

Best Practice Guidelines for Cardiac Rehabilitation and Secondary Prevention

Human
Services



PRODUCED BY THE HEART RESEARCH CENTRE ON
BEHALF OF DEPARTMENT OF HUMAN SERVICES VICTORIA

Background to Heart Research Centre and authors

The Heart Research Centre was established in 1989 with three year seeding funding from the National Heart Foundation of Australia. It became an independent centre in 1993 and is now affiliated with The University of Melbourne and La Trobe University. The Heart Research Centre conducts research into cardiac rehabilitation and the prevention of heart disease, especially their psychological, behavioural and social aspects. The Centre also conducts training programs for health professionals.

Dr Alan Goble is a practising clinical cardiologist, with a longstanding interest in cardiac rehabilitation. He is a member of the Expert Advisory Panel on Cardiovascular Diseases of the World Health Organisation, and a member and past-chairman of the Council on Rehabilitation and Prevention of the World Heart Federation. He is Chairman of the Board of the Heart Research Centre.

Dr Marian Worcester has a doctorate in social and preventive medicine and a Master's degree in criminology. She has a particular interest in psychological responses to acute illness and social support. She has been Director of the Heart Research Centre since its establishment.

Dedication

These Best Practice Guidelines for Cardiac Rehabilitation and Secondary Prevention are dedicated to the late Dr John Shaw, former director of the National Heart Foundation of Australia, for his support of the Heart Research Centre, and to cardiologists, Dr Robert Goodwin and Dr W Anthony Seldon for their contributions to the development of cardiac rehabilitation in Australia.

BEST PRACTICE GUIDELINES FOR CARDIAC REHABILITATION AND SECONDARY PREVENTION

HEART RESEARCH CENTRE



Principal Authors

Alan J Goble, MD, FRCP, FRACP
Marian U C Worcester, PhD, MA

Produced on behalf of Department of Human Services Victoria

Best Practice Guidelines for Cardiac Rehabilitation and Secondary Prevention
Goble AJ & Worcester MUC

Heart Research Centre

ACN 060 479 763

A company limited by guarantee

Lygon Court, 333 Drummond Street, Carlton, Victoria 3053 Australia

PO Box 607, Carlton South, Victoria 3053 Australia

Telephone (613) 9347 5544 Facsimile (613) 9347 6964

Email heart@medicine.unimelb.edu.au Website <http://rubens.its.unimelb.edu.au/~heart/>

Published by Department of Human Services Victoria

April 1999

ISBN: 0 7311 5258 1

Designed by Outsource Design (03) 9645 5220

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FOREWORD

These Best Practice Guidelines for Cardiac Rehabilitation and Secondary Prevention were commissioned by the Department of Human Services Victoria as part of the Victorian Government's Cancer and Heart Offensive. Cardiovascular disease is the most common certified cause of all deaths in Victoria, as in other states of Australia and elsewhere in industrialised countries, ranging around 45% of deaths for both men and women.

Many who suffer from heart attacks or who have surgical or other procedures which are undertaken to reduce symptoms and prolong life, or who have other problems related to cardiovascular disease, have some difficulties during recovery. It is now clear that such physical, psychological and social difficulties can be greatly reduced through rehabilitation programs.

The costs of care after cardiovascular or coronary artery disease events are considerable, both in human and dollar terms. Subsequent episodes of heart attack, heart surgery, heart failure, stroke and other related illnesses may occur months or years later, leading to costly hospital readmissions and significant suffering for patients and families. These may all be reduced, delayed or prevented through the combined approach of medical care and cardiac rehabilitation and secondary prevention programs.

The Victorian Department of Human Services accepts the recommendation of the World Health Organisation and other authoritative bodies that cardiac rehabilitation and secondary prevention programs should be available to all patients with cardiovascular disease. These Guidelines demonstrate how this can and should be achieved in the most effective and simple manner and at low cost. The Guidelines present the scientific basis and reasoning behind the recommended widespread adoption and implementation of such programs.

On behalf of my department and the Victorian Government, I extend our thanks to the authors and to those who have assisted them in the generation of this very considerable and impressive scientific document.



ROB KNOWLES

Minister for Health and Aged Care

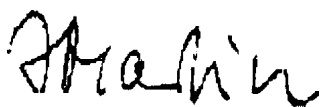
FOREWORD

While the importance of primary prevention of cardiovascular diseases is obvious, the role of *cardiac rehabilitation* as secondary prevention is critical. The cardiac patient who has survived an acute event or suffers from chronic heart disease needs special attention to restore quality of life to the maximum, to improve functional capacity and to lead a normal life; he or she also requires education to help prevent the recurrence of events.

Appropriate cardiac rehabilitation programmes, which include a broad range of secondary prevention measures including education of spouses and families, can help the patient resume a productive life more quickly and function more efficiently. Such programmes can be among the most cost-effective aids that healthcare systems can provide.

Gratitude is expressed to the authors who brought their wisdom, working knowledge, and clinical experience to a unique document on best practice guidelines. The recommendations contained in it are applicable to all countries.

We trust the readers will find the suggestions contained herein to be useful in developing or complementing their own local cardiac rehabilitation programmes.



INGRID MARTIN, MD
Team Coordinator
Cardiovascular Diseases
World Health Organization
Geneva, Switzerland

INTRODUCTION

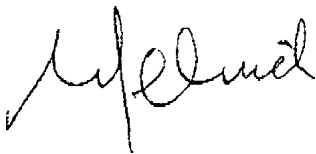
Alan Goble and Marian Worcester have written a classic “Best Practice Guidelines for Cardiac Rehabilitation and Secondary Prevention”. The Guidelines come four years after the US Department of Health and Human Services published the first evidence based guidelines on cardiac rehabilitation entitled “Clinical Practice Guideline”. Why were these Best Practice Guidelines needed and how do they differ from the US Clinical Practice Guideline?

Firstly, the world has moved on. There is more evidence in some areas and new evidence in other areas. Secondly, these Guidelines also involve greater emphasis on the effectiveness of education, counselling and behavioural intervention on outcomes, as well as on organisational issues and evaluation.

Unlike the Clinical Practice Guidelines from the USA, these Guidelines also involve consensus opinions derived from focus groups with health care providers, a survey of current programs in Victoria, Australia, and a comparative study of four model programs in that State. These have been integrated together with the scientific evidence to produce Best Practice Guidelines which are clear, authoritative and evidence based.

They are of value to the practitioners of cardiac rehabilitation, the payers of health services and to those ultimate sceptics, the medical practitioners, who should recommend these programs to all their patients with cardiovascular disease.

I commend the authors on the clarity and scholarship of the Guidelines. I recommend the Guidelines to all interested parties.



MICHAEL V JELINEK, MD, FRACP, FACC

Associate Professor of Medicine

President, Cardiac Society of Australia and New Zealand

PREFACE

These Best Practice Guidelines for Cardiac Rehabilitation and Secondary Prevention concern exercise training, education, counselling and behavioural interventions, as well as key organisational issues relevant to the delivery and evaluation of services.

The Guidelines provide evidence and consensus based recommendations for best practice programs. The document is not intended to be a practical manual on how to set up and conduct programs.

The Guidelines primarily refer to ambulatory programs conducted during early convalescence, immediately after hospital discharge (“Phase 2” cardiac rehabilitation). However, they also refer to inpatient (“Phase 1” cardiac rehabilitation) and later maintenance (“Phase 3”) programs which may best be community-based. All phases of cardiac rehabilitation aim to facilitate recovery (cardiac rehabilitation) and to prevent further cardiac illness (“secondary prevention”).

The document will be useful to both purchasers and funders, agency managers, program planners and people wanting guidance on specific elements of cardiac rehabilitation and secondary prevention programs.

The first five introductory chapters deal with the historical background to cardiac rehabilitation and secondary prevention, the importance of cardiovascular disease as a health care burden, and the development of these Guidelines and other published guidelines and policy statements. Chapter 6 presents a condensed review of the only existing clinical practice guideline on cardiac rehabilitation. That Guideline, which was commissioned by the US Public Health Department, produced recommendations based upon a systematic, comprehensive review of the scientific literature.

Chapters 7 to 11 present a further review of evidence regarding the benefits of exercise training and assess evidence concerning the intensity of exercise, the implications arising from that evidence upon risk stratification and upon the conduct of exercise programs, and the exercise requirements of specific groups. Chapter 12 examines evidence regarding the effectiveness of education, counselling and behavioural interventions upon outcomes, both alone and together with exercise programs, thereby introducing some overlapping of evidence and references with those cited in

earlier chapters. Chapters 13 to 17 deal with the content and structure of education and counselling groups, programs for specific groups, team roles and organisational issues, while Chapters 18 and 19 deal with program evaluation and issues of cost. Recommendations for future research are listed in Chapter 20.

Strength of evidence ratings used in making recommendations were based on those devised by the National Health and Medical Research Council (NH&MRC) of Australia.

Whereas recommendations provided in chapters dealing with the benefits of exercise training, education, counselling and behavioural interventions (Chapters 7 to 12) were largely made on the basis of a comprehensive review of the scientific literature, recommendations contained in Chapters 13 to 19 were mostly based upon consensus opinions and accepted practice, supported by available research findings. These chapters deal with structural issues concerning the content, organisation and evaluation of programs. Many of these issues were included in the Guidelines at the request of members of the Consultative Committee and practitioners who participated in the statewide survey and focus groups.

Some material appears in more than one section of this document because some may prefer to read only specific sections of these Guidelines.

Citation

Reproduction of material in this document may be made with appropriate acknowledgement of sources. The suggested format is as follows:

Goble AJ, Worcester MUC. Best Practice Guidelines for Cardiac Rehabilitation and Secondary Prevention. Heart Research Centre. Melbourne, on behalf of Department of Human Services Victoria; 1999.

EXECUTIVE SUMMARY

Cardiovascular disease remains the leading cause of death in Australia. In 1995, it accounted for 46% of all deaths, with 24% being attributed to coronary heart disease. However, while age-adjusted certified deaths from coronary heart disease are falling, increasing numbers of patients are being discharged alive from hospitals after acute cardiac events and interventions. These patients constitute the major pool of those eligible to attend cardiac rehabilitation and secondary prevention programs.

Cardiac rehabilitation programs were originally introduced to facilitate recovery from acute cardiac events. In both the USA and Australia, work classification or cardiac rehabilitation units were set up in the 1950's and 1960's to encourage return to work among those with physical or psychological disabilities. In Australia, hospital-based programs were established in the mid 1970's. Since that time, many programs have been established in metropolitan and rural hospitals throughout Australia, and more recently, in community settings. Australia now has a large network of programs, particularly in Victoria.

As well as facilitating recovery, cardiac rehabilitation programs function as launching pads for secondary prevention of cardiovascular disease. Education, counselling and behavioural interventions to promote lifestyle change and modify risk factors have become an increasingly important part of cardiac rehabilitation programs.

In 1993, the National Heart Foundation of Australia produced a document to establish minimal standards for cardiac rehabilitation to guide health care providers and policy makers. The purpose of these new Best Practice Guidelines is to provide optimal standards for cardiac rehabilitation and secondary prevention programs, particularly those conducted during convalescence. The recommendations contained within these Guidelines apply to cardiac rehabilitation programs not only in Victoria, but also elsewhere in Australia and in other countries.

The Guidelines examine evidence for the effectiveness of exercise training, education, counselling and behavioural interventions upon physical, psychological, social, occupational and behavioural outcomes, risk factors, morbidity and mortality. Recommendations for best practice are based upon a comprehensive review of the scientific literature. However, where scientific evidence from clinical trials and

observational studies is lacking, recommendations are based upon expert opinion and consensus statements derived from surveys and focus groups with practitioners in the field.

These Best Practice Guidelines do not duplicate the contents of the Clinical Practice Guideline of the US Agency for Health Care Policy and Research (AHCPR), which was published in 1995. Whereas the major part of that document deals with evidence concerning exercise training, these Best Practice Guidelines focus equally on education, counselling and behavioural interventions, as well as other aspects of cardiac rehabilitation which were not extensively addressed in the AHCPR Clinical Practice Guideline. Reference is also made to the findings of studies published since the production of the AHCPR Clinical Practice Guideline.

Exercise Training

There has been extensive research into the benefits of exercise training in patients with cardiovascular disease, particularly after acute cardiac events. Physical and functional outcome measures have been well defined and it is clear that exercise training produces definite physical, quality of life and secondary prevention benefits. Available evidence confirms that exercise training produces definite improvements in physical performance (exercise tolerance, muscular strength and symptoms), psychological functioning (anxiety, depression, well-being), and social adaptation and functioning. Further, exercise training produces a demonstrable reduction in mortality, morbidity, recurrent events and hospital readmissions.

In general, psychosocial outcomes have been less well studied than physical and functional effects of exercise training. Conclusions concerning psychosocial benefits, widely claimed by patients and endorsed by practitioners, have been much less well documented scientifically. It is likely that many of the psychosocial benefits of exercise training are attributable to group activities, peer support and access to professional advice rather than to the exercise itself.

It is probable that exercise training has a favourable impact upon other outcomes, including modification of risk factors. These benefits are mostly apparent when exercise is provided as part of a comprehensive program including education, counselling, behavioural interventions and support. Further, evidence indicates that for such beneficial lifestyle changes to be sustained, continued physical activity and support are required.

Studies have now confirmed that high intensity and low intensity exercise programs produce similar benefits. Nevertheless, some patients may prefer high intensity exercise. Those returning to heavy manual jobs may benefit from more intensive exercise training. For the majority of patients, however, low intensity exercise is sufficient. Further, low intensity exercise has some important practical advantages. It

is more suitable for a broader population, including older men and women and patients with functional impairments, and it is more likely to be sustained in the longer term. Because low intensity programs do not require such careful supervision and use less technology and equipment, they can be conducted at low cost. Clinical rather than technological methods can be used for risk stratification, assessment and monitoring, with considerable cost savings. Exercise conducted in groups also significantly reduces costs.

Further research is needed to determine best practice with regard to the frequency of exercise sessions and the duration of exercise programs. On the basis of both evidence and expert opinion, it is apparent that twice weekly group exercise programs are as effective as thrice weekly. While twice weekly group exercise is recommended, there is some evidence that once weekly supervised group exercise may achieve similar benefits to twice weekly group exercise, provided it is accompanied by an additional daily home walking program.

There is no scientific evidence to indicate the preferred duration of exercise cardiac rehabilitation programs. On the basis of expert opinion, most of the aims of ambulatory cardiac rehabilitation programs conducted during convalescence should be achieved with a twice weekly program lasting four to eight weeks.

It should be emphasised that individual patients vary considerably in their need for a group exercise program. Thus, it is essential to provide flexible programs to meet particular needs.

Recommendations

Exercise programs for cardiac patients should:

- be based on low to moderate intensity exercise
- be suitable for a broad population
- be tailored to individual needs while being conducted in groups
- be preferably conducted twice per week
- be accompanied by a home walking program
- be continued for four to eight weeks
- have a ratio of no more than 10 patients to one staff member
- be designed by a physiotherapist or exercise specialist
- be conducted by a physiotherapist, exercise specialist or an additionally trained nurse or occupational therapist

Education, Counselling and Behavioural Interventions

Scientific evidence concerning the benefits of education, counselling and behavioural interventions is less conclusive than that concerning exercise training. Much of the research in these areas has been poorly designed. Further, the evidence base is confounded by markedly differing interventions, duration of programs and outcome

measures. In some areas, evidence is nonexistent or scanty. For example, the application of behavioural approaches to modify risk factors has not been extensively tested to date in cardiac rehabilitation.

Despite these qualifications, there is now some good evidence to support the effectiveness of education, counselling and behavioural interventions in cardiac rehabilitation, whether combined with, or provided independently of, an exercise program. Available evidence confirms that education, counselling and behavioural interventions increase patient knowledge and enhance psychosocial functioning. Further, favourable effects have been demonstrated upon reduction of smoking, lipid levels and stress. However, increases in knowledge do not necessarily lead to improved health behaviours. More emphasis upon teaching patients the necessary skills for making lifestyle changes is required. Further research is needed to develop interventions which produce measurable improvements in health behaviours and modification of risk factors.

Recommendations

Education and counselling for cardiac patients should:

- be conducted in groups
- be preferably conducted twice per week
- be conducted over four to eight weeks
- be supplemented by individual counselling as required
- follow adult learning principles and encourage interactive discussion
- apply behavioural principles, including goal setting and monitoring, to promote lifestyle changes
- involve psychologists and other appropriately trained specialists to teach patients skills for making lifestyle changes
- provide information relevant to the needs of particular patients or groups of patients
- provide scientifically accurate information
- be delivered by a multidisciplinary team of appropriately trained facilitators

Psychosocial Interventions

Cardiac patients and spouses commonly experience psychological distress following an acute cardiac event. Unfortunately, there appears to be less emphasis upon psychosocial than physical and functional aspects of cardiac rehabilitation. Participation in group exercise and education programs enhances psychological functioning. Such groups also provide social support. Cardiac rehabilitation programs conducted in groups have significant advantages over individually based programs (such as home programs) in these important respects. Stress management programs, relaxation therapy, psychosocial counselling groups and spouse groups can also facilitate psychosocial recovery. Evidence from well designed studies to support the

value of such interventions is generally lacking, although a few recent studies have shown favourable effects from stress management and relaxation therapy. Individual counselling of patients and spouses has also been shown to be effective.

Recommendations

Psychosocial rehabilitation should offer:

- brief screening to detect patients and spouses requiring special assistance
- individual counselling by a social worker, psychologist, or other trained counsellor, if required
- participation in a group to provide social support
- additional modules, such as stress management or relaxation therapy, if required

Vocational Rehabilitation

There is limited evidence demonstrating that cardiac rehabilitation, as currently practised, has a favourable impact upon occupational outcomes. One possible explanation for this lack may be that resumption of work appears to have been set aside or forgotten as a major aim of cardiac rehabilitation in recent years. Further studies are required to test strategies to increase rates of return to work and to promote better occupational adjustment among those who successfully resume work.

Recommendations

Vocational rehabilitation should include:

- supervision by the occupational therapist
- discussion at entry assessment of employment plans and development of appropriate vocational goals
- identification of any physical and psychological barriers to resumption of work
- modules offering tailored vocational programs, including work hardening and simulated work testing
- adequate liaison between patient, doctor and employer

Organisational Issues

There is considerable evidence to support the need for improved referral procedures, discharge planning and liaison between health care providers so that greater participation in cardiac rehabilitation programs can be achieved. Attention to such process issues has been inadequate in the past and now requires a greater focus. Assistance with transport and the provision of more locally based programs are also recommended.

The practice of automatic referral to programs is strongly recommended. If medical contraindications exist in individual cases, the doctor should indicate in the patient's hospital record that the patient should not be referred to a program.

The delivery of a structured cardiac rehabilitation program involves the need for multiple skills. Such expertise is usually beyond the capacity of one or few health professionals and in several areas, specific training is required. Thus, a multidisciplinary team is recommended. A designated co-ordinator is essential. Any team member with adequate organisational and interpersonal skills and sufficient time may fulfil this role. An important function of the program co-ordinator is to ensure adequate communication between different team members, and especially with general practitioners. One health professional may suffice for small programs in poorly resourced rural or local communities, provided there is adequate back-up support.

A key principle of contemporary cardiac rehabilitation programs is flexibility. Thus, while nearly all patients should be encouraged to attend exercise and education groups, the duration of their attendance and the nature and amount of rehabilitation required will vary considerably, according to individual need.

Some patients will require slow progress and support through a gradual program of increasing activity, while others with little impairment of cardiac function or fitness may progress rapidly. Psychological and social support may also vary markedly in degree. While some patients may have a good understanding of their illness or procedure and have clearly defined goals for achievement in a cardiac rehabilitation program, others may have little idea of the nature of their condition or of what may be achieved or desirable from such a program. It is therefore essential that the individual needs of each patient are understood and discussed between the patient and program staff. Patients should be able to see that their particular needs are being addressed at all times in the program.

A rehabilitation plan devised to suit the individual patient needs to be agreed upon at the entry assessment. Specific individual behavioural goals should also be decided so that progress can be monitored. For best practice, a variety of program components or modules should be available to patients. It is now apparent that certain patient groups, such as those who have undergone coronary angioplasty, require different kinds of programs. Some patient groups, such as those of aboriginal background, have rarely attended cardiac rehabilitation programs. Moreover, very little research has been conducted to identify their specific needs. Tailored programs for different patient populations need to be devised and evaluated.

The need for flexibility in the provision and delivery of services also arises from recommendations that programs should be offered to a broad range of patients, including those with considerable physical and functional limitations. It is further advocated that family members should also attend cardiac rehabilitation programs which can offer them an opportunity for primary prevention of cardiovascular disease.

Recommendations

Cardiac rehabilitation and secondary prevention programs should:

- develop efficient referral procedures
- develop effective strategies to maximise program attendance and completion
- offer programs which are accessible
- provide flexible, multifactorial programs consisting of several modules
- offer programs which suit a broad range of patient groups as well as family members
- be delivered by a multidisciplinary team with a designated co-ordinator
- ensure adequate communication between hospital staff, program staff and general practitioners

Evaluation

Evaluation is becoming an increasingly important aspect of cardiac rehabilitation and secondary prevention programs. There are some suitable measures available to assess functional, quality of life and behavioural outcomes. However, there is a definite need for further research to test the applicability of some generic tools to cardiac rehabilitation and to devise more sensitive measures. Outcome indicators have been included in the Best Practice Guidelines because it is difficult to monitor a number of outcomes which require longterm follow-up. Further testing of the recommended process and outcome indicators is required to identify suitable benchmarks. More detailed costings of best practice model programs are also required. Qualitative research is required to obtain a better understanding of patient attitudes and responses in areas which are less well understood.

It should be emphasised that multifactorial, comprehensive cardiac rehabilitation programs combining exercise training with education, counselling and behavioural interventions produce significantly greater benefits to patients than programs providing either exercise or education alone. Many of the studies reviewed contain education, counselling or behavioural interventions as well as exercise training and demonstrated favourable outcomes. However, it is difficult to determine which ingredients of multifactorial programs produce these benefits.

Recommendations

All programs should:

- undergo outcome evaluation to determine their effectiveness upon patient outcomes
- undergo process evaluation to identify inadequacies, to assure program quality and to improve program delivery
- be evaluated following professional advice regarding appropriate evaluation methods

Cost, Cost Saving and Cost Effectiveness

There is marked variation in the cost of programs throughout the world. Costs depend largely on the program duration, frequency of attendance and the intensity of rehabilitation exercise. Low cost programs are feasible provided that high intensity exercise is avoided, thereby obviating the need for technology in risk stratification and monitoring. The major cost is then related to the salaries of program staff. With a well attended program, approaching optimal size for exercise and education groups and for both group and individual counselling and support, it appears that the aims of the program may be generally achieved with twice weekly (possibly once weekly) sessions of group work lasting two hours per session over a period of six weeks. This type of twice weekly program can be reasonably conducted at a mean cost of approximately \$40 per session per patient and a total cost of \$480 per patient completing the program. The cost of a once weekly program would probably approach \$300 per patient.

There is now evidence that significant cost saving may be achieved through cardiac rehabilitation and secondary prevention programs. These savings are largely from reduced subsequent hospital admissions and reduced costs of medical care. There are additional savings that arise through pension, retirement and sickness benefits, provided that work resumption and remaining in work is achieved. These cost savings may be very large in an ageing population prone to development of preventable heart failure.

While cost benefit and effectiveness studies are so far not widely reported, it is apparent that cardiac rehabilitation programs have benefits and effectiveness similar to other successful interventions in the treatment of cardiac and vascular disease.

Recommendations

Cardiac rehabilitation and secondary prevention programs should:

- Avoid high intensity exercise to assure low cost
- Assure educational and behavioural contents are sufficient for secondary prevention, thereby reducing future medical and hospital costs
- Encourage continuation in gainful employment, thereby reducing pension, retirement and social security costs
- Be directed to assure the above and, further, to improve other patient outcomes, including longer life expectancy and improved quality of life such that the gains are apparent relative to the cost.

Although the primary focus of these Best Practice Guidelines has been upon producing recommendations for outpatient programs conducted during convalescence, much of the literature cited in support of recommendations was based upon longterm maintenance programs. It should be emphasised that behaviour change is a process which requires considerable time. Thus, participation in ongoing community based programs is recommended to encourage maintenance of behaviour change and modification of risk factors.