

# Cardiac rehabilitation: it works so why isn't it done?

The authors of the National Institute for Health and Clinical Excellence (NICE) guideline for the management of secondary prevention following an acute myocardial infarction reviewed the evidence for cardiac rehabilitation and declared that its implementation should be a key priority.<sup>1</sup> For nearly 30 years reviews by official bodies around the world have reached the same conclusion, that cardiac rehabilitation is an essential treatment for patients' wellbeing and also saves lives in a highly cost-effective manner. The most recent of numerous meta-analyses included 8940 patients from 48 randomised controlled trials of cardiac rehabilitation and showed a reduction in overall mortality of 20% and of cardiac mortality of 26% over 3 years.<sup>2</sup> Despite the ever growing pile of reports, despite a massive increase in cardiological funding in secondary care, and despite the fact that it is probably the only form of 'chronic disease management' with a proven cost-effectiveness, the majority (around 70%) of patients do not receive rehabilitation following myocardial infarction<sup>3</sup> and recent funding changes are threatening the current provision. If the NICE target that every suitable myocardial infarction patient receives rehabilitation is to be met, then primary care may, for the reasons given below, needs to be in the driving seat.

## WHAT IS IT?

Cardiac rehabilitation is a treatment for patients following a new cardiac event or a step change in clinical condition; for example, following myocardial infarction, coronary revascularisation, cardiac transplantation, new onset or worsening of angina or heart failure, or implantation of a cardiac defibrillator.<sup>4</sup> There are four phases: phase 1 is the period in hospital following the acute event; and phase 2 is the period at home before the start of phase 3, which traditionally has been a supervised outpatient programme. The aims of the rehabilitation programme are to return the

patient to full functioning as quickly as is safe and to reduce the risk of recurrence of the illness. Phases 1 and 2 are the preludes to exercise-based phase 3 rehabilitation, with or without the educational component, which is the phase of effective intervention. This is the core of cardiac rehabilitation on which most studies have been based and the rationale behind this editorial. Cardiac rehabilitation is provided by a team which can include nurses, physiotherapists, occupational therapists, pharmacists, dieticians, psychologists, and social workers. It usually includes exercise as the centrepiece, education, risk-factor monitoring and treatment, stress management, and relaxation training. It should be menu based, with not every patient needing every element of the programme.

Phase 4 is the long-term future of the individual, continuing with the healthy living habits which have been encouraged by phases 1 to 3, with regular monitoring of clinical condition, risk factors, and medication — usually by the primary care team.

In the UK two models are used to provide phase 3 cardiac rehabilitation; a hospital or community-based programme with supervised exercise as the centrepiece starts within about 4 weeks after myocardial infarction and 6 weeks after heart surgery. It can last between 6 weeks and 6 months, depending on the needs of the patient. The Heart Manual is an alternative home-based programme<sup>5,6</sup> that can be used with support from a trained facilitator for patients who prefer such a programme or are unable or unwilling to attend group-based rehabilitation. Some centres use both approaches depending on the circumstances and inclinations of the patient, thus allowing patients a choice of treatment.<sup>7</sup>

## BENEFITS AND COST-EFFECTIVENESS

Cardiac rehabilitation increases physical

fitness, lessens coronary risk factors and improves psychological health and quality of life:<sup>8</sup> it also improves prognosis.<sup>2</sup> NICE has estimated that the incremental cost-effectiveness ratio for rehabilitation after myocardial infarction 'is about £7860 and £8360 per Quality Adjusted Life Year gained for men and women respectively'.<sup>1</sup> The cost-effectiveness of cardiac rehabilitation is also supported by evidence from 15 health economic evaluations conducted in North America and Europe. Papadakis *et al* estimated the of cost per life year gained ranged from US\$2193 (£1218) to US\$28 193 (£15 663).<sup>9</sup> An updated Canadian review of cardiac rehabilitation endorsed the findings of the Cochrane review<sup>2</sup> and reported a relative risk reduction in all cause mortality of 24% (95% confidence interval 4% to 27%).<sup>10</sup> This translates to a number needed to treat of 66 (35 to 273) over a mean of 28 months' follow-up. The same review quoted number needed to treat for other accepted drug interventions after myocardial infarction, such as statin treatment ( $n = 11-56$ ), beta-blocker treatment ( $n = 84$ ), and antiplatelet treatment ( $n = 306$ ). In the review's analysis of cost-effectiveness, cardiac rehabilitation was found to be comparable with lipid lowering for secondary prevention — US\$4950-15 000 (£2673-9000) per life year gained in 1995-1996 (cardiac rehabilitation) versus US\$9630 (£5200) in 1996 (lipid lowering).<sup>10</sup>

## FAILURE TO MEET TARGETS

In 2000 the National Service Framework for coronary heart disease set a target that in England, by 2002, 85% of patients recovering from myocardial infarction or revascularisation should be offered rehabilitation and that once this target had been reached, programmes should be widened to include patients with heart failure, angina, and other conditions.<sup>11</sup> Sadly, almost alone of the National

Service Framework targets, this one has not been met;<sup>12</sup> although it has been shown to be achievable.<sup>7</sup> Indeed since 2000 there has been no increase in the percentage of myocardial infarction and revascularisation patients attending cardiac rehabilitation, with only about 30% joining such programmes in 2004–2005.<sup>3</sup>

## HOW HAS THIS SITUATION COME ABOUT?

With growing evidence of its effectiveness from around the world, the provision of cardiac rehabilitation in the UK has grown gradually. However, since it has never been planned or directed centrally nor commissioned locally, this growth has been haphazard — depending upon the enthusiasm of mainly nurses or physiotherapists who saw a therapeutic gap and filled it. Because cardiac rehabilitation funding is usually inadequate (46% of programmes have no allocated budget)<sup>3</sup> initiators of cardiac rehabilitation programmes have often had to ‘borrow’ time from the other professions involved in this multidisciplinary activity. The providers of cardiac rehabilitation have not been helped by the lack of enthusiasm of physicians and cardiologists and others who have louder voices in deciding the allocation of NHS resources.

As a result, cardiac rehabilitation is greatly underfunded — approximately five times the current funding would be needed to meet the National Service Framework target.<sup>13</sup> The only body to provide consistent support for cardiac rehabilitation has been the British Heart Foundation. Between 1989 and 2002 it awarded pump priming grants of £5 million and, with the National Lottery, a further £3 million in 2004. This funding is now spent, putting some existing rehabilitation programmes at risk.

## WHAT IS TO BE DONE?

The goal set by the National Service Framework for coronary heart disease is achievable where primary and secondary care work together. This has been demonstrated in Cornwall where an innovative programme combining traditional hospital-based rehabilitation

with home-based rehabilitation using the Heart Manual has resulted in more than 85% of eligible patients enrolling.<sup>7</sup> A NICE commissioning guide on implementing cardiac rehabilitation with a business plan tailored to each primary care trust was released in March 2008 and can be accessed by commissioners through their website.<sup>14</sup>

One of the problems appears to be a general lack of knowledge about cardiac rehabilitation and its benefits. To remedy this, the British Heart Foundation and British Association for Cardiac Rehabilitation have launched a publicity campaign to bring the problem of under-provision and poor quality of provision to wider attention. Leaflets setting out the case, one in lay terms<sup>15</sup> and the other presenting the evidence for those interested,<sup>16</sup> have been printed and are being widely disseminated. MPs are being lobbied and patient support groups around the country, armed with the regional results of the audit, will be asked to question the relevant local authorities about local provision.

Perhaps the best hope for cardiac rehabilitation lies with primary care. Practice based commissioning gives an opportunity for GPs to influence inadequate and unequally distributed patient services through negotiating service level agreements with the providers to influence the distribution of resources within episodes of care. Commissioners should consider just how illogical it is that the NHS in England spends less than £20 million per annum on cost-effective cardiac rehabilitation,<sup>13</sup> but nearly £100 million on cost-ineffective stenting for angina pectoris.<sup>17</sup> Achieving an equitable and adequate provision of cardiac rehabilitation depends upon primary care developing new partnerships with secondary care as demonstrated in Cornwall.<sup>18</sup> Until this is achieved patients who have experienced an acute myocardial infarction will continue to die prematurely and many others will live with unnecessary levels of disability.

### Hugh JN Bethell,

Director of Research, Basingstoke & Alton Cardiac Rehabilitation Centre and Retired GP.

### Robert JP Lewin,

Professor of Rehabilitation,  
BHF Care & Education Research Group,  
Department of Health Sciences,  
University of York.

### Hasnain M Dalal,

GP, Lower Lemon Street Surgery, Truro and  
Honorary Clinical Lecturer, Peninsula College  
of Medicine and Dentistry, Truro.

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## Competing interests

Robert Lewin represents the BHF Care & Education Research Group which is part of the BHF charity which is mentioned in this editorial. Robert Lewin and Hasnain Dalal were members of the topic-specific advisory group that reviewed the content of the NICE commissioning guide on cardiac rehabilitation. Robert Lewin was one of the team that developed the Heart Manual.

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**ADDRESS FOR CORRESPONDENCE**

**Hugh Bethell,**  
*Basingstoke & Alton Cardiac  
 Rehabilitation Centre, Chawton Park  
 Road, Alton, Hants GU34 1RQ.  
 E-mail: bethell@cardiac-rehab.co.uk*