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Cardiac rehabilitation should be tailored to the patient

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What are the benefits of CR?

Which patients should undergo CR?

What are the key components of a CR programme?



British Heart Foundation

CARDIAC REHABILITATION (CR) IS, IN EFFECT, A CHRONIC DISEASE MANAGEMENT programme with a very strong evidence base. A systematic review covering 48 trials with nearly 9,000 patients, published in 2004, showed that exercise-based CR resulted in a 20% reduction in all cause mortality and a 25% reduction in total cardiac mortality.[1]

Other benefits of CR have also been clearly demonstrated.[2] These include:

- Reduction in symptoms in those with angina
- Increase in exercise capacity and general fitness
- Reduction in blood pressure
- Improvement in lipid profile (mainly by raising HDL)
- Reduction in arrhythmias
- Improved coronary blood flow
- Improvement in psychological measures.

CR has been defined by the WHO as 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'.

CARDIAC REHABILITATION MODELS

CR programmes can be carried out in hospital or the community. The traditional hospital-based programme is divided into four phases, see table 1, p24.

The other widely used model is a six-week, home-based programme using written and audiotape materials. Patients are supervised by phone, or through home visits, by a specially trained facilitator, usually a nurse or physiotherapist. This method, as described in *The Heart Manual*,[3] has been shown to be better than 'usual care' and achieve similar outcomes to hospital-based programmes.[4,5]

More recently, the 'Care closer to home' initiative outlined in the White Paper *Our health, our care, our say*[6] has seen a shift towards moving cardiac rehabilitation services from the hospital to a community setting. Community-based services are preferred by many patients and have been shown to be feasible and effective.[7]

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Table 1

The hospital-based model of cardiac rehabilitation

Phase I	Usually occurs in hospital prior to discharge. The CR nurse provides education and advice on risk factors, reviews secondary prevention medication and recruits the patient into the programme
Phase II	Refers to the period post discharge and may include telephone support or home visits from the CR team
Phase III	Commonly consists of a structured supervised exercise programme and educational workshops covering heart disease, its causes, healthy lifestyle, smoking cessation, medication and stress management
Phase IV	Refers to the maintenance phase where the aim is lifelong continuation of a healthy lifestyle and appropriate medication

Table 2

Contraindications to referral for Phase IV exercise

- Unstable angina
- Systolic blood pressure ≥180mmHg and/or diastolic blood pressure ≥ 100mmHg
- BP drop >20mmHg demonstrated during exercise tolerance testing
- Resting tachycardia >100bpm
- Uncontrolled atrial or ventricular arrhythmias
- Unstable or acute heart failure
- Unstable diabetes
- Febrile illness

THE PRIMARY CARE TEAM

It is imperative that CR programmes have strong links with the primary care team.

GPs already have their own effective initiatives to improve lifestyle and reduce risk factors, such as smoking cessation strategies and nurse-run secondary prevention clinics.[9] The GP and other members of the primary healthcare team play vital roles in reinforcing healthy lifestyle change, optimising medical risk factor management and ensuring long-term continuation of appropriate cardioprotective medication.

GP referral for Phase IV sessions

GPs can refer CHD patients to an appropriately qualified instructor for Phase IV community-based exercise sessions, using the British Association for Cardiac Rehabilitation's (BACR) protocol for GP referral.

'Exercise on prescription' at local leisure centres can have social as well as physical benefits for patients undergoing CR. It can encourage them to build exercise into their lives and continue to use these community facilities and stay physically active long after they have recovered.

The patient should be clinically assessed by their GP using the BACR protocol and the decision to refer should be made in accordance with published UK guidelines cited in the protocol.

Contraindications for referral for exercise by GPs for Phase IV are listed in table 2, above. The BACR exercise referral pathway (figure 2, opposite) recommends annual review of the patient by their GP or other designated health professional.

WHICH PATIENTS WILL BENEFIT?

The following patient groups have been shown to benefit from CR programmes:

- post-MI
- post-revascularisation (either surgical or PCI)
- stable angina[1]
- heart failure[10]
- post-valve surgery, cardiac transplantation or ICD insertion.

Patients should be offered cardiac rehabilitation at the time of diagnosis, e.g. in the rapid access chest pain clinic for stable angina patients or in hospital post MI/PCI/CABG (i.e. Phase I). Patients typically enter the Phase III programme 2 weeks post MI (uncomplicated) or 4 weeks for CABG.

The National Service Framework for Coronary Heart Disease recommended, in 2000, that patients should be offered CR after acute MI, coronary artery bypass grafting and percutaneous coronary intervention.[11] The target was 85% of these groups to be offered CR by 2002. Once this target had been reached, the NSF recommended that programmes should be widened to include patients with heart failure, angina, and other conditions. The recent NICE guideline on secondary prevention stated that CR should be equally accessible to all patients post-myocardial infarction.[12]

Despite these recommendations, this life-saving treatment is still only provided to a minority of cardiac patients, around 30% in the UK, although every hospital has access to a programme.[13] This is mainly due to two factors: lack of uptake by patients and inadequate provision of services.

Those patients less likely to take up CR include women, the elderly and ethnic minorities.[14] Furthermore, patients who are depressed, socially isolated and those who smoke are also less likely to attend.[15]

Inadequate funding (only around 50% of programmes have a dedicated budget) means that programmes vary in their quality and staffing levels and many are underresourced limiting their capacity.[16] This has led to the practice of only taking patients following MI or cardiac surgery excluding patients with angina even though they would benefit as much.[17] It does not help that the CR service is often separate from the acute cardiology service and rarely has direct physician support.[16]

In an ideal world, patients should be offered a choice as to which type of programme they are referred to e.g. hospital-based, community-based or a home programme such as that provided by *The Heart Manual*. However, lack of funding usually means that only one option is available.

A recent study showed that when the choice of either a hospital or a home-based programme was offered, the NSF standard for patients being offered CR post-MI was achieved.[17] Where both hospital and community-based programmes are available, the community programme typically is for those patients who are perceived at lower risk (e.g. angina patients) with often a heavy focus on exercise and little in the way of secondary prevention and risk factor management.

There has been concern in the past over exercise in those patients who are perceived to be at high risk e.g. those with LV dysfunction or prior to revascularisation in the community. Indeed the SIGN guidelines, published in 2002, stated that such patients should undertake exercise in a

hospital-based programme.[18] However, as more and more CR programmes move to the community such a limitation will not be practical and indeed will result in exclusion of many eligible patients from CR programmes.

More recently, the BACR has published a position statement along with Resuscitation UK on this topic which has left it open to local CR providers to decide where such patients should have their CR programme but with a minimum standard that the CR team must have intermediate life support training and that a plan is in place for a prompt response via a 999 emergency protocol.

IMPROVING SERVICE PROVISION

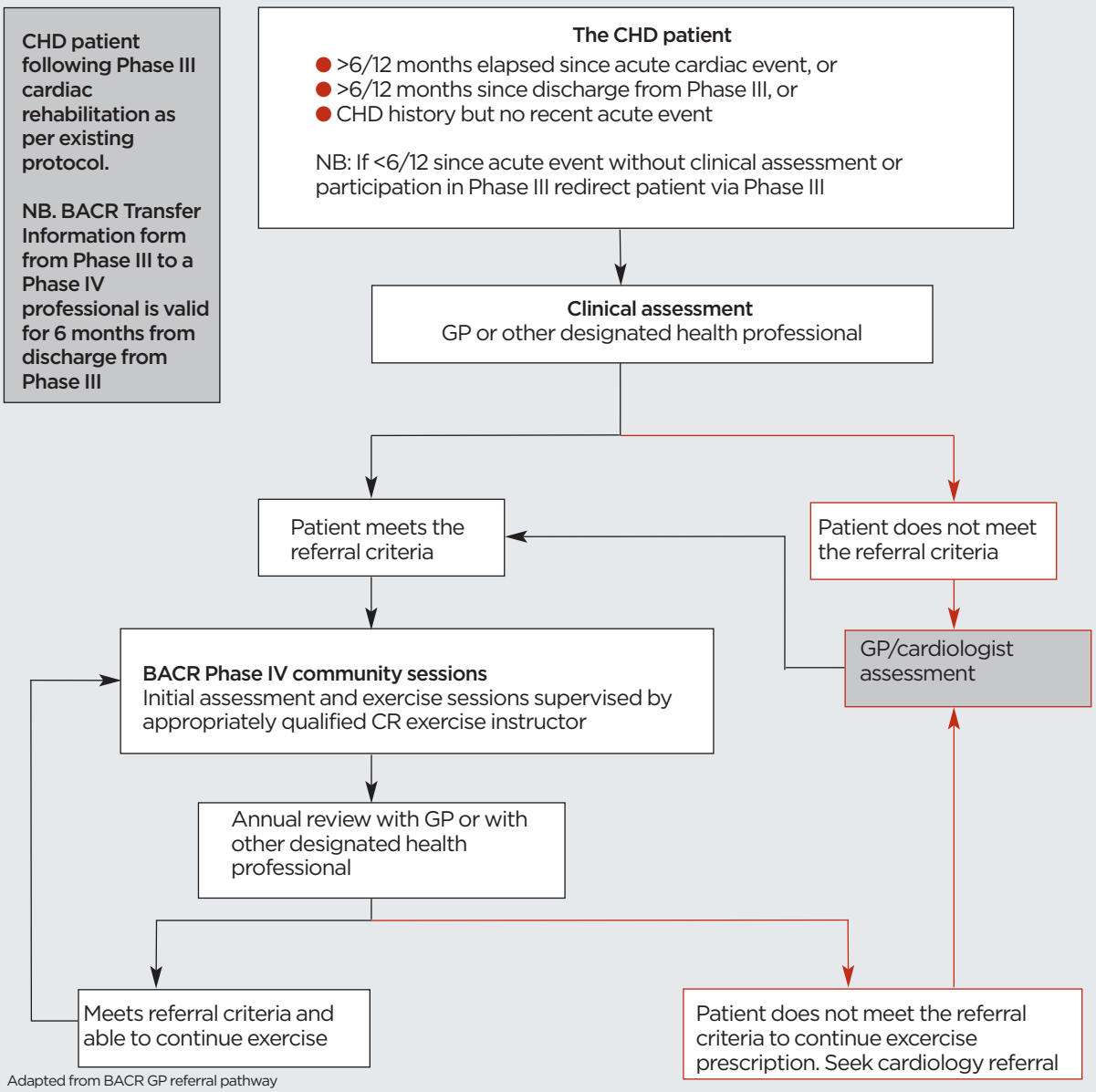
To try to fill the gap in the provision of CR services in the UK, there is a newly developed National Audit of Cardiac Rehabilitation (NACR), part of the Central Cardiac Audit Dataset, funded by the British Heart Foundation (BHF), which reports annually. The aim of this audit is to show what services are achieving locally and nationally and where services are not reaching acceptable standards.

Furthermore in 2007, the BACR published its Standards and Core Components for Cardiac Rehabilitation clearly setting out the minimum standard for CR programmes.[19] The core components reflect that cardiac rehabilitation services are moving away from the traditional model with its focus on exercise, psychological support and education to a more comprehensive approach which includes optimising secondary prevention measures, see table 3, p26.

The optimal model of cardiac

Figure 2

Modified BACR GP referral pathway for Phase IV cardiac rehabilitation community exercise sessions



Adapted from BACR GP referral pathway

key points

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Cardiac rehabilitation (CR) is, in effect, a chronic disease management programme with a very strong evidence base. Exercise-based CR results in a 20% reduction in all cause mortality and a 25% reduction in total cardiac mortality. Other benefits of CR have also been clearly demonstrated. These include: reduction in symptoms in those with angina; increase in exercise capacity and general fitness; reduction in blood pressure; improvement in lipid profile (mainly by raising HDL); reduction in arrhythmias; improved coronary blood flow; and improvement in psychological measures.

CR programmes can be carried out in hospital or the community. The traditional hospital-based programme is divided into four phases. The other widely used model outside hospital is a six-week, home-based programme using written and audiotape materials.

CR programmes should have strong links with the primary care team. GPs already have their own effective initiatives to improve lifestyle and reduce risk factors, such as smoking cessation strategies and nurse-run secondary prevention clinics. The GP and other members of the primary healthcare team play vital roles in reinforcing healthy lifestyle change, optimising medical risk factor management and ensuring long-term continuation of appropriate cardioprotective medication.

GPs can refer CHD patients to an appropriately qualified instructor for Phase IV community-based exercise sessions, using the British Association for Cardiac Rehabilitation's (BACR) protocol for GP referral. The BACR exercise referral pathway recommends annual review of the patient by their GP or other designated health professional.

The following patient groups benefit from CR programmes: post-MI; post-revascularisation (either surgical or PCI); stable angina; heart failure; post-valve surgery; and cardiac transplantation or ICD insertion.

The BACR Standards and Core Components for Cardiac Rehabilitation set out the minimum standard for CR programmes. The core components reflect that cardiac rehabilitation services are moving away from the traditional model with its focus on exercise, psychological support and education to a more comprehensive approach which includes optimising secondary prevention measures. The optimal model of cardiac rehabilitation is one that provides these core components but also takes into account the fact that the needs and beliefs of individual patients vary considerably. Programmes are becoming increasingly patient-centred and moving towards a menu-based approach where the patients choose the components most relevant to them.

Table 3

BACR core components for cardiac rehabilitation programmes

1.Lifestyle
- Physical activity and exercise
- Diet and weight management
- Smoking cessation

2. Education
3. Risk factor management
4. Psychosocial component
5. Cardioprotective drug therapy and implantable devices
6. Long-term management strategy

rehabilitation is one that provides these core components but also takes into account the fact that the needs and beliefs of individual patients vary considerably. Programmes are thus becoming increasingly patient-centred and moving towards a menu-based approach where the patients choose the components most relevant to them. For instance, a patient may choose not to participate in a supervised exercise programme but to take part in a home–based programme such as regular walking or cycling.

There has also been a move away from didactic lecture-style education to strategies to change behaviour such as motivational interviewing. This dynamic non-confrontational counselling approach whereby patients are encouraged to mobilise their own resources to change[20] has been shown to be effective in improving outcomes in secondary prevention particularly with regard to smoking cessation.[21] Goal setting with realistic targets being negotiated between the CR practitioner and the patient is also a key component in successful behaviour change.

CONCLUSION

CR is an effective evidence-based, life-saving treatment for individuals with heart disease. There is currently inadequate provision of services in the UK, particularly for certain groups, but genuine efforts to reduce this inequality are underway. Secondary prevention is now firmly a part of cardiac rehabilitation with a focus on a comprehensive approach. Use of behavioural strategies such as motivational interviewing is becoming increasingly important as it is recognised that changing behaviour in the longer term is key. The optimal CR programme is one that is accessible, inclusive and offers a menu-based approach in conjunction with meeting the minimum standards laid down by the BACR. It is vital we work towards providing such a model to all patients with heart disease.

REFERENCES

1 Taylor RS, Brown A, Ebrahim S et al. Exercise-based rehabilitation for patients with coronary heart disease: systematic review and meta-analysis of randomized controlled trials. *Am J Med* 2004;116: 682-92
2 Ades PA. Cardiac rehabilitation and secondary prevention of coronary heart disease. *N Engl J Med* 2001; 345: 892-902
3 NHS Lothian. The Heart Manual.4th edition. Edinburgh. NHS Lothian. 2009
4 Jolly K, Lip GY, Taylor RS et al. The Birmingham Rehabilitation Uptake Maximisation study (BRUM): a randomised controlled trial comparing home-based with centre-based cardiac rehabilitation. *Heart* 2009; 95: 36-42
5 Lewin B, Robertson IH, Cay EL et al. Effects of self-help post-myocardial infarction rehabilitation on psychological adjustment and use of health services. *Lancet* 1992; 339:1036-40
6 Department of Health. Our health, our care, our say. London. DoH. 2000
7 Clark AM, Hartling L, Vandermeer B et al. Meta-analysis: secondary prevention programs for patients with coronary artery disease. *Ann Intern Med* 2005;143: 659-72
8 Blake E, Tsakirides C, Ingle L. Hospital versus community-based phase III cardiac rehabilitation. *Br J Nurs* 2009;18:116-22
9 Campbell NC, Ritchie LD, Thain J, et al. Secondary prevention in coronary heart disease: a randomised trial of nurse led clinics in primary care. *Heart* 1998; 80: 447-52.
10 O'Connor CM, Whellan DJ, Lee KL et al. Efficacy and safety of exercise training in patients with chronic heart failure: HF-ACTION randomized controlled trial. *JAMA* 2009; 301:1439-50
11 NHS Executive. Cardiac rehabilitation. In: National Service Framework for Coronary Heart Disease. Leeds. NHS Executive. 2000
12 National Institute for Health and Clinical Excellence. CG48 MI: Secondary prevention in primary and secondary care for patients following a myocardial infarction. London. NICE. 2007
13 Bethell H, Lewin R, Evans J et al. Outpatient cardiac rehabilitation attendance in England: variability by region and clinical characteristics. *J Cardiopulm Rehabil Prev* 2008; 28: 386-91
14 Bethell H, Lewin R, Dalal H. Cardiac rehabilitation in the United Kingdom. *Heart* 2009; 95: 271-5
15 Evenson KR, Fleury J. Barriers to outpatient cardiac rehabilitation participation and adherence. *J Cardiopulm Rehabil* 2000; 20: 241-6
16 Brodie D, Bethell H, Breen S. Cardiac rehabilitation in England: a detailed national survey. *Eur J Cardiovasc Prev Rehabil* 2006;13:122-8
17 Dalal HM, Evans PH. Achieving national service framework standards for cardiac rehabilitation and secondary prevention. *BMJ* 2003; 326: 481-4
18 Scottish Intercollegiate Guidelines Network. Cardiac Rehabilitation: a national clinical guideline.Edinburgh. SIGN. 2002
19 British Association for Cardiac Rehabilitation: Standards and Core Components for Cardiac Rehabilitation 2007
20Miller W, Rollnick S. Motivational Interviewing: Preparing People to Change Addictive Behavior. New York. Guilford Press. 2009
21 Hancock K, Davidson PM, Daly J et al. An exploration of the usefulness of motivational interviewing in facilitating secondary prevention gains in cardiac rehabilitation. *J Cardiopulm Rehabil* 2005; 25: 200-6

Useful information

The Heart Manual
General practice pack available
www.theheartmanual.com

British Association for Cardiac Rehabilitation
BACR website can be accessed via:
www.bcs.com