

Best practice guidelines

Outpatient cardiac rehabilitation

**Best practice guidelines
for health professionals**



Queensland Government
Queensland Health

Foreword

Coronary Heart Disease is a national and state health priority. Coronary Heart Disease is responsible for significant morbidity and mortality, which impacts on the Queensland Health system, and more importantly, on the lives of those with coronary heart disease, their families and carers.

Queensland Health acknowledges that cardiac rehabilitation is an important component of management following a cardiac event or intervention. The following guidelines have been developed to assist health professionals deliver these services.

The Best Practice Guidelines for Outpatient Cardiac Rehabilitation identify:

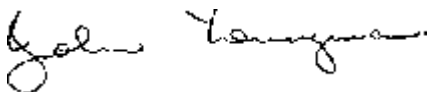
- evidence based practices in the area of cardiac rehabilitation
- options for efficient service delivery; and
- services that can be provided by a range of accredited service providers

These guidelines support the Health Outcomes Plan for Cardiovascular Health: Coronary Heart Disease 2000–2004 through implementation of strategies within the plan. They should be used in conjunction with the Health Outcomes Plan to provide coordinated services to people with coronary heart disease.

Queensland Health is committed to providing efficient and effective services to people with coronary heart disease and these guidelines provide a blueprint for best practice in this area.

I recognise the significant work undertaken by health professionals and professional associations involved in the development of these guidelines and thank all those involved in this process for their collaboration and support.

I am pleased to endorse these Guidelines and ask that health professionals involved in the care of people with coronary heart disease become familiar with this document and encourage its use.



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Acknowledgments

The Health Advisory Unit in Queensland Health initiated the development of Outpatient Cardiac Rehabilitation Best Practice Guidelines for health professionals. Expressions of interest in being involved in developing these guidelines were sought from members of cardiac rehabilitation centres, professional associations and universities throughout Queensland. Focus groups were formed that consisted of a range of health professionals throughout Queensland with an interest in the development of cardiac rehabilitation guidelines. The following people were members of focus groups that contributed to the development of the best practice guidelines for Outpatient Cardiac Rehabilitation – Best Practice Guidelines for Health Professionals.

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Contents

| | |
|--|----|
| Acknowledgments | 2 |
| 1. Aim of this document | 5 |
| 1.1 Other sources of information | 5 |
| 2. Evidence | 5 |
| 2.1 Evidence basis of document | 5 |
| 2.2 Evidence regarding the benefits of cardiac rehabilitation | 6 |
| 3. Cardiac Rehabilitation | 6 |
| 2.1 Aims of cardiac rehabilitation | 7 |
| 2.2 Phases of cardiac rehabilitation | 7 |
| 4. Menu based approach to outpatient cardiac rehabilitation | 8 |
| 4.1 Application at the local level | 8 |
| 4.1.1 How to use this document | 8 |
| 4.1.2 Prioritisation | 9 |
| 4.1.3 Multidisciplinary teams | 9 |
| 5. Standards of practice | 9 |
| 5.1 Professional competence | 9 |
| 5.2 Skillmix | 9 |
| 5.3 Training | 10 |
| 5.2.1 Indigenous health workers | 10 |
| 6. Referrals | 10 |
| 6.1 Referral to cardiac rehabilitation | 10 |
| 6.2 Benefit of cardiac rehabilitation to others | 10 |
| 7. Models of service delivery | 11 |
| 7.1 Group programs | 11 |
| 7.2 Barriers to group participation | 11 |
| 7.3 Alternative models of delivery of cardiac rehabilitation | 12 |
| 8. Elements of outpatient cardiac rehabilitation | 12 |
| 8.1 Integration of cardiac rehabilitation elements | 12 |
| 8.2 General Assessment | 13 |
| 9. Physical activity | 13 |
| 9.1 Introduction | 13 |
| 9.1.1 Definitions | 13 |
| 9.2 Aims of exercise | 15 |
| 9.3 Factors to consider on referral | 15 |
| 9.3.1 Exclusion from exercise – criteria | 15 |
| 9.3.2 Other patient complications | 15 |
| 9.3.3 Consultation with the treating physician | 16 |
| 9.4 Low to moderate intensity exercise | 16 |
| 9.5 Other factors | 16 |
| 9.5.1 Safety procedures | 16 |
| 9.6 Assessments and interventions | 17 |

| | |
|---|----|
| 10. Education, discussion and counselling | 20 |
| 10.1 Importance of education discussion and counselling | 20 |
| 10.2 Education | 20 |
| 10.2.1 Effectiveness | 20 |
| 10.2.2 Education topics | 21 |
| 10.3 Counselling | 24 |
| 11. Progression to the maintenance phase of cardiac rehabilitation | 26 |
| 11.1 Ongoing maintenance | 27 |
| Glossary | 27 |
| References | 28 |
| Appendices | |
| Appendix 1 | 31 |
| Further information | |
| Appendix 2 | 32 |
| Outpatient cardiac rehabilitation – local area contacts | |
| Appendix 3 | 33 |
| Minimum data set collection standards | |
| Appendix 4 | 34 |
| Screening tools | |
| Appendix 5 | 35 |
| Guide to exercise and physical activity levels | |
| Appendix 6 | 36 |
| Borg rating of perceived exertion scale | |
| Appendix 7 | 37 |
| Desired outcomes and objectives of nutrition interventions | |

1. Aim of this document

The expectation for the development of any clinical practice guidelines is that the documented assessment and management strategies are supported by evidence showing that the listed practices produce positive outcomes.

These cardiac rehabilitation guidelines do not aim to review the literature to reproduce evidence based documents. They aim to source evidence based information including meta-analyses and systematic reviews to inform health professionals about practices in outpatient cardiac rehabilitation that are evidence based.

1.1 Other sources of information

These guidelines are designed to assist the health professional deliver efficient and effective services based on patient needs and the resources available. They are not designed to educate the health professional in the area of cardiac rehabilitation.

For more information on the content of thorough assessments and interventions for cardiac rehabilitation, refer to Appendix 1.

2. Evidence

2.1 Evidence basis of document

A large amount of research has been published on the subject of outpatient cardiac rehabilitation. To obtain evidence based systematic reviews and

meta-analyses regarding outpatient rehabilitation, searches were done of Cochrane Databases, the NHS Centre for Reviews and Dissemination – University of York, Evidence Based Medicine Review Database and Medline. Medline searches were also used to obtain consensus statements and reviews.

Existing guidelines on cardiac rehabilitation were also sought. A number of sources (NSW Health¹, Heart Research Centre, Victoria², U.S. Department of Health and Human Services³, NHS Centre for Reviews and Dissemination⁴) have reviewed this literature and produced an evidence basis to practice guidelines for cardiac rehabilitation. NSW Health¹ and the Heart Research Centre³, have assigned evidence using the NHMRC Quality of Evidence rating scale⁵. This scale has been used to support information presented within this document and is explained below.

- I Evidence obtained from a systematic review of randomised controlled trials, providing that it includes at least two properly designed trials of moderate size or a systematic review that does not include trials which it could be reasonably argued could not effect the findings of the review
- II Evidence obtained from a least one properly designed randomised controlled trial.
- III Evidence obtained from a well designed controlled trial without randomisation, from well designed cohort or case – controlled analytic studies, preferably from more than one centre or research group or from multiple time series with or without intervention.
- IV Opinions of respected authorities, based on clinical experience, descriptive studies or reports of expert committees.

2.2 Evidence regarding the benefits of cardiac rehabilitation

Goble and Worcester^{2,6} reviewed available literature to determine evidence of the benefits of cardiac rehabilitation. They concluded that cardiac rehabilitation could be of benefit in:

Risk factor outcomes

- reduced smoking (level of evidence 2)
- improved lipids (level of evidence 2)
- reduced weight (level of evidence 2)
- lower blood pressure (level of evidence 2)
- improved subsequent exercise habits (level of evidence 3)

Physical outcomes

- improved exercise tolerance (Level of evidence 1)
- improved muscular strength (level of evidence 1)
- reduced symptoms (level of evidence 1)
- reduced morbidity (level of evidence 1)
- reduced mortality (level of evidence 2)
- retardation of atherosclerosis (level of evidence 2)

Psychosocial outcomes

- less anxiety (level of evidence 1)
- less depression (level of evidence 1)
- improved wellbeing (level of evidence 1)
- improved social functioning (level of evidence 1)
- greater knowledge (level of evidence 2)
- reduced stress (level of evidence 3)
- increased return to work (level of evidence 3)

(from: Goble and Worcester (1999)⁶ Best Practice Guidelines for Cardiac Rehabilitation and Secondary Prevention: A synopsis. Heart Research Centre, Melbourne, on behalf of the Department of Human Services Victoria).

This evidence indicates that exercise, physical activity, nutritional, education, discussion and counselling interventions can be used in

combination to have substantial impact on a person's wellbeing.

The processes, personnel and organisation of services required to provide outpatient cardiac rehabilitation detailed in this document is based on the following evidence:

- access to outpatient cardiac rehabilitation should be offered to all patients (level of evidence 1²)
- components of cardiac rehabilitation can be of benefit to spouse/family/support person/carer (level of evidence 3^{2,4})
- group programs are effective for exercise/physical activity (level of evidence 2²)
- group sessions are effective for education, discussion and counselling (level of evidence 4²)
- alternative models of service delivery should be implemented where appropriate (level of evidence 2¹)
- most effective cardiac rehabilitation programs involve the integration of components (level of evidence 2^{3,4})
- multidisciplinary teams should be used where possible to provide outpatient cardiac rehabilitation (level of evidence 4^{1,2})

3. Cardiac rehabilitation

Level of evidence 1^{1,2,3,7}

Coronary heart disease is responsible for significant morbidity and mortality within Australia. Queensland Health acknowledges that cardiac rehabilitation is an important component of the rehabilitation process for people with coronary heart disease.

Appropriate education, counselling, physical activity and exercise following a cardiac event or intervention has been shown to have beneficial physical, social and psychological

effects. Therefore, these outpatient cardiac rehabilitation guidelines for health professionals have been developed to assist health professionals in the delivery of these services.

The National Heart Foundation of Australia⁷ describes cardiac rehabilitation as including “all measures used to help cardiac patients return to an active and satisfying life and to prevent the recurrence of cardiac events”. Cardiac rehabilitation “should be an integral component of the long-term, comprehensive care of a cardiac patient”⁷.

3.1 Aims of cardiac rehabilitation

The National Heart Foundation⁷ states that the general aims of cardiac rehabilitation include:

- maximising physical, psychological and social functioning to enable patients to live productively and with confidence
- assisting and encouraging behaviours that may minimise the risk of further cardiac events and conditions

This document supports the above aims and focuses on assisting health professionals involved in outpatient cardiac rehabilitation to achieve them.

3.2 Phases of cardiac rehabilitation

There are three phases of cardiac rehabilitation, all of which aim to aid the recovery of a person following a cardiac event and to prevent the occurrence of further events. These phases are:

Phase I – inpatient – mobilisation

Phase II – outpatient – initial recovery period of 4 to 12 weeks⁷

Phase III – maintenance – ongoing

Progression through these phases should be coordinated, with the patient as the focus of

care. Consultation between the patient, physicians, cardiac rehabilitation health professional/s, and the patient’s significant others should occur to determine the goals for and needs of the patient throughout this process.

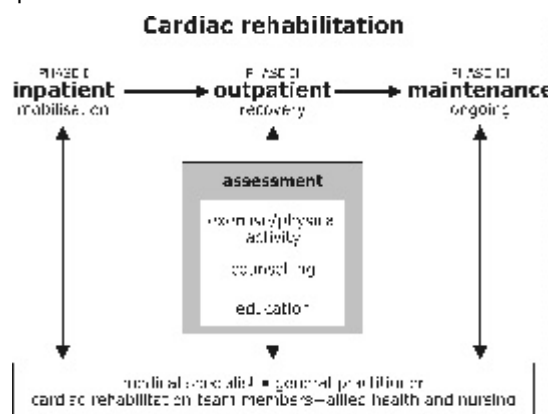


Figure 1: Phases of cardiac rehabilitation

This document focuses on outpatient cardiac rehabilitation (phase II). Outpatient cardiac rehabilitation is an important component in the recovery of patients following a cardiac event^{1,3,4,7,8}. These guidelines provide a comprehensive and multidisciplinary approach to address the aims of cardiac rehabilitation stated in section 3.1.

Components that should be included in comprehensive cardiac rehabilitation are:

- physical activity
- education
- counselling
- interventions targeting behaviour modification in the following areas:
 - inactivity
 - weight control
 - healthy diet
 - smoking cessation
 - stress management
 - control of hypertension
 - psychological issues

4. Menu based approach to outpatient cardiac rehabilitation

These best practice guidelines provide flexibility within an evidence based framework. They aim to assist health professionals working in the area of cardiac rehabilitation to manage a patient through the cardiac rehabilitation outpatient program, to assess prospective clients and appropriately intervene in patient care to meet the individual needs and goals of patients. Health professionals should select assessments and interventions that are appropriate for individual patients.

As well as clinical decision making considerations, this document also emphasises the effectiveness of a multi-factorial integrated approach to cardiac rehabilitation and highlights management considerations regarding access to and delivery of services.

It is recognised that circumstances may arise that necessitate variation from particular aspects in these guidelines. In these instances, it is recommended that health professionals exercise independent judgement as to what is appropriate for individual patients or groups of patients in specific circumstances.

4.1 Application at the local level

4.1.1 How to use this document

To assist health professionals navigate their way through the document the following guide has been provided. Steps to consider at the local level would be to:

1. negotiate a referral process to ensure appropriate referrals are received (section 6)
2. gather general clinical data (Table 1, Section 8)
3. prioritise delivery of services if necessary (Section 4.1.2)
4. determine the appropriate method of service delivery (Section 7)
5. discuss with health professionals available, those most skilled to carry out tasks (Section 5)
6. provide education on topics related to CHD (Table 6, Section 10)
7. assess the needs of the patient in areas of physical activity/exercise and counselling/risk factor modification, using selected assessments as necessary (Table 2, Section 9 and Table 7, Section 10)
8. determine areas requiring intervention – select interventions (Tables 3 and 4, Section 9 and Table 7, Section 10) and refer on if necessary
9. discuss patient progress with patient's general practitioner and medical specialists throughout the outpatient phase as necessary
10. reassess and modify interventions according to the changing needs of the patient
11. at the completion of the outpatient phase, discuss the long term needs and maintenance phase options with the patient and family, medical specialist and/or general practitioner (Section 11)

4.1.2 Prioritisation

The aim of any service is to provide timely intervention for all people requiring cardiac rehabilitation. It is important to note that priority of access to comprehensive outpatient cardiac rehabilitation may vary according to the individual's personal health and well being, risk status, the resources available and health professional availability.

Prioritisation can only be determined at the local level and should be guided by clinical judgement as individuals requiring cardiac rehabilitation are identified. For example, health professionals may need to prioritise interventions for a patient following a myocardial infarction who smokes, has borderline hypertension, is inactive and overweight.

4.1.3 Multidisciplinary teams

The World Health Organisation⁹ recommends that for best practice, a multidisciplinary team of health professionals should conduct cardiac rehabilitation programs in 'intermediate facilities' such as metropolitan and large rural centre hospitals/community health centres⁹.

Goble and Worcester² suggest that where access to group programs is difficult, outpatient cardiac rehabilitation may be conducted by a single health professional with support from other regional health professionals. This is consistent with the appropriate staffing of a 'basic facility' as described by the World Health Organisation⁸.

Appendix 2 has been included to record the details of health professionals within a local area with the capacity to participate in cardiac rehabilitation.

5. Standards of practice

5.1 Professional competence

These guidelines are provided to assist trained health professionals provide care to individuals requiring outpatient cardiac rehabilitation. These health professionals include those with a degree, diploma or a certificate of registration in exercise physiology, medicine, nursing, occupational therapy, nutrition and dietetics, physiotherapy, psychology or social work.

These guidelines should not be used by people who have not completed the appropriate level of training. This may lead to information within the guidelines being applied incorrectly and/or out of context.

Ultimately, the responsibility for delivering services which meet the appropriate standard of care lies with the health professional. It is the individual health professionals' responsibility to ensure they adhere to and work within their personal skill level and scope of practice outlined by their professional boards and associations. Therefore, the health professional is responsible for referring patients to appropriate health professionals when the expertise required is outside their skill level.

5.2 Skill mix

Many different health professionals contribute to the cardiac rehabilitation of an individual. These individuals have training and expertise in specific areas of cardiac rehabilitation. However, in some parts of Queensland access to all professionals is not available.

Skill mix can be defined as the range of health professionals with the knowledge and skills necessary to deliver specific components of

outpatient cardiac rehabilitation. An alphabetical list of health professionals has been included in the skill mix columns of the clinical activity tables which follow. They have been included to help the health professional identify the appropriate professionals for specific parts of the program. If appropriate professionals are available, these guidelines recommend they be included in the cardiac rehabilitation team.

Health professionals involved in outpatient cardiac rehabilitation should educate each other on their role and scope of practice. This will enable appropriate referrals, coordination of patient care and support, and complement medical care provided by cardiac specialists and general practitioners.

5.3 Training

The Heart Foundation of Australia⁷ recommends that health professionals providing cardiac rehabilitation should have training and/or work experience that includes education and physical activity components of cardiac rehabilitation in addition to their professional qualifications.

Training may be appropriate in some instances to increase the level of knowledge and skills of those professionals providing cardiac rehabilitation programs. There are a variety of accredited courses available that may fulfil these needs.

5.2.1 Indigenous health workers

If identified by the patient as appropriate, Indigenous health workers should be included in the cardiac rehabilitation team to work with other health professionals to provide best practice cardiac rehabilitation services to Indigenous people.

In these guidelines it is assumed that Indigenous health workers who provide information regarding cardiac rehabilitation have undergone appropriate training. An example of one such program is the VETEC accredited program "Course in Cardiac Rehabilitation and Secondary Prevention for Indigenous Health Workers"¹⁰.

6. Referrals

6.1 Referral to cardiac rehabilitation

Level of evidence ¹₂

Cardiac rehabilitation, including outpatient rehabilitation^{1,2,7,8} should be available to anyone who has had an acute myocardial infarction, coronary artery bypass grafts, coronary angioplasty or other cardiovascular disease². Cardiac rehabilitation plays a crucial role in secondary prevention as well as aiding individuals to return to a productive and satisfying life.

In most cases, patient are referred to cardiac rehabilitation by their cardiac physician, surgeon, or general practitioner. Negotiation of pathways and methods of referral should be determined at the local level.

6.2 Benefit of cardiac rehabilitation to others

Level of evidence ³

The benefits of cardiac rehabilitation should not be limited to people who have suffered a cardiac event, but should involve the patient's family/carer/ support person/spouse. There is some evidence

to demonstrate that the inclusion of families and carers in the cardiac rehabilitation process can improve patient outcomes and that access, uptake of information and adherence is more likely when partners are involved^{4,11}

Education of patients and their partners has been reported to result in improved knowledge, decreased disability and health behaviour modification⁴.

In addition, families and support people may suffer considerable changes to their lifestyle and emotional status due to the patient's cardiac status⁴, and levels of anxiety and depression seen in spouses may equal those seen in patients. As these key individuals play a vital role in the cardiac rehabilitation process, they should be included where appropriate, and should themselves be considered for intervention if necessary.

7. Models of service delivery

As each person is an individual with different needs, the method of service delivery for cardiac rehabilitation is different for each person. It is therefore essential to assess the appropriate method for delivering outpatient cardiac rehabilitation ie. in groups, individually, by reading material, by video or audiotape. Ongoing assessment should occur to determine if changes in service delivery need to be made.

7.1 Group programs

Level of evidence 2 (exercise)
Level of evidence 4 (counselling and education)

At present, evidence is available to indicate that group programs are effective for counselling, education and exercise in the context of outpatient cardiac rehabilitation. The benefits of group participation include improved social interaction and support, which may enhance self-efficacy and motivation.

In some instances, practitioners may identify people who require individual intervention or long term management in some areas. Therefore group sessions may precede or follow individual sessions. Referral on to appropriate health professional/s should occur if identified as appropriate and should be conducted in a manner that does not diminish or challenge an individual's right to privacy.

Group sessions can involve the patient and/or the patient's family/carer/ support person/ spouse (level of evidence 3³). Benefits to this group have been discussed in section 6.

7.2 Barriers to group participation

Many factors may dictate other modes of service delivery for all or some aspects of comprehensive outpatient cardiac rehabilitation.

Factors which may prevent individuals from participating in a group situation include:

- the absence of a structured cardiac rehabilitation program
- times of programs
- travelling time to attend cardiac rehabilitation programs
- access and the availability of transport
- financial constraints
- the number of health professionals available

Factors impacting on an individual's ability to gain the full benefit from group sessions could include:

- cultural issues
- high risk patients
- co-morbidities which influence recovery/ rehabilitation
- work issues/early return to work
- language and literacy/communication barriers
- physical/cognitive/ behavioural issues
- psychosocial issues
- discomfort disclosing problems in a group environment
- major barriers to change
- the individual's needs and goals
- personal motivation
- professional discretion
- individual's choice

Therefore, individually tailored components should be implemented in addition to group activity where appropriate. Special consideration should also be given to individuals who are unable to derive the full benefit from written handout material because of literacy problems, visual impairment or if English is a second language.

7.3 Alternative models of delivery of cardiac rehabilitation

Level of evidence 2¹

The Health Outcomes Plan for Cardiovascular Health: Coronary Heart Disease 2000-2004¹² states that Queensland Health is working towards providing a comprehensive mix of secondary prevention services to meet the needs of all patients with known coronary heart disease, after an acute coronary event or surgical procedure. To ensure that patients have equal access to cardiac rehabilitation outpatient programs suitable to individual needs, alternative models of service delivery need to be explored to encourage participation.

The following (non-exhaustive) list of alternative models may help health professionals determine the most effective method of service delivery for their particular area:

- use of home-based programs which may include written education modules, regular telephone contact, videos (level of evidence 2^{1,4})
- cardiac rehabilitation provided at times that suit working patients (ie – out of working hours)
- accelerated cardiac rehabilitation programs provided for some patient types (eg. four week cardiac rehabilitation programs for angioplasty patients) (level of evidence 3²)
- regular individual consultations/ appointments if necessary (eg. for counselling) (level of evidence 2¹)
- comprehensive discharge plan and regular telephone contact
- use of video link-ups with larger centres
- use of visiting regional health professionals
- outreach programs with the general practitioner as the facilitator

8. Elements of outpatient cardiac rehabilitation

8.1 Integration of cardiac rehabilitation elements

Level of evidence 2¹

Outpatient cardiac rehabilitation consists of a number of components including risk factor management, education, counselling, behaviour change, nutrition, exercise and physical activity. Integration of these components occurs naturally in cardiac rehabilitation programs.

In order to provide patient focused interventions, health professionals need to combine these areas to achieve the patient's goals and needs. The combination of these interventions appears to be more beneficial than benefits achieved from interventions from a single modality⁴. It should be stressed that these components, when taken in isolation, are not considered to provide comprehensive care to the cardiac patient.

To ensure that all individuals referred for outpatient cardiac rehabilitation receive appropriate, timely and tailored interventions, it is recommended that health professionals:

- consult with the individual's medical specialist and general practitioner
- perform a general assessment to determine the patients needs (see Section 8.1)
- consult with other members of the cardiac rehabilitation team and refer to health professionals in the area of physical activity/exercise, diet, counselling and education for assessment to determine appropriate interventions (see sections 9 and 10)
- consider appointing a cardiac rehabilitation coordinator to assist with coordinated delivery of cardiac rehabilitation throughout all phases

8.2 General assessment

When an individual is referred to outpatient cardiac rehabilitation, general information should be obtained, if not already available, by health professional/s involved in the area of cardiac rehabilitation. Consultation with, or referral by, the individual's medical specialist and/

or general practitioner should occur, as the medical officer is responsible for the overall management of the patient.

The general clinical information detailed in Table 1 (page 14) covers a range of areas and is considered to be the optimal level of information needed to develop a patient profile. The information can be used to highlight areas to be addressed by the appropriate members of the cardiac rehabilitation team.

Items identified with a * are those included in the "Minimum Data Set for Phase II Cardiac Rehabilitation and Secondary Prevention"¹³ developed by the Queensland Cardiac Rehabilitation Association and the Heart Foundation of Australia (Queensland). Please refer to Appendix 3 for a copy of this minimum data set.

9. Physical activity

9.1 Introduction

Physical activity and exercise are important components of cardiac rehabilitation. The aim of physical activity and exercise includes returning the individual to an appropriate level of function, improving the individual's quality of life, providing risk factor modification as well as meeting the client's goals and needs.

9.1.1 Definitions

This document supports the following definitions of physical activity and exercise as described in "Physical activity for people with heart disease"¹⁴.

Table 1: General clinical data

| Clinical Data | General content |
|---|---|
| Coronary heart disease data and medical history | <ul style="list-style-type: none"> - age, sex* - demographic information* - date of the event* - principal diagnosis* - previous surgical &/or medical interventions - relevant test results - previous cardiac history - cardiac symptoms - co-morbidities* including diabetes* - family history* - referral by* |
| Medications* | <ul style="list-style-type: none"> - name, dosage, frequency and method of administration - compliance with medication |
| Baseline data | <ul style="list-style-type: none"> - dietary habits - blood pressure* - weight, height (BMI) and waist/hip ratio* - total cholesterol, LDL, HDL, triglycerides* - smoking history* - substance use - exercise tests (if performed) - basic functional level - physical activity* |
| Psychosocial issues | <ul style="list-style-type: none"> - affect (depression, anger, stress, anxiety, hostility, isolation)• - cognitions (hopelessness, helplessness, cynicism, attributions) - behaviour (time urgency, aggression, avoidance, poor health behaviours) - patient beliefs regarding causation of their CHD - reaction to cardiac event (acute and chronic) - family/social support network* - cultural and religious issues - home environment - motivation (denial, desire to change) - lifestyle factors (including exercise, activities of daily living) - employment status* |

• See Appendix 4 for information on validated screening tools. Referral on to appropriate health professionals should be based on screening results.

* Included in the “Minimum Data Set for Phase II Cardiac Rehabilitation and Secondary Prevention”¹³

Physical activity: any bodily movement produced by skeletal muscles that results in energy expenditure.

Exercise: planned, structured and repetitive movement which is done to improve or maintain one or more components of physical fitness.

Therefore, exercise is a component of physical activity.

For some individuals with low activity tolerance, tasks classified as physical activity (such as showering and sweeping) are exercise. For these guidelines, they are to be classified as physical activity and it is recommended that health professionals highlight the inclusion of these activities as exercise to appropriate patients. A table highlighting comparable levels of activity across a range of areas can be seen in Appendix 5.

9.2 Aims of exercise

In a formal structured program, outpatient cardiac rehabilitation is generally considered to span 4-12 weeks⁷.

Aims of the physical activity/exercise component of cardiac rehabilitation are to:

- create exercise habits both in the group situation (if appropriate) and at home, that can be sustained long term
- achieve an improvement in exercise capacity
- return the patient to their pre-morbid activity level or to improve on this level

A home program of exercise prescribed for patients unable to attend outpatient exercise sessions, or in addition to these sessions, is an important component of cardiac rehabilitation.

9.3 Factors to consider on referral

9.3.1 Exclusion from exercise – criteria

These guidelines concur with the view of The American College of Sports Medicine¹⁵, that states that patients should be excluded from exercise in the following instances:

- significant hypertension or hypotension
- severe aortic stenosis
- the following uncontrolled conditions: arrhythmia, congestive heart failure, diabetes or metabolic disturbance
- high grade atrioventricular block without pacemaker
- current pericarditis or myocarditis
- recent pulmonary or other embolism
- recent stroke or transient ischaemic attack
- recent major surgery
- terminal illness or severe disabling concurrent illness
- acute febrile or systemic illness
- physical or psychological disability preventing participation
- physician refusal
- patient refusal

This publication¹⁵ should be consulted for more information on this topic. Clinical judgement should also be used in determining if participation in structured exercise programs is appropriate.

9.3.2 Other patient complications

Patients with impaired ventricular function, controlled cardiac failure and symptomatic or asymptomatic residual ischaemia were traditionally excluded from exercise training. It has recently been stated that low to moderate intensity exercise is of benefit to these patients (level of evidence 1^{1,2,3,4}).

Patients excluded from exercise could be considered for participation in low level physical activity programs and should still be involved in other areas of cardiac rehabilitation (ie. education, discussion and counselling) as required.

9.3.3 Consultation with the treating physician

It is recommended that health professionals consult and collaborate with the patient's treating physician to ensure patients excluded from participating in exercise training are involved in the exercise and/or physical activity components of cardiac rehabilitation as soon as they are physically able.

9.4 Low to moderate intensity exercise

Level of evidence 2^{1,2}

The exercise/physical activity component of cardiac rehabilitation can be provided to a large range of individuals who have had surgical and/or medical interventions. The types of physical activity or exercise that individuals can perform vary considerably.

These guidelines recommend low to moderate intensity exercise for outpatient cardiac rehabilitation. Evidence suggests no additional benefits are gained from high intensity exercise. Techniques used to monitor exercise intensity are detailed in Table 4. Refer to Appendix 6 for information on the Borg Rating of Perceived Exertion Scale.

If high intensity exercise is prescribed, a pre-program maximum exercise stress test, medical clearance and a higher degree of monitoring is required during exercise to safely manage these patients².

In addition to exercise in the cardiac

rehabilitation setting, it has been shown that benefits can be achieved through physical activity as well as structured exercise^{9,17} The National Heart Foundation¹⁷ and others^{16,17, 19} recommend the inclusion of regular moderate intensity physical activity for at least 30 minutes on most, if not all, days of the week. This activity could be achieved in a single session, or accumulated in multiple bouts of shorter sessions throughout the day^{16,18}.

Therefore, in general, exercise and physical activity prescription should aim for moderate activity, as specified above. However individual patients' self care, occupational or leisure needs may require modification of this. Issues to be considered prior to the prescription of any exercise/activity program are detailed in Tables 1 and 2.

9.5 Other factors

9.5.1 Safety procedures

Level of evidence 4^{1,2,7,8}

When planning physical activity and exercise group sessions, health professionals should ensure that:

- an emergency protocol is established and documented and where appropriate, emergency equipment is accessible
- health professionals supervising the sessions should have a current CPR accreditation/competency
- the number of health professionals supervising the session is appropriate for the number of and diagnosis of the group participants, also taking into consideration the type of exercise sessions planned (eg. one person to 10 patients for low to moderate intensity – level of evidence 4²)

9.6 Assessments and interventions

Health professionals involved in the exercise/physical activity component of cardiac rehabilitation should, following the general assessment, carry out a pre-program assessment. Selection of appropriate intervention

and monitoring strategies should be based on assessment results, the patient's needs, the philosophy of the program, the professional's area of practice and available resources. Regular monitoring ensures that interventions can be modified or altered to match the patient's changing needs and allow the patient to develop sustainable behaviours/habits.

Table 2: Pre-program assessment

| Element | Considerations | Skill mix |
|------------------------------------|---|---|
| Safety | <ul style="list-style-type: none"> - risk stratification - exclusion criteria - safety procedures (see 9.5.2) | <ul style="list-style-type: none"> - Exercise physiologist, - Medical Officer, - Occupational therapist, - Physiotherapist, - Registered nurse |
| | <ul style="list-style-type: none"> - medical clearance | Medical Officer |
| Exercise/physical activity history | <ul style="list-style-type: none"> - activities prior to event (work , household, leisure) - exercise history - current activity level - limiting symptoms - target exercise/activity level - patient needs and goals | <ul style="list-style-type: none"> - Exercise physiologist, - Medical Officer, - Occupational therapist, - Physiotherapist, - Registered nurse |
| | <ul style="list-style-type: none"> - exercise testing results - barriers to exercise - access to exercise equipment | <ul style="list-style-type: none"> - Exercise physiologist - Physiotherapist |
| | <ul style="list-style-type: none"> - physical capacity - work demands - task analysis of work - energy conservation techniques | <ul style="list-style-type: none"> - Occupational therapist, - Physiotherapist |

Table 3: Intervention strategies

| Interventions | Content | Skill Mix |
|-----------------------------|--|--|
| Prescription considerations | <ul style="list-style-type: none"> - components of fitness - warm up/cool down - stretching - mode of activity/method of training (continuous, cumulative, interval) - functional capacity - cardiovascular conditioning: <ul style="list-style-type: none"> - duration - frequency - intensity - muscular conditioning: <ul style="list-style-type: none"> - muscular strength - endurance - flexibility - progression of task - home program - safety issues | <ul style="list-style-type: none"> - Exercise physiologist, - Occupational therapist, - Physiotherapist |
| | <ul style="list-style-type: none"> - simulated work/ home/ leisure tasks - work conditioning | <ul style="list-style-type: none"> - Occupational therapist, - Physiotherapist |
| Personal considerations | Encourage: – <ul style="list-style-type: none"> - self-efficacy - empowerment - motivation Provide information and educate as appropriate (refer to table 6) | <ul style="list-style-type: none"> - Exercise physiologist, - Medical officer - Occupational therapist, - Physiotherapist, - Registered nurse |

Table 4: Monitoring strategies

| Element | Content | Skill mix |
|----------------------------------|--|---|
| Standard monitoring techniques | <ul style="list-style-type: none"> - rate of perceived exertion - talk test - self-monitoring - symptoms - general observations (eg breathing, colour, behaviour, sweating) - technique correction | <ul style="list-style-type: none"> - Exercise physiologist, - Medical officer, - Occupational therapist, - Physiotherapist, - Registered nurse |
| Additional monitoring techniques | <ul style="list-style-type: none"> - blood pressure - heartrate | <ul style="list-style-type: none"> - Exercise physiologist, - Medical officer, - Occupational therapist, - Physiotherapist, - Registered nurse |
| | <ul style="list-style-type: none"> - ECG | <ul style="list-style-type: none"> - Exercise physiologist, - Medical officer, - Registered nurse |
| | <ul style="list-style-type: none"> - METS - Monitoring of home based activity - SaO₂ | <ul style="list-style-type: none"> - Exercise physiologist, - Occupational therapist, - Physiotherapist |
| Personal factors | <ul style="list-style-type: none"> - Compliance - Progression - Motivation | <ul style="list-style-type: none"> - Exercise physiologist, - Medical officer, - Occupational therapist, - Physiotherapist |

Table 5: Post program assessment

| Area | Content | Skill mix |
|-------------------|---|--|
| Program discharge | <ul style="list-style-type: none"> - home exercise program - feedback to medical officers | <ul style="list-style-type: none"> - Exercise physiologist, - Medical officer, - Occupational therapist, - Physiotherapist |
| | <ul style="list-style-type: none"> - consider work site assessments - consider exercise tests | <ul style="list-style-type: none"> - Occupational therapist, - Physiotherapist |
| Home based needs | <ul style="list-style-type: none"> - home based work conditioning - facilitate graduated return to work - community services eg. home help - presence of equipment or assistive devices | <ul style="list-style-type: none"> - Occupational therapist, - Physiotherapist |
| Review/follow-up | <ul style="list-style-type: none"> - compliance - home based program review - symptoms - assess if further interventions are required | <ul style="list-style-type: none"> - Exercise physiologist, - Medical officer, - Occupational therapist, - Physiotherapist |

Please refer to Section 11 for maintenance phase needs at the end of the outpatient phase and for post program review.

10. Education, discussion and counselling

10.1 Importance of education discussion and counselling

Level of evidence 2^{1,2,3,4}

Cardiac rehabilitation is more than improving physical fitness and returning the patient to work. There is good evidence that negative emotions and poor health behaviours are related to poorer health outcomes for cardiac patients. Counselling, confidence building, education, risk factor management and secondary prevention are also key elements of cardiac rehabilitation.

Helping patients and families understand the cardiac condition and build skills to alter lifestyle factors that negatively impact on cardiac health, involves education, behaviour modification techniques and counselling^{1,4}. Assisting patients and their families to reduce significant levels of negative emotions is an essential part of cardiac rehabilitation, which will improve not just their quality of life but also their health outcomes. This section of the document aims to assist health professionals select appropriate interventions based on the patient's needs.

10.2 Education

Level of evidence 2^{1,3,4,20}

Education involves more than the transfer of information. It is not confined to formal education sessions, but is an integral component of physical activity and exercise prescriptions, counselling sessions and informal gatherings such as morning teas. Individuals can benefit from the experiences of others in similar situations so time should

be allowed for group members to share their experiences either in a formal or informal way.

10.2.1 Effectiveness

To be effective, information should be presented in a manner that enhances learning for all.

To achieve this, health professionals should:

- employ adult learning principles (level of evidence 2¹)
- encourage group disclosure and sharing of experiences
- understand group work principles
- encourage the group to generate their own solutions to encourage ownership of knowledge
- use theories and strategies for behaviour change (level of evidence 2¹)
- tailor the education mode to suit individual needs
- assess knowledge and learning style/preferences
- address misconceptions
- establish/provide a supportive learning environment
- address knowledge, attitude, beliefs and skills of the individual
- develop client-set, client-focussed learning objectives in collaboration with the health professional
- provide written confirmation of information provided
- regularly conduct process, impact and outcome evaluations

Within the group environment, health professionals need to be aware of group process theories (level of evidence 2¹) to assess and evaluate group dynamics and participant behaviour and to foster a positive learning environment for all. It is also important to identify clients who may require further individual intervention in a particular area.

10.2.2 Education topics

Level of evidence 2^{2,4,20}

All patients involved in cardiac rehabilitation should be provided with health information about their condition. This information should be the basis of behaviour change, and should provide

the patient and their family with information on rehabilitation and lifestyle changes^{1,13}. It has also been shown that providing information reduces the anxiety and stress of both the patient and their family³. These resources may be available from other cardiac rehabilitation programs if not available locally.

Table 6: Outpatient cardiac rehabilitation education topics.

| Topics | Content covered | Skill mix |
|----------------------------|--|--|
| Heart disease | <ul style="list-style-type: none"> • how the heart works • atherosclerosis • angina • conduction disorders • valvular disease • diseases of the heart muscle • heart attack and the healing process <ul style="list-style-type: none"> - causes and symptoms - difference between heart attack and cardiac arrest - myths and misconceptions • cardiac symptoms and their management • what to expect during recovery | <ul style="list-style-type: none"> - Dietitian-Nutritionist, - Exercise physiologist, - Medical officer, - Occupational therapist, - Physiotherapist, - Registered nurse |
| Risk factors | modifiable risk factors <ul style="list-style-type: none"> • smoking • raised lipids • nutrition and diet • high blood pressure • overweight and obesity • management of type 2 diabetes • physical inactivity • alcohol intake • stress nonmodifiable risk factors <ul style="list-style-type: none"> • age • sex • diabetes • positive family history | <ul style="list-style-type: none"> - Dietitian-Nutritionist, - Exercise physiologist, - Medical officer, - Occupational therapist, - Physiotherapist, - Registered nurse |
| Physical activity/exercise | <ul style="list-style-type: none"> • definition of physical activity • definition of exercise • type, duration, frequency, intensity • how to monitor the level of exertion • benefits • how to manage angina while doing activity • appropriate clothing and footwear | <ul style="list-style-type: none"> - Exercise physiologist, - Medical officer, - Occupational therapist, - Physiotherapist, - Registered nurse |
| | <ul style="list-style-type: none"> • orthopaedic and musculoskeletal problem avoidance – chronic • barriers to exercise | <ul style="list-style-type: none"> - Exercise physiologist, - Physiotherapist |
| | <ul style="list-style-type: none"> • orthopaedic and musculoskeletal problem avoidance – acute | <ul style="list-style-type: none"> - Physiotherapist |

Table 6 continued

| | | |
|----------------------------|---|---|
| | <ul style="list-style-type: none"> • co-morbidity impact on exercise eg. CVA, congenital heart disease, very low level of exercise capacity | <ul style="list-style-type: none"> - Exercise physiologist, - Occupational therapist, - Physiotherapist |
| Activities of daily living | <ul style="list-style-type: none"> • outline of recovery process and anticipated timeframes • general principles regarding resumption of activity • self-monitoring of exertion and symptoms | <ul style="list-style-type: none"> - Medical officer, - Occupational therapist, - Physiotherapist, - Registered nurse |
| | <ul style="list-style-type: none"> • how to resume general activities using: <ul style="list-style-type: none"> - principles of energy conservation - principles of work simplification • guidelines for return to self-care, home, work and leisure activities • use of assistive equipment | <ul style="list-style-type: none"> - Occupational therapist |
| Nutrition* | <ul style="list-style-type: none"> • healthy weight range • healthy eating | <ul style="list-style-type: none"> - Dietitian-Nutritionist, - Exercise physiologist, - Medical Officer, - Physiotherapist. - Registered nurse |
| | <ul style="list-style-type: none"> • modification of diet to achieve appropriate body weight and maintain micronutrient adequacy • dietary fats – types, role in heart disease • salt, fibre • other nutrients in foods • cholesterol • food selection/shopping • eating habits/meal patterns • food preparation/cooking • eating out/takeaway • food labelling • recipe modification • hydration during exercise | <ul style="list-style-type: none"> - Dietitian-Nutritionist |
| Smoking cessation | <ul style="list-style-type: none"> • association of smoking and heart disease • benefits of quitting • nicotine dependence • methods of quitting (behaviour change) • resources available | <ul style="list-style-type: none"> - Exercise physiologist, - Dietitian-Nutritionist, - Medical officer, - Occupational therapist, - Physiotherapist, - Psychologist, - Registered nurse, - Social worker |
| | <ul style="list-style-type: none"> • medications available for nicotine addiction | <ul style="list-style-type: none"> - Medical officer, - Pharmacist, - Other <i>trained</i> health professionals, - Registered nurse |
| Medications | <ul style="list-style-type: none"> • knowledge and understanding of medications • cost • method of administration • strategies for compliance with medications | <ul style="list-style-type: none"> - Medical officer, - Pharmacist, - Registered nurse |

Table 6 continued

| | | |
|---------------------------------------|---|---|
| Psychosocial issues | <ul style="list-style-type: none"> • mood and emotions (anxiety, denial, depression, grief and loss) • normalisation of event • address areas of concern <ul style="list-style-type: none"> - job security - sexual activity • psychosocial risk factors • return to normal activities | <ul style="list-style-type: none"> - Medical Officer, - Occupational therapist, - Psychologist, - Registered nurse, - Social worker |
| | <ul style="list-style-type: none"> • financial concerns • social support • social isolation • impact on family | <ul style="list-style-type: none"> - Medical officer, - Registered nurse, - Social worker |
| Stress management | <ul style="list-style-type: none"> • link between stress and heart disease • resources available • stress management strategies <ul style="list-style-type: none"> - relaxation techniques - time management - setting priorities - balancing work, family and leisure - resources available | <ul style="list-style-type: none"> - Dietitian-Nutritionist, - Exercise physiologist, - Medical officer, - Occupational therapist, - Physiotherapist, - Registered nurse, - Social worker, - Psychologist |
| Cardiac investigations and procedures | <ul style="list-style-type: none"> • explanation of test they have had eg.: <ul style="list-style-type: none"> - electrocardiography - echocardiography - stress tests - blood tests - coronary angiography • explanation of management (medical or interventional) eg.: <ul style="list-style-type: none"> - thrombolytic therapy - cardiac heart surgery - angioplasty - pacemaker implantation • address and discuss anxieties associated with the above | <ul style="list-style-type: none"> - Medical officer, - Physiotherapist, - Registered nurse |
| CPR | <ul style="list-style-type: none"> • see heart disease topics • emergency procedures • community resources | <ul style="list-style-type: none"> - CPR accredited trainer |

Please refer to Section 11 for maintenance phase needs at the end of the outpatient phase and for post program review

* For information on outcomes and objectives for nutrition interventions, refer to Appendix 7

10. 3 Counselling

Level of evidence 2^{1,2,3,4,20}

Access to psychosocial counselling should be available to all patients, as evidence¹¹ suggests that risk factor modification and the reduction of emotional distress reduces cardiac event recurrences and mortality. How these interventions are provided depends on the needs and goals of the individual patients. Principles involved in counselling interventions are well recognised and involve the inclusion of relationship building, goal setting,

implementation of strategies such as behaviour modification, evaluation of progress and reinforcement and support to maintain changes and prevent recurrence.

Counselling is more than providing information, so interventions provided in these sections reflect this complexity. Health professionals involved in this area should select categories within their professional scope of practice and their level of expertise. If issues arise that fall outside the professional's area of expertise, referral to the appropriate professional should occur.

Table 7: *Counselling assessments and interventions*

| Area | Assessments | Interventions | Skill mix |
|------------------------|---|--|---|
| Nutrition [#] | <ul style="list-style-type: none"> - attitudes towards nutrition and coronary heart disease - dietary adequacy and appropriateness for coronary heart disease - costs and benefits for change - eating habits/appetite - energy and food intake required to achieve appropriate body weight and to maintain micro-nutrient adequacy - food/meal planning based on individual needs - personal and environmental barriers and enablers to appropriate dietary habits - options/strategies for change - support, reinforcement and review issues | <ul style="list-style-type: none"> - emotional support - normalisation of eating - stage appropriate interventions depending on readiness to change - goal setting - behaviour change strategies - coping strategies - ongoing review of goal attainment* | <ul style="list-style-type: none"> - Dietitian-Nutritionist |
| | <ul style="list-style-type: none"> - significant degree of disordered eating - active non-compliance | <ul style="list-style-type: none"> - cognitive behaviour therapy - support - normalisation of eating pattern | <ul style="list-style-type: none"> - Clinical psychologist and - Dietitian-Nutritionist |

Table 7 continued

| | | | |
|----------------------------|--|--|--|
| Financial considerations | <ul style="list-style-type: none"> - financial pressures regarding hospitalisation and recovery - consequences for future expectations - cost of illness - health cover - employment situation | <ul style="list-style-type: none"> - facilitation of financial support (including liaison and advocacy with appropriate authorities) - assisting patients to provide documentation to private providers - facilitate contact with Centrelink and other government departments - referral, if necessary, to welfare financial advisers offering financial counselling services (eg Lifeline) - counselling regarding adjustment to change in financial situation | - Social worker |
| Activities of daily living | <ul style="list-style-type: none"> - self-care functioning - home maker skills - community living skills - driving issues - sexual activity - leisure activities - physical and psychological barriers to resumption of activity | <ul style="list-style-type: none"> - discussion and demonstration of alternative practices/ techniques and lifestyle modification - goal setting and ongoing review* - link to community services* | - Occupational therapist |
| Work issues | <ul style="list-style-type: none"> - functional work capacity - task analysis of work - work demands | <ul style="list-style-type: none"> - development of appropriate vocational goals - facilitation of alternative work practices - liaison with workplace/ doctor - ongoing review of goal attainment* | - Occupational therapist |
| Psychosocial issues | <ul style="list-style-type: none"> - pre-existing quality of life issues - grief and loss - sexual activity - locus of control - self-esteem - outlook on life - personality and coping style - stress management - emotional problems adjusting to cardiac conditions - family understanding of and reaction to cardiac event - effect on self, family and partner | <ul style="list-style-type: none"> - emotional support for individual/family - building self-esteem - grief counselling - goal setting - stress management techniques - coping strategies - ongoing review of goal attainment* | <ul style="list-style-type: none"> - Medical officer, - Occupational therapist, - Social worker, - Psychologist, - Registered nurse |

| | | | |
|-------------------|--|---|--|
| | <ul style="list-style-type: none"> - role responsibility and changes | | |
| | <ul style="list-style-type: none"> - level of mental flexibility and intellectual brightness - personality and coping style - previous psychopathology - clinically significant levels of anger, anxiety, denial, depression, substance dependence - sexual dysfunction | <ul style="list-style-type: none"> - cognitive behaviour therapy - medical management of specific symptoms | <ul style="list-style-type: none"> - Clinical psychologist, - Medical officer |
| | <ul style="list-style-type: none"> - grief and loss - pathological grief | <ul style="list-style-type: none"> - crisis counselling - grief work - follow-up support[#] | <ul style="list-style-type: none"> - Psychologist, - Social worker |
| Smoking cessation | <ul style="list-style-type: none"> - motivation/attitude to quitting - nicotine dependence - emotional/behavioural links to smoking | <ul style="list-style-type: none"> - counselling regarding methods of quitting - goal setting - stress management techniques - support and ongoing monitoring* - referral to specialised service* - link to community maintenance programs* | <ul style="list-style-type: none"> - Medical officer, - Occupational therapist, - Social worker, - Psychologist, - Registered nurse |

*Please refer to Section 11 for maintenance phase needs at the end of the outpatient phase and for post program review

For information on outcomes and objectives for nutrition intervention, refer to Appendix 7.

11. Progression to the maintenance phase of cardiac rehabilitation

Level of evidence 4^{1,7,8}

The role of the health professional does not end at the completion of the outpatient phase. Long-term maintenance is important to sustain behaviour change and risk factor modification developed during this phase.

Modifying lifestyle factors may take some time.

To assist this process and maintain skills developed during the outpatient phase, referral, follow-up and further long-term management (if required) should be offered to all individuals at the completion of outpatient programs.

To encourage patients to maintain their exercise/activity level, establishing a home based exercise/activity program is mandatory.

The following considerations should be discussed with a patient on completion of the outpatient component of cardiac rehabilitation:

- referral to risk factor modification programs addressing smoking, nutrition and physical

- activity
- identification of support groups and other resources in the community
 - access to education and discussion sessions as necessary⁶
 - home and/or community based programs to maintain exercise and physical activity
 - the necessity of long term management by cardiac rehabilitation team members or other health professionals
 - referral to other health professionals (as necessary)
 - regular follow-up and review by cardiac rehabilitation team members
 - referral back to the patients' general practitioners (GPs) for regular monitoring by the GP or other medical specialist

11.1 Ongoing maintenance

As general practitioners and medical specialists are involved in the ongoing management of the patient, health professionals involved in outpatient rehabilitation should consult with the treating physician regarding the patient.

Formal communication should occur between cardiac rehabilitation team members and the individual patient's general practitioner and medical specialists throughout the outpatient phase and at the completion of this phase of the rehabilitation process. This communication aids in the transfer of information and informs physicians of the need for ongoing intervention and/or assistance in specific areas of the cardiac rehabilitation process.

Glossary

Activities of daily living

exertion required to perform normal life tasks

BMI – body mass index

mathematical measurement used to determine the relationship between height and weight as a measurement of body mass.

CHD

coronary heart disease

ECG

electro-cardiogram – measurement of the electronic signals of the heart

HDL Cholesterol

high density lipoprotein cholesterol – commonly referred to as the “good” cholesterol as it reduces fatty deposits (atheroma) in arteries

LDL Cholesterol

low density lipoprotein cholesterol – commonly referred to as the “bad” cholesterol. Too much LDL in the blood can clog the arteries (atherosclerosis)

LDL/HDL ratio

measurement between the “bad” and the “good” fats present in the bloodstream – used to determine risk for heart disease and monitor the effectiveness of treatments

MET

metabolic equivalent – a measure of oxygen through the lungs

Rate of perceived exertion

physical activity self assessment tool used to indicate the level of exertion as perceived by the individual

SaO₂

percentage of haemoglobin molecules that are carrying oxygen molecules

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Appendix 1

Further information

Sources of detailed information which may provide background information on elements of cardiac rehabilitation.

Evidence based information regarding cardiac rehabilitation

- Goble, A.J. and Worcester, M.U.C. (1999). *Best Practice Guidelines for Cardiac Rehabilitation and Secondary Prevention*. Heart Research Centre. Melbourne, on behalf of Department of Human Services Victoria.
- NSW Health Department (1997). *NSW Policy Standards for Cardiac Rehabilitation*. NSW Health Department

Recommendations for cardiac rehabilitation programs

- National Cardiac Rehabilitation Advisory Committee of the Heart Foundation (1998).

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- Heart Foundation of Australia (1997). *How to Plan a Cardiac Rehabilitation Program*. Heart Foundation of Australia (NSW Division)

Components of cardiac rehabilitation

- Australian Cardiac Rehabilitation Association. (1999). *A Practitioner's Guide to Cardiac Rehabilitation*. Renard Marketing.
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Appendix 2

Outpatient cardiac rehabilitation – local area contacts

This form may be used to record the local health professionals who can be involved in components of outpatient cardiac rehabilitation. This table can be used to help with communication, consultation, coordination and referrals between health professionals to ensure appropriate and timely care is provided to all patients requiring cardiac rehabilitation.

| Name | Address | Phone |
|------------------------------------|---------|-------|
| Cardiac Rehabilitation Coordinator | | |
| Cardiac Nurse | | |
| Cardiologist | | |
| Dietitian-Nutritionist | | |
| Exercise Physiologist | | |
| General Practitioners | | |
| | | |
| | | |
| | | |
| | | |
| Occupational Therapist | | |
| Pharmacist | | |
| Physiotherapist | | |
| Psychologist | | |
| Social Worker | | |
| Others | | |
| | | |
| | | |
| | | |
| | | |

Appendix 3

Minimum data set collection standards

[Reproduced with permission from the Queensland Cardiac Rehabilitation Association and Heart Foundation of Australia (Queensland)¹³]

The following document standardises data collection for the minimum data set and contains 28 compulsory items and one additional (optional) item. These are:

1. date of birth
2. gender
3. postcode
4. suburb
5. country of origin
6. social support
7. principal diagnosis
8. second diagnosis
9. medications
10. date of event
11. phase 1 cardiac rehabilitation
12. date commenced phase 2 cardiac rehabilitation program
13. phase 2 completed

14. date commenced phase 3 cardiac rehabilitation program
15. referral method
16. reasons for non attendance
17. family history
18. comorbidities
19. diabetes
20. smoking
21. lipid profile
22. blood pressure
23. body composition (BMI, waist to hip ratio)
24. physical activity
25. hospital readmission/re-event
26. return to work
27. employment status
28. return to normal activity

Additional Items

29. SF-36

Please contact the Queensland Cardiac Rehabilitation Association or the Heart Foundation of Australia (Queensland Branch) for a copy of the collection sheet and standards for this list.

Appendix 4

Screening tools

After a cardiac event, psychosocial issues may arise which, if not addressed, can prolong or affect recovery. Screening tools should be used and, if significant results found, referral for further long-term management by trained health professionals should be offered²¹. Consultation with appropriate health professionals should occur if information on the use and interpretation of these tools is required.

Screening for depression and anxiety

Level of evidence 1²⁰

A meta-analysis by Dusseldorp and others²⁰ demonstrates that anxiety and depression have a big impact on the onset and progression of coronary artery disease.

Several studies^{22,23} have shown that significant depression is a predictor of increased risk of cardiac death and that anxiety levels can also affect an increase in the risk of a cardiac event²⁴.

Individuals with clinically significant levels of depression or anxiety should be referred to specifically trained health professionals (level of evidence 2¹).

Depression

- Beck Depression Inventory²⁵
- Cardiac Depression Scale²⁶
- Zung Self-rating Depression Scale²⁷
- Hospital Anxiety and Depression Scale²⁸

Anxiety

- State Anxiety Inventory²⁹

Other screening tools

Anger and hostility

- Spielberger Anger and Hostility Scale (STAXI)²⁹
- Cook and Medley Scale³⁰

Substance use

- Alcohol Use Disorder Identification Test (AUDIT)³¹

Smoking

The Fagerstrom Nicotine Tolerance Scale³²

Appendix 5

Guide to exercise and physical activity levels

(Reproduced from "Physical Activity for People with Heart Disease"¹⁴, page 24 with permission from the National Heart Foundation)

| Category | Self-care | Occupational | Recreational | Physical conditioning |
|---------------------------------|---|--|---|--|
| Very light | Washing, shaving, dressing, desk work, writing, washing dishes, driving care | Sitting (clerical, assembling), standing (shop assistant, bartender), driving truck*, crane operator# | Indoor bowls, billiards, archery#, golf (with buggy), | Walking (level at 3 kph), stationary bicycle (very low resistance), very light callisthenics |
| Light 3-5 mets | cleaning windows, raking leaves, weeding, power lawn mowing, waxing floors (slowly), painting carrying objects (8-14kg) | stock shelves, (light objects)#, light welding, light carpentry#, machine assembly, car repair, paper hanging# | Dancing (social and square), golf (walking), sailing, horseback riding, volleyball (6 man), tennis (doubles), bowls, | Walking (3-5kph), level bicycling (10-13 kph), light callisthenics |
| Moderate 5-7 mets 25-33Kj | Easy digging in garden, Level hand lawn mowing, Climbing stairs (slowly), Carrying objects (14-27 kg) | Carpentry (exterior home building)#,, Shovelling earth, Pneumatic tools# | Badminton (competitive), tennis (singles), snowskiing (downhill), light backpacking, basketball, football, skating (ice and roller) | Walking (5-7 kph), bicycling, swimming (breast stroke) |
| Heavy 7-9 mets 33-42Kj | Sawing wood#, heavy shovelling#, climbing stairs (moderate speed), carrying objects (27-41 kg) | Tending furnace#, digging ditches#, pick and shovel#, | Canoeing#, mountain climbing#, fencing | Jog (8kph), swim (crawl stroke), rowing machine, heavy callisthenics, bicycling (19kph) |
| Very heavy | Carrying loads upstairs#, carrying objects (41kg)#, climbing stairs (quickly), shovelling 10mins (7kg) | Logging, heavy labouring, | Handball, squash, ski touring over hills#, vigorous basketball | Running (10 kph), bicycle (21 kph or up steep hill), skipping |

may produce disproportionate myocardial demands because of arm or isometric exercise

* may cause added psychological stress that will increase workload on the heart

Appendix 6

Borg rating of perceived exertion scale

Below is the rating of perceived exertion scales, the original scale (6-20) and the newer 10 point scale.

(From³³)

| 15 Point scale | | 10 Point scale |
|-----------------------|--|----------------------|
| 6. no exertion at all | | 0. nothing |
| 7. extremely light | | 0.5 very, very weak |
| 8. | | 1. very weak |
| 9. very light | | 2. weak (light) |
| 10. | | 3. moderate |
| 11. light | Desirable range of activity | 4. somewhat strong |
| 12. | | 5. strong |
| 13. somewhat hard | | 6. |
| 14. | | 7. very, very strong |
| 15. hard (heavy) | | 8. |
| 16. | | 9. |
| 17. very hard | | 10. |
| 18. | | |
| 19. extremely hard | | |
| 20. maximal exertion | | |

Appendix 7

Desired outcomes and objectives of nutrition interventions

(Adapted from³⁴)

To provide individuals with tailored interventions to address the specific needs of the patient, the following outcomes and objectives of nutrition intervention are recommended.

1. to achieve and maintain optimal nutritional status
2. to minimise the risk of further cardiac events and conditions
3. to promote optimal client well-being
4. to contribute towards optimal metabolic control
 - A. blood lipids
 - cholesterol < 4.5 mmol/L³⁵
 - LDL < 2.0 mmol/L³⁵
 - TG < 2.0 mmol/L³⁵
 - HDL cholesterol >1.0 mmol/L³⁵
 - B. blood pressure: to contribute to the management of recommended blood pressure ($\leq 140/90$) with dietary management³⁵
5. to achieve and maintain body fat loss in people with a BMI ≥ 27 Kg/M² or waist >102cm (male) or >88cm (female)³⁶
 - A. weight loss: 5-10 per cent³⁶
 - B. waist circumference loss: 5-10 per cent³⁶
6. to achieve and maintain positive lifestyle behaviour changes
 - A. to adopt and maintain dietary, physical activity, smoking and other lifestyle habits conducive to health and well being based on current recommendations for

clients with coronary heart disease and dependent on individual circumstances and requirements

B. to foster the development of the client's behaviour change skills

As with any clinical measurements, these will be reviewed as new information or recommendations become available.

Best practice guidelines for health professionals

Outpatient cardiac rehabilitation

These guidelines are intended as a general guide only and are not intended to be prescriptive. The guidelines should not be considered all inclusive nor should it be considered exclusive of other methods of service delivery. Health professionals must exercise independent judgement as to what is appropriate for individual patients or groups of patients under particular circumstances.

Queensland Health accepts no responsibility for any personal injury, loss or claim however sustained or caused as a result of any person using or relying on the information in these guidelines. Any duty owing remains the responsibility of those health professionals who provide relevant services.

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