Cardiac rehabilitation in the UK 2000 – can the National Service Framework milestones be attained?

Cardiac rehabilitation offers physical, psychological and survival benefits for patients recovering from cardiac illness. This questionnaire survey of all known cardiac rehabilitation units in the UK provides data on how well the National Service Framework targets for cardiac rehabilitation are being met.

Abstract

Background. The British Association for Cardiac Rehabilitation and British Heart Foundation survey all the cardiac rehabilitation (CR) units in the UK annually. This paper reports the numbers and diagnoses of the patients treated in these units and adds data about their funding and the outcomes achieved.

Methods. A questionnaire survey of all known CR units in the UK, with telephone follow-up if needed.

Findings. Three hundred and two centres were identified. Of the 253 who returned their questionnaires, 174 (69%) gave figures for the numbers and diagnoses of their patients for the year 2000. The median number of patients joining each programme was 175, with a total of 42,367 patients. Of these centres 121 (48%) gave compliance figures; 70% of patients completed the course. Complications were reported by 129 centres (51%). Some 139 (55%) responders answered the funding question, of whom 21 received no funding and 118 received between £10,500 and £400,000 per annum. Twenty-six (10%) reported the number of patients having exercise tests before and after the programme, and eight reported the results. In all, 52 centres (20%) used psychometric questionnaires before and after the programme. Risk factors were measured by 124 centres (49%) and medication use by 80 (32%).

Interpretation: The prospects for meeting National Service Framework goals and milestones for CR seem bleak.

Key words: cardiac rehabilitation, staffing, database.

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Introduction

In 1997 the British Association for Cardiac Rehabilitation (BACR) circulated all the cardiac rehabilitation centres in the UK with the first of three 'cumulative' questionnaires. Part One was sent in 1997 and the information requested included the name, address and discipline of the coordinator, the site of the programme, the conditions treated, programme content and staff involved. With financial backing from the British Heart Foundation, a book of the findings for each programme was produced.[1] A summary of the statistics was published in the year 2000.[2]

> ***'Every hospital should ensure that more than 85% of people who are discharged following myocardial infarction or revascularisation are offered cardiac rehabilitation'***

In 1998, Part Two was added, asking for information about the patients treated by each centre over one year – the number of patients referred, their age, gender and diagnosis. The results were published in 2001.[3]

In 1999 Part Three was added, which asked for the outcomes of treatment. This format will be continued annually and the results from the year 2000 (to which a query about funding was added) are reported in this paper.

Chapter seven of *The National Service Framework for Coronary Heart Disease* (NSF for CHD) encompasses cardiac rehabilitation (CR).[4] Standard 12 requires 'NHS Trusts to put in place agreed protocols/systems of care so that, prior to leaving hospital, people admitted to hospital suffering from coronary heart disease have been invited to participate in a multidisciplinary programme of secondary prevention and CR'. The NSF goal is that every hospital should ensure that more than 85% of people who are discharged following myocardial infarction or revascularisation are offered CR.

Milestone 2 states that: 'By April 2001, every hospital should have an agreed protocol for the identification, assessment and management of people who are likely to benefit from CR'.

Milestone 3 states that: 'By April 2002 every hospital should have clinical audit data no more than 12 months old that describe all the items ……'. These items include the total number and percentage of those recruited to CR who, one year after discharge, report taking regular physical exercise, being non-smokers and having a body mass index (BMI) < 30 kg/m^2.

This survey gave an opportunity to assess progress with meeting these milestones.

Methods

In the UK, cardiac rehabilitation is divided into four phases. Phase I is the period in hospital during which the patient is recovering from the cardiac event. Phase II is the first few weeks at home, with gradual mobilisation. Phase III is the period of supervised exercise training, education and risk factor modification which starts at about four to six weeks after the event and usually lasts from six weeks to three months. Some centres use The Heart Manual (a self-help, home-based system)[5] during this period. The Heart Manual also covers phase II.

Phase IV is long-term follow-up, as the patient is encouraged to continue healthy living with monitoring of risk factors and medication.

We have defined CR for the purposes of these investigations as phase III cardiac rehabilitation.

The coordinators of all the CR centres identified in the UK were circulated with a three-part questionnaire. We confirmed, from the responses received and by telephoning non-responding hospitals, that all hospitals in the UK with coronary care units have access to CR.

Part One of the questionnaire included the information sought and the answers provided in previous years, with a request to change any details which were now incorrect. We added the question: 'What is your current funding per annum?'

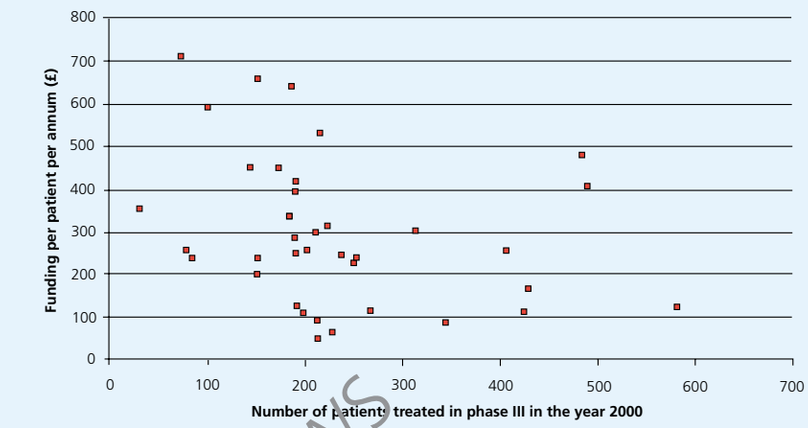
Part Two requested details sought in previous years – the number of patients who entered the programme during the year in question (in this case from 1st January 2000), their diagnosis, age and gender profile.

Part Three asked for patient drop-out rates, reasons for non-compliance, and the use of before-and-after exercise testing and psychometric and/or quality of life (QoL) measures. We also sought information about the measurement of risk factors and the rate of prescription of aspirin, beta blockers, statins and angiotensin-converting enzyme (ACE) inhibitors.

Coordinators who did not return their questionnaire within two months were contacted by telephone, and again after a further two months if they still failed to respond.

Those who funded the study played no part in the design of the study.

Figure 1. Funding per cardiac rehabilitation (CR) patient as compared with number of CR patients treated in each centre in the year 2000. All of these patients received exercise-based CR



Results

A total of 302 CR centres were identified. Replies could not be elicited from 49 centres. The data given here are based on information from the 253 centres which returned questionnaires.

Updated Part One information

In total, 302 centres were identified, of which 253 (84%) returned questionnaires. Seventeen centres (7%) used The Heart Manual[5] only. Of these centres 166 (66%) operated in hospitals, 27 (11%) in the community and 51 (20%) in both. Nine centres (36%) did not answer this question.

The question on funding was not answered by 114 (45%), was reported as nil by 21 (8%) and varied from £10,500 to £400,000 (median £62,000) for the remaining 118 centres (figure 1). The cost per patient treated varied from £50 to £712 (median £256 per patient). There was a trend to an inverse correlation between the number of patients treated and the cost per patient (figure 1), though this did not reach statistical significance. There was no relationship between the total level of funding or the funding per patient and whether or not Parts Two or Three of the questionnaire were completed.

Updated Part Two information

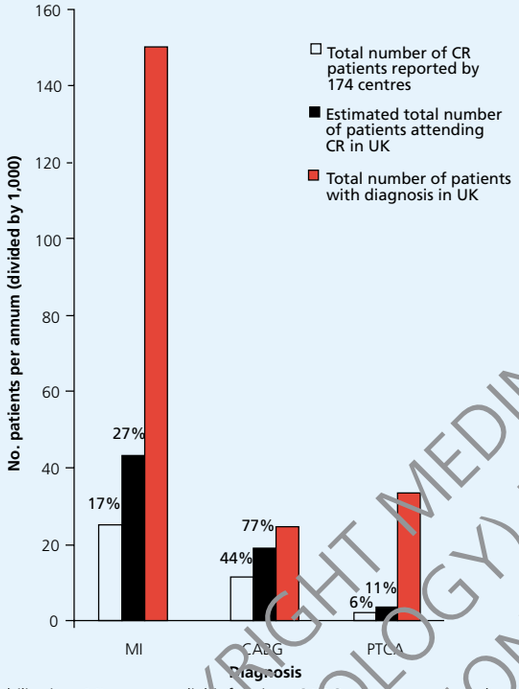
The number of patients enrolled for the exercise-based rehabilitation programme during the year was stated by 178 (69%) of the responders. In total, the 178 programmes enrolled 42,367 patients (median 175 patients, mean 245, range 11 to 983).

The diagnoses of the treated patients was stated by 174 (100%) of the responders who gave figures. The number of patients in each category is shown in figure 2. Also included in the histogram are: a projection of the number treated by all centres, presuming that the responders were representative of the whole; and the number of eligible patients in the UK.

Part Three information

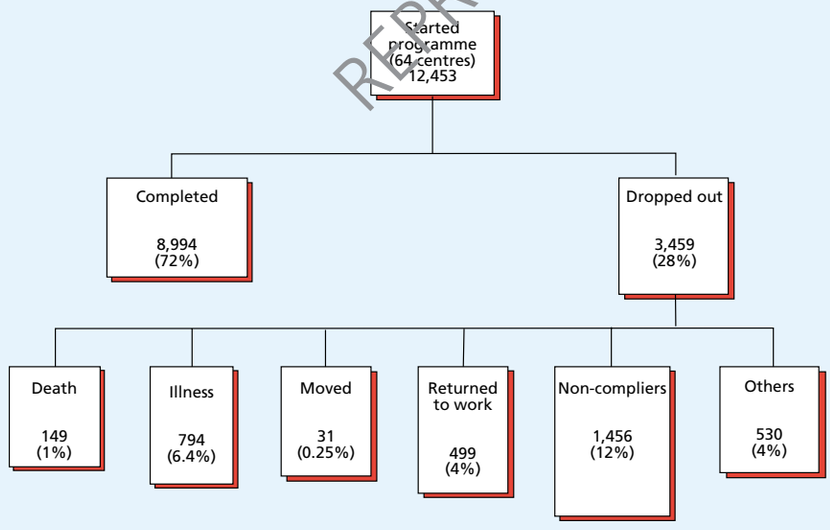
The numbers of patients who joined the programmes was reported by 138 centres (55%) but these figures did not always accord with the numbers given in Part Two. One hundred and twenty-eight centres (51%) gave figures in both Part Two and Part Three. The total number of patients for these programmes was 29,284 from Part Two

Figure 2. Total number of patients enrolled in cardiac rehabilitation (CR) compared with total number of patients in the UK in each category of diagnosis in the year 2000. Some 174 out of 302 centres gave figures. The estimated total number of patients attending CR in the UK was calculated by multiplying the figures reported by the 174 centres by a factor of 302/174. The annual total figures for MI survivors, CABGs and PTCAs were obtained from the BHF,[10] the Society of Cardiothoracic Surgeon's website[11] and the British Cardiac Intervention Society website,[12] respectively



Key: CR = cardiac rehabilitation; MI = myocardial infarction; CABG = coronary artery bypass graft; PTCA = percutaneous transluminal coronary angioplasty

Figure 3. Causes of dropping out from cardiac rehabilitation in the 64 centres which gave these figures



and 24,444 (16.5% lower) from Part Three. The figures below are based on these Part Three 'joiners'.

Compliance: Some 121 centres (48%) gave compliance figures, representing 26,756 patients of whom 18,784 (70%) completed the CR programme. In all 64 centres, representing 12,453 patients who joined, gave at least one reason for non-compliance (figure 3).

Complications: These were reported by 129 programmes, representing 31,626 patients. Three episodes of ventricular fibrillation and 63 episodes of prolonged hypotension were reported. A total of 257 patients were admitted to hospital directly from a CR session.

Before and after measurements: Twenty-six (10%) of responding centres gave figures for the numbers of patients having comparable before and after exercise tests, of which eight gave figures for the change. The increase in exercise tolerance varied from 12% to 65% (median 24%).

Fifty-two centres gave figures for the number of patients having psychological health and/or quality of life (QoL) measured before and after the programme. Of these centres, 46 used the Hospital Anxiety and Depression (HAD) score,[6] four used SF12,[7] two used an analogue wellbeing scale,[8] four used SF 36 and three used the QoLMI scale.[9]

Risk factors: With respect to risk factors, 101 centres (40%) measured BMI in an average of 92% of their patients, 124 (49%) measured blood pressure in 98% and 57 (23%) measured cholesterol in 78%. Fifty-seven centres (23%) recorded the rate of cigarette smoking before and after their programme, with a mean of 9% of patients still smoking by the end of the programme.

Medication rates: These were reported by 80 centres (32%). In these centres 92% of patients with coronary artery disease took aspirin, 71% took beta

Key messages

- The provision of cardiac rehabilitation (CR) in the UK is increasing
- The NSF milestones for CR are unlikely to be met for several years
- Funding for CR in the UK is erratic, inconsistent and mostly inadequate

blockers, 71% took a statin and 48% took an ACE inhibitor.

Discussion

This survey has updated the information from the 1998/9 survey of CR centres in the UK[3] and has added some data about the outcomes achieved by this treatment. It is known that many centres do not keep records of their activities, and we had hoped that the regular request for information would encourage coordinators to improve their data collection. This aspiration has not yet been fulfilled: the return rate in 1998 was 83%, compared to 84% for this survey four years later. The number of centres giving figures for the number and diagnoses of their patients has increased from 171 to 174. One possible reason is that the increased quantities of data requested might have discouraged coordinators from responding. The level of funding did not seem to be a factor in the ability to complete Parts Two or Three of the questionnaire but might have played a part in whether the questionnaire was returned.

It was disappointing that the figures given to the same question in two different sections of the questionnaire did not tally. This calls into question the accuracy of the figures which we gave in the Year 2 survey report.[3] In that report we estimated that between 14% and 23% of infarct patients, between 33% and 56% of coronary artery bypass graft (CABG) patients and between 6% and 10% of coronary angioplasty (PTCA) patients were included in CR programmes. These figures were overestimated by 16%. We presume that the higher figure represents the numbers who were invited into the programme while the lower figure represents the number who took part. It was encouraging to find that the total numbers invited had increased by 30% from 1998 to 2000.

Updated CR figures

Our results give an updated estimate of the percentage of the eligible patients in the UK who are being invited to join multidisciplinary CR, and show a modest increase from the 1998 figures. Altogether 25,007 infarct patients were enrolled by the 174 responding centres; taking the British Heart Foundation figure of 150,000 infarct survivors per annum in the UK,[10] approximately 17% are included (the figure for 1998 was 14%). If the figures from the 174 responders are representative of all 286 centres then approximately 27% of all infarct patients are included (the figure for 1998 was 23%).

> ***'A startling finding is the lack of funding for so many centres'***

By the same calculation and using the figure of 24,733 coronary artery bypass surgery patients reported by the Society of Cardiothoracic Surgeon's website,[11] between 44% and 77% of CABG patients are included (the figures for 1998 were 33% and 56%).

The figures for PTCA patients show that between 6% and 11% of the patients undergoing the 33,652 procedures reported on the British Cardiac Intervention Website[12] are included (the figures for 1998 were 6% and 10%).

The most startling findings from this survey are the lack of funding for so many centres and the inability of so many others to report their level of funding. The wide disparity of funding for those who did answer this question indicates further the chaotic nature of CR organisation in the UK. Any service needs a degree of clerical support or coordinator time if such data are to be collected, and it may be that a lack of funding explains the difficulty in recording and being able to report on patient throughput and outcome measures. Underfunding also contributes to the lack of resources to measure patient outcomes in the first place.

Chapter seven of the NSF for CHD[4] encompasses CR. Standard 12 and some of the goals and milestones are detailed in the introduction. Our findings indicate that the NSF goal that 'every hospital should ensure that more than 85% of people discharged following myocardial infarction or revascularisation be offered CR' is a long way from being met. Likewise, Milestone 3, which requires clinical audit data on smoking habit, exercise and BMI, is a long way from being reached. Very few coordinators can give these figures, even for patients at the end of their CR programme. It is inconceivable that they might have the resources to follow up patients routinely one year after the acute event.

CR has been shown to produce physical,[13,14] psychological[15,16] and survival[17,18] benefits for patients recovering from cardiac illness. These gains have been recognised by the inclusion of CR in the NSF for CHD. However, CR in the UK is under-resourced and the NSF goals for CR are unlikely to be met for many years.

To achieve the NSF objectives, the following will be needed:

1. A properly designed CR organisation for each hospital/PCT.
2. Clerical support, with recording of patients eligible for CR, those offered CR and those joining CR.
3. A protocol for recording risk factors for CHD.
4. A protocol for measuring and

recording physical performance and psychosocial wellbeing before and after the CR programme.

5. Sufficient funding for all these tasks. We suggest that at the time of writing this should be in the region of £250 per patient treated.

Acknowledgements

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