

An integrated and coordinated approach to preventing recurrent coronary heart disease events in Australia

Policy statement from the Australian Cardiovascular Health and Rehabilitation Association

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Coronary heart disease (CHD) is prevalent and costly.¹ It has been estimated that implementing the existing evidence base for the treatment and management of patients with an acute coronary syndrome would reduce mortality by up to 80%.² Cardiac rehabilitation (CR) and heart failure management (HFM) programs are widely acknowledged as effective secondary prevention interventions.^{3,4} Recent systematic reviews of these interventions reinforce the survival advantage of CR and HFM programs in the modern treatment and management of CHD.⁵⁻⁷ Importantly, these programs are safe and cost-effective compared with other treatment strategies,^{3,8} and are beneficial for patients of all ages.⁴ These programs lead to improved clinical and behavioural outcomes, including fewer hospital readmissions, better adherence to pharmacotherapy, enhanced functional status, improved risk profile, less depression, and better quality of life.^{4,9} However, they are widely underutilised, with fewer than one in three eligible patients attending CR^{4,10} and about one in 10 taking part in HFM programs.¹¹ Additionally, those at highest risk for recurrent disease are least likely to participate in these programs.¹² Moreover, the Australian Cardiovascular Health and Rehabilitation Association recommends that national health outcome data be collected to inform program effectiveness, policy and planning.

The aim of this review is to summarise the current evidence for CR and secondary prevention programs to stimulate practitioners, planners and policymakers to consider the way secondary prevention is practised, and to encourage development of services that meet the broad needs of Australians with cardiovascular disease (CVD).

Efficacy of cardiac rehabilitation

Since the 1980s, meta-analyses of traditional CR have shown a reduction in mortality of about 25%.³ These findings have been replicated and extended to cover secondary prevention programs in two contemporary systematic reviews of up to 63 randomised controlled trials (21 295 patients with coronary disease), which showed that supervised exercise alone⁵ or medical management without supervised exercise⁶ led to reductions in mortality. Further, patients with CVD who engage in secondary prevention initiatives have fewer non-fatal disease manifestations, including myocardial infarction, revascularisation therapy and rehospitalisation.^{4,7,9}

CR has positive effects on biomedical and behavioural risk factors. Exercise training and education programs favourably modify lipid levels, blood pressure, insulin sensitivity and glucose homeostasis, weight, and smoking rates.^{6,9} Exercise programs are particularly effective at improving functional status and countering deconditioning in cardiac patients with¹³ or without heart failure.⁹ Many studies have shown that including

ABSTRACT

- Implementing existing knowledge about cardiac rehabilitation (CR) and heart failure management could markedly reduce mortality after acute coronary syndromes and revascularisation therapy.
- Contemporary CR and secondary prevention programs are cost-effective, safe and beneficial for patients of all ages, leading to improved survival, fewer revascularisation procedures and reduced rehospitalisation.
- Despite the proven benefits attributed to these secondary prevention interventions, they are not well attended by patients.
- Modern programs must be flexible, culturally safe, multifaceted and integrated with the patient's primary health care provider to achieve optimal and sustainable benefits for most patients.

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counselling in CR programs improves quality of life and reduces depression.^{3,4,9}

Models of effective secondary prevention and their core components

Since the 1960s, CR in Australia has been traditionally based on about 8 weeks of supervised group exercise and education.^{6,14} Recent advances in risk factor management, improved revascularisation techniques and earlier mobilisation have led to shorter hospital stays and reduced deconditioning.^{3,4} As a result, CR programs are evolving into flexible multifaceted preventive interventions to provide maximal clinical benefits to a majority of patients with a variety of conditions.¹⁵ Contemporary scientific evidence shows that effective secondary prevention is achieved through a range of different models in addition to traditional CR.^{6,15}

Three models of care, consistently described and systematically evaluated in the literature, have been categorised as:

- “education and counselling with an exercise component”;
- “education and counselling without a supervised exercise component”; and
- “exercise only”.⁶

Education and counselling with exercise programs tend to be short-term and are group-based with supervised exercise sessions. Programs providing education and counselling without supervised exercise are generally based on an individual intervention, are nurse-led, long-term and often include telephone support.⁶ Exercise-only programs focus on supervised sessions over the short

1 Summary of 371 cardiac rehabilitation programs in Australia*

Features of programs	No. of programs
Model of care [†]	
Education and counselling with supervised exercise	260 (70%)
Education and counselling without supervised exercise	67 (18%)
Exercise only	18 (5%)
Setting [‡]	
Hospital	190 (51%)
Home	15 (4%)
Community	91 (25%)
Flexible	64 (17%)
Time-limited	267 (72%)
Group-based	288 (78%)
Maintenance offered	125 (34%)
Heart failure management program offered	64 (17%)

* Described in state directories on the Australian Cardiovascular Health and Rehabilitation Association website (<http://www.acra.net.au>) or available from the National Heart Foundation of Australia by individual state. † Model of care information unavailable for 26 programs. ‡ Setting information unavailable for 11 programs. ◆

term. Most contemporary CR programs in Australia are multidisciplinary, have an average duration of 7 weeks (SD, 3 weeks), are conducted in groups, and have educational and physical activity components (Box 1). Many of these programs accelerate resumption of daily activities, expedite role resumption, educate patients about symptom management, address psychological issues, and reinforce behaviours designed to stabilise or reverse the progression of the atherothrombotic process.^{14,16}

Although there is strong evidence that CR and secondary prevention programs are beneficial, it is unclear from large, rigorous systematic reviews which model of care provides most benefit.^{5,6,9} Regardless of the program type, interventions are best initiated early after the diagnosis of CHD to educate patients about potential complications and initiate effective secondary prevention strategies.¹⁷ These programs vary in staffing, structure, content and length, according to available resources, referral patterns, patient preferences and capacity to implement evidence-based guidelines. Interestingly, a meta-regression concluded that short-term group programs in primary care were as effective in reducing all-cause mortality as longer hospital-based programs run by specialists.¹⁸ In contrast, HFM services provide individualised ongoing care by a specialised multidisciplinary team.⁷ Overall, current evidence suggests that a flexible model offering a range of services in a variety of settings is the most effective preventive intervention for people with CVD.

Over the past decade, more flexible models with durations ranging from 3 to 48 months focusing on individualised care have emerged, such as the Stanford Coronary Risk Intervention Project (SCRIP),¹⁹ a model for nursing case management (MULTIFIT),²⁰ Coaching patients On Achieving Cardiovascular Health (COACH),²¹ the updated Heart Manual²² and the Choice of Health Options In prevention of Cardiovascular Events (CHOICE).²³

Most of these effective longer-term secondary prevention programs involve:

- coordinated ongoing care provided by a primary care physician;
- a team of health care professionals;
- building a patient–provider partnership;
- episodic surveillance of biological and behavioural disease markers;
- adherence to protective medications; and
- an integrated menu of service provision catering for groups and individuals in a variety of settings (medical practice, community, hospital, residential), supplemented by educational resources reinforcing adherence to evidence-based therapies.

Together with flexible CR programs, these models expand the reach of service delivery and prevention of recurrent coronary events.

The core components of CR or secondary prevention programs should include intervention, evaluation, and a review of outcomes, including a quality improvement process.²⁴ The intervention should be evidence-based, informed by national guidelines, and include individual goals and strategies that underpin long-term secondary prevention, and return to work if appropriate, and should incorporate exercise, education and psychosocial interventions.^{6,16} For evaluation, the key elements include a psychosocial appraisal, medication review, and medical and risk factor assessments as advised by national guidelines.^{16,25} Others suggest the addition of nutritional and physical activity assessments,¹⁵ automatic program referral and initial entry assessment within 4 weeks of the acute event, preferably earlier.¹⁷ For outcomes and quality improvement, programs should progress towards the individual's preferred goals, assessment of needs, and identification of people at high risk, with targets and interventions being revised as required.²⁴ Data about program use (proportion referred, attended and completed) and readmissions to hospital within 12 months should also be recorded.

Improving access to secondary prevention

Despite the proven benefits of CR and HFM programs, a minority of patients use them.^{10,11} Barriers relating to the availability of programs, referrals, attendance, completion and long-term maintenance have been extensively studied and are multifactorial.^{10,25-27} Examples include patients' indifferent perceptions of such programs, failure of clinicians to refer patients, insufficient organisational support, lack of flexibility, distance from secondary prevention services, and fragmented funding. Several strategies have been recommended to facilitate the uptake of programs, including automatic referral processes, encouragement to attend by treating doctors, and flexible interventions in a variety of settings.^{15,18} The Australian Cardiovascular Health and Rehabilitation Association strongly recommends multifaceted strategies to promote effective flexible secondary prevention interventions at the local, state and national levels (Box 2). Such services should be tailored to the needs, preferences, cultural safety and circumstances of individual patients (and carers) while being appropriate for their clinical status. We also recommend that each CR and HFM program should, at a minimum, collect data on the numbers of patients referred, the proportion who enter and complete the intervention, and basic demographic information (age, sex, Indigenous status and diagnosis). Such national data would inform program use and quality improvement activities.

2 Recommendations to improve referral, attendance and completion of cardiac rehabilitation and secondary prevention programs, and continue maintenance of prevention measures

Process	Recommendation
Referral	<ul style="list-style-type: none"> Include automatic referral in the clinical pathway Physicians strongly recommend attendance Link referral to Medicare items (eg, Enhanced Primary Care Program) Use marketing strategies to increase awareness Adopt national key performance indicators Organise coordination of referrals by cardiac rehabilitation staff Offer flexible programs in a variety of settings Address barriers to access early, while in hospital Target women, culturally and linguistically diverse and Indigenous populations
Enrolment/attendance	<ul style="list-style-type: none"> Provide patient with an appointment and reconfirm 1–2 weeks prior Adopt a patient-centred approach and tailor the program accordingly Actively facilitate peer support Involve patient carers in the program Involve cardiologists and general practitioners in planning Use existing local resources Provide accessible parking at program centres Provide dedicated and expanded program funding Involve Aboriginal and multicultural health workers if appropriate Develop women-only groups if appropriate Develop patient resources in languages other than English
Completion	<ul style="list-style-type: none"> Adopt standard definitions of eligibility, attendance and completion Set program completion date at outset Communicate with patients' health care providers before and after the program Refer on to community programs where available Build in a reward system
Maintenance	<ul style="list-style-type: none"> Support and develop community-based programs Encourage participation in maintenance programs Follow up at least once within 12 months ◆

Heart failure and cardiac rehabilitation

Patients with heart failure often present with advanced cardiovascular symptoms, necessitating a specialist multidisciplinary service and appropriate risk stratification. Furthermore, the incidence of heart failure increases in the elderly, in whom comorbidities (eg, respiratory disease, renal impairment, diabetes, arthritis, depression) are more prevalent, necessitating additional medical resources. All patients with heart failure, including those with automated implantable devices, should be offered access to a

facility-based or home-based, telephone-supported CR program. An estimated 25% of Australians with heart failure live in rural and remote regions, far from specialist HFM facilities, emphasising the need for non-facility-based programs and integration with primary care.¹¹ Specialised multidisciplinary HFM programs also provide direct medical back-up and advanced therapy options, such as drug titration and inotrope therapy for acute exacerbations.⁷ In non-metropolitan regions, generic chronic disease programs involving staff trained in HFM should be adapted for continuing secondary prevention.²⁸ Ideally, cardiovascular secondary prevention inpatient, outpatient and home-based care services should be seamlessly integrated to encourage cost-effective continuity of care.

The promotion of self-care is integral to HFM programs through symptom identification and management plans incorporating a flexible diuretic regimen, and discussion of polypharmacy and comorbidity (which increases the potential for haemodynamic compromise) to counter acute clinical deterioration.²⁹ Individual or group counselling about prognosis, treatment options and treatment limitation in the event of clinical deterioration is important.²⁸ Advanced care planning and referral to palliative care services may be appropriate for symptom management.²⁸ Carers of patients with heart failure should be involved in the care process where possible. If transport is a barrier to attending facility-based CR programs, the availability of community transport should be explored, or home-based, telephone-supported disease management programs, such as COACH²¹ or the system of care used in the Chronic Heart failure Assisted by Telephone (CHAT) study, should be considered.³⁰

Exercise training in heart failure

The evidence base for the efficacy of exercise training in patients with heart failure is stronger than that for rehabilitation for other cardiac conditions. A recent meta-analysis identified that exercise training is safe in patients whose condition is stable, and consistently increases functional capacity.¹³ Most of the benefit appears to be the result of peripheral adaptations,³¹ although modest improvements in cardiac function have also been reported.³² Regular physical activity and exercise is "strongly recommended" as an adjunct to pharmacological therapy for patients with heart failure, and is an essential component of comprehensive HFM.²⁸ The benefits of strength training can also be useful in addressing deleterious effects of ageing.

Summary

CR and secondary prevention programs should be flexible, culturally appropriate, multifaceted and integrated with patients' primary health care providers to achieve optimal and sustainable benefits for most patients. Studies of efficacy and effectiveness involving a variety of service models and settings document survival benefits and improvements in clinical and behavioural outcomes beyond those currently achieved from revascularisation and protective pharmacotherapy. However, secondary prevention interventions are underutilised, which points to the need to tailor programs to reach the majority of patients with CVD. Where such prevention programs are provided locally and can be sustained, they improve the adherence to medical management and thus to the long-term control of disease progression.

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Competing interests

None identified.

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