

BEST PRACTICE  
EVIDENCE-BASED  
GUIDELINE

CARDIAC  
REHABILITATION  
SUMMARY AND  
RESOURCE KIT



AUGUST 2002

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## PURPOSE

This guideline applies primarily to patients with coronary heart disease, and specifically those following an acute coronary syndrome (acute myocardial infarction/unstable angina) and following coronary bypass surgery and angioplasty.

The purpose of the guideline is to provide a summary of the most up to date New Zealand and overseas evidence and make recommendations based on the evidence, that will lead to best practice cardiac rehabilitation in New Zealand. The guideline is aimed at all health providers working in cardiac rehabilitation, primary care providers and health information services. Further resources are being developed for patients and their families. It is hoped that the information in these guidelines will be used to inform patients with coronary heart disease and their advisers about the benefits of comprehensive cardiac rehabilitation, and that this will ultimately lead to improved health outcomes for patients.

# 2

## BACKGROUND

"Cardiac rehabilitation is the co-ordinated sum of interventions required to ensure the best physical, psychological and social conditions so that patients with chronic or post-acute cardiovascular disease may, by their own efforts, preserve or resume optimal functioning in society and, through improved health behaviours, slow or reverse progression of disease [1]."

A cardiac event or procedure such as acute myocardial infarction or unstable angina is a major stressor as individuals adjust to the fact that their health has changed and realise their illness will impact on their daily life and future plans. Cardiac rehabilitation can help facilitate recovery through this period.

The main goals of cardiac rehabilitation are:

1. To prevent further cardiovascular events by empowering patients to initiate and maintain lifestyle changes
2. To improve quality of life through the identification and treatment of psychological distress
3. To facilitate the patient's return to a full and active life by enabling the development of their own resources.

Comprehensive cardiac rehabilitation programmes have been shown to reduce mortality from coronary heart disease, re-infarction rates and hospital admissions and improve quality of life for the patient and their family. Meta-analysis of randomised controlled trials of cardiac rehabilitation have shown a 25% reduction in total mortality in those patients who combined multi-factorial risk factor counselling with exercise compared with exercise alone [2 (1+), 3 (1++), 4 (1+), 5 (2++), 6 (2++)].

### 2.1 PROGRAMME COMPONENTS

The main components of a comprehensive cardiac rehabilitation programme are:

- Empowering patients to make lifelong changes
- Exercise programmes
- Nutrition management
- Weight management
- Smoking cessation
- Managing psychosocial aspects of life
- Pharmacotherapy
- Ongoing personal follow-up and support.

The programme is currently delivered in three phases:

## PHASES OF CARDIAC REHABILITATION

### Phase I: Inpatient rehabilitation

Phase I rehabilitation in hospital includes early mobilisation and education helping the patient, spouse, partner, whānau and family begin to develop an understanding of heart disease. The patient should be given a discharge plan (with a copy sent to his/her general practitioner) usually offering medical follow-up, information and referral to Phase II programmes.

### Phase II: Outpatient rehabilitation

Phase II rehabilitation is traditionally a supervised ambulatory programme beginning as soon as possible after discharge and referral. It usually involves:

- An exercise component (home activity and/or supervised exercise sessions)
- Education sessions aimed at increasing understanding of the disease process, risk factors, treatment, and nutrition advice
- Guidance for the resumption of physical, sexual and daily living activities, including work
- Psychosocial support.

On completion of the programme a summary letter should be written to the patients GP and specialist.

### Phase III: Long term maintenance

Phase III promotes long term maintenance of the skills and behaviour changes learned within Phase I and II. In New Zealand, this phase is primarily the domain of independent community 'cardiac clubs' which act as support groups.

## 2.2 SCOPE

There is strong New Zealand and overseas evidence that all patients with coronary heart disease should be referred to a cardiac rehabilitation programme, except for individual cases excluded on clinical grounds.

This New Zealand cardiac rehabilitation guideline applies primarily to patients with coronary heart disease, specifically those following an acute coronary syndrome (acute myocardial infarction/unstable angina), and following coronary artery bypass surgery and angioplasty. Most aspects will also be applicable to patients with chronic stable angina and also following surgery for valvular heart disease.

Special consideration was given to:

- Appropriateness and acceptability for Māori
- Appropriateness and acceptability for Pacific peoples
- Other socio-cultural/socio-economic factors in New Zealand.

## 2.3 USERS OF THE GUIDELINE

The guideline is aimed at all health providers working in cardiac rehabilitation in New Zealand, both in hospitals and the community. A companion consumer document will also be produced. These guidelines were commissioned jointly by the New Zealand Guidelines Group and the National Heart Foundation of New Zealand, and funded by the Ministry of Health. This guideline will be updated in 2005.

## 2.4 THE GUIDELINE PROCESS

The guideline development team and system used for grading the evidence is described in Appendices 1 and 2. This is a summary of a more detailed guideline which is freely available on the New Zealand Guidelines Group website [www.nzgg.org.nz](http://www.nzgg.org.nz) or the National Heart Foundation of New Zealand's website [www.heartfoundation.org.nz](http://www.heartfoundation.org.nz) This guideline has been endorsed by:



# 3

## LIFESTYLE INTERVENTIONS

### 3.1 EMPOWERING PEOPLE TO MAKE LIFELONG LIFESTYLE CHANGE

#### **Key points**

Cardiac rehabilitation provides the opportunity to coach and encourage positive lifestyle behaviours and increases compliance with medication use.

For personal behaviour change, several key elements need to be present:

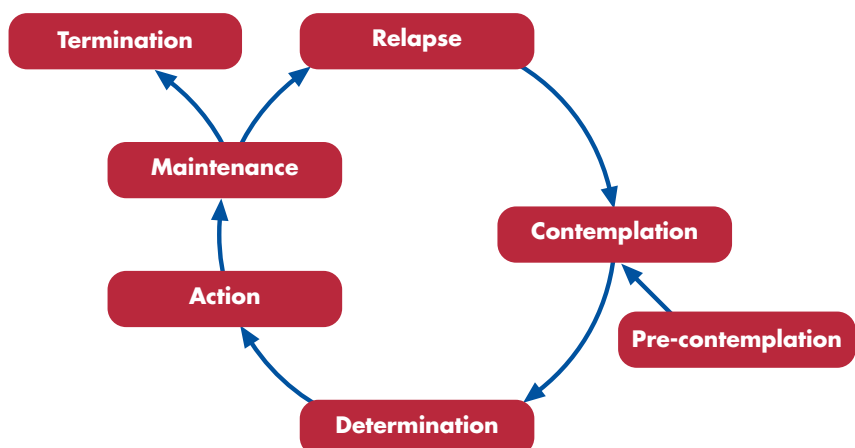
- A belief that change is possible.
- Motivation to make the change.
- A support network and personal capacity to enact and sustain change.

Knowledge alone does not lead to behaviour change, the combination of knowledge, education and empowerment works best for motivating and sustaining behaviour change.

Empowering people to make behaviour change is a difficult and dynamic process but is essential if lifestyle interventions are to be effective and long-term [8-14].

The intervention process should be matched to the patient's specific circumstances, readiness to change, cultural background and socio-economic circumstances. A commonly accepted model for behaviour change is Prochaska and DiClemente's 'stages' of change in which patients are seen as moving through a series of stages [11] (Appendix 3). This model enables the health professional to be patient centred, responding to the needs of the patient depending on where they are at in the process of change.

#### **Stages of change**



Health professionals undertaking cardiac rehabilitation should take a patient centred approach to empower behaviour change.

- Empathetic and empowering coaching from health professionals will facilitate the process of making and sustaining change. This will build the person's belief that they can cope with the lifestyle changes and that they can adhere to these changes once they enter into the outside world.
- Relapse is common. Strategies specific to the person and the situation they live in need to be anticipated in conjunction with the person, to enable them to identify strategies to 'get back on track' as quickly as possible.
- Patient's spouse, partner, whānau and family should be involved in all stages of the educational process (with the informed consent of the patient).

Achieving a patient centred approach involves:

- Asking simple open ended questions
- Empathy – this is not passive agreement but careful listening and clarification of the patient's own experience
- Avoiding confrontation as it increases resistance to change
- Mobilising the patient's motivation
- Reflective listening
- Clarifying and summarising
- Working at the patient's pace and direction
- Respecting the autonomy of patients.

Cardiac patients will face a number of high, real and perceived barriers to behaviour change. Identifying potential barriers and practicing coping strategies to overcome these barriers, will aid adherence to change.

If the person is not empowered to enact their own change, their home environment is not considered and the person is not given the tools to be resilient to the external environment, then it is highly likely the person will not be empowered to adopt lifestyle changes.

## 3.2 PHYSICAL ACTIVITY

### Key points

Physical activity has a small effect on serum lipids, blood pressure, obesity and smoking cessation, but significantly reduces cardiovascular and total mortality.

Physical activity improves functional capacity of patients with cardiac disease and lessens symptoms of angina and shortness of breath.

Vigorous physical exercise is associated with an increase in risk of myocardial infarction and sudden death.

Regular moderate physical activity is associated with lower, long term cardiovascular risk.

### RECOMMENDATIONS

<b>B</b>	Exercise advice should be individualised and consider clinical characteristics, lifestyle, attitudes, culture and environment.
<b>B</b>	For sedentary people, at least 30 minutes of moderate intensity activity on most days of the week is recommended.
<b>D</b>	Physical activity for people with coronary heart disease should begin at low intensity and gradually increase over several weeks.
<b>B</b>	Short periods of physical activity are beneficial.
<b>C</b>	In people with coronary heart disease, vigorous exercise is generally not encouraged.
<b>B</b>	Where possible, people with coronary heart disease should be referred to a comprehensive cardiac rehabilitation programme for exercise training.

For most patients with cardiovascular disease, physical activity is beneficial. Health benefits increase with the amount of physical activity. Physical activity has a small effect on serum lipids, blood pressure, obesity and smoking cessation, but significantly reduces overall cardiovascular risk. Exercise based cardiac rehabilitation after myocardial infarction lowers cardiovascular morbidity and total mortality [15]. Exercise training improves the functional capacity of patients with cardiac disease and lessens symptoms of angina and shortness of breath. The benefits of exercise training may be greatest for individuals who have been inactive.

The benefits of physical activity need to be balanced against a small increase in risk of sudden death with vigorous physical exercise. This increase in risk is very small. In supervised cardiac rehabilitation the risk of sudden death is 1 in 784,000 exercise hours, and the risk of a myocardial infarction is 1 in 294,000 exercise hours. Cardiovascular risk is higher in persons with impaired left ventricular function, severe coronary artery disease with inducible myocardial ischaemia, recent myocardial infarction and in individuals with significant ventricular arrhythmia [16-20]. Vigorous exercise is not recommended in these individuals.

The cardiovascular risks of exercise may be reduced by assessing risk prior to exercise training, by recommending low to moderate intensity activity and by having individuals begin exercising in a formal cardiac rehabilitation programme. Clinical trials of exercise based cardiac rehabilitation suggest a benefit from regular physical activity in clinically stable patients after a myocardial infarction [19]. Any increased risk during and after exercise is likely to be outweighed by a lower, long term cardiovascular risk.

Exercise prescription in a supervised setting for 6 – 12 weeks will safely and effectively allow patients to increase their functional capacity by determining appropriate training intensity, duration and frequency. Participation in a structured cardiac exercise programme has been consistently associated with greater improvements in functional capacity and exercise behaviour. Where there are barriers to attendance, home-based cardiac rehabilitation may be appropriate.

### **Exercise prescription**

The aim of exercise prescription is to provide individual advice on the level and type of exercise needed to improve functional capacity and increase energy expenditure without compromising safety or detracting from enjoyment. There is no evidence-based standard for exercise prescription in cardiac populations, and it is not clear that one type of exercise training improves outcomes more than another.

An individual approach is needed because of the wide range of age, fitness level, disease severity, risk factor profile and medications. There are five major components to consider when prescribing exercise; frequency, duration, type of exercise, intensity and warm up / cool down. The intensity and duration of exercise sessions should start at a low level and gradually increase.

#### **i) Frequency**

Most exercise prescriptions are modified from a 3-session per week model. A patient's programme may start out with several short sessions each day and gradually increase to 30 – 45 minute sessions on most days of the week as functional capacity improves [21].

#### **ii) Duration**

It is preferable for each session to be one continuous session. However, accumulating a target duration with several short bouts of exercise, separated by brief rest periods is encouraged at early stages of training, or in those individuals with low functional capacities (< 5 Metabolic Equivalent (METS)<sup>1</sup>, Appendix 4). If a goal of training is to increase energy expenditure, longer training sessions (up to 60 minutes) may be prescribed. However, a general rule for training sessions is that they should be completed within one hour, with the inclusion of warm-up and cool-down sessions. There does not appear to be any evidence to suggest benefit from longer sessions and risk of cardiovascular and orthopaedic injuries increases with duration of exercise [19, 21].

#### **iii) Type of exercise**

To achieve the best aerobic training effect, prolonged continuous low to moderate intensity exercise (40 – 75% VO<sub>2</sub>max), using large muscle groups is indicated. Typical activities include walking, running, cycling and swimming (refer to Appendix 4 for examples). Activities such as weightlifting, most sports and heavy manual labour are usually too sporadic or of unnecessarily high intensity to qualify as good aerobic training modalities. Activities such as gardening and golf, fall somewhere in the middle of these extremes and are often substituted as training modes, albeit not ideal ones [22].

<sup>1</sup> One METS equals oxygen consumption at rest which is about 3.5 millilitres per kilogram of body weight per minute. An individual exercising at 2 METS is consuming oxygen at twice the resting rate.

#### **KEY** - see Appendix 2 for details.

- A** Well designed meta-analysis (MA) of RCT, or a body of evidence which are consistently applicable
- B** Very well designed observational studies or extrapolated evidence from RCTs or MAs
- C** Lower quality observational studies or extrapolated evidence from B
- D** Non analytical studies or expert opinion.

#### iv) Exercise intensity

The most difficult part of exercise prescription in a cardiac population is intensity, not only due to determining which intensity is appropriate, but also in measuring the intensity of a given activity. Extrapolation from several large studies enrolling those without cardiac disease and applying it to those with cardiac disease in the context of cardiac rehabilitation, suggests that low-to-moderate intensity exercise is beneficial and increased benefit may be achieved with more intense exercise.

There is a direct dose-response-relationship between fitness level and/or activity level and cardiovascular benefit. Whatever intensity of exercise is indicated, the use of 'low, moderate, or vigorous' activity may be confusing to patients in unsupervised exercise programmes. It is important to carefully describe these intensities. Therefore METS, or some other indicator of exercise intensity should be thoroughly explained and incorporated into exercise programmes (Appendix 4). Once this is done, the practitioner should ensure that exercise prescriptions meet whatever goals are established for a given programme [23, 24].

#### v) Warm-up and cool-down

A period of warm-up, which initially raises the heart rate gradually and involves the stretching of the main muscle groups to be used, decreases the likelihood of musculo-skeletal injuries. In addition, a short period of warm-up exercise reduces ischemia during subsequent exercise. Five to ten minutes of lower intensity exercise (cool-down), such as walking at the end of an exercise session may reduce hypotension immediately after vigorous exercise [25].

### 3.3 NUTRITION MANAGEMENT

#### Key points

In patients with cardiovascular disease, a cardioprotective dietary pattern reduces cardiovascular and total mortality. Modification of dietary fat should not be considered in isolation from a whole diet approach.

A cardioprotective dietary pattern reduces LDL cholesterol but also improves the lipid profile, lowers blood pressure, improves glycaemic control and reduces thrombotic clotting.

Dietary therapy is an integral component of cardiac rehabilitation and is additive to drug therapy.

#### RECOMMENDATIONS

<b>A</b>	In all patients with cardiovascular disease, the adoption of a cardioprotective dietary pattern is recommended. This pattern includes large servings of fruit, vegetables and whole grains, low fat dairy products, small servings of unsalted nuts and seeds regularly and fish or legumes frequently in place of fatty meat and full fat dairy products. Small lean meat servings can be part of this dietary pattern.
<b>A</b>	Intensive dietary advice, compliance checks and long term follow up, preferably from a dietitian, are recommended to facilitate the adoption and maintenance of this dietary pattern.
<b>C</b>	A small amount of alcohol may provide health benefits. The protective effect of alcohol is seen at doses as low as one standard drink every second day.
<b>A</b>	There is currently insufficient evidence to recommend nutrition supplements of antioxidant vitamins, minerals or trace elements for the treatment or prevention of cardiovascular disease.
<b>A</b>	Fish and fish oil supplements may reduce the risk of sudden cardiac death, however it remains to be determined whether fish oil supplements are more beneficial than eating fish.

A cardioprotective dietary pattern not only reduces LDL cholesterol it improves the lipid profile, lowers blood pressure, improves glycaemic control and reduces the risk of clotting. Dietary therapy is additive to drug therapy and further reduces cardiovascular risk. Failure to adopt a cardioprotective diet may result in the need to use higher doses or combinations of medications [26].

A cardioprotective dietary pattern reflects a change to a different, but practical and enjoyable, cuisine. Specific food and nutrient recommendations appear to offer only slight advantage. The cumulative advantage accruing from all food and nutrients in an integrated dietary pattern offers the prospect of a substantial reduction in risk of cardiovascular disease (CVD) for individuals and populations [27 (1+)] (Appendix 5).

This dietary pattern includes:

- Large servings of fruit, vegetables and whole grains
- Low fat dairy products
- Small servings of unsalted nuts and seeds regularly
- Fish twice a week or legumes frequently in place of fatty meat and full fat dairy products
- Small lean meat servings.

Intensive dietary treatment involving dietary assessment, individualised advice, and regular follow-up should be offered to all patients. This treatment is best given by a dietitian who can individualise advice according to desired goals and outcomes and have an important role during all phases of cardiac rehabilitation [28]. Other health professionals can assess the patients for weight reduction and give general dietary advice without formal dietary assessment.

Repeated exposure to nutrition messages is important because changing food-related behaviours is complex. People need detailed information to make appropriate food choices.

Factors associated with poor dietary compliance following cardiac rehabilitation include lower levels of education and lower socio-economic status. Key barriers to adopting nutrition advice include, eating in social situations, food prices and the overabundance of food [29 (1+), 30-33]. Efforts should be made to ensure these identified barriers are addressed during nutrition counselling sessions.

### **Special groups**

Particular consideration is required to meet the nutritional needs of Māori and Pacific peoples.

### **Dietary supplements**

One half of the New Zealand adult population regularly consumes a vitamin and/or mineral supplement. Despite these high rates of consumption there is little evidence from recent randomised controlled trials to support their use in the treatment of people with cardiovascular disease and in some cases these supplements may be harmful.

There is insufficient evidence to recommend nutrition supplements of antioxidant vitamins, minerals or trace elements for the treatment of cardiovascular diseases. A high consumption of fruits and vegetables, wholegrain breads and cereals and suitable vegetable oils will ensure an adequate intake of vitamins and minerals.

Supplemental vitamin E may reduce the susceptibility of LDL cholesterol to oxidation, however Vitamin E supplements have no beneficial effect on cardiovascular events or mortality rates. Evidence shows that supplemental beta-carotene, 20 mg/d, taken singly or combined with vitamin E, may increase coronary heart disease mortality [34-36 (1+)].

Fish or fish oil supplements may reduce the risk of sudden cardiac death [37 (1-)]. However it remains to be determined if fish oil supplements are more beneficial than eating fish. Poor regulation of the dietary supplements industry in New Zealand means the quality and consistency of supplements may vary. Rancid or old fish oils from supplements can lead to gastric upset.

Increasing the intake of omega 3 polyunsaturated fats (PUFA) through food sources is less expensive than direct supplementation and more likely to be maintained by patients long term. The omega 3 PUFA occur in all fish and shellfish but are especially rich in oily fish, for example, tuna, kahawai, trevally, kingfish, warehou, dory, salmon, sardines and eel. Squid, mussels and oysters also have a medium to high oil content.

Garlic can be included as part of a normal diet but there is insufficient evidence to recommend garlic supplements for prevention or treatment of cardiovascular disease [38-42 (1+)].

Folic acid supplements to reduce blood homocysteine levels have not yet been shown as beneficial in reducing cardiovascular risk. Folate rich foods, especially fortified grains and cereals, fruit (particularly citrus and berry fruits), legumes (such as peas, lentils and beans), vegetables and nuts should be included as part of a normal varied diet.

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## Alcohol

Regular consumption of a small amount of alcohol may provide health benefits if there are no contraindications. The protective effect of alcohol is seen at doses as low as one standard drink every second day. The maximum intake should be limited to two standard drinks per day for women and three standard drinks per day for men [43-45, 46 (2+)].

Those who abstain from drinking alcohol, or drink only infrequently, should not start drinking for health reasons.

## 3.4 WEIGHT MANAGEMENT

### Key points

About one sixth of the adult population in New Zealand are obese (BMI>30).

Obesity is associated with a two to three fold increase in coronary heart disease.

Modest weight reduction will improve blood lipids, blood pressure and blood glucose control.

### RECOMMENDATIONS

<b>A</b>	For overweight and obese patients with coronary heart disease, the combination of a reduced-energy diet and increased physical activity is recommended.
<b>A</b>	The initial goal of therapy should be to reduce the patient's weight by 10%.
<b>A</b>	An energy deficit is most readily achieved through choice of foods low in total fat content, particularly saturated fat. Further reductions in total energy intake can be achieved by reducing carbohydrate intake, especially highly sweetened foods or drinks such as sugar, confectionery, cakes, biscuits, soft drinks and chocolate.
<b>D</b>	Popular high protein weight loss diets are not recommended for long term weight loss because they restrict consumption of healthy foods and do not provide the variety of foods needed to meet nutritional needs.

For overweight and obese patients with coronary heart disease, the combination of a reduced energy diet and increased physical activity is recommended. The lowering of cardiovascular risk through weight reduction is as a result of the improvement in other major risk factors. Modest weight reduction leads to an improved blood lipid profile, lower blood pressure and reduced blood glucose and, HbA<sub>1c</sub> in some patients with type 2 diabetes [47].

An energy deficit is most readily achieved through choice of foods low in total fat content, particularly saturated fat. Further reductions in total energy intake can be achieved by reducing carbohydrate intake, especially highly sweetened foods or drinks such as sugar confectionery, cakes, biscuits, soft drinks and chocolate.

Recently a meta-analysis reported that a low-fat diet, high in protein and fibre-rich carbohydrates, mainly from different vegetables, fruits, and whole grains, is highly satiating for fewer kilojoules than fatty foods [48 (1+)].

Popular high protein weight loss diets restrict consumption of healthy foods and do not provide the variety of foods needed to meet nutritional needs [49].

## 3.5 SMOKING

### Key points

Smokers with coronary heart disease reduce the risk of a recurrent myocardial infarction (MI) by half if they stop smoking.

Nicotine replacement therapy increases quit rates by 1.5 – 2 fold compared to placebo, regardless of setting.

Second-hand smoke is a significant risk factor for non-smokers and should be avoided.

### RECOMMENDATIONS

<b>A</b>	All patients with cardiovascular disease should be advised to quit smoking. They should be supported to stop smoking as a priority measure.
<b>A</b>	For smokers with coronary heart disease, medical advice, individual and group counselling, nicotine replacement therapy and some antidepressant medications improve success in quitting and are recommended.
<b>D</b>	The spouses, partners, whānau and family of patients with coronary heart disease should be strongly encouraged to stop smoking to avoid the risk of second-hand smoke to the patient.

### Benefits of smoking cessation

- People with heart disease reduce the risk of a recurrent myocardial infarct (MI) or death by half if they stop smoking
- It is beneficial to stop smoking at any age. The earlier smoking is stopped, the greater the health gain
- Smoking cessation has major and immediate health benefits for smokers of all ages
- Within one day of quitting, the chance of a heart attack decreases
- Within two days of quitting, smell and taste are enhanced
- The excess risk of heart disease is reduced by half after one year's abstinence. The risk of a major coronary event reduces to the level of a never smoker within five years
- The average weight gain of 3kg and the adverse temporary psychological effects of quitting are far outweighed by the overall health benefits [50].

There is good evidence for the effectiveness of:

- Brief advice from health professionals
- All forms of nicotine replacement therapy (NRT) for people smoking more than 10 – 15 cigarettes per day
- Self help materials alone; with follow up telephone calls, improves effectiveness
- Organised group programmes, are better than self help materials but no better than intensive health professional advice.

### Nicotine replacement therapy (NRT)

NRT increases quit rates at 12 months approximately 1.5 – 2 fold compared to placebo, regardless of setting.

It is more dangerous for patients with heart disease to continue smoking than to use NRT. Given the seriousness of their medical condition, cardiac patients who cannot quit should be among the first to be considered for NRT. In patients with ischaemic heart disease, NRT should be started at a lower dose. The dose may be increased if withdrawal symptoms occur. Follow closely. Use cautiously after discussion with a specialist in people in the immediate post MI period (4 weeks), those with serious arrhythmias or those with severe or worsening angina.

Contraindications to NRT may include hypersensitivity to nicotine, recent MI, unstable or progressive angina, Prinzmetal's variant angina, and severe cardiac arrhythmias.

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### Antidepressant drugs (*bupropion and nortriptyline*)

These are second line pharmacotherapy. Bupropion is a suitable treatment (if required) for people with cardiovascular disease. Patients with cardiovascular disease should be given nortriptyline only under close supervision because of the tendency of the medicine to produce sinus tachycardia and to prolong the conduction time.

### Second hand smoke

About two thirds of the smoke in a cigarette is not inhaled by the smoker but is released into the air. That smoke mixes with smoke exhaled by the smoker and the combination is called second hand smoke. All patients with a history of cardiovascular disease and their family members, should stop smoking and avoid second hand smoke.

Effective approaches for smoking cessation are detailed in the National Health Committee's Smoking Cessation Guidelines 2002 [50] (Appendix 6).

## 3.6 MANAGING PSYCHOSOCIAL ISSUES

### Key points

Up to one in four patients will experience a disabling level of anxiety or depression following a myocardial infarction.

A patient's illness perception may determine the degree of anxiety and depression experienced and may delay or substantially reduce social and leisure activities.

Depression is associated with a five-fold increase in mortality at six months and a three fold increase in one year cardiac mortality.

Major depression following a coronary event runs a long term course with the majority of those affected remaining depressed at one year.

Most patients will return to work or primary activity following myocardial infarction. The return to work is associated with an improvement in emotional well being.

Marital status, emotional and social support and social networks are likely to have a protective effect and reduce risk of future fatal and non-fatal coronary heart disease and total mortality.

### RECOMMENDATIONS

<b>B</b>	Psychosocial interventions (patient education, counselling and cognitive behavioural techniques) should be included in comprehensive cardiac rehabilitation programmes.
<b>C</b>	An assessment of the social support available to the patient is recommended for all patients with coronary heart disease.
<b>D</b>	Simple questions regarding the patient's illness perception, coping skills and external support followed by a validated questionnaire such as the HADS questionnaire are recommended.
<b>C</b>	The involvement of spouses, partners, whānau and family should be encouraged in all phases of comprehensive cardiac rehabilitation.
<b>B</b>	All patients with coronary heart disease who demonstrate a high level of anxiety or depression should be referred to a trained practitioner for assessment and treatment of their anxiety and depression.
<b>B</b>	Comprehensive cardiac rehabilitation programmes should include vocational guidance to facilitate an appropriate and realistic return to work.
<b>D</b>	For those who see work as a potential barrier to participation in an outpatient based programme, options such as home based cardiac rehabilitation should be considered.
<b>D</b>	Comprehensive cardiac rehabilitation programmes should include discussion of sexual activity in an open, frank and sensitive manner.

For patients having just experienced a heart attack or undergone coronary artery surgery recovery is complex [51]. A grief reaction and adjustment is a normal part of the recovery process for the patient and their spouse, partner, whānau and family [52].

With the trend to shorter hospital stays there is less time for people to internalise, assimilate and adjust to the meaning of their illness or procedure. The period after discharge is a particularly vulnerable time of grief; 'home-coming depression' or 'cardiac blues' is so common it is regarded as a normal part of the recovery process. Up to one in four patients will experience a disabling level of depressive symptoms or anxiety.

Most patients however, do make effective adjustments and cope, slowly improving over the weeks post event. Over 50% of patients return to sexual activity and also outdoor activities by three weeks following myocardial infarction. Many return to work (if previously employed) and to their previous maximum level of activity by seven weeks [53]. A patient's illness perception may determine the degree of anxiety and depression experienced and may delay or substantially reduce social and leisure activities.

The main issues to discuss are, social support, illness perception, feelings of anxiety and depression, sexuality, work and vocational adjustment including driving.

### **Social support**

Informed families and positive spousal/partnership relationships are important for emotional adjustment, lifestyle changes and return to a full and active life. Identification and assessment of a patient's social resources is recommended. Spouses, partners, whānau, family members and significant others should be involved in all phases of cardiac rehabilitation. Asking the patient four brief questions can help in the assessment of their social support network.

- Who do you live with?
- Who do you confide in about their fears and worries?
- Who do you see for recreation?
- Who do you discuss decisions with?

Receipt of information has been identified as the most significant concern for spouses/partners of cardiac patients. The spouse/partner may retain more information following an education session and can therefore reinforce the information to the patient.

### **Psychological assessment**

Some simple questions regarding illness perception, understanding of the event, procedure or disease and coping skills may identify patients at risk of significant psychosocial distress [54-56].

Suggested questions are:

- What do you think causes heart attacks? (Knowledge)
- Why do you think the heart attack happened to you? or, Why do you think your coronary arteries blocked up? (Illness perception)
- What have the doctor's told you? AND Do you go along with that? (Illness perception)
- Do you understand it? What do you understand by it? (knowledge, misconceptions, 'cardiac myths')
- How have you coped in the past with a major life event? (Previous coping skills)
- What and who will help you cope with this? (Internal and external resources-social support)
- How do you see the future? What difficulties do you see in recovering from this? (Sense of control/efficacy, barriers to recovery, eg, financial, social).

It is important to note that there is the risk of oversimplifying the assessment process. The commonest questionnaire for psychological assessment used in cardiac rehabilitation in New Zealand is the Hospital Anxiety & Depression Scale (HADS) scale which is a well validated, short, well accepted by patients and easy to score (Appendix 7).

### **Depression**

Depression is associated with a five fold increase in mortality at six months and over three fold increase in one year cardiac mortality even when adjusted for factors associated with higher risk (eg, previous myocardial infarction or impaired left ventricular function) [57 (2+)].

Depression following myocardial infarction, percutaneous transluminal coronary angioplasty (PTCA) or coronary artery bypass graft (CABG) is linked to increased recurrence, increased readmission rates, failure to return to work and normal

everyday social and leisure activities, more reports of angina and poorer compliance with medical treatments and healthy life choices, especially smoking cessation [58 (2+), 59 (2+), 60 (2+), 61 (2+), 62 (2++), 63 (2-)].

Major depression after coronary events runs a long-term course with the majority of patients remaining depressed when followed up at six and twelve months [64]. The elderly are as vulnerable to depression as younger patients but often present with somatic symptoms eg, insomnia, fatigue, headache, memory impairment and vague chest pain and bodily discomfort, thereby going largely unrecognised by health professionals [65].

Caution should be exercised in selecting an antidepressant, which does not have significant cardiac side effects.

### **Sexual activity**

The psychological impact of acute myocardial infarction, as well as the physiological effects of the illness and medications, can have a major effect on patients' ability to resume sexual activity.

Patient or spouse anxiety and fear of another heart attack or sudden death during intercourse often lead to reduced sexual activity or sexual function. Heart rate levels during intercourse are similar to those found in everyday life and sexual activity for those with coronary heart disease is associated with low risk of cardiac complication [66]. Coital death is rare, encompassing only 0.6% of sudden death cases [67].

Studies show that of those people who were sexually active prior to the infarction, 5 – 34% fail to resume sexual activity. For those who resume sexual activity, 50% resume sexual activity within one month, the large majority by three to six months [53, 68].

Patients with heart disease, diabetes, high LDL (low density lipoprotein) levels and smokers are at higher risk of developing erectile dysfunction associated with atherosclerotic stenosis of major penile arteries. Treatment options include the use of oral pharmacotherapy, vacuum constriction devices, penile self-injection with alprostadil, papaverine or phentolamine, intra-urethral alprostadil, penile prosthesis and vascular surgery [69-71] (Appendix 8).

Sildenafil (Viagra) should not be used by those taking nitrate tablets or spray. It may be used safely for those with stable angina not taking these medications [71].

### **Work and vocational adjustment**

In addition to providing income, work is an important source of self-esteem. Most patients will return to work or primary activity following myocardial infarction. The return to work is associated with an improvement in emotional well-being. Vocational guidance as part of a comprehensive cardiac rehabilitation programme will enable a patient to consider when to return to work, or whether a modification of their work is desirable. Almost half of people that do not make it back to work do so because of psychological reasons, not physical factors [1, 72].

Efforts to facilitate a return to work should begin as early as possible, since patients who delay are less likely to resume work [73].

For those who see work as a potential barrier to participation in an outpatient based programme, options such as home based cardiac rehabilitation should be considered.

Cardiac rehabilitation staff should facilitate a discussion between employer and patients that allow a phased return to work, or time off to attend cardiac rehabilitation programmes.

### **Driving and travel**

*The Medical Aspects of Fitness to Drive*, published by the Land Transport Safety Authority describes precautions for those with cardiac disease (Appendix 9).

Patients considering air travel should seek advice from their general practitioner or physician to discuss their individual situation and the risks and benefits associated with travel. Advice will take account of the severity of the cardiac event, the progress in recovery, and the travel requirements (such as distance to be travelled, length of journey and the complexity of the itinerary etc).

## PHARMACOTHERAPY

### Key point

Patients with coronary heart disease are at very high risk and have been shown to benefit from a number of pharmacological interventions regardless of risk factor levels.

### RECOMMENDATION

**A**

**In all patients with coronary heart disease pharmacotherapy with aspirin, a betablocker, an ACE inhibitor and a statin should be considered unless contraindicated, regardless of initial levels.**

The benefits of pharmacotherapy are potentially substantial and clear recommendations can be made based on compelling randomised controlled trial results. Pharmacotherapy with aspirin, beta-blockers, ACE inhibitors and lipid lowering agents can provide substantial benefits for all patients [74-80 (1++)]. More detailed secondary prevention medication guidelines are currently being produced and will be available in early 2003.

Long term pharmacotherapy with aspirin, a beta-blocker, an ACE inhibitor and a statin should be considered in all patients with coronary heart disease should be considered. Pharmacological interventions to lower blood pressure, serum cholesterol and other risk factors reduce the risk of cardiovascular disease regardless of the initial levels [81].

All medications will require consideration of side effects and contraindications.

**Table 1: Considerations in secondary prevention for patients with coronary and other vascular disease**

Goals	Intervention
<b>Lipid lowering goals:</b> Total cholesterol < 4 mmol/L LDL cholesterol < 2.5 mmol/L	Ensure cardioprotective dietary change. Promote exercise and weight management. Assess fasting lipid profile. Start drug therapy (statin generally most appropriate; consider adding fibrate if low HDL or high TGL).
<b>BP control goal:</b> <120 - 140/80 - 90 or lower if diabetes	Ensure lifestyle measures. Add BP medication individualised to patient characteristics.
Antiplatelet agents	Continue aspirin indefinitely. If aspirin contraindicated, consider warfarin.
Beta blockers	Continue betablockers indefinitely unless contraindicated.
ACE inhibitors	Continue ACE inhibitor indefinitely in high-risk, post MI patients (anterior MI, previous MI, LV dysfunction or CHF).  Consider chronic therapy in other patients.

Adapted from American Heart Association Tables.

## COMPREHENSIVE CARDIAC REHABILITATION PROGRAMMES

### 5.1 CASE MANAGEMENT

#### *Key point*

The case management model is adaptable to primary and secondary care settings and also to individual needs in relation to programme content and length.

#### RECOMMENDATION

**A**

Comprehensive cardiac rehabilitation should embrace a case management approach.

**D**

Hospital based cardiac rehabilitation must be comprehensive and should be individualised to meet the needs of each patient.

The concept of comprehensive cardiac rehabilitation for cardiovascular disease demands a co-ordinated approach to patient management, which brings together behavioural modification principles, exercise training and optimal secondary prevention pharmacotherapy [7]. A suggested framework around which to base a case management programme for cardiac rehabilitation is:

- Identify patients who would benefit from rehabilitation
- Risk stratification and triage of those identified
- Assignment of individuals to a case manager
- Institution of intensive risk reduction interventions based on clinical practice guidelines
- Medical supervision of safety, efficacy and adherence to risk reduction efforts
- Measurement of medical outcomes and patient satisfaction
- Systematic follow up and institution of change in therapies as indicated.

### 5.2 PATIENT IDENTIFICATION

#### *Key points*

Patients can be referred to a cardiac rehabilitation programme by different health care professionals.

Programme co-ordination and process evaluation including monitoring of attendance and drop out are important aspects of an effective programme.

## RECOMMENDATIONS

<b>D</b>	Comprehensive cardiac rehabilitation should be considered in all patients after myocardial infarction, coronary artery bypass surgery and angioplasty.
<b>D</b>	All patients with coronary heart disease should receive a personal written invitation to attend a cardiac rehabilitation programme.
<b>D</b>	A cardiac rehabilitation co-ordinator should have overall responsibility for liaison with patients, their health practitioners and other members of the team. The coordinator should implement strategies to minimise missed referrals.

## 5.3 PROGRAMME FORMAT

**Key point**

Cardiac rehabilitation should be viewed as a continuum through Phases I, II and III from initial admission to long term follow up. This requires co-ordination of the programme and integration between primary and secondary care.

## RECOMMENDATIONS

<b>D</b>	All patients following a coronary event should receive a recommendation and referral for rehabilitation from a clinician.
<b>D</b>	Prior to discharge, all eligible patients should receive a written discharge plan.
<b>D</b>	Prior to commencing Phase II cardiac rehabilitation, all patients should be assessed and a programme developed that meets their individual needs and sets realistic goals.
<b>D</b>	The programme co-ordinator should communicate in writing to the patient's general practitioner and specialist advising details of enrolment, non-attendance or discharge from the programme.
<b>D</b>	All patients should receive written information regarding their nearest cardiac club.

**Phase I – Inpatient rehabilitation**

Initiation and delivery of Phase I rehabilitation is undertaken by ward staff or designated cardiac rehabilitation professionals [82]. The personal recommendation by a cardiologist or physician to attend rehabilitation is important [83].

Aspects to consider for Phase I rehabilitation include:

- Reassurance
- Information
- Risk factor assessment
- Education
- Psychological stresses and responses
- Mobilisation
- Involvement and support of spouse, partner, whānau and family.

Ensure that the information the patient and his or her spouse, partner, whānau or family receive is tailored to the needs of the patient and is consistent. Privacy is important. As soon as the patient is able to leave the bed area, discussion should take place in a private area on the ward and not by the bed.

**KEY** - see Appendix 2 for details.

- A** Well designed meta-analysis (MA) of RCT, or a body of evidence which are consistently applicable
- B** Very well designed observational studies or extrapolated evidence from RCTs or MAs
- C** Lower quality observational studies or extrapolated evidence from B
- D** Non analytical studies or expert opinion.

Discharge information for discussion with patient, spouse, partner, whānau or family should cover as a minimum:

- Physical activity plan until return for Phase II
- Smoking cessation plan and support (if appropriate)
- Angina action plan
- Medication (dosage and possible side effects)
- Psychological aspects and relationships
- Work
- Driving
- Nutrition advice (simple changes until return for Phase II)
- Alcohol.

A written invitation to attend Phase II cardiac rehabilitation programme should be provided prior to discharge [84].

### ***Phase II – Outpatient rehabilitation***

Before entry into cardiac rehabilitation programmes a tailored programme should be devised to meet the needs of the individual [85].

Education topics offered should include:

- Modifiable and non-modifiable risk factors
- Food and nutrition (including meal planning, shopping, budgeting)
- Exercise
- Stress management
- Psychological aspects
- Spouse and family support (a separate group should be facilitated for spouses, partners whānau and family members and issues raised taken back to the wider group at the end of the session)
- Return to work
- Resumption of intimate and sexual activity
- Medication
- Coronary disease management including investigation, medical and surgical treatment
- CPR (for whānau and family as well as the patient).

The programme co-ordinator should communicate in writing to GPs and specialists advising them of their patients' enrolment, non-attendance or drop out in the programme. This letter should also contain a summary of the patient's progress in the cardiac rehabilitation programme.

### ***Phase III – Long term maintenance***

This is a lifetime maintenance stage in which physical activity, positive lifestyle and psychological changes are supported in a minimally supervised or unsupervised setting. The cardiac club/support group network throughout New Zealand is widespread. Currently there are more than 50 such groups and of these 40 are affiliated to the Heart Foundation. The members of these groups provide emotional support to one another, learn new coping strategies and discover ways to improve their condition and help others while helping themselves. For a list of Phase III cardiac clubs see the New Zealand Directory of Cardiac Rehabilitation programmes available from the National Heart Foundation of New Zealand on [www.heartfoundation.org.nz](http://www.heartfoundation.org.nz)

## 5.4 INFORMATION NEEDS

### Key point

Patient recovery may be enhanced by tailoring individual information needs and by using a variety of methods for information delivery.

### RECOMMENDATIONS

- |          |  |
|----------|--|
| <b>B</b> | The educational component of a comprehensive cardiac rehabilitation programme should be individually tailored to the specific circumstances, readiness to change, cultural background and socio-economic circumstances of the patient. |
| <b>B</b> | Varied methods of providing patients with information during their hospital stay need to be considered to optimise patient learning and recovery.  |

With the short hospital stays and the brief time available for inpatient education, the role of the hospital nurse in the early provision of effective patient education is important. This information should be tailored to the specific circumstances, readiness to change, cultural background and socio-economic circumstances of the patient [85 (3)]. The delivery of information should involve the spouse, partner, whānau and family.

## 5.5 SETTINGS FOR CARDIAC REHABILITATION

### Key point

Offering cardiac rehabilitation in different settings will widen choice, improve access and uptake.

### RECOMMENDATIONS

- |          |   |
|----------|---|
| <b>D</b> | Hospital based cardiac rehabilitation must be comprehensive and should be individualised to meet the needs of each patient.                 |
| <b>B</b> | Cardiac rehabilitation programmes should be offered within the primary care setting for which workforce development is required.            |
| <b>D</b> | Home based cardiac rehabilitation is recommended for patients who are either unable to attend or unwilling to use a hospital based service. |

Assessment of the patient's needs prior to commencing the rehabilitation programme should enable the cardiac rehabilitation team to establish at which venue the patient would prefer to undertake their rehabilitation.

### Hospital based cardiac rehabilitation

The components of a comprehensive cardiac rehabilitation programme in a hospital setting are:

- Case management – one person is responsible for the ongoing communication and follow up of each person referred to the programme and with their regular health providers (both hospital and primary care)
- Multi-disciplinary team – a range of skills and expertise should be integral to the delivery of a rehabilitation programme
- Individualised, menu-based programmes should be established to meet the particular needs of each person. Factors to be taken into account include cultural background, social and economic resources, the persons ability to attend, eg, cost, time off work, distance from the programme
- Involvement of spouse, partner, whānau and family.

Hospital based cardiac rehabilitation should be individualised to meet the individual needs of each patient.

#### KEY - see Appendix 2 for details.

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### Primary care

Modification of lifestyle can take time, frequently longer than the length of the average rehabilitation programme [86(3)]. Continued support from a familiar health professional is important.

Continuity of contact is an important factor for adherence to lifestyle modification and medication. The primary health care team are in a unique position to offer this. Placing cardiac rehabilitation within the primary care setting should increase the accessibility of the service. In a recent audit of cardiac rehabilitation facilities in New Zealand, distance from the programme was one of the reasons given for exclusion from the programme by 35% of respondents [87]. For many people, a hospital visit involves extra transport and parking costs which can preclude attendance. The hospital service invariably takes place during the working day adding to the inconvenience.

The current health service structure with integration of primary and secondary care under the District Health Boards should enable seamless case management of patients with cardiovascular disease.

### Home based cardiac rehabilitation programmes

Facilitating cardiac rehabilitation within the home environment enables patients who are unable to attend cardiac rehabilitation, eg, due to domestic and/or work commitments, or people who are not comfortable in the group situation to attain the benefits associated with cardiac rehabilitation. An individualised plan can be developed by the cardiac rehabilitation nurse/primary healthcare nurse for the patient to follow. Monitoring of the patient's progress towards the agreed goals can take place at the patient's home, at the rehabilitation programme or primary health care centre, or by telephone.

## 5.6 THE MULTIDISCIPLINARY TEAM

### Key points

Cardiac rehabilitation involves a number of disciplines through the various phases. These numerous disciplines all have potentially important roles to improve patient outcomes.

Coordination and teamwork are essential to optimise patient outcomes.

### RECOMMENDATION

**D**

**A range of knowledge and skills are recommended for a comprehensive cardiac rehabilitation service. The disciplines of medicine, cardiology, dietetics, nursing, exercise physiology, occupational therapy, physiotherapy, psychology and social work all contribute to ensuring a comprehensive service. The model chosen locally will vary but all disciplines included need to be committed to a co-ordinated and collaborative approach.**

There is a need for a range of disciplines to input into the service, including cardiology, dietetics, nursing, exercise physiology, occupational therapy, physiotherapy, psychology and social work. There is a lack of evidence to support which disciplines are essential to the team. No single composition of a team is best. The model chosen will depend on the resources available and the way the cardiac rehabilitation programme fits into the integrated service for cardiac patients in a particular area [88 (1+)]. Everyone on the team must be committed to the concept of a co-ordinated and collaborative approach.

# 6

## SPECIFIC POPULATIONS

### *Key points*

Women, the elderly, rural and socio-economically disadvantaged patients require special attention.

Patients with diabetes and cardiovascular disease have particularly high risk of recurrent events.

Spouse, partner, whānau and family are affected by the cardiac event and can make important contributions to the rehabilitation of their family members.

### RECOMMENDATIONS

- |          |  |
|----------|--|
| <b>D</b> | Women's specific needs must be addressed in the comprehensive cardiac rehabilitation programme.  |
| <b>D</b> | All patients should be referred to comprehensive cardiac rehabilitation irrespective of age.   |
| <b>D</b> | Disadvantaged patients may need extra support to attend and complete programmes.   |
| <b>D</b> | Rural patients need options for rehabilitation at home or within a primary care setting.   |
| <b>D</b> | Patients with diabetes warrant priority for rehabilitation.  |
| <b>D</b> | Spouse, partner, whānau and family should be offered access to an appropriate support group and be involved in all stages of the rehabilitation process. |

## MĀORI PERSPECTIVES

### Key points

The burden of cardiovascular disease falls disproportionately on Māori. Therefore it must be ensured that Māori receive timely, high quality and culturally appropriate cardiac rehabilitation services.

Cardiac rehabilitation programmes must be accessible and meet the needs of Māori patients and their whānau.

Māori leadership and participation in the development, purchasing and provision of cardiac rehabilitation programmes in New Zealand is necessary.

### RECOMMENDATIONS

<b>D</b>	The development of Māori provider cardiac rehabilitation programmes is recommended.
<b>D</b>	Mainstream cardiac rehabilitation programmes must be reoriented to meet the needs of Māori.
<b>D</b>	It is necessary that Māori have input into the policy and decision making processes of cardiac rehabilitation services.

The burden of cardiovascular death and disease falls disproportionately on Māori in New Zealand [89-91]. A commitment to improving Māori cardiovascular outcomes requires that Māori are given high priority in cardiac rehabilitation.

Māori seek to exercise tino rangatiratanga (self-determination) by actively participating in and controlling the provision of health services for Māori. The development of Māori provider cardiac rehabilitation programmes will reduce access barriers and improve the effectiveness and appropriateness of services for Māori patients and whānau. However, mainstream service providers need to examine ways of increasing their responsiveness to meeting unmet Māori need. One important way this can be achieved is to organise services around Māori patients and their whānau.

Delivery of services must be innovative and be at sites accessible to whānau (such as marae, kohanga or Māori sports clubs). Communication and involvement with whānau is crucial at all stages of cardiac rehabilitation. The creation of a rehabilitation environment that is open, respectful, supportive and empowering, and acknowledges the needs of Māori is another important step to achieving improved service responsiveness. For example, the use of information that is developed and delivered by Māori, and that is Māori specific, is recommended as ideal. Furthermore, rehabilitation health professionals must strive to impart information that is clear and consistent and suits the needs and preferences of Māori patients.

## Programme development for Māori

Māori cardiac rehabilitation programmes must be developed and promoted with adequate and ongoing resourcing. In their absence, mainstream cardiac rehabilitation services must:

- Incorporate the Treaty of Waitangi in policy development and documentation
- Recognise Māori cardiovascular health gains as priority in service planning and provision
- Recognise the importance of the socioeconomic determinants of cardiovascular health for Māori
- Develop a workforce plan that includes Māori staff recruitment, advancement and retention
- Develop partnerships with key Māori provider organisations and community networks
- Establish of a programme for secondary prevention that incorporates a whānau and lifecourse approach, rather than a medical 'compliance' approach
- Up skill the competency of non-Māori staff to work effectively with Māori patients and whānau
- Investigate the use of innovative models of service delivery within Māori communities as an alternative to hospital-based programmes
- Implement the collection of complete and accurate ethnicity data
- Take responsibility for audit and evaluation to monitor the service for equitable access and delivery of programmes
- Monitor Māori data within a quality assurance framework that ensures improved access and utilisation.

**KEY** - see Appendix 2 for details.

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## PACIFIC PERSPECTIVES

### **Key point**

For Pacific peoples the extended family, church and community, together with socio-economic circumstances have a particular influence on health.

### RECOMMENDATIONS

- |          |  |
|----------|--|
| <b>D</b> | Current cardiac rehabilitation programmes should be redefined to meet the needs of Pacific peoples.  |
| <b>D</b> | Cardiac rehabilitation services serving Pacific people should consider the importance of the Pacific family unit, spiritual needs and socio-economic status. |

There are 22 island nations in the population referred to as Pacific peoples in New Zealand, each with its distinct language and culture.

The burden of cardiovascular disease falls heavily on Pacific peoples. Cardiac rehabilitation could significantly reduce the effects of cardiovascular disease on Pacific families and communities. To address the cardiac rehabilitation needs of such a diverse population requires flexibility, innovation and the will and commitment of health professionals [92-94].

### **The family**

The family is the main unit upon which Pacific communities are based. 'Family' to Pacific peoples means 'extended family' regardless of locality, living arrangements and the number of households. The family plays a vital role in providing its members with a material, emotional, spiritual and cultural environment. Involving the family in the decision making process is vital to the success of the patient's cardiac care and rehabilitation.

Most Pacific peoples believe and uphold family, culture and spiritual values. Respect of elders, church ministers and people of high standing and commitment to family, church and community are instilled into Pacific children from an early age. Many Pacific peoples believe that spiritual well-being is essential to health. It is an accepted belief that good health and well-being are blessings from God and likewise, sickness and disease are attributed to the will of God. Healing is often viewed as the answer to prayer.

### **The Pacific concept of and attitudes to health**

Many Pacific peoples see health as a holistic concept encompassing the total well-being of the individual within the context of the family. Often they will seek medical care only when the illness is so serious that it prevents them from functioning in their daily life. Some take a fatalistic view of health based on personal beliefs and attitudes, therefore rating health a lower priority to family, church, cultural or work responsibility.

### **Service provision**

'By Pacific for Pacific' is the ideal model of best practice for the provision of cardiac rehabilitation services for Pacific peoples. This is the ultimate goal. However, in the absence of Pacific providers, mainstream providers are encouraged to consider the

following recommendations to assist in overcoming barriers and to improving responsiveness of their services to the needs of Pacific peoples.

### **Programme development for Pacific peoples**

- Involvement by Pacific peoples in the process is vital
- Recruitment, development and support of Pacific staff
- Programmes to include a component for the family and caregivers
- Up skilling of non-Pacific staff on Pacific values, beliefs and issues
- Development and strengthening of partnerships with key Pacific providers
- Fostering of linkages between mainstream cardiac rehabilitation programmes, Pacific organisations and community networks
- Evaluation and audit of Pacific specific performance indicators, which are tied to accountability.

### **Programme delivery**

- Involving family members in consultation, decision-making and implementation process
- Providing the patient with follow-up support, eg, telephone call or home visit
- Facilitating support for the family and caregiver's programmes
- Providing community/church based cardiac clubs as an option to hospital and mainstream venue
- Providing assistance with transport where needed
- Facilitating access to social services by providing appropriate information.

### **Presentation of information**

Cardiac rehabilitation information should be disseminated utilising appropriate delivery methods. Resources developed by/with Pacific peoples are most effective. Pacific peoples are more likely to promote and advocate for cardiac rehabilitation services if they participate in the planning and development processes.

- Creation of an environment, which is welcoming, respectful, empowering and supportive, is likely to make the Pacific patient and family feel accepted and comforted
- Privacy is important when sharing sensitive and personal information
- Information should be simple, clear and consistent
- Use of bright colours and Pacific imagery when developing resources
- Use of medical jargon to be avoided. Simple explanations of processes, treatment, role of and importance of adherence to medication and modified lifestyle programme
- Use of Pacific staff including qualified/certified interpreters where English is a second language is recommended
- Avoid overload of information for both patient and family
- Repeated presentations are more likely to achieve expected results
- Use of a variety of media and formats is encouraged
- Personal interface, video and television are the preferred and more effective methods. Written information has a place but is not as effective.

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- D** Non analytical studies or expert opinion.

## AUDIT, PROGRAMME EVALUATION AND PATIENT SATISFACTION

### **Key point**

Audit, evaluation and patient feedback are integral aspects of quality improvement.

### RECOMMENDATIONS

<b>D</b>	Audit of programme performance indicators is necessary to monitor service provision and quality of care. Audit should take place every six months.
<b>D</b>	The collection and audit of ethnicity data is recommended to monitor services for equitable access and delivery of programmes.
<b>D</b>	All comprehensive cardiac rehabilitation programmes should monitor and evaluate data relevant to their locality, the population served and the stakeholders of the service.
<b>D</b>	All comprehensive cardiac rehabilitation programmes should ascertain the views of the consumers to assist the development of a quality service.

### **Quality**

The consumers, service providers, purchasers and funders of cardiac rehabilitation services all have a particular interest in the quality of cardiac rehabilitation care. This puts a responsibility on service providers for the collection of data relevant to the different perspectives. Often different levels of data will be required for different purposes and this chapter describes:

- The minimum data required for programme evaluation that a service provider should collect (obtained routinely and by patient satisfaction questionnaire)
- Additional data for periodic audit (by internal or external agencies)
- Suggested performance indicators that a provider could report against or that District Health Boards could include in service specifications.

Programme evaluation is a way of monitoring and improving the quality of care. The information gathered should report on the objectives of the cardiac rehabilitation programme and meet the information needs of all the stakeholders.

Audit is a systematic, independent and documented process for obtaining evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled [95].

### **Patient satisfaction and consumer input to the programme**

Patients are increasingly involved in the evaluation of their care. Measures of patient satisfaction have been developed primarily so that patients could furnish health care providers with feedback on the services provided to them. A patient's satisfaction with a service may bear no relationship to the health professional's concept of a quality service. This emphasises the importance of coupling patient satisfaction with outcome evaluation.

### Minimum data for routine collection

Process evaluation	Outcome evaluation	Consumer feedback
Basic demographics (age, gender and ethnicity)	Risk factor reduction outcomes (smoking, BP, lipids, BMI, physical activity)	Annual Patient satisfaction questionnaire
Admitting medical condition/diagnosis	Mortality and re-infarction	
Source of referral	Psychosocial outcomes (return to work, quality of life)	
The numbers attending (including partners)	Adverse events	
The drop out rate	Non-compliance with medication and lifestyle changes	
Reasons for non-attendance	Re-admission	

A Recommended Cardiac Rehabilitation Data Form is attached in Appendix 11.

### Additional data for periodic audit

Phase I	Phase II
Number of cardiac rehabilitation patients seen per month	Number of cardiac rehabilitation patients seen per month
Percentage seen by a cardiac rehabilitation nurse within 72 hours of admission	Percentage with risk assessment completed
Percentage of notes containing a risk factor assessment	Percentage with record of an exercise test result
Percentage seen (with their partner where appropriate) prior to discharge by a cardiac rehabilitation nurse for pre discharge planning	Percentage with formal assessment of need prior to commencing the Phase II programme
Percentage with discharge medication recorded in the cardiac rehabilitation notes	Percentage with goals identified and agreed
Percentage receiving a written invitation to cardiac rehabilitation	Percentage resumed activities of daily living
Percentage receiving a discharge plan	Percentage resumed previous work
	Percentage of notes containing a written recommendation to attend their nearest cardiac club
	Percentage with a summary of progress sent to general practitioner

### Performance indicators

Reporting of programme performance indicators is necessary to monitor service provision and to review the quality of care. These performance indicators will form the basis of the service specifications developed between service providers and District Health Boards.

Number of admissions to hospital with the primary reason for admission being the condition for which the patient attended the programme by cardiac condition	Number of readmissions to hospital with cardiac conditions
Average length of hospital stay (in days)	Number seen by ethnicity and cardiac condition in Phase I cardiac rehabilitation
Average number of sessions attended per patient	Number of individuals referred by ethnicity and cardiac condition to Phase II cardiac rehabilitation
Number of individuals attending primary care-based cardiac rehabilitation programmes	Number of individuals in hospital-based cardiac rehabilitation programmes
Number of individuals referred back to primary care practitioner	Number with self management plan participating in a home based programme

## IMPLEMENTATION OF THE CARDIAC REHABILITATION GUIDELINE

The guideline development team recommends the following multi-faceted strategies be adopted to disseminate the guideline and encourage its implementation throughout New Zealand.

### ***Dissemination of the guideline***

The guideline should be disseminated as widely as possible to the following groups;

- General practitioners
- IPAs and PHOs
- Primary health care nurses
- Cardiac rehabilitation nurses
- Cardiac Society members
- Disease state management nurses
- Exercise physiologists
- Dietitians
- Cardiac rehabilitation clubs
- Medical and nursing colleges.

### ***Provision of consumer information***

Māori, Pacific and English resources will be prepared to give people recovering from a cardiac event or living with coronary heart disease information about the life long life style changes that may need to be made and raise awareness of the benefits of cardiac rehabilitation and how to access services. This would be based on the information in the guideline and could be adapted locally. It is envisaged that the English version would be completed in 2002 and the Māori and Pacific peoples resource completed in 2003.

### ***Liaison with DHB and other rehabilitation service providers***

It is recommended that a number of District Health Boards (DHB) be invited to trial comprehensive cardiac rehabilitation programmes based in the community and the hospital, and to design programmes specifically to meet the needs of Māori and Pacific peoples. A number of the guideline development team members are willing to provide advice and assistance on how these could be achieved. It is recommended that these trials should be formally evaluated to assess consumer satisfaction, improved health outcomes and cost effectiveness.

### ***Liaison with the Ministry of Health***

It is proposed that the Ministry of Health review the service specifications for DHB's cardiac rehabilitation programmes to include home based care programmes, the collection of ethnicity data and the ongoing review and evaluation of the programmes.

## Events and Training

To assist the uptake of the guideline in primary care, it is recommended that;

- The guideline is launched at the Cardiac Society Conference
- A CME pack be developed for primary care facilitators and other health educators
- The guideline development team members make presentations at relevant conferences and CME meetings around the country
- Training programmes be developed specifically for cardiac rehabilitation nurses
- Te Hotu Manawa Māori develop training resources based on the guidelines for Māori practitioners
- Pacific Heart Beat develop training resources based on the guidelines for Pacific practitioners.

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- D Non analytical studies or expert opinion.

## APPENDICES AND RESOURCES

- 1 The Guideline Development Team
- 2 Adapted SIGN Grading System
- 3 Stages of Change
- 4 Metabolic Equivalent (METS) Exercise Intensity Chart
- 5 Foods to Include in the Cardioprotective Dietary Pattern
- 6 Smoking Cessation
- 7 The Hospital Anxiety and Depression Scale (HADS)
- 8 Sexual Activity and Heart Disease
- 9 LTSA Requirements
- 10 Cardiac Rehabilitation Goals
- 11 Recommended Data Form.

Copies of the resource kit pages (Appendices 3 - 10) can be downloaded and printed for distribution from the NZGG website [www.nzgg.org.nz](http://www.nzgg.org.nz)

# APPENDIX 1: THE GUIDELINE DEVELOPMENT TEAM

## Chairman

**Prof Norman Sharpe** - Cardiologist, Auckland Hospital; Head, School of Medicine, University of Auckland, Chair, New Zealand Guidelines Group.

## Co-Drivers

**Dr Sue Wells** - Public Health Medicine Registrar; General Practitioner

**Fiona Doolan-Noble** - National Cardiac Rehabilitation Co-ordinator, National Heart Foundation of New Zealand, Auckland, President, Cardiac Rehabilitation Association of New Zealand.

## Members

- **Chris Baldi** - Lecturer in exercise physiology and cardiac rehabilitation, Department of Sports and Exercise Science, University of Auckland
- **Stephen Burden** - Exercise Physiologist, Centre for Sports and Exercise Science, Waikato Polytechnic
- **Dr Rob Doughty** - Senior Lecturer in Medicine, Department of Medicine, University of Auckland
- **Stewart Eadie** - Lecturer in Nursing, UNITEC and Clinical Counsellor
- **Euan Grigor** - Deputy-Chairman Heart Foundation Cardiac Care & Rehabilitation Committee; Consumer representative, Rakaia
- **Dr Ngaire Kerse** - General Practitioner; Department of General Practice, University of Auckland; Representative of the Royal New Zealand College of General Practitioners
- **Helen McGrinder** - Cardiac Rehabilitation Nurse Specialist, Greenlane Hospital
- **Henare Mason** - Board Member Te Hotu Manawa Māori; Rheumatic Fever Trust, Middlemore Hospital
- **Dahlia Naepi** - Registered Nurse, Pasifika Healthcare, Pacific island representative
- **Dr Diana North** - Medical Director, National Heart Foundation of New Zealand
- **Dr Tania Riddell** - Public Health Medicine Registrar, National Heart Foundation of New Zealand
- **David Roberts** - National Dietitian, National Heart Foundation of New Zealand
- **Riki Robinson** - Registered Nurse; Māori Mobile Disease State Nurse; Māori representative
- **Iutita Rusk** - Manager, Pacific Islands Heartbeat, National Heart Foundation of New Zealand; Pacific Island representative
- **Dr Ralph Stewart** - Cardiologist, Greenlane Hospital, Auckland
- **Tangi Vautier** - Registered Nurse; Māori Mobile Disease State Nurse; Māori representative
- **Tim Corbett** - MBs, DipPh, BPhEd.

In August 2001, **Deidre Nehua** - CEO Te Hotu Manawa Whanui, joined the guideline committee to be the elected representative of Te Hotu Manawa Whanui. **Henare Mason** had retired from the Board of Te Hotu Manawa Whanui but agreed to stay on the committee to support the guideline development.

**Laura Lambie**, **Gabrielle Collison** and **Rachel Gilchrist** from the Ministry of Health, **Rob Cook** and **Catherine Marshall** from the New Zealand Guidelines Group are thanked for their support and contributions. **Virginia Hand**, Department of Medicine, University of Auckland, assisted with co-ordination of this manuscript.

Details of the competing interests of team members, and the guideline development process, are included in the full text of the guideline available at [www.nzgg.org.nz](http://www.nzgg.org.nz)

## APPENDIX 2: ADAPTED SIGN GRADING SYSTEM

LEVELS OF EVIDENCE	
<b>1++</b>	High quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias.
<b>1+</b>	Well conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias.
<b>1-</b>	Well conducted meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias.
<b>2++</b>	High quality systematic reviews of case-control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal.
<b>2+</b>	Well conducted case-control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal.
<b>2-</b>	Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal.
<b>3</b>	Non-analytic studies, eg, case reports, case series.
<b>4</b>	Expert opinion.

Following assessment of the level of evidence for individual papers, recommendations were given a grade from A to D as below. This grading system departs from the Scottish Intercollegiate Guidelines Network (SIGN) system which was derived primarily for treatment guidelines and revises ranking according to therapy or prognosis. Questions relating to prognosis were considered a feature of this guideline to determine how to tailor cardiac rehabilitation services according to individual patient needs. For further details on the SIGN system see [www.sign.ac.uk](http://www.sign.ac.uk)

GRADES OF RECOMMENDATION	
<b>A</b>	<p><b>For therapy:</b> At least one meta-analysis, systematic review, or RCT rated as 1++, and directly applicable to the target population, OR</p> <p>A body of evidence consisting principally of studies rated as 1+, directly applicable to the target population and demonstrating overall consistency of results.</p> <p><b>For prognosis:</b> At least one meta-analysis, systematic review, or large high quality cohort study rated as 2++ and directly applicable to the target population, OR</p> <p>A body of evidence consisting principally of studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results.</p>
<b>B</b>	<p><b>For therapy:</b> A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results, OR extrapolated evidence from studies rated as 1++ or 1+.</p> <p><b>For prognosis:</b> A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results.</p>
<b>C</b>	<p><b>For therapy:</b> A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results, OR extrapolated evidence from studies rated as 2++.</p>
<b>D</b>	<p>Evidence levels 3 or 4, OR for therapy: extrapolated evidence from studies rated as 2+, or expert opinion.</p>

## APPENDIX 3: STAGES OF CHANGE

Stage	Description – a person in this stage is
<b>Pre-contemplation</b>	<p>Not considering changing a specific behaviour and likely to be resistant to changing the negative behaviour</p> <p>People in this stage may:</p> <ul style="list-style-type: none"> <li>• Have a lack of knowledge (reluctant)</li> <li>• Are resistant to being told what to do (rebellious)</li> <li>• Lack the energy to make change (resigned)</li> <li>• Have rationalised their existing behaviour to be comfortable with it (rationalised).</li> </ul> <p><b>Intervention</b></p> <p>Develop rapport – skilled, reflective listening clarifies the patient’s own experience and meaning; acceptance involves listening carefully with a desire to understand the patient’s perspective, don’t be judgmental</p> <p>Raise doubt – increase gently the patient’s perception of risk and the importance of cardiac rehabilitation.</p>
<b>Contemplation</b>	<p>Patient ambivalent about changing behaviour.</p> <p>Contemplators are willing to consider the problem/health issue and the possibility of change – but are ambivalent. “I would like to stop smoking... but....”</p> <p><b>Intervention</b></p> <p>Ask patients to talk about the pros and cons of current behaviour and the pros and cons of change.</p> <p>Tip the balance – evoke reasons for change, risks of not changing, strengthen the person sense of self efficacy for change.</p>
<b>Preparation</b>	<p>Actively getting ready to change the behaviour, eg, looking for information on walking shoes, healthy nutrition or stress management. A plan of action is being made and some behaviour change may have taken place</p> <p><b>Intervention</b></p> <p>Offer choices – help the patient determine the best course of action, encourage the patient to choose their preferred treatment option as this increases treatment adherence.</p>
<b>Action</b>	<p>Busy making changes. A large number of behaviour change processes are taking place in cognitive, environmental and interpersonal areas of the person’s life</p> <p><b>Intervention</b></p> <p>Help the patient take specific steps towards enhanced adherence.</p>
<b>Maintenance</b>	<p>Consistent change in pattern of behaviour. The new behaviour has become a normal way of life and is ingrained in the personal lifestyle. However, relapse is still possible.</p> <p><b>Intervention</b></p> <p>Help the patient identify and use strategies to maintain adherence.</p>
<b>Termination</b>	<p>Resolved of all temptation to engage in the old behaviour and has 100% self efficacy in all tempting situations. Termination is an end goal reached by few.</p>
<b>Relapse</b>	<p>Relapse is a temporary stop to the behaviour change process. The length of the stop depends on the anticipation and development of relapse strategies. A complete stop to the behaviour change process leads to collapse.</p> <p><b>Intervention</b></p> <p>Normalise it – it is ok.</p> <p>Help the client re-enter the stages of change without becoming stuck or demoralized.</p>

## APPENDIX 4: METABOLIC EQUIVALENTS (METS)

One METS equals oxygen consumption at rest which is about 3.5 millilitres per kilogram of body weight per minute. An individual exercising at 2 METS is consuming oxygen at twice the resting rate.

### METS values for leisure activities

Activity	METS (Min)	METS (Max)
Cycling	5mph	2
	10mph	5
	13mph	8
Dancing	Ballroom	4
	Aerobic	6
Skipping	<80/min	8
	120 - 140/min	11
Swimming	Breast stroke	8
	Freestyle	9
Tennis		4
Walking	1 mph	1
	2 mph	2
	3 mph	3
	3.5 mph	3.4
	4 mph	5

### METS values for tasks of daily living

Activity	METS (Min)	METS (Max)
Bed making	2	6
Carrying heavy groceries	5	7
Cleaning windows	3	4
Cooking (standing)	2	3
Dressing	2	3
Driving a car	1	2
Eating	1	2
General housework	3	4
Grocery shopping	2	4
Loading/unloading washing machine	5	4
Lying awake	1	2
Mowing by hand	5	7
Painting / decorating	4	5
Sexual intercourse	3	5
Showering	3	4
Vacuuming	3	3.5
Walking up stairs	4	7
Washing car	6	7
Washing dishes	2	3
Watching television	1	2

## APPENDIX 5: FOODS TO INCLUDE IN THE CARDIOPROTECTIVE DIETARY PATTERN

### Benefits of dietary treatment

Dietary treatment now involves the promotion of a cardioprotective dietary pattern. This pattern offers more than simple LDL-cholesterol reduction, via mechanisms that improve the lipid profile and glycaemic control, lower blood pressure, and reduce the risk of clotting. Dietary treatment is additive to drug therapy and integral to reducing cardiovascular risk.

A variety of dietary patterns reduce cardiovascular risk. These patterns have in common a high plant food content and minimal content of meat or dairy fats, and commercially hardened plant oils or fats. They include most of the following food components:

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Food Component	Recommendation	Serving Size Example
<p><b>Vegetables and fruit</b></p> <p>Choose coloured varieties daily, especially the green, orange and red vegetables</p>	Aim for at least 8 servings daily	½c cooked vegetables, 1c raw green vegetable or salad, 1 medium apple, pear, orange, nectarine, banana, ½c stewed, frozen or canned fruit
<p><b>Whole grain breads and cereals</b></p> <p>Choose a variety of grain products with at least half as whole grain products</p>	Aim for 6 or more servings daily depending on body weight and activity	1 medium slice of bread or ½ bread roll, ½c bran cereal or ⅔c wheat cereal, ½c cooked porridge or 3T muesli, ½c cooked pasta or ⅓c cooked rice
<p><b>A variety of oils and spreads (including sterol-fortified spreads), nuts, seeds or avocado</b></p> <p>Choose products made from sunflower, soya bean, olive, canola, linseed, safflower or nuts and seeds, other than coconut</p>	Aim for 3 or more servings daily depending on body weight and activity	1t soft table margarine or oil, 2t light margarine (45-60% fat), 3t low fat mayonnaise (10% fat or less), 1T avocado, 1D nuts or pumpkin seeds, 1D peanut butter, 1T sunflower or sesame seeds
<p><b>Low fat or fat-free milk products</b></p> <p>Use 0-0.5% fat milk. Hard cheese and semi-soft cheeses can be included to 4 times weekly in very small amounts</p>	Include 2 – 3 servings daily or replace with soy products	1 glass trim or low-fat milk, 1 pottle low fat yoghurt, ⅓c cottage cheese, 2T parmesan cheese, 2cm cube cheddar cheese, 3cm cube standard camembert, brie, edam, feta, mozzarella
<p><b>Fish, dried peas, beans, soy products, skinned chicken, or very lean meats</b></p> <p>Choose 1 – 3 servings from this group daily depending on body weight</p> <p>If eating fish, choose some oily fish species such as tuna, kahawai, trevally, kingfish, warehou, dory, salmon, sardines, eel, squid, mussels, and oysters</p>	<p>Include 1 – 2 fish servings weekly</p> <p>Include dried peas and beans 4 – 5 times per week</p> <p>Limit meats to 1 – 1 ½ servings daily</p>	<p>2 small/medium fillets of cooked fish, 1c mussels, ⅓c salmon or ½ can sardines,</p> <p>1c cooked dried beans, chickpeas, lentils, dahl, ½c tofu or tempeh, 1 glass fortified soy milk</p> <p>100-120 grams trimmed meat/chicken, ½c mince or casserole</p>

Abbreviations: c = cup D = dessertspoon T = tablespoon t = teaspoon

### When considering a healthy dietary pattern think about the following:

- Choose plenty of fresh foods
- Choose more dried peas, beans, or nuts if you do not eat fish, meat, or poultry
- Select ready prepared and packaged foods labelled low in saturated fat and salt and high in fibre
- Mostly avoid deep fried foods, butter, palm oil products, hard or visible white fat, salty foods, or adding salt to foods.

The National Heart Foundation of New Zealand acknowledges the support of Mrs Janice Bremer (DipHSc, NZRD) and Dr Alex Chisholm, (DipHSc, MCApSc, PhD, NZRD) in developing this document.

## APPENDIX 6: SMOKING CESSATION

### THE FIVE A'S: ASK, ASSESS, ADVISE, ASSIST, ARRANGE

#### **I. ASK**

The smoking status of every adult should be identified and prominently documented in the medical record. For current smokers and those who have quit in the past year, smoking status should be updated at each visit.

#### **II. ASSESS**

Determine the willingness of smokers to make a quit attempt, by asking every smoker questions to determine if he/she is ready to make a quit attempt.

#### **III. ADVISE**

Provide brief cessation messages at nearly every encounter. These messages should be:

- clear, strong and personalised
- supportive
- non-confrontational.

#### **IV. ASSIST**

Provide assistance according to the person's readiness to quit. Relevant information is important for everyone, even those not ready to quit. Provide additional support for those with some interest in quitting:

- offer self-help material
- assist in setting a quit date
- help develop a quit plan
- provide practical counselling and support
- explore barriers to successful cessation and strategise solutions
- offer referral to organised cessation support (eg, the free QUITLINE – 0800 778 778)
- encourage nicotine replacement therapy as first line pharmacotherapy or if previous failure or contraindication to NRT, discuss use of bupropion.

#### **V. ARRANGE (FOLLOW-UP)**

Arrange appropriate follow-up for all smokers. Arrange follow-up (in person or by phone) with smokers who are ready to quit:

- first follow-up within the first week
- second follow-up within the first month
- reinforce staying quit during visits in the first year post-cessation.

Reproduced with permission from the *Guidelines on Smoking Cessation*, May 2002, National Health Committee, Wellington, New Zealand.

# APPENDIX 7: THE HOSPITAL ANXIETY AND DEPRESSION SCALE

Name: \_\_\_\_\_ Date: \_\_\_\_\_

This questionnaire is designed to help know how you feel. Read each item and tick the box which comes closest to how you have been feeling in the last week.

Don't take too long over your replies. Your immediate reaction to each item will probably be more accurate than a long thought out response.

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**1. I feel tense or 'wound up'**

- Most of the time
- A lot of the time
- From time to time
- Not at all

**3. I get a sort of frightened feeling as if something awful is about to happen**

- Very definitely and quite badly
- Not too badly
- A little but it doesn't bother me
- Not at all

**5. I can laugh and see the funny side of things**

- As much as I always could
- Not quite as much now
- Definitely not so much now
- Not at all

**7. I feel cheerful**

- Not at all
- Not often
- Sometimes
- Most of the time

**9. I feel as if I am slowed down**

- Nearly all the time
- Very often
- Sometimes
- Not at all

**11. I feel restless as if I have to be on the move**

- Very much indeed
- Quite a lot
- Not very much
- Not at all

**13. I get sudden feelings of panic**

- Very often indeed
- Quite often
- Not very often
- Not at all

**2. I still enjoy the things I used to enjoy**

- Definitely as much
- Not quite so much
- Only a little
- Hardly at all

**4. I get a sort of frightened feeling like butterflies in my stomach**

- Not at all
- Occasionally
- Quite often
- Very often

**6. Worrying thoughts go through my mind**

- A great deal of the time
- A lot of the time
- From time to time but not too often
- Only occasionally

**8. I can sit at ease and feel relaxed**

- Definitely
- Usually
- Not often
- Not at all

**10. I have lost interest in my appearance**

- Definitely
- I don't take as much care as I used to
- I may not take quite so much care
- I take just as much care

**12. I look forward with enjoyment to things**

- As much as I ever did
- Rather less than I used to
- Definitely less than I used to
- Hardly at all

**14. I enjoy a good book/radio/TV programme**

- Often
- Sometimes
- Not often
- Seldom

*Thank you*

Anxiety score

Depression score

## USING THE HOSPITAL ANXIETY AND DEPRESSION SCALE

Ask the client to read each item and please tick in the box opposite the answer that most reflects how they have been feeling during the previous week.

It is important to highlight the fact that the questions reflect the previous week. Also encourage the client to score their immediate reaction and not to think about the question for too long.

### How to score the HADS questionnaire

The HAD Scale scores both depression and anxiety.

The rating is based upon a four-point scale.

1. For items 2, 4, 5, 8, 12 and 14 a tick in the top box scores zero points and the last box three points.
2. For items 1, 3, 6, 7, 9, 10, 11, and 13 the points are reversed (ie, a tick in the top box scores three points, the second box two points etc.).

#### For Depression:

Total all the scores given for the depression questions (add up the scores for the questions 2, 5, 7, 9, 10, 12, 14).

#### For Anxiety:

Total all the scores given for the anxiety questions (add up the scores the questions 1, 3, 4, 6, 8, 11, 13).

### Implications of the result

Assessment	HADS score		Action
Assess illness perception, coping skills and factors present that may place a patient more at risk of significant psychosocial distress: <ul style="list-style-type: none"> <li>• Unexpected or first time illness</li> <li>• Changes to diagnosis/treatment</li> <li>• Complications or cancellations</li> <li>• Prolonged stay/repeated admissions</li> <li>• Person under 50 years of age</li> <li>• Lack of spouse, partner, whānau or family support</li> <li>• Other negative health and illness beliefs</li> <li>• Other recent life stressors</li> </ul>	11 – 21	<b>Probable significant depression or anxiety</b>	<b>Referral to appropriate person</b> <b>Tailor cardiac rehabilitation programme accordingly, check on progress</b>
	8 – 10	<b>Possible or borderline depression</b>	<b>Tailor cardiac rehabilitation programme accordingly, may need referral to appropriate person check on progress</b>
	0 – 7	<b>No depression or anxiety state, but may be 'at risk' as determined by assessment</b>	<b>Usual cardiac rehabilitation programme, check on progress</b>

## APPENDIX 8: SEXUAL ACTIVITY AND HEART DISEASE

Some people, for a variety of reasons, may not resume sexual activity straight away and other ways of expressing their feelings should be considered. Advise caution, not timidity.

After the shock of being diagnosed with heart disease and the natural fear of losing each other, a couple may find that their relationship is made stronger by resuming their sex life.

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Question	Answer
Does sexual intercourse pose any risk for people with heart disease and with Stable Angina or a past history of a myocardial infarction?	A healthy sex life is part of returning to a normal life after a cardiac event and can be very beneficial for the couple's relationship, helping them to feel secure and happy.
Does sexual intercourse pose any risk soon after a cardiac event (acute myocardial infarction or a period of unstable angina)?	Choose a time when you are rested and relaxed, having had your prescribed medications. Start slowly, allowing the intimacy to build before starting intercourse. This can sometimes be associated with fear and anxiety related to the fear of losing each other.
Will sexual activity damage my heart?	No. Intercourse represents a very small risk of triggering a myocardial infarction. Sexual intercourse uses only 3 – 5 METS, about the equivalent of walking up 2 flights of steps briskly. If your typical angina pain starts, stop and take your nitroglycerin spray as you have been directed. When your pain has completely resolved, you may resume sexual activity, though you may want to go more slowly.  Report chest pain when you next see your doctor. It might be that your medications need adjusting or you may need to use nitroglycerin spray before intercourse.
Is it common for people to lose interest in sex after a cardiac event or a myocardial infarction?	Yes. These feelings are common in both the person who has had the cardiac event and/or their partner. Cardiac blues, anxiety or fear can significantly decrease the desire for sex. This situation is normal and often temporary. Open communication about the issue can help, along with cardiac rehabilitation that can help build confidence. There are many ways of expressing your love and fondness without having intercourse, including touch, cuddling and kissing each other without the goal of orgasm. Impotence or a dry vagina may be helped by changing medications and should be discussed with your doctor.
How does depression impact on sexual intimacy?	Depression occurs in approximately 14% of people who have suffered a myocardial infarction. Common symptoms of depression may include some of the following; a loss of interest in things normally found pleasurable – that includes sex, withdrawal from family and social interaction, depressed mood, anger or irritability and disturbance in normal sleep patterns.
Will sex be different now?	More than 75% of people don't change the way they engage in foreplay and sexual positions, though don't hesitate to experiment in ways that make it easier for the individual with the heart condition.
Will medications affect sex?	Modern medications tend to be more specific and have less side effects, though if you are troubled by impotence or not having enough vaginal fluid to make intercourse comfortable, then consult your doctor.
Is it safe to use drugs like Viagra?	Sildenafil (Viagra) should not be used by those using nitroglycerin tablets or spray. It may be used safely for those with stable angina and not taking nitrates.
What if it is not the same?	Like in any relationship, there are many reasons why couples may experience problems with sex. Contributing factors can be too much alcohol, medications (see above), fatigue and stress related to recovery, fear, relationship conflict and depression to name a few.
When should I seek help?	If sex becomes a concern for you, don't hesitate to contact your nurse or doctor.

## APPENDIX 9: LTSA REQUIREMENTS

Medical Condition	Class 1 or class 6 licence and a D, F, R, T or W licence endorsement in relation to vehicles of less than 4,500 kg GLW or GCW	Class 2, 3, 4 or 5 licence and P, V, I or O licence endorsement
<i>Angina pectoris</i>	Individuals with angina at rest or on minimal exertion despite medical therapy should not drive	Individuals with angina at rest or on minimal exertion despite medical therapy should not drive
<i>Acute uncomplicated myocardial infarction</i>	Should not drive for at least <b>two weeks</b> . Return to driving subject to specialist assessment	Should not drive for at least <b>four weeks</b> . Return to driving subject to specialist assessment
<i>Coronary artery bypass surgery</i>	Should not drive for at least <b>four weeks</b> . Return to driving subject to specialist assessment	Should not drive for at least <b>three months</b> . Return to driving subject to specialist assessment
<i>Coronary angioplasty</i>	Should not drive for at least <b>two days</b> . Return to driving subject to specialist assessment	Should not drive for at least <b>four weeks</b> . Return to driving subject to specialist assessment
<i>Cardiac arrest</i>	Should not drive for at least <b>two months</b> . Return to driving subject to specialist assessment	Normally considered permanently unfit to drive. For exceptions refer section 3.3.1 of LTSA guide.

Reproduced from the Land Transport Safety Authority publication *The Medical Aspects of Fitness to Drive: A guide for medical practitioners*. For more information see [www.ltsa.govt.nz](http://www.ltsa.govt.nz)

GOALS	INTERVENTION
<b>Psychosocial management:</b>	<p>Assess level of social support needed.</p> <p>Monitor symptoms of depression and anxiety.</p> <p>Advise on return to vocational activity, driving and return to sexual activity.</p> <p>Refer to home or hospital based comprehensive cardiac rehabilitation programme.</p>
<b>Smoking goal:</b> Complete cessation	<p>Assess tobacco use. Strongly encourage patient and family to stop smoking and avoid smoke. Facilitate counselling, pharmacotherapy and cessation programmes as appropriate.</p>
<b>Physical activity goal:</b> At least 30 minutes on most days of the week	<p>Assess exercise risk, preferably with exercise test to guide prescription. A gradual increase to periods of physical activity of at least 30 minutes most days of the week and an increase in daily lifestyle activities is advised.</p> <p>Vigorous exercise is not routinely recommended.</p> <p>The benefits of regular moderate physical activity overall, considerably outweigh any risk of sudden death.</p>
<b>Nutrition management goal:</b> Adoption of a cardioprotective dietary pattern	<p>This dietary pattern includes:</p> <ul style="list-style-type: none"> <li>• Large servings of fruit, vegetables and whole grains</li> <li>• Low fat dairy products</li> <li>• Small servings of unsalted nuts and seeds regularly</li> <li>• Fish or legumes frequently in place of fatty meat and full fat dairy products</li> <li>• Small lean meat servings.</li> </ul>
<b>Weight management goal:</b>	<p>For overweight or obese patients, an individually planned nutritionally balanced diet may be considered. The initial goal of weight loss should be to reduce the patient's weight by 10%. Encourage exercise and nutrition goals.</p>
<b>Lipid lowering medication goals:</b> Total cholesterol < 4 mmol/L LDL cholesterol < 2.5 mmol/L	<p>Ensure cardioprotective dietary change. Promote exercise and weight management. Assess fasting lipid profile. Start drug therapy (statin generally most appropriate; consider adding fibrate if low HDL or high TGL).</p>
<b>BP control goal:</b> <120-140 / 80-90 or lower if diabetes	<p>Ensure lifestyle measures. Add BP medication individualised to patient characteristics.</p>
Antiplatelet agents	<p>Continue aspirin indefinitely. If aspirin contraindicated, consider warfarin.</p>
Beta blockers	<p>Continue betablockers indefinitely unless contraindicated.</p>
ACE inhibitors	<p>Continue ACE inhibitor indefinitely in high-risk, post MI patients (anterior MI, previous MI, LV dysfunction or CHF).</p> <p>Consider chronic therapy in other patients.</p>

For more detailed information on the evidence base to these recommendations, or lists of cardiac rehabilitation services, refer to the summary of the cardiac rehabilitation guidelines, or the full text of the guideline available from [www.nzgg.org.nz](http://www.nzgg.org.nz) or [www.heartfoundation.org.nz](http://www.heartfoundation.org.nz). These guidelines have been endorsed by:



# APPENDIX 11: RECOMMENDED CARDIAC REHABILITATION DATA FORM

Male     Female    Date of Birth    /    /

**Ask the patient to which ethnic group they identify**

<input type="checkbox"/> Māori	<input type="checkbox"/> Niuean	<input type="checkbox"/> Indian
<input type="checkbox"/> NZ European	<input type="checkbox"/> Cook Island Māori	<input type="checkbox"/> Chinese
<input type="checkbox"/> Tongan	<input type="checkbox"/> Samoan	<input type="checkbox"/> Other

**Admitting medical condition**

<input type="checkbox"/> Myocardial infarction	<input type="checkbox"/> Unstable angina	<input type="checkbox"/> Heart failure
<input type="checkbox"/> Coronary artery bypass grafting	<input type="checkbox"/> Percutaneous transluminal coronary angioplasty (with or without stent)	<input type="checkbox"/> Arrhythmia and CABG ± valve

**Source of referral to the programme**

<input type="checkbox"/> Medical team	<input type="checkbox"/> Cardiac rehabilitation nurse	<input type="checkbox"/> Ward nurse
<input type="checkbox"/> Practice nurse	<input type="checkbox"/> Other hospital	<input type="checkbox"/> General practitioner
<input type="checkbox"/> Patient	<input type="checkbox"/> Other health professional (eg physiotherapist)	

**Referral and utilisation**

Has the patient been referred to Phase II?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If yes, did the patient receive a written referral?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Has the patient previously attended Phase II?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Did the patient attend Phase II?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

How many sessions did the patient attend? \_\_\_\_\_





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