

Cardiac rehabilitation in New Zealand—moving forward

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ABSTRACT

Modern guideline-based cardiac rehabilitation provides an evidence-based, cost effective and comprehensive approach to reduce re-infarction and mortality. It offers a multidisciplinary approach to support self-management, improves psychological and social functioning and adherence to recommended life-style changes and medications. The challenge is to broaden uptake of cardiac rehabilitation, increase participation in supervised exercise programs and ensure that healthy behaviours are maintained in the long term. Shared care planning between cardiac rehabilitation specialists and primary health providers could improve long-term adherence by ensuring continuity of care of patients who have completed a Phase 2 cardiac rehabilitation program, either facility or home based.

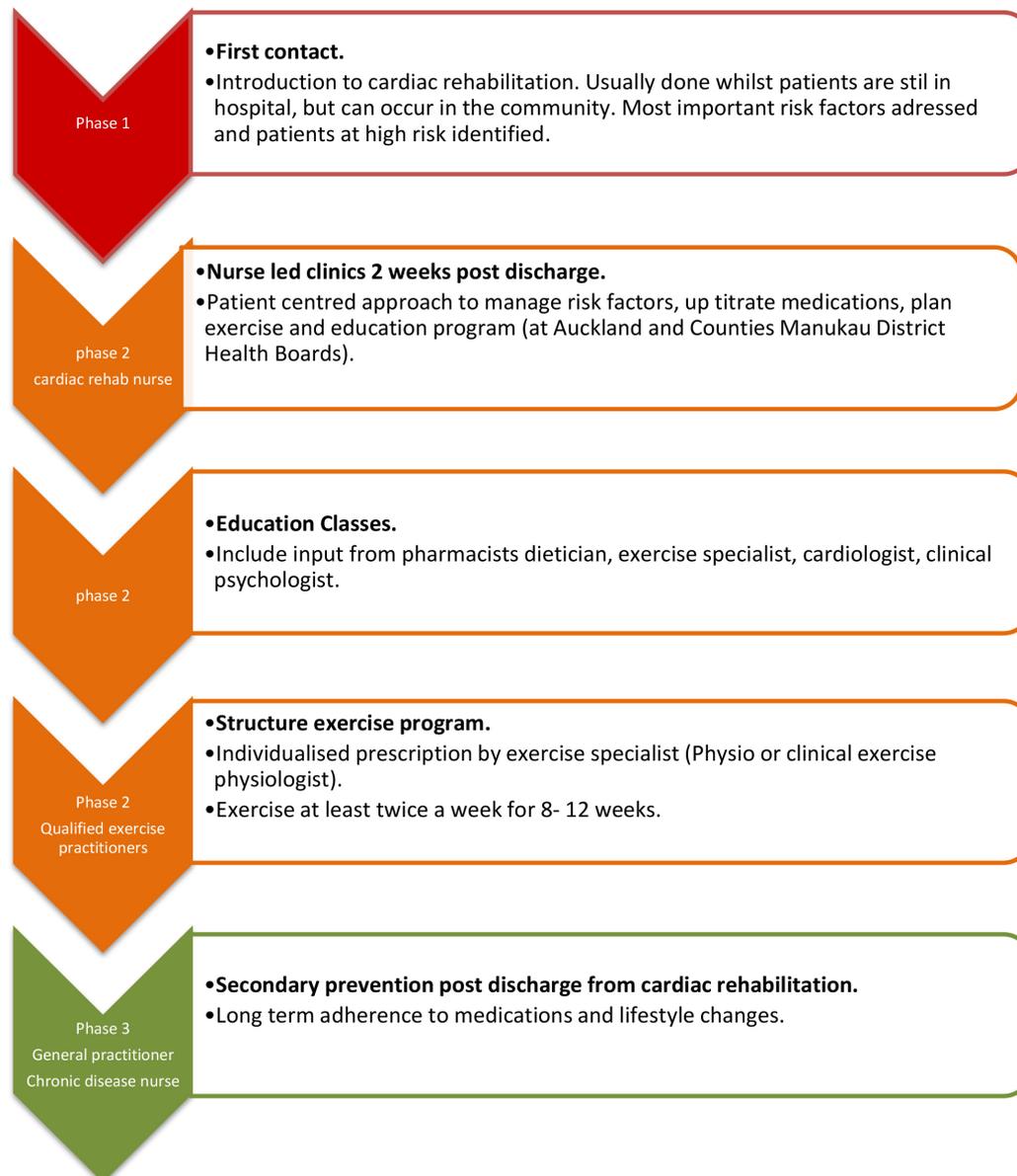
Evidence suggests that survivors of myocardial infarction (MI) are at high risk of recurrent events, accounting for more than 40% of admissions to coronary care.¹ Survivors have an annual death rate of 7.2%—six times that in people of the same age who do not have coronary heart disease.^{2,3} Contributing factors for this include poor adherence to secondary prevention strategies such as lifestyle changes (smoking cessation, physical activity and adoption of a cardioprotective diet) and medications (antiplatelet agents, statins, ACE inhibitors and beta blockers),^{2,4,5} with adherence to medication falling sharply after discharge from hospital.⁵ Consequently, the prevalence of poorly controlled risk factors is high in this population group and is associated with a poorer prognosis.⁶

Compounding the problem are shorter inpatient stays (2–3 days) where patients are exposed to multiple interventions and investigations. This interferes with the ability to effectively address secondary prevention strategies, especially in an ageing population with multiple comorbidities. Finding time, while in hospital, to identify and address psychosocial issues associated with non-adherence, such as low health literacy, depression, non-traditional health beliefs, cardiac

misconceptions and lower education level,⁷ is increasingly difficult.

Cardiac rehabilitation (CR) offers a successful and cost effective method to effectively support self-management and improve psychological and social functioning,⁸ as well as reducing non-adherence to recommended life-style changes and medications.⁹ Modern CR has developed into a multidisciplinary, comprehensive approach focusing on group and tailored patient education, personalised exercise training, and provision of individualised support for the modification of risk factors and psychosocial issues. As an intervention, CR is suitable for a range of patients, including: post myocardial infarction; stable angina pectoris; coronary artery bypass graft surgery; heart valve repair or replacement; percutaneous transluminal coronary angioplasty; implantable cardiac defibrillator; and heart transplantation or heart-lung transplantation.¹⁰ Contraindications to participation in CR are few and concern only the exercise aspect of the program.^{10,11} In most guidelines, CR is a class I recommendation.^{10,12,13}

Cardiac rehabilitation protocols are generally applied over three time periods (Figure 1). Phase 1 generally refers to the in-hospital phase; Phase 2 begins

Figure 1: Phases of cardiac rehabilitation.

after discharge from the hospital and traditionally includes a supervised and monitored out-patient program. The Phase 2 program generally consists of a 4–8-week long guideline-based education and exercise program provided by a multidisciplinary team. Following assessment, patients may also be referred to other services, for example, psychologists, dieticians and the heart failure service.

The structured exercise component of CR is recognised as an important part of guideline-based programs and studies show that its inclusion reduces mortality.¹⁴⁻¹⁶ It comprises an individual exercise prescription based on the patient's cardiovascular status (arrhythmias, left ventricular ejection fraction), general

health (presence of sternotomy, frailty, arthritis) and significant comorbidities (chronic obstructive pulmonary disease, diabetes).^{17,18} The exercise program is generally run by physiotherapists or clinical exercise physiologists who are qualified to prescribe exercise after a functional test.

A recent overview of Cochrane systematic reviews that included 148 randomised controlled trials (RCTs) (n=98,093) identified that for people who are clinically stable following myocardial infarction or percutaneous coronary intervention, or who have heart failure, exercise-based CR is an effective and safe therapy that reduces hospital readmissions and improves quality of life.¹⁹ In their systematic review and meta-analysis (34 RCTs (n=6,111),

Lawler and colleagues found that patients randomised to exercise-based CR had a lower risk of re-infarction (odds ratio [OR] 0.53, 95% CI 0.38–0.76), cardiac mortality (OR 0.64, 95% CI 0.46–0.88), and all-cause mortality (OR 0.74, 95% CI 0.58–0.95).¹⁶

Detractors of CR often point to the lack of benefit seen in the randomised RAMIT study.²⁰ This, however, was a flawed study that did not reflect current evidence-based practice, with little to demonstrate that guidelines were followed.²¹

There is no question that CR that adheres to guideline recommendations is effective. The key challenges for CR programs globally are how to enhance access to a broader group of patients who have the potential to benefit from CR, but who may not be able to attend traditional group programs; how to improve referral rates to CR and how to more effectively support the maintenance of long-term behaviour change and medication adherence to reduce recurrent cardiac events.

Cardiac rehabilitation in New Zealand

In New Zealand CR programs are funded by respective District Health Boards (DHBs), sometimes in partnership with Primary Health Organisations (PHOs). Patients are recruited to CR usually as in-patients (Phase 1). In centres that are unable to perform revascularisation, for example Northland, first contact with patients is often post discharge. Generally, however, during the Phase 1 period, the CR team start to address psychosocial issues, major risk factors like smoking, and to identify those at high risk of non-adherence.

Some DHBs, for example Auckland and Counties Manukau, have implemented CR nurse-led clinics 2 weeks post discharge. These clinics are supervised by a physician and facilitate the prescribing and up-titration of evidence-based medications and supports the problem solving of any self-management issues.

Prior to commencing a Phase 2 program, patients in collaboration with a nurse specialist and their family/whanau, develop a shared care plan incorporating a plan for their Phase 2 program, including their goals, and taking into account, cultural traditions, personal preferences and values,

family situations, social circumstances and lifestyles.²² New Zealand CR teams have developed specific education programs that are relevant to their populations and geographical location. Some try and cover most aspects of the education process in one day, while others spread the sessions over a number of weeks with people being able to choose the sessions that interest them. Many programs have developed a more patient-centred approach to encourage discussion and include self-management support, such as goal setting and problem solving, moving away from traditional ‘chalk and talk’ models. These group sessions are being held increasingly across New Zealand in venues outside the hospital facility in community halls or in association with local PHOs. Health professionals contributing to the educational component include psychologists, pharmacists, dieticians, exercise physiologists/physiotherapists, and cardiologists with this aspect of the program generally being led by the cardiac rehabilitation nurse specialist.

Despite a recent Australasian audit²³ suggesting poor uptake of cardiac rehabilitation, data collected directly from a subset of CR providers in New Zealand suggests access in some DHBs (Auckland, Counties Manukau, and Bay of Plenty) to be well above international levels at over 68%, an improvement from the findings from earlier studies.²⁴ A range of factors may contribute to the improved engagement noted in some DHBs, including the partnership some DHBs have with the Heart Foundation GoRed for woman program, as well as Whanau Ora and Pacific Island programs, which target Māori and Pacific populations respectively. Both these population groups are recognised as experiencing the greatest burden of cardiovascular disease in New Zealand.²⁵ In addition, patients who are unable to access traditional group programs, due to rurality, work or family commitments, or personal preferences, can also be referred to the Heart Guide Aotearoa (HGA) program. This home-based program has been set up to be “an individualised, menu-based, cognitive behavioural, chronic disease management program for people with coronary heart diseases”²⁶ and has been noted to increase participation in CR programs, especially for Māori.²⁷

Despite these initiatives, a number of significant gaps in the delivery of CR in New Zealand exist. For example, apart from the HGA, there is a paucity of options for patients who are unable, or find it difficult to attend traditional group based programs (due to comorbidities, work/family commitments, geography) that needs to be addressed. Nationally, there are no clear key performance indicators or credentialing of individual CR providers to ensure quality. Data collection is poor and as a consequence there is a lack of a consistent approach to assessing the efficacy of programs and their associated long-term outcomes, such as mortality or medication adherence at 1 year. There is also no cohesive approach to delivering CR exercise programs across New Zealand; the component with the strongest evidence underpinning its inclusion.¹⁶ Reasons for this are complex, and include a significant lack of resource to run the program, lack of staff with core competencies,²⁸ and variable attention to basic exercising testing measurement, eg, the walk test or the step test. Less than 50% of programs assess exercise capacity at all, or formally risk-stratify patients prior to starting an aerobic training program.^{18,23,28,29} There is also a lack of access to more comprehensive tests of functional capacity, like incremental cardiopulmonary exercise tests,^{28,30} outside university testing laboratories. It is unclear whether eligible patients across New Zealand are offered exercise programs within the scope of exercise guidelines.

The way forward

Evidence suggests that CR initiated as early as within 2 weeks of discharge improves uptake and long-term outcomes,^{11,31} and commencement of a structured exercise program within 1 month of discharge is beneficial.³¹ The timing of CR may, therefore, need to shift to earlier contact with patients post hospital discharge and early risk stratification for exercise prior to a cardiology outpatient visit or commencement of a Phase 2 program. Stratification of patients into lower and higher risk patients may also allow for a better use of the highly skilled CR team members. Lower risk patients could be referred and assessed at

a specialist nurse-only clinic, with ongoing follow-up by primary care chronic disease nurses in conjunction with a home-based program, such as the HGA, or a web based resource, for example the New Zealand Heart Foundation website. Complex patients with multiple comorbidities or complex cardiac disease could be case managed by CR specialist nurses with supervision of a cardiologist; as has been done by heart failure services nationally. Such a service could provide a more intensively supervised exercise and rehabilitation program.

Novel approaches to the delivery of CR, such as text messaging services,^{32,33} and remote exercise monitoring programs³⁴ need further exploration as they may provide options to extend CR beyond the setting of supervised, structured, and group-based rehabilitation. Uptake of home-based CR, such as the HGA program could be increased; evidence suggests that these programs can be equally effective in improving outcomes of mortality, cardiac events, exercise capacity, or modification of risk factors.^{35,36} The long-term effectiveness of these approaches, and the optimal mode of their delivery within New Zealand, remain unknown, however the attractiveness of these models lies in their potential to increase the provision of CR to low-and moderate-risk coronary patients, who comprise the majority of contemporary post infarction patients, many of whom do not participate in the current structured, supervised, facilities based exercise program.

An approach to better facilitate the transition from Phase 2 to 3 programs to ensure continuity of care, as has been done with other services such as diabetes, need consideration. For example, there could be a system of automatic referrals from cardiology to a long-term conditions management coordinator within a PHO or general practice. This shared management plan between primary and secondary health care may ensure long-term follow-up of all patients, especially those who are at high risk of recurrent events and complications, such as heart failure.

The All New Zealand Acute Coronary Syndromes—Quality Improvement (ANZACS-QI) registry is a national quality

improvement registry which has been introduced to all New Zealand hospitals. A CR module is being developed in this database and will allow for all CR units to be able to report uptake of CR, recurrent major cardiovascular events, as well as long-term medication adherence. This may lead to a better understanding of the benefits and cost-effectiveness of CR programs within the New Zealand health system.^{9,37}

Conclusion

Modern guideline-based cardiac rehabilitation is a cost effective way to significantly reduce morbidity and mortality. A shift in philosophy is needed to maintain its relevancy in the modern cardiology era, with shorter hospital stays and an increasing burden of patients with multiple comorbidities. Increased access is needed to a menu

of CR options available closer to where people live, that suits a broader group of patients and programs need to be resourced appropriately so they can provide education and exercise components that mirror the evidence in the guidelines. Stronger integration with primary care to support collaborative models of care may facilitate a smooth transition from Phase 2 to ongoing care in the community, and to assist in ensuring long-term adherence to healthy behaviours and cardiac medications. In addition, the use of innovative tools like remote monitoring, text messaging, home- and community-based programs need further exploration and evaluation in the New Zealand setting. Finally, all CR providers need a system to collect and compare data across programs to assess uptake and compare outcomes.

Competing interests:

Fiona Doolan-Noble reports she is also a co-author on a paper describing a nation-wide audit of cardiac rehabilitation services in New Zealand, also in this issue.

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