and had no reason to return to work (which was a stressful sales dealership in automobiles). The retired patient did not, by the way, cease making progress in exercise or other risk factor areas, but his exclusion does impact on the returned to work figures. The single unemployed, yet fit, patient was also unemployed prior to infarct and did not indicate intentions to actively seek work. The four others were all fit by hospital assessment but explicitely withheld from returning to work by GP's.

Table 5.15 provides a simple display of the cohort return to work figures as a summary statement to this section of the results. All patients returned are shown by week of return and a cummulative percentage of those returned is provided. The mode week for the cohort was the 12th week with 7 patients returned to work, and 88%, or 20 patients, had returned by the end of the 17th week. Similar data on the SGH control group is not available for comparison.

Psychological Outcome Assessment

The Eysenck and Middlessex Hospital Questionnaire procedures were used to develop patient group profiles and to allow group comparisons. Table 5.16 provides the results of initial cohort, SGH study, and SGH control group Eysenck scores (Form A). These are reported for two categories of assessment: Neuroticism (N), and Extrovertism (E). The published data from Eysenck tables are also presented for two groups: Normal Population scores, and Mixed Neurotic Group scores.

The Eysenck results for the cohort and SGH study are rather similar to the control group and to one another for both (N) and (E) outcomes. The results indicate that for all three groups, the patients are more neurotic and more introverted (less extroverted) than Normal subjects, but all patient groups were less neurotic and more extroverted than the Mixed Neurotic Group subjects. These results support the comparability of the three groups for various personality profiles, and the results for patients were predictable by the Eysenck Personality Inventory guidelines.

The Middlesex Hospital Questionnaire (MHQ) results further enhanced the validity and reliability of the study. Table 5.17

Table 5.16

Initial Psychological Assessment in Stage I, In-hospital Testing Using the Eysenck Personality Inventory (Form A): Research Cohort results Compared with Southern General Hospital Intervention Study and Controlled Patients.*

Eysenck(Form A) Personality Inventory -- Neuroticism=N, Extrovertism=E; 10-Day Results

	Myocardial Infarct Patients									Normal Population[a]			Mixed Neurotic Group Results[a]		
	Control			S.G.H. Study			Research Cohort								
	Mean	Std.D.	n	Mean	Std.D.	n	Mean	Std.D.	n	Mean	Std.D.	n	Mean	Std.D.	n
N	10.068	(5.52)	72	9.560	(5.52)	67	10.774	(5.29)	31	9.065	(4.78)	2000	14.410	(5.47)	61
E	11.365	(4.80)	72	11.520	(3.60)	67	11.194	(3.53)	31	12.070	(4.37)	2000	9.951	(4.34)	61

*Results for this and all other S.G.H. quoted data are through cooperation of S.G.H. Rehabilitation Unit, Naismith, et al (109, 1978), and the generous communications afforded the researcher by Dr. Gavin Shaw who was the cardiologist in charge of this research study at S.G.H.

[a]Published data from Eysenck and Eysenck (50, 1972).

Table 5.17

Initial Psychological Assessment in Stage I, Comparative Data Using the MHQ Middlesex Hospital Questionnaire: 10-Day Results, Cohort and S.G.H. Studies.±

Myocardial Infarct Patients(MHQ Total)									Local Male MHQ Study[b]				MHQ Outpatients		
Control			S.G.H. Study			Cohort			Manual Workers			Total Gp.		Psychiatric[c]	
Mean	Std.D.	n	Mean	Std.D.	n	Mean	Std.D.	n	Mean	Std.D.	n	Mean	Std.D. n	Mean	Std.D. n
31.1	(18.7)	72	30.4	(17.7)	67	32.7	(12.2)	31	27.9	(12.8)	63	25.4	(12.0) 100	40.8	(21.5) 62

± See Naismith et al, op.cit, above. [b]The Local Study is S.G.H.

[c] MHQ Published data, Crown and Chrisp (23, 1966).

displays the results for the studies as well as a local sample taken by SGH in the hospital catchment area from persons with similar profiles of work and social backgrounds as the patient groups. The MHQ published data on psychiatric outpatients are provided as well for comparison. Again, the patient groups were similar at initial assessment. The MHQ guidelines for overall psychological assessment indicate that a higher group mean is a partial predictor of less success in adjustment to disease or treatment. More specifically, the MHQ has individual categories to discuss, which follow, but overall, a mean score significantly below findings for psychiatric outpatients would imply greater prognosis for adaptation to the MI and to social, physical, and emotional environmental changes following MI. Given the means derived from the local male population study, all three patient groups might be considered, on average, less stable emotional and psychologically -- not a surprising result for initial assessments.

Table 5.18 is a summary of the results for both Eysenck and MHQ, initial and post-infarct six-month assessments. The "A" results in each instance are the initial results while "B" data are those gathered and assessed at six-months post infarct. It was hypothesized that through intervention, the nurse would be able to positively affect outcomes and provide support for adaptation for the patient and his family. The results displayed here are in part analysed to evaluate this position. Initial results were correlated with six month results (data "A" to "B" in each instance) using two-tailed correlation analysis. The differences were sorted for an observation of Mean Differences and evaluated using a *t* distribution, significance decision rule of 0.050, in each area of the two studies.

Three things are crucial to consider in these results. First, that the A-to-B results were highly correlated, thus indicating no significant differences between initial and six-month assessments for every test area. At face value this implies no significant change in patient group behaviour over time, thus no impact through intervention on psychological adjustment to the disease. The second crucial observation is that the *t* probability of differences between mean assessments (initial to six-month) shows only two results that are significant. Again, the implication at face value is that no

Table 5.18

Summary Table of Psychological Assessment Scores for Research Cohort Study Using Eysenck and MHQ Procedures. A=10 Day Results; B=6 Month Results (n=31)

Variable	Mean	Std.D.	Mean Diff.	Std.D. A to B	Std. Error	Two-Tail Test Corr.	Two-Tail Test Prob.	t Value	t Prob.
Eysenck A(N)	10.77	5.30	0.06	4.08	0.73	0.77	0.001	0.09	0.93
Eysenck B(N)	10.71	5.31							
Eysenck A(E)	11.19	3.59	-1.74	2.63	0.47	0.74	0.001	-3.68	0.001
Eysenck B(E)	12.94	3.78							
MHQ A (FFA)	5.29	3.72	0.65	2.70	0.49	0.74	0.001	1.33	0.19
MHQ B (FFA)	4.65	3.74							
MHQ A (PA)	4.45	3.21	0.65	2.24	0.40	0.77	0.001	1.60	0.12
MHQ B (PA)	3.81	3.35							
MHQ A (O)	7.84	3.10	0.45	2.20	0.40	0.71	0.001	1.14	0.26
MHQ B (O)	3.39	2.58							
MHQ A (S)	6.90	3.61	0.42	2.35	0.42	0.81	0.001	0.99	0.33
MHQ B (S)	6.48	3.91							
MHQ A (D)	5.00	2.92	0.42	2.75	0.50	0.56	0.001	0.85	0.40
MHQ B (D)	4.58	2.97							
MHQ A (H)	3.26	2.63	-0.29	2.69	0.48	0.59	0.001	-0.60	0.55
MHQ B (H)	3.55	3.20							
MHQ A (Total)	32.77	12.22	2.97	6.90	1.24	0.85	0.001	2.39	0.02
MHQ B (Total)	29.81	12.93							

FFA = Free Floating Anxiety
PA = Phobic Anxiety
O = Obession
S = Somatic
D = Depression
H = Hysteria

Eysenck N = Neuroticism
Eysenck E = Extroversion

impact for intervention is evidenced. That leads to the third general observation on standard deviations. All standard deviations for the cohort patient groups results were large relative to the mean assessment scores. Similarly, for the MHQ published data, the standard deviations (in Table 5.17) were large, and this pattern for MHQ results persists for SGH control, SGH study patients, and for the local male survey results. Not reported in this study was a heuristic exercise (statistically) in which the standard deviations were reduced systematically by ten percent, and the results were that only four areas remained insignificant. Those included the Eysenck (N), MHQ (S), MHQ (D), and MHQ (H) results. That does not deserve space in this study, but it may point out the possibility of weaknesses in instrumentality for predictive scoring.

The Eysenck (N) outcome was not expected to differ significantly, consistent with published data reviewed earlier, as the Neuroticism assessment is concerned with personality features and patterns of behaviour not expected to be altered in the rehabilitation effort. It was a concern of the research to assure that the intervention did <u>not add</u> to the (N) score. The results indicate that intervention did not affect this area of patient profile. The Eysenck (E) result was predicted to change, and the results were highly significant therefore reinforcing the hypothesis and the role of intervention. Specifically, patients as a group became more extroverted in their behaviour at six months compared to the initial assessment period.

The Total MHQ results were also significant (0.02) with mean assessment results of 29.81 (sd= 12.93) at six months, which compares favourably with the Local Male Catchment study result of 27.9 (sd= 12.8) , presumed to be a normal population observation.

<u>Assessment of Modifiable Risk Factors--Secondary Prevention</u>

The primary emphasis, noted earlier, which impacts on the significance of this study is changes in risk factors as a partial validation of the role of the nurse counsellor in rehabilitation.In this section, each of the risk factors are treated individually with comparable results for cohort outcomes. These changes are concerned with the hypothesis that intervention by the nurse will significantly affect patients' behaviour and therefore improvement in risk factor observations will be noted between pre- and post-infarct and in terms

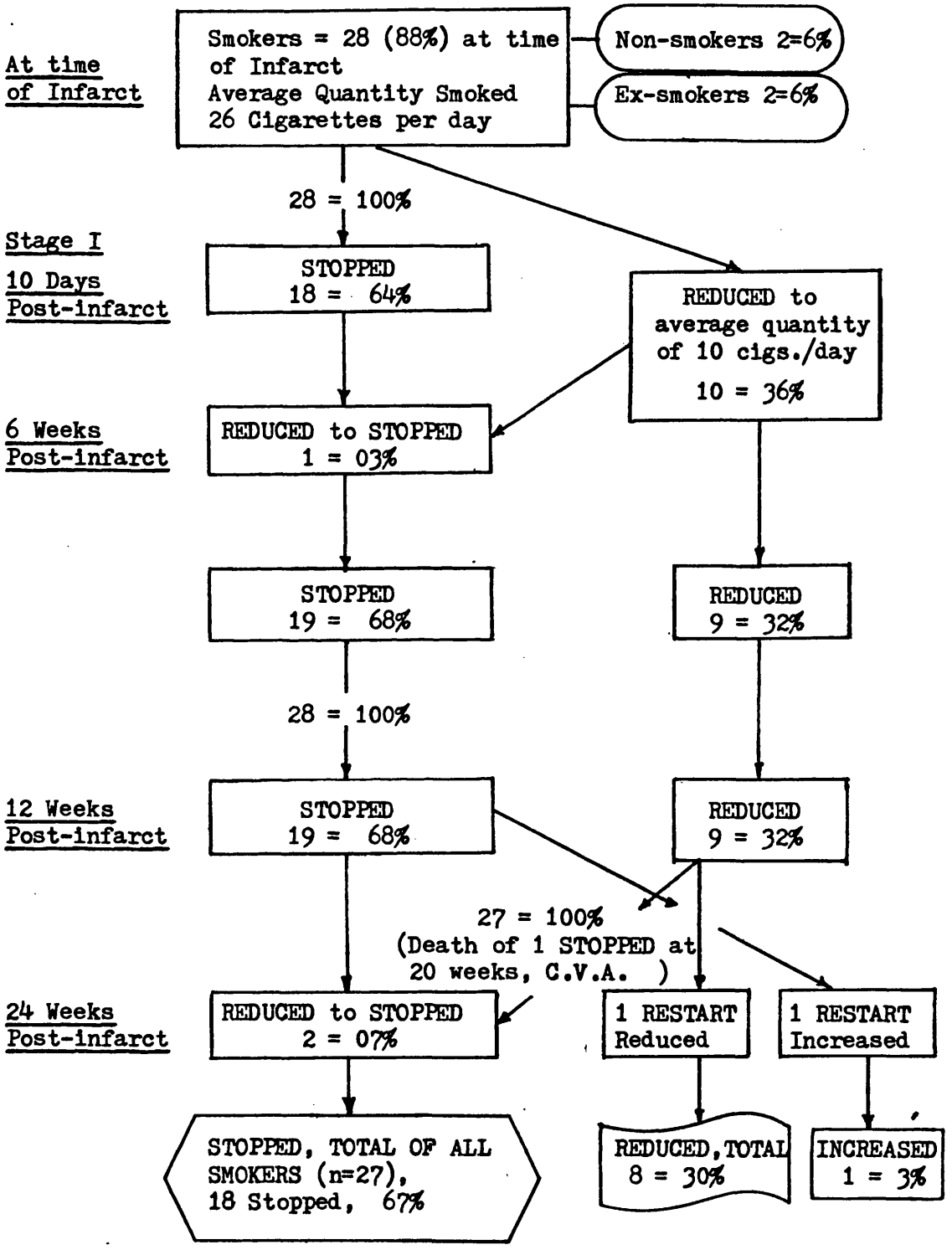

Figure 5.1

Cohort Study Smoking Results Through Six Months Anti-smoking Efforts. Original Number for all Study (n=32) Includes Death. STOPPED data Indicates Those who Maintained STOPPED record over Study Period.

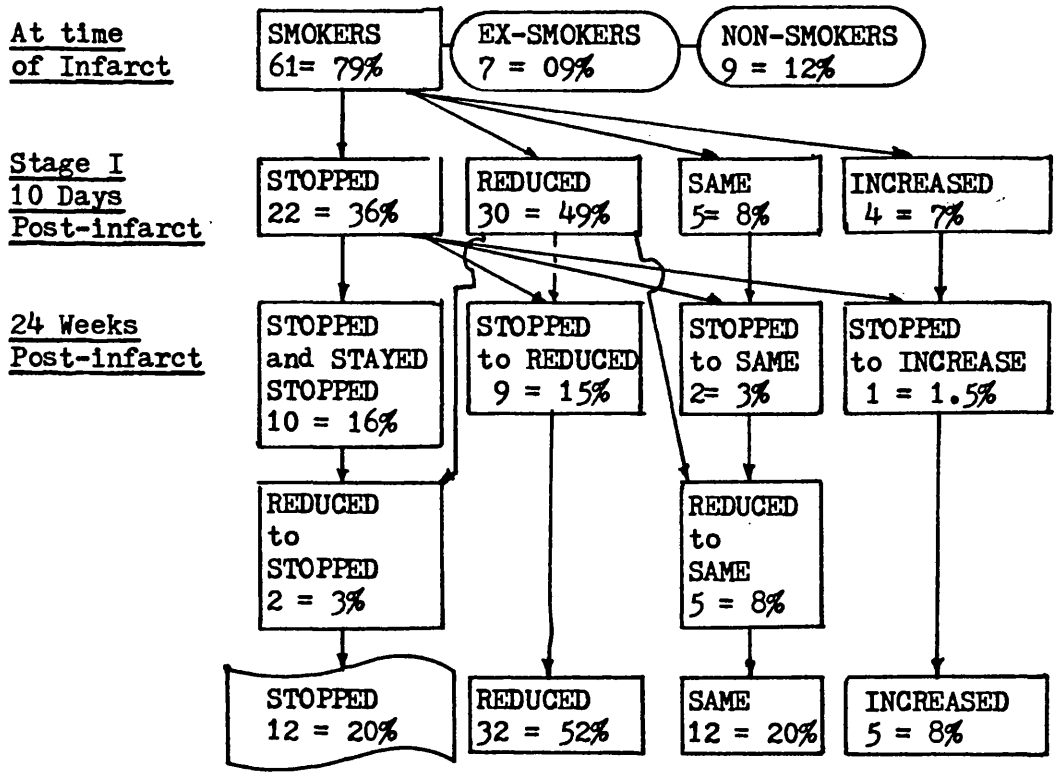

Figure 5.2

SOUTHERN GENERAL HOSPITAL, Control Patients
Smoking Results. Number = 61 Smokers Studied

Table 5.19

Smoking Results and Comparative Outcomes [a] for Cohort, S.G.H. Study, and S.G.H. Control

Group Considered	Percentage Results Summary
S.G.H. Control Patients	72% of total Smokers Stopped or Reduced
S.G.H. Rehabilitation Study	85% of total Smokers Stopped or Reduced
Research Cohort Study	97% of total Smokers Stopped or Reduced
S.G.H. Control Patients	20% Abstained smoking for six months
S.G.H. Rehabilitation Study	22% Abstained smoking for six months
Research Cohort Study	67% Abstained smoking for six months

[a]Source for S.G.H. Data on all smoking, Naismith,et al,(109,1978)

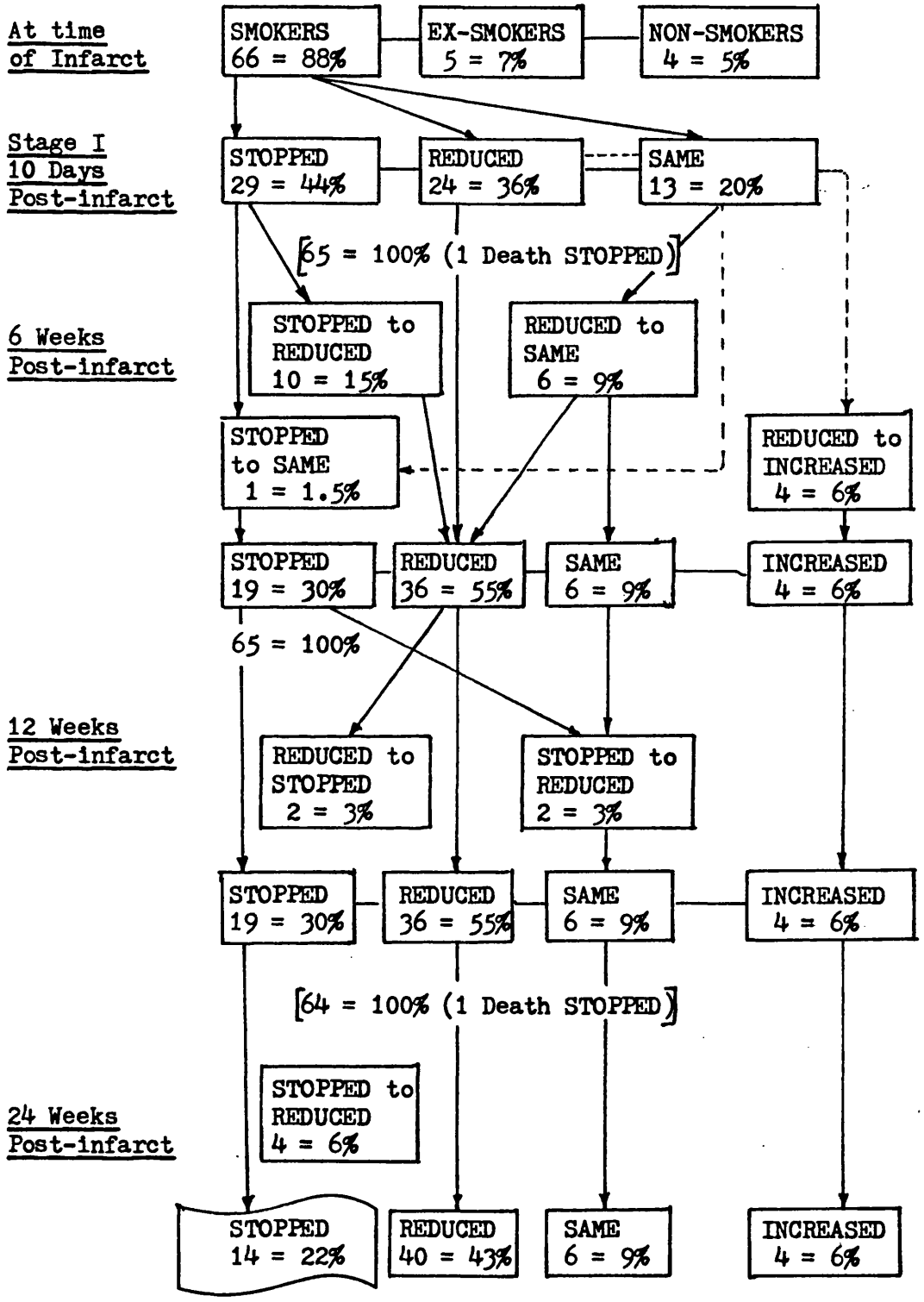

Figure 5.3
Southern General Hospital Intervention Patient Smoking Results (n=75); Smokers = 66.
Source: Naismith,et al (109),1978, Personal data and results provided for this study.

of actual results compared to expectations, or results, of other group outcomes.

Smoking Results

Smoking histories were given great attention in the cohort and SGH studies due in part to the heavy weight attached to the risks of smoking and due also in part to the ability to measure objectively the results of intervention. The illustrations which follow are meant to be self-explanatory in that flow chart figures are presented for each group and provisions are made to show progress or changes throughout the six-month rehabilitation effort.

Figure 5.1 is a chart of the cohort results while Figure 5.2 is the SGH Control Group results, and Figure 5.3 is the SGH Rehabilitation Study group results. Table 5.19 provides a summary of the main outcomes for the three groups. For determining the individual categories of STOPPED, REDUCED, and INCREASED, the following is offered for clarity. STOPPED includes mainly those who ceased smoking altogether during the Stage I hospital counselling sessions and stayed stopped throughout the six-month study period. Several instances of restarts, or those who reduced and then stopped are charted within the diagrams -- with explicit qualifications for time stopped or when reduced or restarted. The INCREASE presumes no reduction or increase, but no clear evidence of reduction.

As a primary focus on the smoking results, the Royal College of Physicians (see Finlayson & McEwan, 53, 1977, pg.111) estimates the percentage of male smokers in Britain between 60 and 70 percent of the total population. The cohort had 28 smokers (88%), while the SGH control group had 61 (79%), and the SGH study group had 66 (88%) smokers. In all groups there were several ex-smokers and several non-smokers as indicated in the charts.

The relevant results post-infarct six-month findings indicate that for the cohort, 18 stopped and stayed stopped (67%), and compared to the control group with 12 stopped (20%), the outcomes are rather dramatic. The SGH rehabilitation study did not directly intervene with continuous counselling support for smoking, or anti-smoking, efforts, and the results show 14 stopped (22%). For the cohort, 97% (27 of 28 smokers) decreased or stopped overall, and

these results were quite welcome to the researcher who placed emphasis on anti-smoking as set forth under methodology earlier.

A particularly interesting finding was the number in each study who stopped smoking at 10-days post infarct(following initial counselling in hospital), and the end results post-infarct six months. For the cohort, 18 initially stopped with two changes only over the rehabilitation period; one patient died, and one restarted. These two were replaced as one in the reduced category stopped by six-weeks and stayed stopped, and one more stopped at 12 weeks and stayed stopped for an additional 12 weeks.

For the control group, 22 stopped initially (36%), two more who had reduced stopped prior to six months, but only 12 patients eventually were assessed as STOPPED smokers, a significant slippage over time. For the SGH study group, 29% initially stopped yet only 14 (22%) remained stopped at six months. Again, significant slippage. It is hypothesized that the continuity of nurse counselling for the six-month rehabilitation period had a direct affect on these outcomes as SGH intervention was early and clinic oriented. This will be discussed in following chapters.

Weight and Plasma Lipid Results

As reviewed substantially in the literature chapters of this study, there are several conflicting and often confusing clinical recommendations concerning obesity, plasma lipids, and their associated roles as risk factors in coronary heart disease. Obesity has been associated with increased mortality and interrelated with other coronary risk factors such as hypertension and raised plasma lipids, specifically triglycerides. It is in the presence of these interrelated risk factors that obesity is itself considered a CHD risk factor.[1]

Following what appeared to be a consensus of opinion from published sources, it was felt that reducing the total amount of saturated fat and the excessive total calorie intake in the research cohort sould be part of secondary prevention goals. No standardised

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[1] See specifically Royal College of Physicians of London,(124, 1976; pp.44-51); also see Oliver, Michael (116,1976; pp.214-218), Morris,J.N. (104, 1977; pp.1307-1314),and Editors, Lancet(47,1977;p.80).

laboratory guidelines were used in this study, however plasma lipids were evaluated by SGH procedures and the individual consultants. The procedures were repeated for observations at 6, 12, and 24 weeks for this specific study. The results reported here reflect changes in observations over the rehabilitation period plus weight observations in parallel clinical visits.

Figure 5.4 is a flow chart displaying the weight changes and cohort study results. The criteria in each instance is based on Desired Weight, clinically determined at Southern General Hospital for height, plus 6 lbs.(2.8 kilos). Only 19 of the 31 patients were at desired weight (DW) or less than 6 lbs over that weight at initial assessment (10-days post-infarct).At six months post infarct, only 18 patients were at desired weight, with several changes during the research period.

The first important observation made was that four patients immediately gained weight even with restricted diets for fats and calorie intake. On inquiry, each of the four expressed trouble staying on the recommended diet schedule while also trying to cease smoking. Two more increased weight to beyond the six-pound limit by the 12 week clinic. None of the increases through the 12th week had increased by more than one stone, however, one patient had increased 35 pounds by the 24th week. He became the only patient at the six-month clinic to be at desired weight plus more than two stones, and it was observed that he was a heavy smoker who had stopped and stayed stopped and also who chose not to reduce fat intakes.

The four patients who were more than two stone overweight (one patient more than five stones overweight) reduced significantly, two reaching desired weight and two reaching less than a stone overweight. The greatest progress was a 45-lb loss by the five-stone-plus patient. So while the end results do not seem significant at first glance, the Tabled data indicate that progress was made by all four patients in the extreme obesity category. All patients who gained weight were those who stopped smoking and stayed stopped, and the weight pick up occured early in the rehabilitation period. One patient who initially gained weight (and had also stopped smoking) later reduced weight for a net five-pound loss.

The incidence of weight changes, particularly the gains in early

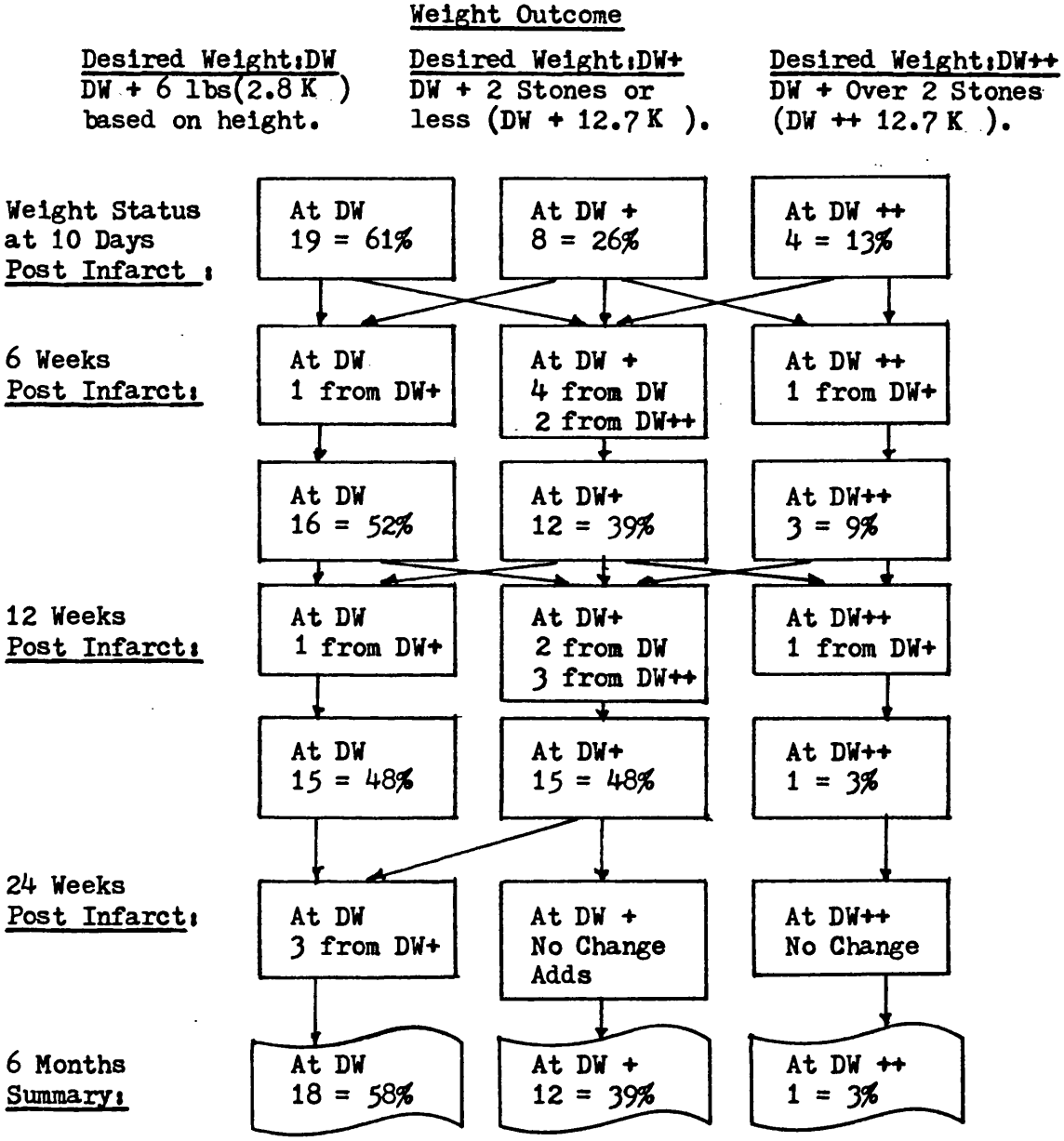

Figure 5.4

Cohort Study Weight Outcome Summary Changes

stages of rehabilitation, fit well when compared to smoking habits and changes over the study period. This in fact was expected, as several studies indicate a high correlation between weight increases and reduced (or stopped) smoking.[1] Table 5.20 displays final weight results by smoking classifications, and while the nurse counsellor

[1] See an editorial for summary review of obesity and smoking-related problems of weight control (35, 1977; pp.115) British Medical Journal.

Table 5.20

Final Weight Results at 24 Weeks Post Infarction - by Smoking Results

	Smoking Status				Total Patients
	Ex-Smoker	Non-Smoker	Stopped	Reduced	
D.W. remained the same	1	-	10	4	15
D.W. gained 5 - 10 lbs.	-	-	3	-	3
D.W. gained 35 lbs.	-	-	1	-	1
D.W.+ remained the same	-	-	2	2	4
D.W.+ gained 10 lbs.	-	-	1	-	1
D.W.+ lost 5 - 10 lbs.	1	-	1	1	3
D.W.+ lost 1 stone	-	1	-	-	1
D.W.++ lost 2 stones	-	-	-	1	1
D.W.++ lost 3 stones	-	1	-	-	1
D.W.++ lost 45 lbs.	-	-	-	1	1

was mentally prepared for the problem, emphasis was placed on supporting anti-smoking behaviour even at early expenses for weight increases among several patients. Yet 12 of the 17 patients who stopped smoking were able to maintain weight control through attention to diets with less fat and calorie intake.

Table 5.21 provides a summary of the often erratic fasting plasma lipid levels. Overall, progress was achieved in all instances with the exception of the one individual previously reported who gained 35 pounds or more. Only four patients (13%) were at target lipid levels at the six-week clinic, but by the 12-week clinic, the number increased to seven patients (23%), and at 24 weeks post-infarct, nine patients (29%). Clearly this is not a singular success but the "progress" category also increased from an initial 11 (35%) to 14 (45%) of the cohort patients. Only eight patients showed no substantial progress over the 24-week period, yet that was down from 16 (52%) at initial six-week clinic assessment. For seven of these eight "no progress" patients, the laboratory results revealed no pattern of plasma lipid levels; all but one varied test to test.

It is interesting to note that the highest cholesterol levels reported at each clinic changed only slightly, down from the high of 10.0 at six weeks to 8.0 at 12 weeks, and 9.7 at the final 24-week assessment. Yet the change in triglyceride levels was significant, down from 6.32 at six-weeks to 5.89 at 12 weeks, and finally to 2.60 at 24 weeks.

Table 5.22 provides the results of lipid outcomes and weight classifications at the end of the six-month rehabilitation period. The weight classifications are the 10-day initial assessments, and the lipid levels are those observed at six months. From the table, one can see that the best progress or success came in the area of desired weight patients (those at desired weight initially), but also the major failure came in the same classification; namely, the one patient who gained 35 or more pounds and also had abnormally high (and increased) lipid levels, specifically triglycerides.

A higher number of patients in the target lipid category were from those with desired weight, and those patients who had lost

Table 5.21

Lipid Categories, Cohort Study Results Summary

Category	6 Weeks	12 Weeks	24 Weeks
Target Category Ser.Cholesterol 5.2 mml/1 or less Ser. Triglyseride 1.1 mml/1 or less No Lipoprotein reported	4 (13%)	7 (23%)	9 (29%)
Progress Category Ser.Cholesterol 6.5 mml/1 or less Ser.Triglyceride 2.0 mml/1 or less No Lipoprotein reported	11 (35%)	11 (35%)	14 (45%)
No Progress Category Ser. Cholesterol +6.5 mml/1 Ser.Triglyceride +2.0 mml/1 and/or Lipoproteins reported	16 (52%)	13 (42%)	8 (26%)
Summary Ser.Cholesterol 6.5 mml/1 or less			
Ser.Triglyceride 2.0 mml/1 or less	15 (48%)	18 (58%)	23 (74%)
And No Lipoprotein reported			
Highest Cholesterol	10.0	8.0	9.7
Highest Triglyceride	6.32	5.89	2.60

significant amounts of weight (two stones up to 45 pounds) had reached target lipid levels or were making substantial progress toward target lipid levels.

Overall, the weight and plasma lipid level results indicate progress, generally, but no clear provision for a statement as to a rigorous interpretation of the rehabilitation effort. On a descriptive note, interviews held with wives and patients at home visit sessions indicate positive commitment to the dietary recommendations by 27 of the 31 patients (responses to the several questionnaires). The patients and wives also noted in 30 of the 31 cases a clear understanding of the dietary recommendations and

Table 5.22

Cohort Results, Weight at 24 Weeks Post-infarct by Lipid Categories; (Desired Weight=Target +6 lbs)[a]

10-day Wt.Score	6-Month Change	Lipid Outcome Scores[b]		
		Target=2	Progress=1	No Prog.=0
At D.W. =2	Weight Same/Steady	5	8	2
	Gained 5 to 10 lbs	1	1	1
	Gained 35 lbs	-	-	1
D.W. + One St. = 1	Weight Same/Steady	1	-	3
	Gained 10 lbs	-	1	-
	Lost 5 to 10 lbs	1	1	1
	Lost 14 lbs	-	-	1
D.W. + Two St. = 0	Lost Two Stones	-	1	-
	Lost Three Stones	1	-	-
	Lost 45 lbs	-	1	-

[a]Desired Weight (D.W.) is Target + 6 lbs as determined at S.G.H. Study; Outcome Scores 2=Target DW; 1= Target + 1 Stone; 0=Target + 2 stones.

[b]Lipid Target Categories follow S.G.H. Outcome Scores.

the implications for risk and overweight. All 31 patients and wives (or family members) were aware of target weights and, when necessary, the need to reduce. All who gained weight indicated they were aware of the weight gain, of excess eating, and as noted earlier, the smokers particularly had trouble controlling calorie intake.

Given the guidelines of this study, success in these areas would appear to be best measured by the ability of the nurse to provide adequate information and reinforcement while also making marginal progress for weight targets with most and having marked success with several patients.

Exercise Results

The specific exercise programme followed in this study was part of a larger study in progress at Southern General Hospital, the results and guidelines for clinical outcomes being unreported here. It must be noted that the cohort patients became part of this testing

and the SGH larger study, and while the consultants and staff at the hospital were quite generous with other data from their studies, it seems perfectly acceptable for them to reserve the exercise results including those of the cohort patients. The results reported in this study are therefore not all inclusive of the rehabilitation efforts afforded the individual patients, yet those which can be reported are provided in the three tables which follow.

Table 5.23 provides guidelines and outcome categories for each patient in the cohort for both work-related and leisure exercise. As the tabled data indicate, very little difference was found between pre-infarct work-related exercise and the work exercise experienced six-months post infarct. The information of course relates to those who were at workprior to infarct and those returned to work (n=30, n=23, respectively). The change in exercise for work-related observations may be in fact entirely due to lack of evidence for those not returned to work. The leisure-related exercise results clearly tell a different story.

For 31 patients pre- and post-infarct, there were 17 changes of exercise habits. While 20 patients had been sedentary in life style exercise habits prior to infarct, only six remained sedentary at six months (two of those being clinically unfit to take on an exercise programme or more than minimal exercise at leisure). Ten of those patients became ambulatory by six months, and six having achieved strenuous exercise habits. One of those latter six eased off his exercise habits for a net five patients in the final assessment of strenuous exercise. One who had had strenuous exercise prior to infarct became ambulatory while one more ambulatory became strenuous in the final analysis.

The role of the nurse counsellor in these matters generally was one of reinforcement for clinical recommendations for patient exercise programmes. That is to say, the nurse did not take it upon herself to prescribe but only to inform patients of exercise testing results, to facilitate communications between patient, consultant, and general practitioner, and to give encouragement and recognition to patient and family for progress in exercise activity. However, through the interviews and home visits, a number

Table 5.23

Exercise Results for Cohort Study Pre- and Post-Infarct(6 Month Data);Work & Leisure.

Category	Work Related Exercise		Leisure Related	
	Pre-Infarct (n=30)*	6-Mon.Post (n=23)	Pre-Infarct (n=31)	6-Mon.Post (n=31)
Strenuous Brisk walking over 2 miles daily or exercise to max capacity noted.	5 (17%)	4 (17%)	1 (03%)	5 (16%)
Ambulatory Regular walking up to 2 miles daily or exercise regular/gentle.	16 (53%)	13 (57%)	10 (32%)	20 (64%)
Sedentary No regular habits for exercise	9 (30%)	6 (26%)	20 (65%)	6 (20%)

*One patient unemployed pre-infarct; percentages are by category.

Table 5.24

New Leisure Interest in Exercise 6 Months Post-Infarct (n=25) *

Type of Interest/Exercise	Number/Patients
Walking up to 2 miles per day	20
Walking over 2 miles per day	4
Fishing (Regularly)	2
Gardening(Regularly)	8
Jogging(To recommended Capacity)	3
5BX Fitness Exercises	11
Home Decorating/Fix up	3
Golf (Regularly)	3
Cycling (Regularly)	1
Squash	1
Bowling	2

*Multiple Interests by several result in more than 25 numbers of interests per patient reported(6=none)

Table 5.25

Exercise Summary at 6 Months Post-infarct by Severity of Infarct; Cohort Outcomes

Type of Exercise	Severity of Infarct		
	Mild	Moderate	Severe
Work (Total=23)			
Strenuous	-	2	2
Ambulatory	5	4	5
Sedentary	4	1	-
Leisure (Total=31)			
Strenuous	2	1	2
Ambulatory	8	6	6
Sedentary	1	3	2

of recommendations were made in terms of kinds of exercise and in helping patients to set up progressive distances for daily walking. Table 5.24 indicates patient interest in a variety of exercise-related activities, all of which were encouraged according to the patient's interest, yet a definite interest was maintained for daily, measured brisk walking with target increases over time.

The leisure-time exercise programme was also considered a vital aspect of the intervention counselling, and this emphasis followed published reports which indicate leisure exercise to be associated with lower levels of CHD risk, particularly among young and middle-aged males.[1] The focus of the counselling was therefore to alter leisure activities and modify behaviour among patients who had previous histories of sedentary life styles.

The results show that 25 patients (of the 29 fit to take at least ambulatory exercise)were walking relatively long distances daily; ie., two miles or more. Of those, 5 were involved in the more strenuous activities of playing squash, cycling, or jogging,

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[1] See Hickey, Noel, et al, (69, 1975; pp.507-509) in which leisure exercise is noted as important while work-related exercise had no significant effect on lessened risks.

and eight more patients had multiple interest in regular exercise for leisure.

Table 5.25 relates the exercise classifications to the severity of infarct with several interesting results. In general, the severity of infarct did not appear to hamper the patients' efforts to institute and maintain exercise programmes consistent with targets set through clinical analyses. Still, two patients of the 10 severe infarcts were able to develop strenuous exercise programmes, six more became ambulatory which amounted to progress at a significant level, and the remaining two were not fit for more than minimal exercise efforts. For the leisure exercise regimens, those patients in mild and severe classifications seemed to make the most progress.

Results of Questionnaire Responses on Nurse Counselling

Separate from the results of outcomes for risk factor counselling, intervention for weight control, smoking, lipid level control, and clinically controlled exercise programmes, an attempt was made to validate the nurse's role in coronary rehabilitation through questionnaire response. Two types of response were solicited, one from the general practitioner involved with the cohort patient, and one from the patient and family (spouse or relative). Clearly, the results cannot easily be submitted to a reasonable statistical procedure with a total cohort of only 31 patients, and the social survey limitations of cell size for categories of responses. Therefore in both groups of surveys, the total results are reported here with patient, spouse, and general practitioner comments and suggestions.

General Practitioners Response

Table 5.26 is provided with a display of the questionnaire results. The questionnaire is replicated in the appendices. A total of 27 GP's responded (87%) while four did not respond. A patient cross-reference number is provided so the reader can compare responses between GP and Patient/Spouse which follows in Table 5.27. As the results show, all questions were answered affirmative with two exceptions who answered with reserved comments (Cross #7 and #12).

Table 5.26

Results of Cohort Study of General Practitioners' Quesionnaire Survey Responses. Thirty-one sent out(cross referenced to the Patient Numbers in Patient Questionnaire Response). Of those Sent Out, Twenty-seven were returned completed (87% Response).

Questions Asked: 1. Was the 6th Week Summary Letter sent by the nurse a worthwhile addition to the consultant's summary?

2. Did the patient and family appreciate home visits and benefit from counselling?

3. Would you make use of a nurse in this role if she were available?

4. Would you like to see more of this assistance given to cardiac patients?

Cross Pt. #	Q. #1	Q. #2	Q. #3	Q.#4	Comments or Suggestions:
1	Yes	Yes	Yes	Yes	Total service was appreciated by myself and patient as he needed extra support.
2	Yes	Yes	Yes	Yes	More of this type of service is needed.
3	Yes	Yes	Yes	Yes	Patient gained confidence rapidly.
4 and 5	Yes Yes	Yes Yes	Yes Yes	Yes Yes	I feel your service has given these patients greater confidence and better health motivation than those whom you have not attended.
6	Yes	Yes	Yes	Yes	No comment made.
7	Yes	Yes	+See Note	Yes	+ I doubt it -- I have great difficulty getting nursing staff for general nursing care 52 weeks a year, so feel that to delegate to this capacity would increase problems.
8	Yes	Yes	Yes	Yes	No comment made.

(Table Continued)

Table 5.26 Continued

Cross Pt. #	Q. #1	Q. #2	Q. #3	Q. #4	Comments or Suggestions
9	Yes	Yes	Yes	Yes	No Comment Made
10	Yes	Yes	Yes	Yes	Feel that cardiac rehab. assistance should be dependent on mental attitude and needs of patient. I think this condition needs a bit of "playing down".
11	Yes	Yes	Yes	Yes	No comment made.
12	Yes	Don't Know	No	No	Already have health visitors attached to practice to give counselling.
13	Yes	Yes	Yes	Yes	No comment made.
14	Yes	Yes	Yes	Yes	No comment made.
15	Yes	Yes	Yes	Yes	No comment made.
16	Yes	Yes	Yes	Yes	I would like to see this type of service extended to patients leaving hospital after other types of illness other than MI (C.V.A.).
17	Yes	Yes	Yes	+Yes	Gives the patient confidence. + Others too.
18	Yes	Yes	Yes	Yes	Patient and family more aware of health needs.
19	Yes	Yes	Yes	Yes	No comment made.
20	General Practitioner Did Not Return Form for Patient #20.				

(Table Continued)

Table 5.26 Continued

Cross Pt. #	Q. #1	Q. #2	Q. #3	Q. #4	Comments or Suggestions
21	Yes	Yes	+Yes	Yes	+ With all hospital patients. This service is valuable and needs extending as many post-MI patients have numerous questions and doubts that can be answered and helped by counselling -- especially the intelligent and apprehensive patients who are aware of the difficulties they face.
22	General Practitioner Did Not Return Form for Patient # 22.				
23	Yes	Yes	Yes	Yes	No Comment made.
24	Yes	Yes	Yes	Yes	Really helped patient's confidence!
25	General Practitioner Did Not Return Form for Patient #25.				
26	Yes	Yes	Yes	Yes	No Comment made.
27	Yes	Yes	Yes	Yes	Would like to see more of this service.
28	Yes	Yes	Yes	Yes	No comment made.
29	General Practitioner Did Not Return Form for Patient #29,				
30	Yes	Yes	Yes	Yes	Increased confidence!
31	Yes	Yes	Yes	Yes	No comment made.

The general practitioners' responses were strongly in support of nurse counselling of the type provided, and several expressed in comments definite feelings that such efforts should be expanded. A consensus of the comments indicates that the GP's felt their patients appreciated the counselling, the continuity of attention, and the support provided through home visitations. Several comments also noted specifically that patients' confidence increased as well as motivation to change to better health behaviour. In all instances, the general practitioners expressed that the summary letters sent by the nurse to them were worthwhile additions to the consultants' summaries. In only one instance did a GP doubt that he would make use of a nurse in this capacity if she were available. In all instances, the GP's expressed a desire to have more nurse counselling instituted for cardiac patients, and in several instances the responses included notions that this type of service might be expanded to other patients coming out of hospital.

It was particularly rewarding to see so many general practitioners taking time to write in comments and suggestions beyond merely a yes or no answer to the specific questions. For reader clarity, an actual letter sent to a general practitioner is reproduced in the appendices (without patient personal information).

Patient & Spouse Responses

Table 5.27 displays the results and comments taken from both patients and their wives(when married). The source document for the combined reporting of responses is the Phase II assessment form (last two pages) used at six-months post-infarct, and which is included in the appendices. Comments are provided as quotes from the questionnaire responses.

The responses would appear to be self-explanatory, however a few summary comments are in order. In the first and sixth columns of Table 5.27, patients and spouses respectively were asked to tick a category of rehabilitation effort which they felt had the greatest benefit to the patient in his recovery. Several patients responded by ticking multiple answers, yet the results show that 24 patients placed emphasis on home visits as most helpful; seven

Table 5.27

Results of Cohort Patient Questionnaire Concerning Nurse's Role in Rehabilitation

#	Patient Comment of Most Helpful Effort	Patient's Attitude at 6 Months			More Advice Needed	Spouse Comment of Most Helpful Effort	Comments from both Patient and Spouse unsolicited on an open remarks area of questionnaire
		Physical	Emotional	Sexually Active			
1	6 week clinic and exercise	As prior to MI.	As prior to MI	As prior to MI	No	1st home visit after discharge.	Home visits greatly appreciated; easier to talk at home.
2	6 Week clinic & Bike Tests.	As prior to MI.	As prior to MI.	As prior to MI.	No	Home visit after discharge.	Extra Attention appreciated--helped adjust at home.
3	6 Week Clinic "gave me such Confidence	Much Better	As prior to MI.	As prior to MI.	More in ICU	1st Home visit after discharge.	Spouse: I was very frightened and uneasy talking at hospital, so pleased to have home visits which removed some of the fear and worry.
4	First Home Visit	Better	Better	As prior to MI.	No	Home visit before Husband came Home.	It was so important to know we had a phone number to use if needed. Even although we never used it, it was such a comfort to know someone was truly concerned about us.
5	Rehab in Hospital and Home Visits.	Better	As prior to MI.	Better	Never got advice or explain in ICU.	Home Visit before husband's discharge.	Patient: I found it very difficult to reduce smoking in hospital while all around were smoking. Spouse: It was so important to know I was included and the home visits gave me knowledge and confidence--very appreciated.

(Table Continued)

Table 5.27 Continued

#	Pt Comment Effort	Patient Attitude at 6 Months			More Advice Needed	Spouse Comment Effort	Comments; Spouse & Patient
		Physical	Emotional	Active Sexually			
6	Rehab in Hosp. and Home Visits	Better	Much Better	As prior to MI.	No	Home Visits especially one prior to discharge.	It was very important to me to get answers to questions as they arose; helped me control my fear. Rehabilitation help--First Class! It made all the difference; really important to know who to call if needed. Spouse; Felt so relieved after the pre-discharge visit and I began to gain confidence and see how I could help. Then had no time to worry.
7	In-Hosp. Rehab Visits.	Worse	Worse	Worse	Hospital Staff.	Home Visits	Spouse; Felt husband discharge too soon. Our relationship strained;He is irritable, a different man. Helped to talk this out with someone.
8	Home Visit and Exercise	Much Better	As prior to MI	As prior to MI.	No	--	Patient; Wife died 16 weeks after my discharge; Nurse's support at that time was invaluable.
9	Home Visits & Bike Test	Better	As prior to MI.	As prior to MI.	No	N/A	I know my limits but with advice and support I feel I have done so much better this time and I feel much more confident.(Previous MI)
10	Home Visits	As prior to MI	As prior to MI	As prior to MI	No	--	Questions were answered quickly. Contact with same person throughout the whole time was good.

(Table Continued)

Table 5.27 Continued

#	Pt Comment Effort	Patient Attitude at 6 Months			More Advice Needed	Spouse Comment Effort	Comments; Spouse & Patient.
		Physcial	Emotional	Active Sexually			
11	Bike Test and 6 Wk Clinic	Better	Better	Better	Hospital Staff.	Home Visits	Just good to know someone really cared and was there.
12	Home Visits	Worse	As prior to MI	As prior to MI	ICU/ Hos.Staff	Home Visit before Hus.Discharge	Very little explanation or "help" from doctors or hospital staff other than rehab nurse. "You were the only one who answered our questions."
13	Home Visits	Worse	Worse	Worse	No	All the Nurse's Help.	It has been a terrible strain. Husband frightened to do anything. You tell him to increase activity--everyone else "Take it Easy!".
14	Home Visits	Worse	As prior to MI	As prior to MI	No	1st Home Visit after discharge.	Just great to know someone cares!
15	Bicycle Tests	Worse	Worse	Worse	Hospital info very confusing.	Home Visits	Hospital visits gave me permission to increase activity, including go back to work. GP would not allow anything--makes it confusing.
16	Rehab Hosp. Visits.	Worse	As prior to MI	As prior to MI	More advice in ICU	Home Visits	"Phone Number Appreciated. Husband discharged too soon. Home visits gave both confidence. Spouse: I really never relaxed until I spoke with you. The Intensive Care experience frightened me terribly. It made all the difference when you came along. Questions answered and directions for care given.

(Table Continued)

Table 527 Continued

#	Patient Comment Effort	Patient's Attitude at 6 Months			More Advice Needed	Spouse Comment Effort	Patient & Spouse Comments
		Physcial	Emotional	Active Sexually			
17	1st Home Visit	As prior to MI	As prior to MI	As prior to MI	No	Home Visit before Pt. discharge	Helped to have questions answered clearly and promptly -- and good to have a phone number.
18	Hospital Rehab Visit and Home.	Much Better	Better	Better	No	--	After the explanation about the risks and my condition in hospital, I became a "believer". But the encouragement and support along the way gave me the will-power. (lost 45 lbs. in 6 months)
19	Home Visits	As prior to MI	As prior to MI	As prior to MI	No	Home Visits	Relations in marriage very strained before heart attack. In general, nurse's advice helped a lot.
20	1st Home Visit	Worse	Worse	Worse	No	1st Home visit before discharge.	Helped us both to define our limits and how to cope and to operate with these limits.
21	1st Home Visit after discharge	As prior to MI	As prior to MI	As prior to MI	No	pre-dischange visitation.	Phone number appreciated. Good to have the same assistance throughout the whole time.
22	Hospital Rehab Visits.	Worse	As prior to MI	As prior to MI	No help from Hos. staff.	Pre-discharge Visit and Home visits.	We were both so shocked and frightened So important to have consistent information, explanation, plus general support and phone number. Because we both look realistically at the future, contact with nurse sorted out confusion from time to time. It felt comfortable to talk to you unlike other doctors or nurses who all appear too busy.

(Table Continued)

Table 5.27 Continued

#	Patient Comment Effort	Patient's Attitude at 6 Months			More Advice Needed	Spouse Comment Effort	Patient and Spouse Comments
		Physcial	Emotional	Active Sexually			
23	Hospital Rehab Visits	Better	As prior to MI	As prior to MI	No	Home visit before discharge	Really so "muddled" at first and so relieved to have answers to questions as they came along.
24	6 Week Clinic & Exercise.	Much Better	Much Better	Better	No	Telephone Calls to Nurse.	Before 6 week visit, he was so frightened. He kept to himself and withdrew from all sexual relations--marriage really strained. After the visit, he was a different person and with continual support things went from "good" to "better".
25	6 Week Clinic Test	Better	Better	As Prior to MI	Hosp. Staff	Hospital Visit/Nurse	Spouse: Early explanations and the information were important.
26	Hospital Rehab Advice	As prior to MI	As prior to MI	As prior to MI	No	Home Visits	Thanks so much for everything but especially for assistance in obtaining home help.(wife invalid).
27	Home Visits	As prior to MI	As prior to MI	As prior to MI	Very little help from Hos staff./ Nurse Good.	Pre-discharge Visit at Home	More information should be given by doctors and hospital staff. So nice to see same person in hospital and after discharge at home.

(Table Continued)

Table 5.27 Continued

#	Patient Comment Effort	Patient's Attitude at 6 Months			More Advice Needed	Spouse Comment Effort	Patient and Spouse Comments
		Physical	Emotional	Active Sexually			
28	Home Visit	Worse	Worse	Worse	No	Pre-discharge Visits/Nurse	The nurse was the only "familiar Face" in a sea of confusion.
29	Home Visit	Worse	Worse	Worse	No	1st Home Visit before Discharge	So good to know you were available throughout all these months.
30	1st Home Visit after Discharge	Better	Better	Better	Hospital Staff Info.	Pre-discharge Visits	Appreciated written instructions and other informative literature with the personal contact.
31	Home Visits	As Prior to MI	Worse	As prior to MI	No	Home Visits	Extra attention and care contributes to confidence.

ticked the 6-week clinic, and four more noted the bicycle test assessment (which connotes the efforts of the six-week clinic).

Spouse response for the same question ran to a near consensus on home visits, with 16 (almost half) emphasizing the pre-discharge visit in which the nurse visited solely with the wife or family prior to the patient coming home. The remaining 15 responses emphasized home visits (where applicable). The individual comments by patients and wives provide a consistent theme in that they appreciated the continuity of nurse counselling throughout the rehabilitation period, appreciated reinforcement which gave the patient and family confidence to adapt and strive toward better health, and the information services (explanations of CHD, risks, rehabilitation, and implications for future behaviour).

Part of the questionnaire results dealt with attitude changes and the patient's individual assessment (validated by spouse information) on three particular points. Those included whether or not the patient felt at six-months post-infarct better (or worse) physically, better(or worse)emotionally, and had better (or worse) sexual relations than pre-infarct. Table 5.28 below summarises the outcomes of responses validated.

Table 5.28

Patient's Attitude at Six-months on His Physical, Emotional, and Sexual Acitivity as Related to Pre-infarct Behaviour.

Response	Physical Condition	Emotional Condition	Sexual Activity
Same as Prior to Infarct	9(29%)	17(54%)	20 (65%)
Better at 6-months Than Prior to Infarct	12(39%)	7(23%)	5 (16%)
Worse at 6 months Than Prior to Infarct	10(32%)	7(23%)	6 (19%)

It was interesting to note that 12 patients actually felt they were in better physical condition at six-months post infarct tham prior to infarct, and similarly, 7 patients felt emotionally

better off after the rehabilitation period. The questionnaire was set up originally to assess whether or not patients felt they had recovered pre-infarct conditioning, both physical and emotional, and respectively 9 and 17 said yes to this category. The changes in sexual activity were felt essential to question as several studies noted under literature review showed a great many patients not returning to normal marital relationships and therefore creating family strains.

Summary Remarks

The researcher is aware of the rather small number of cases reported statistically in these results, but the procedures used to make evaluations were chosen with the size of study in mind and the limitations to data comparisons. The primary concern has been with the intervention aspects of the nurse counsellor and subsequent relevant results which might impact of the success or limitations of a nurse practitioner working within similar guidelines for coronary rehabilitation.

The discussion and conclusions which follow will attempt not to replicate the outcomes or results reported in this chapter but an effort will be made to clarify and expand on the issues and implications for the role of the nurse in coronary rehabilitation from the viewpoint of improving the patient's overall pattern of behaviour, general family stability (or adaptation), and the impact of better communications among those involved in a similar programme.

CHAPTER VI

DISCUSSION OF RESULTS OF STUDY

Introductory Remarks

As an overview, it is appropriate here to give proper credit to the Southern General Hospital staff, consultants, and in particular, the cardiac rehabilitation team. That team consisted of Dr. Gavin Shaw, cardiologist in charge, Dr. L. Naismith, Dr. J.F. Robinson, supervising cadiologist for the Cohort, and Sister Mary MacIntyre. It was their research efforts and support for a nursing intervention cohort study that formed the core of research efforts reported here. It was due to the SGH results that a comparative study was made possible. This is not entirely an acknowledgement, but it is also a re-statement of the framework in which the discussion takes place.

Home Visitation

The foundation of the study was home visitation and initial in-hospital visitation by the nurse with patient, wife, and other family members when appropriate. This activity prevailed throughout the rehabilitation work, therefore it is important to present views on the visitation successes and limitations here.

The responses reported under results by patients and their general practitioners, wives, and family members provides a rather clear indication that they saw visitations as important aspects of the rehabilitation process. The results are from open-ended survey questionnaire information, and the response indicates that most patients and wives felt the visitations provided continuity of care, a consistent contact for help, a source for information about the disease, progress in rehabilitation, and adjustment, and more to the point, the visitation was viewed as a positive effort to help the patient reach targets of behavioural change. Specifically, that suggests success through unmeasureable outcomes such as having patients and family express greater confidence in recovery and return to active life. This is particularly supported by the response from the general practitioners.

In the questionnaire responses by all concerned, the notion of continuity and support (reinforcement) stood out. That is to say, the nurse was seen to be an active force in helping patients and family in the post-discharge(release) environment in which the patient is faced with adaptation problems compounded by family

and social responsibilities. The reinforcement aspect of the cohort study was the outstanding difference between the cohort and other published studies, and while statistical analyses do not provide a method of measuring the nurse's contribution directly, the implication seems rather clear; the nurse's intervention resulted in better rehabilitation results in all areas of the controllable risk factors. These points are taken up separately later in the chapter.

Community Nurse Visitations (Health Visitors)

The existing cadre of Health Visitors in Britain would seem likely candidates for roles in cardiac counselling, and an SGH survey noted that the Health Visitors in Glasgow were qualified professionally, yet did not normally become involved, for cardiac counselling. The SGH information is not reportable here, but the implications communicated to the nurse are that seldom do Health Visitors intervene and then only for "crisis situations". GP's apparently do not ask for intervention unless the patient is in a crisis situation. Most of the nurses working in this area were found to be well trained, yet experience generally centred on maternity problems and child-related home counselling.

Nursing Role Intervention

Patients in the cohort (and in the SGH study not reported here) were queried about the role of Health Visitors and their visits to family physicians. In no instance did a patient or wife express that they received counselling beyond the general clinical areas of interest. Patients apparently did not ask for such advice either. The patients also received no unsolicited help with non-rehabilitative aspects of adaptation either, and these included problems with relocation of housing, home-help care, financial assistance, or occupational counselling.

The role of the nurse in these areas became one of coordination rather than counselling, yet in several instances the need for help was critical. The physical housing situation was vital to one patient living in a high rise in which elevators often were not operating, or vandalised, and in another case, a patient who tried to take regular walking exercise was severely beaten and mugged only paces from his door.

Information counselling was a primary concern, and one of risk prevention and reinforcement for patient efforts. Counselling began on release from CCU with immediate and intension efforts for the

patient and included counselling with patient and family, contact with the general practitioner, and assessment of patient needs.

In terms of patient information, the results show that without this initial active effort to provide the patient with knowledge about his disease, rehabilitation, and future behaviour (needs and expectations), the patient would most likely be discharged with very limited information on any aspect of CHD. This point is strongly supported by SGH results, other studies reviewed in depth in earlier chapters, and the cohort patient and wife responses through questionnaires. Yet it is precisely the increased information that one has about the disease that forms the background for a rehabilitation programme from the patient's viewpoint. Put another way, without knowing needs and expectations, the patient has absolutely no direction for working out his problems in recovery or positive rehabilitation and return to active lifestyle.

The initial counselling for family members became vital to the success of the rehabilitation effort as wives and other family members became aware of the patient's limitations as well as the positive aspects of recovery. More importantly, the wives' needs and expectations were dealt with. Specifically, their frustrations with lack of understanding, potential of stress, and potential for negative rehabilitation efforts (such as overprotection) were attended by the nurse counsellor. It was through these early visits and counselling sessions that the family came to understand the disease better, to endorse rehabilitative efforts, and to plan a progressive rehabilitation effort with (generally) positive attitudes and a positive outlook for better health behaviour in the future.

In terms of secondary prevention, these points of discussion cannot be underrated! Reinforcement by the nurse, by family, by friends all made up the rehabilitation effort, and most stemmed from early attempts to ease anxiety about the disease, to explain rehabilitation, and to relieve frustration by answering questions when they arose. The continuity of the hospital-to-home health care became vital for precisely the same reasons.

The results of these efforts are best interpreted by the responses of patients and families since information services and the points of behavioural modification are in fact attitudinal

subject little to quantification but greatly to attitude evaluation. Nevertheless, the measured results for secondary prevention seem to provide a rather strong implication that where intervention occured, rehabilitation results for reduced risk factors were greatest. This is particularly evidence for the smoking results, early back to work results, weight control results, and attitude changes indicating reduced stress and increased exercise regimens. Again, these points will be treated later in the chapter.

The role of the nurse, particularly as a counsellor, also had a tremendous impact on information collected about the patient, his family, social networks, and progress in rehabilitation. In the initial assessments, clearly a well-designed instrument could be used by persons other than nurse practitioners, evaluated by consultants, and used by the hospital staff and GP's for either identifying patient profiles of risks (perhaps also historic profiles leading to causal implications and research) or future needs and limitations of the patient in his discharge status. The several indices used in this study became those information-gathering instruments along with the guidelines of the SGH study. They shall be treated momentarily, but it is important here to clarify that the role of the nurse in this went well beyond mere information gathering.

It was the continuity of information, gathering past data and historic profiles (both clinical and personal), and the active intervention with that information <u>in hand</u> by one individual which evolved into a synergistic result. The nurse was at once informed of the patient and family, familiar with the clinical data and the social environment of the patient and family, aware of limitations, able (in her training and background) to interpret that body of knowledge, and then asked to apply it all to a positive programme of after care and rehabilitation. The family and patient were aware of a focal person throughout the rehabilitation process, both in hospital and at home, became more secure in relationships (hence in communication and support), and together with the nurse sought to create a positive atmosphere for rehabilitation.

The role of the nurse took one other crucial aspect, that of providing information services to the general practitioner. She had

the unique advantage of communication linkage with the hospital consultants, the patient, family, CCU and ward nursing staff, social welfare workers(and others), and the general practitioner. These linkages were personal, individual, and subject to little restraint. As a result, all parties involved had greater access to information, to assessment data, to rehabilitation progress, and therefore to attend patient needs. Without the nurse counsellor's presence for communications, information reverts to letters, occasional visits by patients to clinics, little or no family contact with professional staff members, and an unstructured communication channel through which the patient must get help.

These points are not peculiar to the cohort study. The several sections relevant in review of literature chapters speak rather pointedly to these facts, and to breakdowns in communications within existing channels. For the cohort study, the responses by general practitioners, patients, wives, and consultants bear out the value of this communicative aspect of the role of the nurse counsellor.

The several assessment clinics have been well presented elsewhere, but here the nurse's role is noted. At the six-week and 12-week clinics, patients were evaluated. The nurse took an active part in much of the clinical examination work, again adding to the overall continuity of care and reinforcing patients' progress and family understanding of rehabilitation. Consultant's simply would not have the time (or it would be a costly use of consultants) to handle the full clinic procedure, let alone seek information or to counsel patients on assessment points. In this context, the nurse became a better economic use of manpower resources at the hospital, but also became a stronger source for outward communication to those concerned, as noted above. The response from patients (on the questionnaire results) indicated that most felt the clinic visits were enjoyable and important aspects of their overall rehabilitation programmes. Yet patients also indicated in response prior to the first six-week clinic visit anxiety over returning to the hospital to be examined. The visit was seen as a potentially impersonal "go to hospital, wait in line, see a doctor" type of affair. Yet after the visit, patients felt reassured of their progress, supported in their efforts to get back into the

mainstream of life in their communities, and in general happy that they were given direction and assessment attention by both consultants and nurse counsellor.

The 24-week clinic evaluation became a focal point for reward and reinforcement. That is to say, since most patients (23 of 31) were back to work and the remainder except one were making very satisfactory progress in rehabilitation, the 6-month post-infarct assessment was a highly positive experience. Patients and families had a great deal to be proud of as they reviewed the previous six-month period and assessed the progress of behavioural change. The clinical information supported those who systematically reduced weight, stopped smoking, took exercise, and adapted to their disease situation. This was reinforced again by the overall assessment report and letters sent to GP's at the time which became an additional way to support future needs of the individual patients -- as well as to provide a service for the GP. The results here are supported by the evaluations offered by patients, wives, and general practitioners in response to their questionnaires. It is further enhanced by the actual results of changes in data taken through the prognostic indices and the psychological assessment instruments.

Prognostic Indices and Psychological Assessment

The use and review of results of indices and assessment tools will not be attempted here as the results section clearly rather detailed information. However, these instruments were more than mere research tools for the nurse counsellor. They became working documentation data bases for a variety of helpful counselling points and very specific insights into patient problems. For clarity, the reader is referred to Table 5.8 which shows correlation results of the indices peculiar to the cohort study. Each of the indices had its specific use in the study, and in general all indices lent support to the cohort results as being significantly more successful over control groups (or published guidelines data) so that at once the indices are in part validated and in part supportive of the success of the nursing intervention study.

Here an attempt is made to speak to each index and assessment tool in terms of how they were used in the cohort study. In each

instance, the reader is asked to look at the results chapter for detailed information on outcomes and scoring.

Schiller and Modified Schiller Index

The Schiller Index was used in conjunction with others to assess initial conditions and risk factors of each patient, and in so doing, to provide the nurse with guidelines for handling counselling services designed to reduce controllable risk factors and help recovery. Moreover, the index was used to compare progress over time and to provide feedback to the patient, the consultant, and the GP on each patient. The total score in each instance was found to be reliable and a good predictor of each patient's overall condition.

Most importantly, the index allowed the nurse to determine individual priorities for each patient. Without such an index or similar device which individually scores the categories of risk and forces one to consider systematically patient and family histories, the nurse would be left with only intuitive feeling for each patient's condition. Clearly, a definite direction for the nurse counsellor is essential to rehabilitation, and the Schiller models were found extremely useful. These points do not concern themselves with the research aspect of the study but with patient care and the support the nurse felt by having at hand a set of guidelines. After initial assessment and personal contact with patients, personal assessment was more sensitive and more useful.

From a research standpoint, the index provided objective support for progress in each of the several areas of intervention and secondary prevention. A particularly interesting finding was that through the index assessment, patients were found to have a history of irritability prior to infarct, and by validating this indicator, through SGH outcome scoring and questionnaire data, it was found that none of the patients had considered themselves irritable, at the time, until questioned after infarct. Clearly the irritability factor is recognised as a serious post-infarct condition needing attention for readjustment, adaptation to work and family, and reduction of stress, yet little or no information is derived on pre-infarct irritability. One wonders why, yet it is apparent that measuring pre-infarct conditions to predict coronary

incidence probabilities is unlikely in terms of irritability. Yet after-the-fact, this trait showed up in all but four patients. The use of the index rating system brought forward this assessment criteria.

Norris Index

The results indicate that the Norris scale for predicting physical rehabilitation was also significantly correlated with respect to changes in outcomes scores on cohort patients. As it was part of the Schiller procedure and overall index, it will not be reviewed extensively here. However, it is important to note that the published criteria (see review of literature)implied that psychosocial status would not be positively related to physical severity of infarct and therefore both aspects of the patient had to be considered in rehabilitation (or predicting return to work for instance). This was strongly affirmed in the cohort study and in the comparative studies. Phychosocial profiles which included those patients with potentially greatest difficulty in psychological or social adaptation simply were not those with the most severe physical conditions (MI rated). There was no significant correlation between severity and psychosocial disorders.

Rahe Life Change Assessment

The irritability noted through the Schiller assessment procedure was apparent in the Rahe LCU table results as well. The relevant index data on each were complementary. While the prognostic index showed post-infarct anxiety, physical fatigue, and resistance to behavioural changes (hence irritability associated with same), the Rahe scores indicated similar results with a general prediction of high stress problems. Moreover, the Rahe LCU results clearly identified rank-order of patient stress levels given previous 12-month life crises. Thus it expanded quite nicely on the psychosocial areas of the study and provided the nurse with practical guidance for counselling family members about the importance of reducing stress and stressful situations.

The Rahe procedure does not allow for testing results of intervention but is a method of determining factors present in the patient's life that could have led, or contributed to, the onset of acute coronary disease incidents. With that in mind, the knowledge

provided the nurse at initial Stage I assessment was invaluable to the rehabilitation process. It particularly guided the nurse in what not to say in home visits and what areas not to touch upon so as to minimize the potential for creating stress through the intervention process. This is particularly important if one considers the nurse's role as in part one of caring, and one cannot provide "care" without understanding -- which in turn requires background to the family and patient and some indication of the seriousness of recent past incidents in the patient's life. With the Rahe instrument, this background and information was provided, and more importantly, the previous validation of Rahe's findings increased the confidence for the nurse to handle family counselling in a sensitive manner.

Eysenck Personality Inventory and MHQ Factors

The assessment tools here deal primarily with psychosocial factors and adaptation. In terms of the overall study, the two procedures for assessment were quite useful for evaluating results between initial assessment and 6 -months post-infarct. The reader may wish to refer to Tables 16 and 18 in the results chapter for quantification of these results. As a summary discussion here, the Eysenck A and B results validated the MHQ results, and together reinforced the prognostic indice data. In general their use was to provide a parallel assessment on the psychosocial diagnosis made clinically and therefore to provide a more objective approach to dealing with projected neuroticism in patients. Initially, the tests were used to determine classes of neuroticism, and this information was used in the SGH study, the control, and the cohort.

While the SGH results should remain largely unrevealed here, it is necessary to note that SGH research centred on investigating the use of psychological testing rather than prognostic indexing as predictive of rehabilitative difficulty. In their study, SGH researchers found that neurotic introverts and neurotic extroverts had poorer outcomes than stable extroverts. They also noted that the group most sensitive to rehabilitation efforts was the neurotic introvert group.

The cohort results confirm these SGH results in general, and reinforce prognostic index results, yet the cohort results tend to

contradict published reports which imply patients will generally lose self-esteem, lose confidence, and reduce their roles in active social and physical life styles.[1] The Eysenck and MHQ paradigms suggest that patients with neuroticism scores at outset will retain these characteristics over time, perhaps have greater problems with rehabilitation or recovery, and perhaps also maladjust to the disease. The results of the cohort on these latter points is fully consistent with published data and control group results.

The departure, or apparent contradiction in data, comes in terms of the increased social and physical activity of patients, increased confidence, and maintenance of self-esteem, all with success in the cohort to a significant degree yet not so in similar testing, as reviewed by Finlayson and McEwan(53, pp. 53 and ppp.106). The behavioural implications suggest that through intervention and counselling (as opposed to clinical treatment alone and observation of social networks) created an atmosphere conducive to family support, reinforcement for phsyical programmes of exercise, dietary control, and simply love and affection within the social setting.

These points are reinforced moreso by the reports from general practitioners who consistently note that patients had greater confidence in themselves, better attention to healthful behaviour, and had actively pursued rehabilitation. The results are supported also by the majority of comments by patients and wives in their 6-month assessment when they noted consistently better attitudes by patients in terms of emotional control, sexual activity, and phsycial exercise.

Aside from these factors, the use of the Personality Inventory tool and MHQ score provided the nurse with more objective criteria in setting goals for intervention. Specifically these goals fell into the following areas of concern:

1. To identify stress and to reduce stress and anxiety

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[1] See Finlayson and McEwan (53, pp.103 to 110) for an overview of results in tests evaluating psychosocial adjustment factors in studies in England and Dundee, Scotland. Patients were found to lose confidence, reduce social contacts, lose interest in phsyical activity, and not replace these losses with compensating activities.

for patients and family members.

2. To identify sources of psychosocial problems such as financial difficulties and intervene to provide help or to contact appropriate agencies who could directly help.

3. Improve the patient's chance to return to work, and to want to return to work, in part through evaluating personality traits which might prevent behavioural adaptation.

4. To facilitate a family understanding of the disease and how it relates to the patient's personality (and risks), and to family social networks.

5. To involve the wife and family in any productive way possible for the adaptation of the patient to his disease, to social acitivity, and to practical applications of his rehabilitation programme.

6. To reduce fear for both patient and family, and by identifying potential problems and conflicts arising through psychological maladjustment, intervene to reduce stress.

7. To help the patient and family identify and to better understand risk factors associated with personality traits, thus increasing the chances for acceptance of things beyond their control, and increasing the chances of dealing with those factors which they can control.

Overall Outcome Results of Cohort

The results sections, specifically Tables 5.6 and 5.8, provided comparisons between the cohort and SGH studies. It was noted there that for the three classes of outcomes (T1, T3, and T5), intervention was strongly supported through significant testing, both for changes over the rehabilitation period and for compared results with control group assessment outcomes. There was, however, a marginal result for the T3 score differences in which the cohort reflected the same results for SGH study (by team rehabilitation). The very fact that the results are similar imply a rather strong case for the nurse practitioner as a competent interventionist given that team outcomes with cardiologist support produced a similar result.

What is important here is that analyses of variance for the several variable in all three groups (SGH study, cohort and control)

revealed significant differences (greater success for study and cohort over control patients), in the T1 and T5 areas but not in T3 results. The T3 results deal with secondary prevention, and therefore this finding is a particularly disturbing one. The lack of significance for T3 (all risk factors combined for an outcome) implies, initially, that the rehabilitation effort in these areas had no greater success than simply letting patients go their own way unaided. However, that is not the case at all. The individual outcomes on risk factors strongly refute this contention, and each factor will be dealt with later in the chapter.

As a hypothesis the goes beyond this paper, the nurse suggests that the insignificant results for T3 reside in the measurement procedure so that rank-ordering, for instance, on smoking is not sensitive enough to indicate the relative changes in risk over time. Thus, changes which amount to a value of, say "1" from smoking regularly to significant reduction (0 to 1 on the scale) may not be sensitive enough for a statistical evaluation. On the other hand, a percentage change base, or a more sensitive index may better indicate differences between groups under study. Since the study by SGH, the control, and the cohort used the 0,1,2 (and for smoking alone) 3 coding, a diversion into statistics would not enhance this study.

The implications of the overall assessment outcome scores and subsequent analyses are that (1) the nurse's intervention was as successful or moreso than the SGH team intervention, and (2) that intervention by both groups proved of greater benefit with better rehabilitation results than merely allowing patients to proceed on their own. This is not to suggest that the nurse counsellor performed better than the rehabilitation team. To the contrary, , a team supported by hospital staff and physicians clearly is far superior. It does point out the potential for nurse counselling as opposed to the type of intervention performed by the SGH rehabilitation unit. SGH fundamentally intervened early, in hospital, with systematic follow up counselling after discharge. There was a programme (physician led) to intervene and counsel throughout the rehabilitation process, and after initial contact and clinical assessment, the SGH study continued on a reinforcement counselling programme aimed at systematically reducing risk factors

or modifying behaviour. The nurse counsellor specifically was concerned with the continuity of after care and reinforcement in the home environment. As a matter of interest, one is led to speculate that the team might have tremendous success if a nurse counselling role was included as part of the overall hospital-based rehabilitation effort.

Return to Work

As reviewed earlier in the thesis, the return to work results of many research efforts become primary considerations for success of rehabilitation programmes. There is little doubt that those reading this study will focus on similar conclusions, and rightly so -- as long as the many other considerations are given proper attention. The return to work results reported for the cohort, SGH study, and control group patients were not greatly different than expectations published by researchers elsewhere.As noted and reviewed substantially in earlier chapters, a rate of return to work for rehabilitated patients is expected to be between 50 and 80 percent, some authors narrowing this down to 70 to 80 percent for more recent efforts. The cohort results compare with these data, all based on six-months post-infarct observations, and a 74% rate of return by six months does not appear to be out of line.

On the other hand, there are several very important considerations in the return to work data. One of those considerations is the early return to work, target published data suggesting an approximate 12 week post-infarct goal for a third to a half of patients in a representative sample group.[1] In the cohort, the results show 44% returned by 12 weeks. The mean week returned for the cohort was the 13th week (mode week 12th). The SGH study group had relatively less success with the mean week being the 14th week post infarct, yet the two studies were significantly the same as shown in the analyses. Both differed significantly from the SGH control patients who, as a group, had a mean week returned of the 16th week post infarct.

These clearly will be the yardsticks on which results are in part evaluated. But there is a flaw. Figure 6.1 shows plotted return-to-week points for each patient in the cohort. The dotted line is the actual point plot graph for return to work. The solid

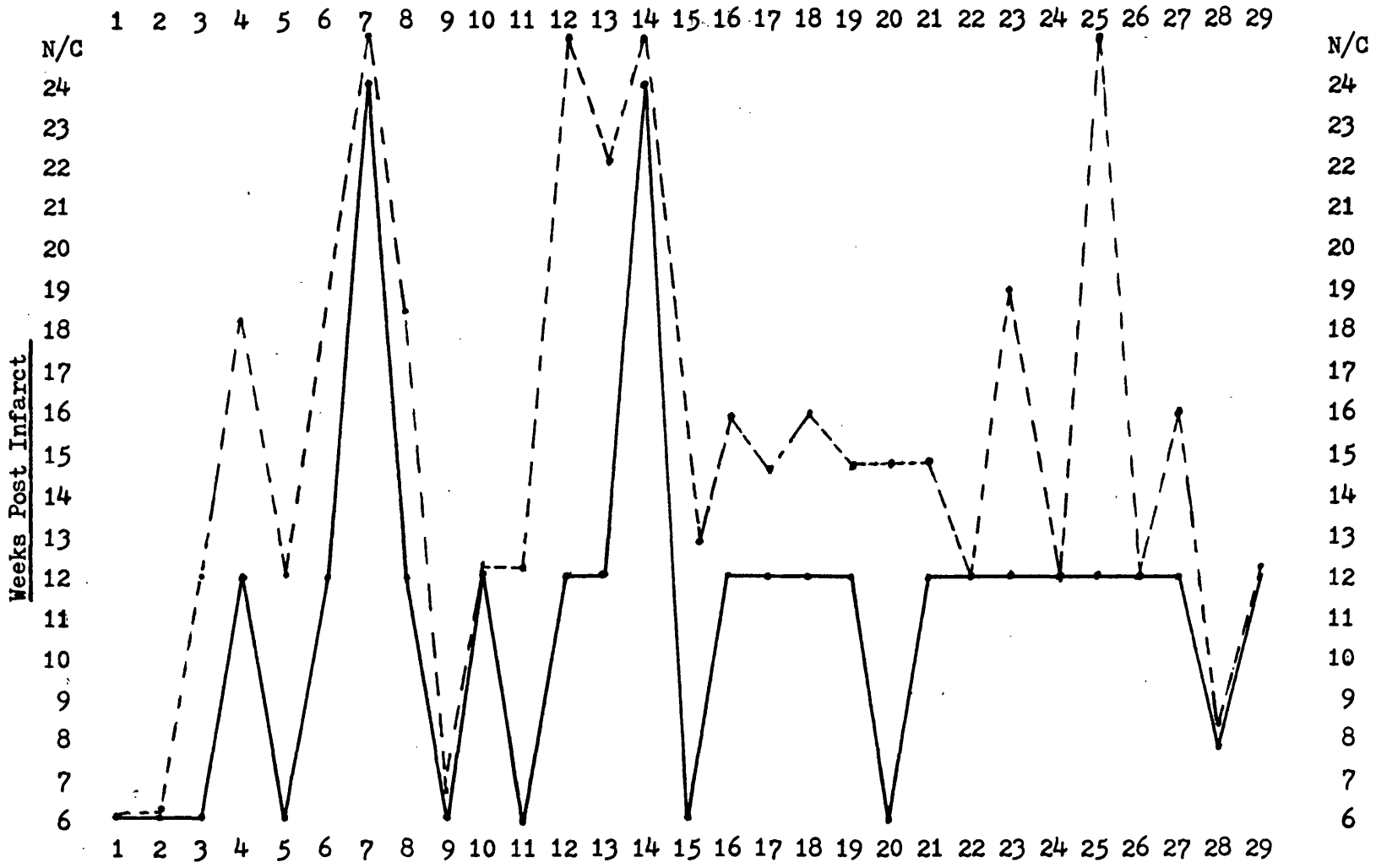

Figure 6.1

COMPARISON CHART FOR DIFFERENCES BETWEEN HOSPITAL ADVICE AND GP PERMISSION FOR COHORT RETURN TO WORK

——— = Hospital Advice (week when patient could have returned to work)
– – – – = G.P. Consent (actual week patient returned to work)
N/C = G.P. withheld consent at final assessment, post-infarct six months.

line is the week patients would have returned if GP advice and hospital advice had been identical, following the consultants' return to work assessment. There is a clear discrepancy between the two plotted sets of points.

For the cohort, Figure 6.1 indicates that 29 patients (all plotted who were found able to return to work) represented 96% of the 31 cohort patients, all of which were advised prior to the end of the six-month rehabilitation period they could return to work. All except two patients (27) had been advised they could return to work by the 12th week. Eight of those were advised they could return at six weeks. Yet general practitioner consent was consistent with hospital rehabilitation advice in only nine of the 29 patient cases. Four patients still had not received GP consent as the six-month rehabilitation study ended! GP consent lagged hospital advise by as little as four weeks (one case) and as much as 12 weeks among those who finally received consent.

It is very important here to appreciate that the nurse is not trying to discredit general practitioners. These data are a statement of fact, and beyond that, there are at least several considerations which indicate social conditions, financial situations, and patients themselves are impacting on the GP decisions. Unfortunately this aspect of the study was not taken any deeper than to look at the results and try to analyse, nonrigorously, the implications. The following few paragraphs are an attempt to review the situation.

The questionnaire responses by patients and family noted in several instances that both patients and family members were not entirely happy with the conflicting information and advice received from hospital, nurse counsellor, and general practitioner. In terms of work data, the nurse's counsel reflected accurately that of the supervising consultant and the hospital cardiologists. Information by the general practitioner did vary substantially in at least four cases, varied enough to need clarification in 12 more cases, and was relatively consistent in only nine cases. Several are unobserved in the study. This in fact does lend support that the GP did not follow hospital assessments in every case, perhaps not the majority, yet each GP had much more information than normally provided from the cardiologists, the consultant (assessment letters), and from the nurse (see appendices for replicated letters).

The second consideration in part supports the notion that the general practitioner could have acted more in accord with hospital advice,and in part suggests that the GP may have been misled by the patient in several instances. Both situations arise through the negotiating effects of a patient having to talk with his GP, bargain, perhaps, for return to work consent, and for the GP to make a decision based on negotiation and his casual contact with the patient. It is not at all overlooked that the GP is making a decision that will have low-risk consequences if consent is withheld, higher risk consequences if the patient is returned to work too early.

Clearly there are at least two considerations. First, whether or not the GP is oriented to no risk, particularly if he perceives little marginal benefit for the patient returned to work. Second, the social welfare system in Britain protects most patients from real financial stress so that returning to work is not essential for economic reasons (at least not an early return to work). Both suggest that the GP may feel quite justified in not returning patients to work early. On the patient side of the coin, financial rewards may be greater by not returning to work, and even if the rewards are marginally better (or marginally worse), the trade off of not working against working for only a small change in income may not be a strong motivation for the patient to negotiate for early return to work. Table 6.1 below provides a short glimpse of financial status (all factors considered for total financial resources while not working following the MI), for the cohort patients.

Table 6.1

Financial Status of Patient and Family Following Myocardial Infarction in Glasgow Before Return to Work and After Discharge. (n = 31) *

Change of Status and Estimate of Current Position:	Number of Patients	Percentage of Patients
No Change in Status	8	26%
Better by 25% or less	13	42
Better by 25 - 50%	6	16
Better by 50 - 75%	-	-
Worse by 25% or less	2	6
Worse by 25-50%	2	6
Worse by 75%	1	4

*Questionnaire based information of patient, validated by spouse.

If the financial advantage of being off work, lacking official general practitioner consent, is any indication of the potential for patients negotiating not to return, a case could be made for 19 patients (58%). That is to say, one would suspect less active push by patients to return to work in many instances in Britain. This is actually the problem in two patients who were otherwise fit to return to work, after six weeks, yet openly admitted to the financial advantage and would not seek GP consent. To the contrary, each implied they would avoid the issue and probably not appear as well as they could when examined. There is no way to evaluate this -- nor to substantiate it -- yet both patients remained unemployed.

The significance to these points is that evaluation of actual return to work data may be the wrong criteria for judging effects of rehabilitation. If that has any weight at all, then the net balance of most previous rehabilitation studies based on return to work results are in question. Moreover, comparisons between countries and cultures become baseless. Using consistent measurement of patients' ability to return to work might be a replacement for actual return figures. For the cohort, Table 6.2 displays how the results might appear on that criteria.

Table 6.2

Cohort Patients Potential for Returning to Work Based on Hospital Consultants' Total Assessment and Recommendations to GP's.

Number of Week at Which Patient Could Have Returned to Work: (n=29)*	Number of Patients	Percentage of Patients
6 Weeks	8	28%
8 Weeks	1	3
12 Weeks	18	62
24 Weeks	2	7

*Based on 29 fit to return in total study. Two not fit post six-month period of infarct.

As shown, it is easily hypothesized that 93% of the 29 patients returned to work (or assessed capable of returning) could have returned by the end of 12 weeks post infarct. These

patients were assessed at the six-week and the 12-week clinics, one being returned at eight weeks on advice after the six-week clinic. Thus 27 of the 29 patients were eligible for returning to work according to a rather thorough in-hospital examination by a rehabilitation team, and that would modify the 23 returned, the the reported cohort results of 74%, to 27 returned at 12 weeks (87%) or 29 returned in six months (94%). The SGH study suggests a similar configuration of outcomes, but that data is not reportable here.

Secondary Prevention -- Risk Factors

Any attempt to summarise the complex issues involved in rehabilitation outcomes for the various risk factors would result in total replication of half the chapter on results. However, in each instance some discussion is offered which will focus on the intervention successes and limitations. For clarity, the reader is asked to refer to the results section on each risk factor to include Smoking, Weight, Lipids, and Exercise. These were considered the controllable factors which the nurse counsellor could best address in her field efforts of rehabilitation.

It was noted earlier that the individual results for risk factor categories refuted the total T3 outcome findings (which showed insignificant differences between cohort and SGH control or study patients). This is in part addressed here, particularly for the smoking variable, while a direct comparison of weight, lipid, and exercise data is not possible due to the confidential results of the SGH findings. Smoking received much early attention as a controllable risk factor in the cohort study, yet all factors were attended equitably. Less emphasis was placed on lipid control as the nurse's role seemed to be more one of simple advice on diet and reinforcement of healthful living habits rather than one of active, clinical intervention, armed with staff support and the appropriate knowledge for dietary regimen. Exercise intervention simply followed the consultant's guidelines so that the nurse did not attempt to go beyond the expert diagnosis provided by hospital clinical evaluation procedures. Still, the factor of reinforcement for exercise, suggestions for types of exercise, and motivation for

behavioural changes were all very much a part of the nurse's role set. Finally, weight control was compounded with the anti-smoking campaign so that one could not ignore the effects (or need to help control weight) of smoking.

Smoking

The cohort results and comparative data are provided in Figures 5.1, 5.2, 5.3 and Table 5.19. The cohort results with 67% abstained (stopped and stayed stopped) from smoking are better results than either the SGH study or the control, and as reviewed in early chapters, better than most early attempts. This figure is enhanced by the additional 30% who reduced smoking significantly during the rehabilitation period.

A great deal of credit is due the SGH rehabilitation team for the cohort results. In the first instance, the nurse was given much counselling as to approaching patients to stop, and the SGH rehabilitation team advised on early intervention with full and forceful efforts. They indicated that in their intervention study, they had not approached patients with an intensive effort but had learned through trial and error that several things led to better success with smokers. First to be intensive in one's effort. Second, to intervene with the patient as early as possible, preference for initial release from CCU (or in CCU) but before he had his first cigarette. Third, to counsel with the spouse or family at the earliest time convenient. The nurse counsellor added to these priorities a special effort to communicate anti-smoking aspects of the rehabilitation programme to ward personnel in an attempt to gain reinforcement in hospital.

The anti-smoking results of the cohort are also in large part due to the reinforcement the patients received at home. In every instance wives made concerted efforts to support the anti-smoking programme, six of the wives stopping with their husbands. In general the approach following a pattern in which the nurse made an early attempt to point out to the patient the risks of smoking coupled with information about anatomy and physiology and the nature of coronary heart disease. At that initial assessment, the motivation for smoking was classified and all subsequent efforts focused on changing that motivation or replacing cigarette smoking

with other behaviour. Professional reinforcement was sought in every instance, through consultants, staff, and nurse behaviour, through GP information and family and friends help. The family reinforcement was seen as vital to the success of the programme and family behaviour was seen as in part responsive to the several home visits by the nurse practitioner.

The ultimate goal of the anti-smoking programme was total abstension -- not systematic reduction to stopping. Yet for those who reduced their habit, every support and reinforcement (praise) was offered. The noted failure (restart and increased) in the cohort was understandable from the nurse's point of view. He had stopped early and was extremely positive about rehabilitation in all aspects until his wife unexpectedly died, of CHD, and the patient simply said he could not handle the stress of everything at once.

Weight & Lipids

Several authors in the review of literature chapter were noted as finding conflicting evidence , often coupled with rather confusing recommendations, concerning obesity and plasma lipids as CHD risk factors. These points are not repeated here, yet it is important to note that obesity was found to be associated with other CHD risks such as hypertension and raised plasma triglyerides. It was within this context that weight observations for patients and programmes for helping patients to reduce when necessary were considered in the rehabilitation process.

Figure 5.4 in results illustrates the cohort progress while Tables 5.20 and 5.21 display summaries for weight and lipid control efforts. As the results indicate, smoking had a very real role in weight changes so that among those who stopped smoking, nearly all gained weight initially. Several became obese by the rehabilitation risk definition (overweight by more than 6 pounds and one stone more), and in one instance, a patient gained 35 pounds, gradually yet without let up, over the rehabilitation period. This became a serious matter as he also had several other risk factors present such as high stress history, a sedentary life style, and hypertension.

In the total picture, lipid levels were erratic and subject to very little interpretation or analysis, yet marginal changes were

observed clinically at each of the assessment clinics. Weight changes were erratic among the patients who stopped smoking, yet in all but one instance, the patients reduced after initial weight increases. Target weight was achieved in 18 cases, 10 of those who had stopped smoking and had initial weight setbacks. The results displayed in Figure 5.4 do not appear to attest to success, possibly one of the factors accounting for insignificant results in T3 analyses. But on closer inspection, the numbers of patients in target category, progress category, and no progress category remain the same (or similar) yet the individuals involved are quite different.

It is the contention of the nurse that the weight programme was successful for helping those in stopped smoking categories to recovery control of weight through dietary regimens which at the same time reduce cholesterol levels. Moreover, for seven more patients who initially had weight problems, and increased weight early in the rehabilitation process, four regained control back to initial levels and continued to make progress. Those results do not show up in change factors since the compared data is between initial assessment and six-month data. Perhaps for research purposes, a more sensitive evaluation is needed to account for these changes and the coupled effects of reduced and stopped smoking among patient groups.

A particular success in weight observations occured through attitude changes by patients toward more healthful dietary behaviour. This is not statistically measured but shows up in several comments by patients and remarks on questionnaires. One case in point was a 40-year-old postman who confided that he normally consumed seven to nine pints of lager, six meat pies, and four bags of crisps at each lunch period. He was also single and cooked for an elderly father and younger brother. He had a long history of obesity and revealed an incredibly abusive diet intake. He shed 45 pounds during the rehabilitation period, reduced significantly his triglyeride levels, and increased leisure exercise. He reported that his self-esteem increased substantially while not having to alter his behaviour such as visiting pubs and drinking with peers. The major points of his progress being that he drank soda and lime (and in less quantity), ate more balanced meals, and cut down on

saturated fats. He also devised the diet largely by himself and had fun doing it.

Exercise

One of the cooperative areas of this cohort and the SGH research included the exercise testing and programming for patients. It was noted both in methodology and the results chapters that the detailed exercise results available are not reported here. The Southern General Hospital rehabilitation team efforts are expected to be represented in published form in the near future (relative to the writing of this thesis). Therefore, the details of the cohort results will form part of that SGH results report. Here, it was mentioned, the concern is with reporting exercise-related intervention by the nurse who used the clinical guidelines and recommendations of SGH consultants to counsel patients.

Tables 5.23 and 5.24 in the results section provide complete results for the cohort patients. The primary emphasis for the nursing intervention was to systematically increase exercise or to motivate patients to perform prescribed patterns of exercise to target limits. There were two levels of concern. At the first level was to focus on prescribed exercise, such as gradually increased walking over set distances and use of the 5BX Fitness Exercises from the Canadian Air Force exercise programme. At the second level was leisure activity in which the nurse focused on patient and family interests to promote regular leisure-time exercises and to change sedentary life style patterns.

The formal aspect, 5BX exercises and walking, was highly successful within the cohort. Prior to infarct 20 of the 31 patients took no regular exercise and fundamentally ignored all patterns of leisure-related activities. Only 10 of the 31 took some gentle (yet regular) exercise, and one patient only had any history of regular and strenuous exercise (equated with brisk walking exceeding two miles per day). Thus 30 of the 31 patients were candidates for being classified in the risk factor of a sedentary life style, and clearly 20 of those were at risk.

At the end of the rehabilitation period, 25 of the 31 patients were at least talking regular exercise on a formal basis (ie, walking briskly up to two miles a day, with 5 of those exceeding this by

either walking over two miles a day or following comparable strenuous formal activities). Within that group, several have multiple interests including jogging, squash playing, and the brisk walking. Six patients remained sedentary, two of those not permitted exercise due to the physical limitations of their disease condition. Four others were classified sedentary even though they had taken up leisure interests, yet those interests were not sufficient exercise to aid in rehabilitation or to classify patients as ambulatory (exercises included lawn bowling, fishing and irregular gardening).

The patient questionnaire responses reveal an important aspect of exercise programming in that many patients expressed the value they placed on the six-week clinic and subsequent exercise testing and evaluation. Fifteen of the 20 pre-infarct patients listed as sedentary noted that the exercise testing and counselling gave them increased confidence and aided in their total efforts to stop smoking, maintain weight, and to regain independence at home and at work. At the 24-week clinic evaluation 11 patients were taking 5BX exercises regularly and walking to target distances set by the consulting cardiologists. In addition to those 11, 9 more were walking to target two mile distances daily (but not on 5BX programmes). Of the total 31 patients, 29 were making progress in exercise as prescribed, yet four of the 29 able to take exercise were not doing satisfactorily. In two cases, there is ample reason beyond the control of the programme to suggest success in counselling but failure due to environmental effects. One patient who had begun to take regular exercise was mugged and beaten on his late afternoon outing. Upon recovery, he began again but was threatened and finally withdrew to his flat, and gave up on exercise. Since he was in a high-rise area, he had little opportunity for exercise outside the flat and developed no leisure interests. A second patient was similarly located and made no attempt to leave the flat except at midday.

Overall, the exercise programme was designed not only to help regain physical conditioning but also to relieve stress and reinforce the patient's positive self image. These vital results await SGH evaluation and report, yet preliminary information is such that psychological testing and the patient/GP questionnaire feedback

support a conclusion that 23 of the 25 patients who made progress toward target exercise levels or who reached target levels also displayed less stress and greater confidence in their abilities to regain independence and pursue an active life style.

Nursing Intervention and Questionnaire Responses

Two sets of survey responses formed the basis for assessing the role of the nurse counsellor in the cohort study. These are not subject to statistical evaluation, easily, as they have few numbers and the responses are to few questions. There never was an intention to gather such information for validation of the nurse's role but each response was solicited to enhance feedback and individual evaluation for the nurse. In that sense, there is little to interpret except to ask the reader who has an interest to review those responses which are set out fully in the results chapter. Some clarity and discussion is appropriate here beyond the bare evidence.

In terms of the general practitioners' responses, having had 87% respond and most GP's express personal opinions on the form in addition to answering the questions suggests a rather positive attitude toward the nursing intervention results. All GP's were quite positive in their remarks and supportive of the programme, with one exception who indicated that a nurse counselling service is a lesser priority to adequate nursing service for the GP clinic. One other GP noted that the information and rehabilitation programme was quite worthwhile (and he endorsed nurse counselling), however, he also expressed the notion that his patients were being counselled by Health Visitors. The nurse made an effort to contact the Health Visitors attached to the health centre concerned and there was no, reported visits or work by any of the Health Visitors for cardiac patients; counselling centred on mother's care (pre and post natal), and children's problems.

In terms of the patients and family questionnaire response, several points stand out (and have come up in discussion several times earlier in this chapter). These include the value attached to home visits by wives and family members, the service performed by the nurse in providing insight to the disease, and the consistent reinforcement and continuity of rehabilitation through home visits.

The attitude surveys at 24-week assessment clinics showed interesting results as well. Nine of the 31 patients indicated they felt as well physically as they had prior to infarct, which suggests that whether or not they actually were better physically, they felt better following rehabilitation. Twelve patients actually said they felt better at the six-month assessment than they had prior to infarct(four expressing that they felt much better). Eight still felt worse physically, yet three of those suggested they were doing as well as expected.

Emotionally, 17 felt they were back to normal (back to pre infarct emotional behaviour). Only seven said they felt better adjusted emotionally by the end of six months compared to pre-infarct behaviour, emotionally, and four felt worse emotionally. Earlier it was noted that patients irritability was particularly noted at post infarct and that as a group there was a rather high rated score of neuroticism initially which also remained high, yet tapering off, post six months. These emotional attitude questions would appear to reinforce the prognostic indicators reported and discussed at length earlier.

In terms of the emotional problems and irritability, it is worth noting here that patients (and wives in particular) expressed their opinions that having had the nurse's telephone, a contact, throughout the rehabilitation relieved anxiety and also gave them some comfort that someone cared. In several instances the nurse was called, usually when the patient became highly irritable and was substantially upsetting family. An example is the case where social welfare workers visited one family to check into financial arrangements and sick pay (basically it was taken as an investigation of the patient to validate his condition for compensation). This was rather important as the sick pay was subsequently delayed for approximately six weeks and the patient's family was close to being broke financially. However, the nature of the questions by the visitors irritated the patient who literally attacked and threatened them. He was still raging when the wife telephoned the nurse. It seemed incredibly simple at the time, yet the patient talked on the telephone, still in a rage of course, to the nurse, and in less than five minutes was settled down and peacefully talking about his progress in exercise and diet control. The nurse

did nothing in this instance except answer the telephone and listen. However, she followed up on the financial problems and managed to obtain help for the family.

The attitudes on sexual activity were interesting as well, as several research studies reviewed earlier noted that most MI patients reduce sexual activity (and it is common for GP's to suggest less activity). Twenty of the 31 patients reported their sexual activity had regained normality (to pre-infarct norms). Five patients reported better marital relations and greater activity post-six months versus pre-infarct. Six said sexual activity was worse. Several, of course, were not physically fit for any exercise form. The interesting point here is that all these responses were cross checked against spouse's responses and considered in light of assessment and interview remarks. There was general agreement between patient and wife, however, several wives reported husband's emotional stability as less than that by the husband's response. Interviews reflected that those patients most irritable were apparently those having stopped smoking and having to reduce weight, which seems reasonable.

As a validation tool, each of the surveys seem to be weak instruments. The nurse does not suggest otherwise, however they were valuable to the nurse for personal evaluation and provided several revealing points about patients' and family members' attitudes. The nurse counsellor's role and success is best evaluated by the compared results of the several studies and the cohort success in terms on individual changes in secondary prevention risk factors. Those have been discussed amply, and it is with those results in mind the nurse feels secure in the conclusion that the cohort was a success and the methodology of rehabilitation a reliable procedure.

The limitations of small numbers is apparent, yet there are more positive indications than limitations for using the various prognostic indices, the intervention procedures, and the methods of follow up such as early, intensive home visitation with patient and family members. There is every reason to believe that the significance testing of risk factor results, index comparisons, and outcome scores for rehabilitation guidance are all reliable and strongly supportive of the major hypotheses of this thesis.

There is no reason to believe that any individual aspect of the cohort study was a failure, nor were any patients failed by the nurse in her counselling responsibilities. It is rather doubtful that many researchers would agree without reservations that there is "proof beyond doubt" for the value of this programme or the use of the nurse practitioner in a cardiac rehabilitation counselling role. There is no doubt in the nurse's mind that the patients of the cohort are significantly better prepared to live a useful and normal life, to deal better with their disease, and to pursue a life with substantially less risk of re-infarct prematurely.

Summary Comments

There is little to summarise here except to guide the reader into the final chapter of this thesis. In the chapter that follows, the discussion will centre on the nurse's role and on implications for further research and rehabilitation efforts -- points omitted in this section purposely. An overview to the results is that in such a complex study, and given that patients are striving for rehabilitation under complex conditions, many of the results and findings reported are subject to interpretation. There is no disclaimer here that they should be (or could have been) otherwise for the study is one of behavioural implications having few directly measureable outcomes. That, in the nurse's opinion, should not be detrimental to the success evaluation of the work itself.

If any one point stands out among the results, it is that all the results taken together, even if only marginally successful, would indicate success for the nurse. She maintained a focus and philosophy of care throughout the cohort study which concerned the individual patient -- not group results. When one patient stopped smoking, her efforts were considered successful. When one patient adjusted well to his home environment, it was a success. When one patient reduced his weight, it was important. It was pleasant to see the overall cohort results to be as successful as they were; it was exciting to see any one patient benefit from the nurse's efforts!

CHAPTER VII

CONCLUSIONS AND SUMMARY

The nurse counsellor took a position consistent with nursing theory that this study should be one of "caring" for patient needs, not to exclude family members and in particular the spouse who must endure a traumatic period of her husbands life. After "curing" would therefore be a result in part of consultant's intervention, hospital attention, general practitioner treatment, and perhaps extension of nursing services to the home environment.

The function of the nurse was to treat the whole individual within his environment and not isolated from social or cultural conditions. With that in mind, the home visitation programme was developed and early intervention counselling for both patient and family members was considered essential. The general aims of the nurse's intervention was to provide that close personal contact necessary to maintain continuity of care, to be available for coordination between hospital and home assessments, and to provide information, education, and understanding to the patient and his family for CHD and subsequent rehabilitation. This all sounds rather mysterious, but to the nurse it was rather simple. She had to be committed to care for the individual patient, be educationally oriented, and be knowledgeable about coronary care and the several important implications for secondary prevention.

An important point must be reiterated here, and that is that the nurse did not vary substantially from the Southern General Hospital procedures except to make adjustments in care, in the method of intervention, and the intensity of efforts in some areas (such as smoking). The study and the adjustments followed from the advice of the SGH rehabilitation team which had recently developed and implemented their own study and therefore had found out several of the problems and limitations to their efforts. The team warmly received the nurse for research and literally set out guidelines and offered advice on procedures which greatly enhanced the entire process. That alone signals the importance of continued research and more efforts to rehabilitate MI patients, adding to the small bits of existing knowledge and further enhancing the procedures by building on existing work (mistakes and successes).

The contention of the thesis was that the nurse can intervene to help the patient toward regaining independance, thus filling a

gap in care and treatment between hospital and return to work which now stands as a void. She was not expected to fill a role as treatment specialist or to replace the vital duties of the hospital consultant, general practitioner, or various health and social welfare agencies, but she was to supplement those duties, to coordinate, to communicate, and to maintain close contact with all.

The philosophy of both the nurse and the SGH rehabilitation team was that the patient cannot be treated clinically and left to his own devices to adjust to home and social pressures, to change his own risk profile, or to handle the complexities of the disease without also leaving the patient fully at risk. The primary success appears to be solidly in the reduction of risk factors thus helping significantly in secondary prevention. The lines of communication and assessment procedures enhanced the patient's chances of clearly defined help by all concerned, and the response generated from general practitioners suggests that the nurse provided an added service for the continuity of patient follow up care between hospital and community.

Conclusions

The purpose of this study was to provide a new direction to the process of cardiac rehabilitation by using a nurse for field rehabilitation, and it was hypothesized that she would be able to perform the duties of a team with similar results. By implication, such success would mean a more economical method of instituting cardiac rehabilitation through the use of nurse practitioners rather than teams composed of physicians (with primary cardiac rehabilitation responsibilities) and nurses (with support only).

There is every reason to believe that the results of this study support that position and advance the notion that a well-trained nurse can carry the primary field responsibility for health care delivery in cardiac rehabilitation. The number of patients in the cohort should not be treated as a limitation on the range of the nurse's usefulness either. The small number was in part by choice and in part a function of the academic time restrictions for forming a data base for this report. Given the

complex environment of the nurse in this study (that of mother, nurse, student, and visitor to Scotland), the 31 patients in the study could have been expanded with little strain on time to perhaps 60 over the limited period of the study. It is estimated that over a year, the nurse could have handled approximately half of the total population of MI patients discharged from Southern General Hospital if the distribution of discharges was evenly distributed over the year. Figure 4.1 in methodology shows that the population might approximate 364 patients, both men and women of all ages and categories of infarction. That would equate to about 180 patients for the full-time nurse, or about three per week in each stage of rehabilitation.

The economic implications are that two nurse counsellors hospital based under a configuration similar to that at Southern General would be able to provide the complete field care and assessment work, attend the scheduled clinics, and still have the flexibility to concentrate on a patient when necessary without detracting from other patients' care. The time breakdown of the task shows the following:

1. First visit after transfer from CCU with patient, about one half hour essential; social protocol and coordination time with staff an additional 15 minutes.
2. Second in-hospital visit (initial 10-day assessment testing, and indepth interview), with patient, about 40 minutes.
3. Third hospital visit and socialising with patient, about one half hour.
4. Visit in hospital with spouse and family, one half hour.
5. Pre-discharge visit at home with family, one hour including social protocol.
6. Discharge hospital visit and patient transition, one half hour in direct support, social considerations 15 minutes.
7. First home visit, 2-3 weeks post infarct, one hour.
8. Second home visit, 4-5 weeks post infarct, one hour.
9. Six-week clinic assessment, one and one-half hours.
10. Home visit between 6 and 12 week clinics, one hour.
11. Clinic assessment at 12 weeks, about 45 minutes.
12. Six-month (final 24-week) assessment clinic, one and one half hours.

Add to those explicit time requirements travel time for home visits of about four hours, in-hospital coordination time for assessment data, preparation of files and data, reports and consultant discussions of about four hours. For each patient, an additional two hours time on average spent on follow up or communications with general practitioners and other community agencies. The total time required of the nurse for each patient if each patient required individual indepth assessment scoring, reporting and added coordination, would be 22 hours maximum. For the cohort study, each patient required on average $8\frac{1}{2}$ hours direct time, and the associated paperwork and reporting prorated per patient was less than one hour total. More than one patient was seen at most clinic evaluation periods, and the pooling effects of several patients being examined clinically resulted in nursing time involved of less than one half hour per patient (as opposed to one and one-half hours). Therefore under normal conditions and the SGH patient population profile distribution, each of two nurses assigned would be required a 30 hour week for intervention and associated services based on an average of three patients per week.

The total cost of such a programme for nursing intervention is not determined here, but based on explicit costs, travel, salary, and associated support services might approximate 33 per patient over the six-month rehabilitation period. Economies of scale and the early return to work of many patients could easily halve that figure, and on inspection, the cost of instituting such a simple programme as nurse counselling might not exceed twelve pounds per patient per year. Any figure remotely similar to this would indeed be inexpensive for the economy if each patient was returned, on average, to work only a week early. Thus, a reduction in sick pay and associated benefits would easily offset the cost of nursing services while the added productivity to the economy would at least double the payoff savings over costs of nurse counselling.

Aims and Objectives Revisited

One of the objectives set out in the introduction to the thesis was to examine and extend the current body of knowledge in cardiac rehabilitation, specifically in that area of nursing care

through intervention for patients surviving an MI. It seems apparent by the body of results and the specific success of the nurse in the cohort that this objective is achieved. But several specifics were noted. It would appear that the criteria for reporting success or failure of rehabilitation based on back to work data might be misleading. This was noted for the rather consistent differences between hospital assessment advice and the actual return to work following GP consent. Again, the results and discussion showed no "fault" nor attached a connotation of disapproval in the actual behaviour of physicians, but pointed out that through interviews, many patients behaved differently when talking with their GP's than when being assessed at the hospital. It was also noted that in a majority of the cohort patients, financial rewards, as such, while off work may have eclipsed those after return to work, thus eliminating the urgency for a patient to seek work or GP consent to return.

Another specific finding was that outcome scoring on assessment scales with examined sample groups failed to account for individual changes in patient risk factors so that while group smoking results showed a significant success (rated by outcome scores), weight changes and lipid level changes remained the same <u>for the group</u> yet changed dramatically for individuals. Thus the sensitivity of assessment for measurement may require better instrumentation to account for the rehabilitative changes and the complex variables which interact (such as smoking behaviour and weight change).

A second objective of the study was to investigate the feasibility of extending the nurse's role in cardiac rehabilitation, specifically the role of the nurse practitioner trained and experienced in coronary heart disease. There are several points to be made here, not to exclude the early discussion in this chapter. The first point is that few limitations were noted in any part of the cohort study which could not be surmounted. Those limitations were generally problems with acceptance of the nurse as a capable individual who could go into the field and work. It is with great appreciation that the nurse points to the cooperation of Southern General Hospital and the professional support given the nurse in this endeavor. She had been generally discouraged by several other hospitals in the greater Glasgow area, had been politely turned away by a number of physicians,

and had been warned by several experienced nurses that she was going beyond accepted nursing procedures. The important limitation pondered prior to the study was acceptance by patients and families of the nurse intervening, and her potential for adding to stress problems by entering the home environment. The results of the cohort, the patient response to formal questionnaires, the GP evaluations, and the reinforcement of results all add to cast this doubt to the wind. Just the contrary seems true, that the nurse, particularly a woman is apt for the intervention role and very clear feedback shows that the nurse was able to generate rather touchy conversations, such as counselling on sexual behaviour, and that patients and family members were comfortable and positive toward the nurse in conversation and counselling. It is not at all clear that physicians, particularly men, would generate the same candour of conversation with both husband and wife, and the responses to questionnaires show that few patients broached topics with their general practitioners beyond clinically related areas.

The second area of concern is that the nature of counselling did not seem to require the intense background originally thought required of the nurse. Clearly, she must be oriented to care and to have the fundamental expertise of coronary medicine, yet there is no reason to suppose that most trained Health Visitors could not become highly competent cardiac nurse counsellors with very little additional orientation training. The crucial point is not who can work in the area but whether or not her services could be coordinated between hospital and community so that a counselling role is fully accepted and supported at the hospital clinic and in the community environment with the GP's support. The initial reaction by the nurse here is that a counsellor is better situated in the hospital due to the importance of intensive counselling early after infarct recovery, in the hospital, and with close consultant communication at the critical stages of adaptation.

A third objective was to examine the potential and the limitations of the nurse practitioner working between hospital and community environments. This is not a compartmentalised objective and is well covered in the preceding comments. Yet it is important to emphasize that much of the rehabilitation work related to adaptation for the

patient in terms of social and psychological considerations. The implications are that the nurse walks a rather thin edge of two or more roles. She must be able to accept and work within the intensive care and acute recovery areas of the hospital, be able to understand and interpret clinical information peculiar to coronary medicine, yet also develop a highly personal and nonclinical approach to counselling in the home with the patient, family, and friends. She must be respected by the patient and family as having the necessary knowledge to advise in coronary heart disease and to be mature enough to field complex, and usually very personal, questions about the disease, the patient, and perhaps family.

The consensus of these points seem to imply that the nurse counsellor will not be an apt role for all nurses, trained or not in CHD. The criteria rests squarely on the individual's aptitude for handling complex problems and making independent decisions while being an extroverted person committed to improving the patient's chances for a healthy future life. This is a set of serious limitations as it implies that one cannot generalise that all CCU trained nurses are capable candidates, that all Health Visitors are capable candidates, or that any given type of individual will work best in the role prescribed.

A final objective of the study was to provide a framework for future work and research in cardiac rehabilitation, specifically for the area relevant to nursing care and intervention counselling. In terms of future work, the entirety of this thesis speaks to that issue with the primary conclusion being that a nurse can perform capably and responsibly in cardiac rehabilitation, and she is needed to bridge the gap between hospital and community care for the patient and family. More importantly, she is <u>wanted</u>, and the patients and family members in the cohort showed great appreciation for the help, hunger for knowledge about the disease, and a genuine need for intervention counselling. That counselling had direct impact on reduced risk and greater secondary prevention, but it also had the unmeasureable impact of increasing patient and family confidence, reinforcement for the patient and family efforts to regain active and normal life styles, and better continuity of care in all aspects of the programme.

The implications for future research are in great part self explanatory. The efforts of the nurse should be extended to many areas, in teams, in hospitals, and in general practice so as to further investigate how counselling varies under different conditions, in different locales, and through different resources, with different persons. A point that should be made is that in research a rather narrow approach exists, apparently for the benefits of data consistency, in which male patients only are rehabilitated, and since return to work data has played such a pivotal role for success measurement, only those who are well under retirement age have been included in such studies. One is tempted to ask where our medical priorities rest? It seems far less important to have "qualified" sampling frames and "validated" data than to help those who are ill, regardless of research priorities or the weight of statistical evidence.

While at Southern General Hospital, the nurse as well as all involved in the rehabilitation research (in all studies) focused on male patients in working-age brackets. For a period of about 18 months more than a hundred such patients received attention, and the resulting reports will add to the knowledge of male patients, their histories, outcomes, and future research implications. Yet several hundred women patients were ignored, several hundred more men didn't qualify for the sampling farme criteria, and several hundred more were out of the validation time criteria. If we are a committed profession, then the consultants here, in America, in Australia, and elsewhere who are sincerely researching CHD problems and rehabilitation might consider better success criteria than economic benefits, return to work, and group statistics. The general practitioners and hospital physicians should consider more cooperation, rather than treating their areas of expertise as compartmentalised sectors of the profession. Nursing might consider more than their limited and stereotyped roles, and specifically nursing education must challenge their profession to be more responsive to crucial areas of nursing, such as cardiac rehabilitation.

There is no easy way to put forth an opinion of the overall responsibility of the several professions in coronary rehabilitation nor to set forth implications for future research. Those opinions

are behavioural, personal, and intense. However, as a summary, it seems that we all need to simply get on with it! Together we need to treat and rehabilitate, not worry about statistics or validation as primary objectives of rehabilitation, and to consider the patients, all of them, that need our help now and in the future.

APPENDICES

Appendix 1

Reproduced Patient Registration Approval

CORONARY NURSE COUNSELLOR REHABILITATION
PROJECT: LETTER OF PARTICIPATION FORMAT

The purpose of rehabilitation is to help you return to normal activities as soon as possible and to try and prevent you having this illness again.

To do this, the nurse will ask you to fill in some questionnaires and to discuss different aspects of your daily life and type of work so that she can give the best advice which will apply to you. She would also like to talk to your near relatives as they are often anxious about looking after you.

The most suitable menus at first will be chosen for you and margarine is advisable instead of butter. The best choice for you, in the long run, will be discussed later.

It is wise, if you are a smoker, to stop altogether. Now is your best chance of success.

In the months ahead, the nurse will, if you agree, be seeing you and your family again to find out whether the advice was helpful.

I will participate in the above project.

(Signed)_____

Appendix 2

Reproduced Letter to General Practitioner Seeking Permission and Explaining Cohort Nurse Counselling for the Research Patients

Dear Dr._____

I am writing about your patient (named) who was recently admitted to the Southern General Hospital with suspected Myocardial Infarction.

It is becoming apparent that an organised rehabilitation programme providing guidance on dietary habits, smoking, exercise, and psychosocial problems is beneficial to such patients. Cardiac rehabilitation on this scale is onerous and has many limitations in practice. It is therefore of interest to me to see if a nurse practitioner can assist in the rehabilitation process.

With this in view, I would like to do some research on the role of the nurse as a counsellor to the cardiac patient. Under supervision of Dr. Gavin Shaw, and at his unit in the Southern General Hospital, I have seen patients, such as the above,initially in the ward and later in a counselling session at the hospital. Using various measurement instruments, I have identified physical, social, personality, and risk factor information, as a guide to rehabilitation counselling intervention. At this point home visits by myself, with the agreement of the patient's family physician, would help add continuity to the information given in hospital, and lead to more effective guidance. I would like to see the patient and his family in their homes, initially after discharge, if necessary at 3 months and definitely at 6 months post discharge. We hope that this intervention would result in reduced morbidity and earlier return to active life style and work.

It is hoped that such a project would be of particular value to family doctors, and that the information will assist them in the care of this patient. I would therefore welcome your interest, and ask your permission to visit this patient.

Should you have any reservations, please do not hesitate to let me know. I can be reached through Dr. Shaw's unit.

Yours sincerely,

(signed)

Appendix 3

Reproduction of "Summary of Visits" Sent Formally to General Practitioners (This is an Actual Report with Names and Identities Deleted or Other Identifying Information)

(Patient name, information, GP identity, hospital patient number, address, date of infarct, discharge, and SGH unit and consultant omitted on this print.

Clinical Information:

Patient is 52 years old and had an uncomplicated infarct experience physically. He seemed to have an expected attitude toward infarct (denial and anger followed on recovery ward by expressed fear and concern about the future). I have seen him on four visits to the ward.

Social Information:

Family:

Family seems very supportive of patient and quite co-operative concerning aspects of patient's rehabilitation. Very few leisure or recreational activities outside work.

Psychological:

Eysenck and Middlesex scores show high neurotic score(22) with anxiety above normal mean.

Housing:

Very adequate council-type flat all on one level and normal amenities.

Work History:

Past training in Heavy Duty Lorry driving.

Work record is variable; changed jobs often. Patient was receiving sickness benefit due to deafness in right ear $2\frac{1}{2}$ months prior to infarct yet was interviewing for driving jobs.

Patient's Estimate of return to work:

Patient sees work as important part of his life style. He still has financial responsibility for four of six children living at home, although two of those are employed. He has been made aware of the possibility of being unable to return to his former type of employment. Expected anxiety expressed about this.

Intervention of Risk Factors:

Smoking:

Past history: 10-15 cigarettes daily before MI.

Present: Has not smoked at all since infarct and appears sincere about remaining stopped. Wife does continue to smoke. Anti-smoking information given to both of them with support.

Diet:

Past history: Patient has been obese for a number of years. His present weight is 13 stone 6 lbs (186 lbs). Desired weight 160 lbs. Low calorie polyunsaturate diet instructions given and explained.

Exercise:

Very sedentary life style. Routine post-infarction exercise given under supervised guidelines.

Overt Rehabilitation Problems:

1. Inability to return to heavy duty lorry driving. A possible D.R.O. referral may be appropriate.

2. Weight reduction necessary and a programme under diet is being reinforced.

Home Visit: (Dates omitted) Three weeks and one week post hospital discharge.

Patient's general appearance good. Continues not to smoke. Tolerating low calorie diet fairly well and starting exercise routine of walking daily and simple post-infarct exercises at home. Patient discharged on no medication. Sleeping well. He has slight dyspnoea when climbing stairs. States he has a slight "heaviness" in his chest at times -- relieved by walking and not connected with meals or activity; states he had this feeling occasionally before infarct. Family continues support; no undue overprotection.

Patient's six-week post-infarct clinic appointment (Date omitted as well at consultant information on this form).

Appendix 4

CORONARY REHABILITATION INDEX (Schiller)*

The following is the combined Schiller Index, his Modified Index, and the inclusive Norris index as presented by Dr. Eric Schiller for use in this study, published and reviewed elsewhere in the thesis, and approved for the Cohort study in Dr. Schiller's letter which is reproduced as an appendix.

The higher the numerical score obtained, the less likely should be success of the patient in areas of physical and emotional rehabilitation after a myocardial infarction.

I. 1. Physical Classification

Norris Coronary Prognostic Index score corresponding to the New York Heart Association Classification. (see Appendix 5).

NCPI		NYHA	
	0 - 5		1B - 2B - 0
	5 - 7		2B - 3
	8		2C/worse)-6

2. Each Other significant disease score 1 for each.

II. Social Classification

3. Age: Under 44 years - 0
45 - 54 years - 1
over 55 years - 2

4. Educational Level

Tertiary (university) - 0
Trade only - 1
Secondary, over three years - 2
Secondary, less than three yr.- 3
None or primary only - 4

5. Stability of Work History

Employed - Regular Full or Part-time - 0
- Irregular Work - 2
Unemployed at Time of MI - 3

Job available with previous employer - 0
Job not available with previous employer - 2

6. Occupation by Social Class

Profession -0
Non-manual -0
Manual Worker -1
Unskilled Manual -2

7. Recreational History Before Infarct

Active - Regular participation in activities - - 0
Moderate - Occasional participation outside work - 1
Sedentary - Almost no extracurricular activity - 2

8. Marital Status

Married - 0
Single/Widow - 1
Divorced/Separated - 2

9. Family or Social Stability

Good or adequate - 0 (Subjective evaluation based on
Poor - 2 observed financial, housing, and home relations)

10. Personality Factors

Note past history of depression, anxiety, and other psychiatric episodes based on questions about sleep disturbances lack of concentration, tension, irritability, loss of interest, memory disturbances, panic attacks. Note also time of onset, if known, for possible trigger mechanism.

Present Symptoms
Anxiety, Depression, and Antecedent Stress scored according to Eysenck and Middlesex questionnaire results.

Recent onset - 1
Chronic - 2

Under each category, further score:

Mild - normal intensity, causing concern, rather than distress to patient & family - 0

Moderate - causing significant distress to patient and family - 2

Severe - incapacitating or causing severe distress- 4

11. Changes in Life Experience

No overt changes - 0
Mobility - 1
Recent crisis - 2 (Other than MI)

12. Inhibiting Social Service and other Financial Factors

Nil - 0
Present - 2

13. Excessive Patient Dependence (Over-protective family also)

Absent - 0
Present - 2

III. Risk Factor History

14. Smoking - present - 2
Age at onset: Under 18 - 2
Over 18 - 1
Absent - 0

15. Obesity: - Present - 2
Absent - 0

16. Hypertension: Present - 2
Absent - 0

Modified Schiller Index

Work History:

Stable - 0.0
Unstable - 4.5

Previous Job:

Available - 0.0
Unavailable- 4.5

Amount Smoked:

None - 0.1
01 - 09 - 0.2
10 - 19 - 0.3
20 - 39 - 0.4
40 + - 0.5

Education Level:

University - 0.1
Trade - 0.2
Secondary over 3 yr- 0.3
Secondary less 3 yr- 0.4
None/Primary-0.5

Total Score Max.=10.0

---

* Source: Schiller, Eric, "Modified Cardiac Rehabilitation Index for Use by Paramedicals," unpublished discussion paper provided by author, December, 1977. Also see letter of authority enclosed as separate appendix through which the total CRI index was made available to the cohort.

Appendix 5

Classification Categories for Norris & New York Scales *

Funcational Capacity

This is based on certain physcial factors and upon the amount of activity a person can, or thinks he can, perform without developing shortness of breath and pain in the chest.

Class I: Patients with cardiac disease and no limiting of physical activity. Ordinary physical activity does not cause discomfort. Patients in this class do not have symptoms of cardiac insufficiency nordo they experience anginal pain.

Class II. Patients with cardiac disease and slight limitation of physical activity. They are comfortable at rest and with mild to moderate exertion. They experience symptoms only with more strenuous grades of physical activity.

Class III: Patients with cardiac disease and marked limitation of physical activity. They are comfortable at rest. Discomfort in the form of undue fatigue, palpitation,laboured breathing or anginal pain is caused by less than ordinary activity.

Class IV: Patient with cardiac disease who is unable to carry on any physical activity without discomfort. Symptoms of cardiac insufficiency or of the anginal syndrome, are present, even at rest. If any physical activity is undertaken, discomfort is increased.

Therapeutic Classification

This is virtually the doctor's prescription for the amount of physical activity which is permissible. The classification is based both on the amount of effort possible, without discomfort, and also on the nature and severity of the organic defects and the prognosis.

Class A: Patient with cardiac disease whose physcial activity needs no restrictions.

Class B: Patient with cardiac disease whose ordinary physical activity needs not be restricted but who should be advised against unusually severe or competitive efforts.

Class C: Patient with cardiac disease whose ordinary physcial activity should be markedly restricted to moderation.

Class D: Patient with cardiac disease whose ordinary physical activity should be markedly restricted.

Class E: Patients with cardiac disease who should be at complete rest, comfined to chair or bed.

A category of "B" has been found useful and necessary in which a modification to "2B" would describe a patient with mild to moderate angina and some residual left ventricular enlargement after MI.

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* Source: Schiller, Eric, "Cardiac Rehabilitation, Its Potential in Early Prevention of Disability after Myocardial Infarction," Medical Journal of Australia, Sept. 1972, pp.751-757.

Appendix 6

Outcome Scores Summary and Criteria used in Cohort and Southern General Hospital Rehabilitation Studies *

	Score
1. Physical	
Considered fit to return to work by six months by hospital doctor (or GP if patient not attended in hospital):	2
Considered not fit to return to workin six months.	1
Death	0
Return to Work by Six Months	
Returned to work(suitable) with no excess physcial demands and/or less than 50 hours per week.	2
Returned to unsuitable work (excess physical demands and/or more than 50 hours per week).	1
Not returned to work	0
Psychological Dependence on Doctors and/or Drugs	
Independent of above and accepting residual physical limitations..	2
Lessening dependence on above (less anxiety/depression)	1
Strong or increasing dependence on above	0
Dependence on Social Networks both Formal and Informal	
(Formal - Paramedical and social welfare) (Informal- Family,friends,employer)	
Independentof social networks	2
Lessening dependence on above	1
Strong or increasing dependence on above (or no adjustment between husband and wife)	0
2. Secondary Prevention Outcome Scores	
Smoking:	
Non-smoker before MI	3
Stopped after MI and stayed stopped	2
Progress in stopping smoking	1
No reduction or increased smoking	0
Weight: (Target = Desired Weight + 6 Lbs.)	
Target Weight achieved or maintained	2
Target weight not achieved but weight still less than DW + 2 stones (DW + 12.7 kilos)	1
Weight more than DW + 2 stones (DW + 12.7 kilos+)	0

	Score
Lipids: (Serum Cholesterol - Target = 5.2 mmol/1) (Serum Triglycerides - Target = 1.1 mmol/1) (Liproprotein - Target = nil reported)	
Scoring was based on a combination of progress toward all three targets in all areas.	
Targets achieved or maintained	2
Progress toward targets and: (Ser.Chol. below 6.5 mmol/1) (Ser.Trig. below 2.0 mmol/1) (No liproproteins reported)	1
No progress toward target or: (Ser.Chol. 6.5 mmol/1 or above) (Ser.Trig. 2.0 mmol/1 or above) (Liproproteins reported)	0
Exercise: (Regular exercise taken at work or leisure)	
Strenuous exercise or at least brisk walking of over 2 miles per day or to maximum physcial capacity for those unfit to return to work.	2
Ambulatory Exercise - Regular but gentle walking up to 2 miles per day	1
Sedentary habits only	0

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*Source: Naismith, L., et al, unpublished research findings and discussions at Southern General Hospital, Glasgow, Scotland, 1978.

Appendix 7

Rahe's Life Change Table for LCU's *

Life Change Unit's are based on composite of individual scores with a maximum upset of 100 points. These life changes are related to the patient's history over 12 months pre-infarct. Source is Rahe, E.H. (120, 1974).

No.	Change	Weight
1.	Death of Spouse	98
2.	Death of son or daughter	97
3.	Spouse seriously ill	90
4.	Son or daughter seriously ill	88
5.	Serious conflict with other family member	81
6.	Divorce or separation	79
7.	Serious conflicts with spouse	75
8.	Death of close relative	66
9.	Out of Work more than one month	62
10.	Decreased income	62
11.	Death of close friend	61
12.	Change in Working Hours	59
13.	Trouble with boss	59
14.	Debt exceeding ₹10,000	58
15.	Close relative seriously ill	58
16.	Other changes at work	55
17.	Serious conflicts with other relatives	53
18.	Change in sexual habits	53
19.	Marriage or informal marriage	51
20.	Decreased responsibility at work	49
21.	Close friend seriously ill	48
22.	Trouble with work mates	47
23.	Addition of family member	44
24.	Change in living conditions	43
25.	Temporary separation from spouse (+ one month)	43
26.	Change to a different line of work	41
27.	Retirement from work	41
28.	Start taking extra work	35
29.	Increased responsibility at work	34
30.	Family member leaving home	33
31.	Change personal habits	25
32.	Spouse ending work	22
33.	Spouse starting Work	20
34.	Stop taking extra work	20
35.	Attend courses	18
36.	Change in social habits	17
37.	Increased income	11
38.	Change in living conditions	10

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*Source: Theorell, T., Lind,E., and Floderus,B., "The Relationship of Disturbing Life-Changes and Emotions to the Early Development of Myocardial Infarction and Other Serious Illnesses," International Journal of Epidemiology, Vol.4, No.4, 1975; pp.281-292.

Appendix 8

Guidelines for Patient Evaluations Using Phase I and Phase II Coronary Rehabilitation Project Sheets; as enclosed in Appendices as Form B and Form D. *

Work Record

Excellent - Good Attendence record, promotion in employment, early achievement of work suited to personal choice.

Good - Good attendance record, long record with firm, and well adjusted to present job.

Variable - Long patches of good attendance broken by poor attendance not due to exceptional circumstances. Changes of job with no particular aim other than increased money.

Poor:- Generally frequent job changes, no aim or choice in work, and poor attendance record.

Need for Dietary Modification

None - At desired weight or within 6 lbs (2.8 k), cholesterol less than 200 mg/100ml (less than 5.2 mmol/1), and triglycerides less than 100 mg/100ml (less than 1.1 mmol/1)

Slight - Desired weight or within 6 lbs., but cholesterol between 200-249 mg/100ml (5.2 - 6.4 mmol/1), or triglycerides between 100-159 mg/100ml (1.1 - 1.78 mmol/1).

Moderate - More than 2 stone above desired weight, and cholesterol above 250 mh/100/6.45 mmol/1, AND triglycerides above 160 mg/100ml/ 1,8 mmol/1. Suspected diabetes.

Severe - More than two stones above desired weight, same as in moderate, but frank diabetes.

Marital Disharmony/Psychosocial Maladjustment in 12 months pre-infarct

If "NO", only if spouse agrees with husband on answers
If "Yes", lack of agreement also between husband and wife.

Levels of Stress in Past 12 Months

None - Patient admits to none

Slight - Brings work worries home but enjoys solving problems in peace. General worries concerning him time to time.

Moderate - Brings workworries home and becomes anxious about them. Some physical limitations, fatigue, dyspnoea, pain.

Severe - Brings work worries home and worries so much he can't sleep. Too many social activities and no time to relax. Family noise or demands allowing no relaxation. Marital disharmony causing pent up anxiety. Relations causing anxiety. Family problems sufficient to disturb work performance. Severe pain or physcial limitations because of fatigue, dyspnoea or pain.

Levels of Stress past 12 months, work-related

None - Patient denies stress, no evidence to contrary.

Slight - Occasional stresses with bosses, colleagues, public or union troubles.

Moderate - Continuing stresses by work itself, bosses, colleagues, public, union, but made light of by patient.

Severe - Stress so great as to make him change or wish he had changed jobs due to bosses, colleagues, union or other reasons.

Unsure - Conflicting opinions by husband(patient) and wife or close family relations requires a separate qualified code.

Physical Activity Normal over Past 12 Months

Strenuous - Includes heavy labouring or heavy engineering

Moderately strenuous - Includes labouring or occasional lifting of heavy objects.

Light ambulatory - Includes light engineering work, foreman, supervising or other regular but nonstrenuous mobility.

Sedentary - Desk work, conveyor belt (sitting), other.

None - Not at work.

Unsure - At work but no reasonable measure of normal work.

Physical Activity related to Leisure over past 12 Months*

Strenuous - Sport jogging daily, fencing, swimming, consistent golfing, heavy gardening, labouring, heavy housework, or SBX exercises (to maximum on chart, as per 6-week post-infarct test).

Moderately Strenuous - Daily walking to brisk pace or up incline, light gardening, golf, bowling, some swimming, or average house duties.

Light Ambulatory - Strolling, light household duties, window box gardening, amateur dramatics, gentle swimming.

Unsure - Evidence unclear to leisure activity.

*PHASE II - Form D for 6-week post infarct testing for exercise includes evaluation by consultant at hospital for fitness for exercising and categories for reasons not fit. Exercise evaluation replicates past physical classifications above.

Not Fit for Exercise Reasons include: Cardiac Failure, Recent Embolism, Dissecting Aneurysm, Dysrrhythmias or disorders of conduction, infection, reinfarction, or collective reasons.

*Source: Naismith, et al, op.cit., 1978.

Appendix 9

Reproduction of Letter Sent to All Patient's General Practitioners for Questionnaire Response Related to Nurse Counsellor's Role Successes.

(Format included proper letterhead paper, doctor's name and practice, patient reference information, and nurse's information, all of which are not reproduced here. The body of print is).

Dear Dr._____

Enclosed is the final evaluation summary of the above patient done as part of the coronary nurse counsellor rehabilitation project. At six months post infarct, this patient has been measured in terms of overall rehabilitative outcome. This outcome to include the attainment of, or progress toward, five specific targets: Physical, Return to Work, Psychological, Social Independence, and Four specific Risk areas in secondary prevention. These four included smoking, weight reduction, lipid studies, and exercise.

It is my hope that this information will be of beneficial use to you. Now, I ask your assistance in helping me to evaluate this type of rehabilitation and its benefit to the patient and his family. To do this, I would very much value your answers to the questions below, returned by post in the envelope provided.

1. Did you find the six-week summary letter sent by the nurse to be a worthwhile addition to the consultant's summary?_____

2. Did you feel that the patient and his family appreciated the home visits and counselling information?_____.

3. Would you make use of a nurse in this capacity if she were otherwise available?_____.

4. Would you like to see more assistance of this type available to the cardiac patient and his family?_____.

Additional Comments or Suggestions:

_____

_____

Thank you very much for allowing me to visit with your patient during the past six months. Again, I look forward to your comments.

Yours sincerely,

(signed)

National Heart Foundation of Australia
(N.S.W. DIVISION)

CARDIAC REHABILITATION UNIT

PRINCE OF WALES HOSPITAL, AVOCA STREET, RANDWICK, N.S.W., 2031. TELEPHONE 39 6737

ES:MC

14th March, 1977

Mrs. Judith K. Holt,
21 Bridgeway Court,
Kirkintilloch,
SCOTLAND, G66, 3HN

Dear Mrs. Holt,

I do apologise for not answering your enquiry for my article and further information earlier, but I have been away for a few weeks and things have rather piled up!

I couldn't agree more with you that nurses involved in the care of the coronary patient in hospital should also be involved in his assessment for future recovery and rehabilitation; it is a question we have often discussed here in Sydney, and some initiatives have been started at one of our teaching hospitals. In addition, the programme of active physical rehabilitation starting during the patient's stay in hospital and continuing during the critical months after discharge, before the patient returns to work, has also been introduced in two or three of the Sydney teaching hospitals under the aegis of the Department of Rehabilitation Medicine in these hospitals, and in co-operation with the cardiologists.

I am enclosing a copy of the paper you request, plus a more recent statistical analysis which reduces the actual rating procedure to quite a simple form which could readily be administered by any paramedical person. You will note that we finished off with two major and two minor "risk factors" for future inadequate rehabilitation and non-return to work. The major factors are the stability of the previous work history (which will require slightly more standardised definition for administration by numerous observers: but it involves such things as frequent job changes, prolonged periods out of work caused by factors other than the employment situation, and past relationships at work); and the availability, in the patient's estimation at the time while he is in hospital, of the availability or otherwise of his previous job. The minor factors appear to be the number of cigarettes smoked and the previous education level.

If this index works, then any patient with an unstable work history and - or unavailability of his previous job should be considered for selection for an early and intensive rehabilitation programme if he is of working age.

I hope this is of some use to you. I should be most interested to hear of your further programme.

With kind regards.

Yours sincerely,

E. Schiller,

Appendix 11

Telephone: 041-445 2466 - Ext 220

Medical Unit:
Dr. G. B. SHAW
Dr. A. ALLISON
Dr. J. F. ROBINSON

SOUTHERN GENERAL HOSPITAL
GLASGOW, G51 4TF

23rd May, 1977.

GBS/MEP

Mrs. Judith K. Holt,
Department of Community Medicine,
Ruchill Hospital,
Glasgow, G20.

Dear Mrs. Holt,

Thankyou very much for your letter about the Nursing Research Project. This makes matters quite clear. I take it, however, that you will be letting the general practitioners know that you are making these home visits so that they will be able to identify you.

I have sent your protocol off to the Ethical Committee at the Southern General.

Yours sincerely,

G.B. Shaw,
Consultant Physician.

Telephone: 041-445 2466 - Ext 220

Medical Unit:
Dr. G. B. SHAW
Dr. A. ALLISON
Dr. J. F. ROBINSON

SOUTHERN GENERAL HOSPITAL
GLASGOW, G51 4TF

6th June, 1977.

GBS/MEP

Mrs. J.K. Holt,
University Department of Community Medicine,
Ruchill Hospital,
Glasgow, G20.

Dear Mrs. Holt,

I have now received formal approval from the Chairman of the Ethical Committee for your proposed research.

Yours sincerely,

G.B. Shaw,
Consultant Physician.

APPENDIX 12

Coronary Rehabilitation Project, Phase I

(Content is provided as a replica of work but the computer coding and line spacing for response & notes are omitted)

Name_____ Date_____ Unit No._____

Survey No/_____, Age on Registration_____

Sex_____

Previous History:

Patient:

Medical: Recent General Health_____

MI Before: No Yes,Confirmed Yes, Not Confirmed Unsure

If Yes, Number of Infarcts _____

Year of Last Episode_____

Angina Pectoris No Yes, Typical Yes, Atypical

Unsure

More than one year, No.of years_____

Less than one year, No. of weeks_____

1=On Slight Effort, 2=On Major Effort,
3=At Rest, 4=Emotional, 5=Coronary Insuff.

Chest Pain - Non Angina No Yes

Specify_____

Dyspnoea No On Slight Effort On Major Effort, At Rest

Other

No. of years_____

Arterial Hypertension Number of years_____

C.V.A., Number of Episodes _____ Year last____

Intermittent Claudication, Number of years_____

Diabetes, Number of Years_____

Other Diseases (List in area provided)____:

Medical:

Functional Group, Class I II III IV, No previous

Therapeutic Group, A B C D E, No previous

Social:

Religion: Prot. R.C. Jewish Moslem Other

Marital Status: Married Single Widowed

Separated or Divorced

In employment immediately before MI: No Yes

Marital Disharmony in 12/12 before MI: No Yes Unsure

Psychosocial maladjustment in 12/12 before MI: No Yes

Occupation:_____

Family:

Medical:

Coronary Heart Disease: NO YEs Unsure

(Space for members listing and comments)

Hypertension: (space for comments)

C.V.A.:(space for comments)

Diabetes:(space for comments)

Social: Children: Boys_____ Girls_____(comment space)

Previous Marriages_____....

Death of Parent, Close Relative or Friend in past year or past two years (space for comments)

Present Coronary Episode:

Date of onset:_____

Complications During Phase I(post release from CCU in Hospital):

Arrhythmias: None Minor Moderate Major Unsure

Disturbance of Conduction: None Minor Moderate Major Unsure

Shock: Specify_____

Cardiac L.V.F.
Cardiac R.V.F._____

Thrombo-embolism: NO Yes,PE Yes,DVT Unsure

Re-infarction: No Yes,confirmed Yes,unconfirmed, Unsure

Angina: No On Slight Effort On Major Effort At Rest Emotional Coronary Insurfficiency Unsure

Other: Specify(space provided)

Area of Infarct_____

Drug Treatment: No Yes

Digitalis

B. Blockers

Anti-arrhythmics

Diuretics

Sedatives

Anticoagulants

Antilipaemics

Anti-hypertensives

Antidiabetics

Other:(spce provided)

X-ray Changes:

C/T Ratio_____

Pulmonary Venous Hypertension No Yes

Other(specify)_____

Diagnosis: MI Acute Coronary Insufficiency

Number of days since Infarct:

Letter sent to GP_____ Initial_____ Discharge_____

Consent Form Signed_____ Date_____

Clinical Examination at End of Phase I:

General Appearance_____(spce provided)

Body Weight in kgm_____

Body Height in cm_____

Blood Pressure at rest in mm.hg.: Systolic_____

Diastolic_____

Pulse Rate_____min. Irregularity No Yes Unsure

Signs of Cardiac Failure: No Yes Unsure

J.V.P._____ Chest_____ Oedema_____

Bed rest (no ambulation) 7+ days after MI: No Yes

If Not ambulant, principal reason why:

Consultant's routine advice____ Cardiac failure____
Thrombo-embolism_____ Dysrhythmias_____Continuing Chest Pain___
Re-infarction_____ Post-infarct Syndrome_____
Ventricular Aneurysm_____ Infection_____ Other_____

Clinical Anxiety Needing Treatment: No Yes

Clinical Depression Needing Treatment: No Yes

Drugs Required on Discharge: No Yes

Restatment of earlier drug list and space for comments

Referrals to: Social Worker Psychiatrist No Yes

(Space for comments)

Need for Specific Dietary Modification: None Slight Moderate
Severe

Personality Scores:

MHQ:

Free Floating Anxiety_____

Phobic Anxiety_____

Obsessive Compulsive_____

Somatic Symptoms_____

Depressive Symptoms_____

Hysteria_____

Eysenck (Form A):

Neuroticism_____

Extrovertism_____

Lie_____

Habits Before MI:

Smoking:

None Ex-smoker Smoker

Quantity:Cigarettes

1-5 per day 6-10 per day 10+ per day 20+ per day

Pipe, light Pipe, heavy
Cigar, light Cigar, Heavy

Variable (comment)_____

Age at which smoking commenced_____

Alcohol:

Non drinker Occasional Regular, Light Heavy
Alcoholic Unsure Specify_____

Usual Physical Activity at Work during past 12/12:

Strenuous Moderately Strenuous Light Ambulatory
Sedentary None Unsure

Description_____

No.of Hourse worked per week_____

Travel to Work(Describe)_____

Strenuous Moderately Strenuous Light ambulatory
Sedentary None Unsure

Usual Physical Activity at Leisure:

Strenuous Moderately Strenuous Light ambulatory
Sedentary Unsure Description(space provided)_____.

Unusual Physical Activity During past 12/12:

Describe if any_____.

(In following Categories, answers repeated in terms of "none" "Slight" "Moderate" "Severe" "Unsure" Description_____)

Levels of Stress in Past 12/12:

At Work:

At Leisure:

In Travelling to Work:

Home:

Attitude to Recent MI:

Well adjusted with expected responses; ie., grief and/or anger followed by expressed fear and concern about future.

Don't care about MI, life due to low intelligence

Outwardly indifferent(euphoris)

Outwardly indifferent(morose)

Very afraid--deep anxiety

psychotic

unsure

Patient's Estimation of principal cause of infarct:

Overwork worry alcohol smoking overweight

other combination of factors unsure Describe_____.

Work Record:

Age when left school: _____

Occupation (listed if more than one, all included with training if required, length of employment, reasons for leaving).

If not working in 3/12 before MI, why:

Describe:_____

If on sickness benefit prior to MI, reason_____.

Smoking Habits Since MI:

Stopped and stayed stopped Continued Restarted after Stop

Reduced Increased Non-smoker Ex-smoker

If Smoking, how many per day (cigarettes) Pipe? Cigar

Comments_____...

Social Problems During Phase I (after Discharge):

None Continuing as Prior to MI New Problems No data

Space for Description_____/

Rehabilitation Advice Given:

General Advice by Consultant: No Yes Unsure

General Leaflet on Coronary Prevention: No Yes Unsure

Other:_____(space provided)

Classification by Clinical Signs:

Total Coronary Prognostic Index Score_____

Norris: Age_____

Previous History_____

Previous Angina_____

BP, Systolic (on admission)_____

Extent of ECG Changes_____

Shock_____

Arrhythmais_____

Failure_____

X-ray Heart Size_____

Lungs _____

Norris Totals_____

Robinson C/T Ratio_____

Pulmonary Venous Hypertension: No Grade 1, 2, 3, Unsure

Highest LDH reached_____

Classification by Physical Data:

Functional Group: Class I II III IV No previous

Therapeutic Group: A B C D E No previous

Suitability for Exercise:

Considered Fit for effort testing at 6/52: No Yes

Considered Fit for Exercise Programme: No Yes

Type of Programme: I - Graded Walking
II - Graded,Unsupervised Exercises
III - Graded & Supervised Exercises

Rehabilitation Group:

Advice Given: No Yes/Reinforced Specific: As follow,

Smoking (space for long comments), Leaflets explained if used.

Diet...

Exercise...

Hypertension...

Psychological...

Social...

Patient's Determination to adhere to advice: None Mild Moderate
Strong Unsure Comment_____.

Laboratory Results: Date_____

Serum Cholesterol mg./100 ml_____

Serum Triglyserides mg./100 ml_____

Serum Uric Acid mg/100 ml._____

Plasma Urea mg./100 ml _____

Hyperlipoproteinaemia

Type- Friedrich's II IV Other None

Glucose Tolerance Test: Normal Abnormal Not done

- - - - - - - - - - - - -

Interview with spouse or next of kin included a format for name, date, relationship, age, occupation, hours of work, and comments. Under each of the categories below, ample space was provided for extended comments.(In the interest of space here, the many blank lines are omitted).

Corroboration of Patients Evidence: No Yes (agree/disagree)

Estimation of Principal Cause of MI:

Smoking Habits:

Dietary Habits:

Alcohol:

Level of Physical Activity at Work, Travelling to Work, Leisure:

Unusual Physical Activity in past 12/12:

Levels of Stress, at Work, Travelling to Work, at Leisure:

Social Problems:

Housing:

Financial:

Family:

Marital:

Other:

Spouse/Next of kin's determination to cooperate with rehabilitation:

None Mild Moderate Strong Unsure Comment___.

APPENDIX 13

Coronary Rehabilitation Project, Phase II

(The information provided in this appendix is not meant to be comprehensive of the actual form used. In fact, the form is largely a replication of that used in Phase I, Appendix 12. Therefore, in this appendix, appropriate headings are provided, reference will be made to Phase I documentation when appropriate, and variations in data will be presented properly).

Name and patient information replicated

No of Weeks since Infarct:_____

Number of Review (Clinic)_____

Reason if unable to complete form: Death Withdrawal
Nonattendance Other

Comment_____

Medical History since last review:

(Categories replicate Phase I, and includes here a summary comment area plus the following question areas):

Chest Pain: No Yes, angina Unsure

Ankle Swelling: No Yes Unsure

Palpitations: No Yes Unsure

Other Signs relevant to Infarct: Specify_____.

Re-infarction: No Yes Unsure

If Yes: Number_____, No. of weeks since re-infarct_____.

Hospitalisation: No Yes, for cardiac Yes, other

Specify_____ Days in_____

Additional Medical Consultants:_____

New Drugs prescribed:_____

Continuing Drugs:_____

Eysenck Personality Score (Form B at 24 weeks only)_____.

(Replicated Phase I data)

Social History since last review;(Replicates categories in Phase I).

Work History Since Last Review:

Summary:(Area for comments)

Work:

Has Patient Returned to Work: No Yes, Sporadic
Yes, Continuous

Average Number of working hours present per week:_____

Same work as before: Same employer New employer

Modified Work: Same employer New employer

If other work, explain_____/

Number of weeks between infarct and return to work_____.

Advised to return to work by consultant: No Yes

Did patient return to work as advised: No Yes

If not, why: (explain)_____.

Classification of reasons not returned: Main Reason, Ancillary, or Other identified:

Cardiac Disease

Other Disease

On retirement pension

Unemployment

Reschooling

Local Economic Conditions

Awaiting compensation claims

Negative attitude of: Patient
Family
Family Doctor
Factory Doctor
Insurance Doctor
Employer
Other

Comment (space provided).....

Social Problems: (Replicates Phase I data but includes also):

Overprotection by wife: No Yes Unsure

Financial: None Slight Moderate Severe
Comment_____.

Changes in Economic Status because of MI:

None Yes- Better by 25% Yes-Worse by 25%
Yes- Better by 50% Yes-Worse by 50%
Yes- Better by 75% Yes-Worse by 75%

Referrals to: _____(Space for comments).

Rehabilitation Measures and Changes in Attitudes & Habits Since Last Review:

Smoking: (Replicates Phase I data and categories)

Diet: (Replicates Phase I categories, but also includes):

Effect of Dietary Advice:

Reduction in total Calories_____
Reduction in total C.H.O._____
Reduction in Calories and C.H.O._____
Reduction in Saturated Fats_____
Reduction in Saturated Fats and C.H.O._____
Reduction in Satruated Fats and Calories_____
Reduction in Saturated Fats, C.H.O., and Calories_____
Maintained previous regimen_____
Unsure_____

Physical Activity:

(Does not repeat history on Phase I, but replicates advice data and also includes):

Number of weeks on programme_____

Adherence to Programme: No Yes Unsure

Physical activity since last review: (Replicates work, travel, and leisure for Phase I categories).

Psychological:

(Replicates data of Phase I, and asks as well):

Treatment for anxiety: No Yes No data

Treatment for Depression: No Yes No data

If other Treatment, specify_____.

Clinical Review at this time:

(Replicates data in Phase I format)

Anxiety: Decreased No change Increased Not applicable

Depression: Decreased No change Increased Not applicable

Social Support:

Was special additional advice or support given: No Yes,support Yes,help

Specify (ample space provided for response)

No of sessions : at Clinic_____ at home_____

Continuing social problems: No Yes Unsure

Confirmation by spouse or next of kin: (Replicates Phase I)

Clinical Examination:

(Replicates Phase I examination data specifically)

Decisions Made at this Review:

Need for Dietary Modification: No Slight Moderate Severe

Drugs Prescribed: (List)

Patient Considered Fit to resume work by consultant:

Not at this time Yes, Now Yes, in specified No.weeks

Number of Weeks Specified_____

Type of Work Specified: Same Modified

Patient Referred to:

Occupational Therapy: No Yes Comment(space provided)

Social Worker: No Yes Comment (space provided)

Psychiatrist/Psychologist: No Yes Comment(space provided)

Patient considered fit for exercise testing: No Yes

If postponed, why:

Severe cardiac dysfunction Coronary insufficiency
Reinfarction Infection Recent embolism Other___.

Rehabilitation Advice: (Replicates Phase I Categories)

- - - - - - - - - - - - - - - - - -

Assessment of Visits and Consultations:

Patient:

Which consultation or visit or advice did you find most helpful:

1 = In intensive Care Unit
2 = During rest of hospital stay from ward staff or Coronary rehabilitation consultation.
3 = First home visit after discharge
4 = Subsequent home visits.
5 = Visit to Rehabilitation Clinic (six-week evaluation)
6 = Bicycle Test (4-8 weeks after discharge).
7 = Visit to hospital out-patient department (not rehab unit).
8 = GP visit or consultation.
9 = Any other source or later visits.
Specify:_____

Spouse:

Has patient returned to Health & Attitudes of 6/12 before MI?
Physical: As Before Better Much Better Worse
Unsure Spouse Not available
Emotional: (Same categories as above)
Sexual Activity (intercourse):(Same categories as above)

Overprotection by spouse: No Yes Unsure Spouse Not Available

Spouse:

When was offered consultation or home visit most helpful?

1 = In Intensive Care Unit.
2 = During rest of hospital stay.
3 = Visit by nurse to home while husband was in hospital.
4 = First home visit after husband's discharge.
5 = Any other home Visit.
6 = G.P. visit or consultation.
7 = Any other source such as friend, relatives, etc.
Specify:_____

Did you search or ask for any constructive advice other than that which was offered?

1 = From hospital when husband was in-patient in CCU
2 = From hospital when husband was in-patient on ward.
3 = From hospital when husband was outpatient
4 = From G.P.
5 = From friends or relatives
6 = From any other sources:
Specify:_____

Date of next review_____

Letter semt to GP, Date_____

(Ample space was made available for patients or wives, family, or next of kin to response openly, comment, or provide opinions).

APPENDIX 14

Middlesex Hospital Questionnaire (retyped)

(Name, patient data, age, sex, and other necessary data preferred)

(The questions are provided without computer coding or spacing in the interest of concise recording)(Answers: Yes, No, Sometimes)

1. Do you often feel upset for no obvious reason?
2. Do you have an unreasonable fear of being in enclosed spaces such as shops, lifts, etc?
3. Do people ever say you are too conscientious?
4. Are you troubled by dizzIness or shortness of breath?
5. Can you think as quickly as you used to?
6. Are your opinions easily influenced?
7. Have you felt as though you might faint?
8. Do you find yourself worrying about getting some incurable illness?
9. Do you think that cleanliness is next to godliness?
10. Do you often feel sick or have indigestion?
11. Do you feel that life is too much effort?
12. Have you, at any time in your life, enjoyed acting?
13. Do you feel uneasy and restless?
14. Do you feel more relaxed indoors?
15. Do you find that silly or unreasonable thoughts keep recurring in your mind?
16. Do you sometimes feel tingling or prickling sensation in your body, arms, or legs?
17. Do you regret much of your past behaviour?
18. Are you normally an excessively emotional person?
19. Do you sometimes feel really panicky?
20. Do you feel uneasy travelling on buses or on the underground even if they are not crowded?
21. Are you happiest when you are working?
22. Has your appetite got less recently?
23. Do you wake unusually early in the morning?
24. Do you enjoy being the centre of attraction?
25. Would you say you are a worrying person?
26. Do you dislike going out alone?
27. Are you a perfectionist?
28. Do you feel unduly tired and exhausted?
29. Do you experience long periods of sadness?
30. Do you find that you take advantage of circumstances for your own ends?
31. Do you often feel 'strung up' inside?
32. Do you worry unduly when relatives are late coming home?
33. Do you have to check things you do to an unnecessary extent?
34. Can you get off to sleep all right at the moment?
35. Do you have to make a special effort to face up to a crisis or difficulty?
36. Do you often spend a lot of money on clothes?
37. Have you ever had the feeling that you are 'going to pieces'?

38. Are you scared of heights?
39. Does it irritate you if normal routine is disturbed?
40. Do you often suffer from excessive sweating or fluttering of the heart?
41. Do you find yourself needing to cry?
42. Do you enjoy dramatic situations?
43. Do you have bad dreams which upset you when you wake up?
44. Do you feel panicky in crowds?
45. Do you find yourself worrying unreasonably about things that do not really matter?
46. Has your sexual interest altered?
47. Have you lost your ability to feel sympathy for other people?
48. Do you sometimes find yourself posing or pretending?

SOUTHERN GENERAL HOSPITAL

DIETARY QUESTIONNAIRE

PLEASE ANSWER THE FOLLOWING QUESTIONS - Tick where appropriate

1. How many eggs do you eat each week? _____

2. a) Do you use butter or margarine? _____

   b) Do you spread it - Thickly ___ Mod. Thickly ___ Thinly ___

   c) If you use margarine, which type? _____

3. Do you eat Cheese? YES/NO What Type - _____

   Amount approximately per week _____

4. a) How many cups of tea do you have each day? _____

   b) How many teaspoons of sugar do you have in each cup? _____

5. a) How many cups of coffee do you have each day? _____

   b) How many teaspoons of sugar do you have in each cup? _____

6. How much milk do you take each day? _____
   (include all consumed, i.e. milk in tea, coffee, cereal, etc.)

7. Do you add sugar to cereal, porridge, puddings etc.? _____

8. How many meals do you have each day? Please state times of meals in order taken and a brief outline of what meals consist of.

   _____

   _____

   _____

   _____

9. How much squashes, lemonades, etc. do you drink each week? _____

10. How much alcohol do you take each week and what kind? _____

    _____

11. How much bread or rolls do you have each day? _____

12. Please state approx. No. cakes, biscuits, pastries you eat -
    Day_____ Week_____ Month_____ None _____

13. a) Do you eat fried foods? _____

    b) Which type of fat is used for frying? _____

14. How often do you eat fresh fruit? Day___ Week___ Month___ None___

15. a) Do you take jam? _____ How many teaspoons per day? _____
    b) Do you take marmalade? _____ How many teaspoons per day? _____
    c) Do you ever take honey, syrup or treacle? _____

16. a) Have you ever been given dietary advice prior to your admission to hospital? _____
    b) What advice were you given? _____
    c) Who gave you this advice? _____
    d) How long have you been on this diet? _____

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