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Evaluation of Big Lottery Fund/British Heart Foundation Cardiac Rehabilitation Programme

Second Annual Report

(July 2007 v11)

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CARE AND EDUCATION RESEARCH GROUP

THE UNIVERSITY *of York*

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Executive summary

Background

This is the second annual report of a three year evaluation of the Big Lottery Fund's Cardiac Rehabilitation (CR) Programme, supported by the British Heart Foundation (BHF). The programme has two main aims: to increase the uptake of cardiac rehabilitation services, particularly among groups of people who currently make low use of existing services and to drive sustainable improvements in the quality of services on offer to patients.¹ Thirty six CR programmes in Primary Care Trusts (PCTs) in England were funded for up to three years, from 2005/6.

The evaluation

An evaluation was tendered by the Big Lottery Fund (BIG) to assess how far:

- the BIG CR Programme has succeeded in meeting its overall aims;
- selected programmes have succeeded in delivering their own aims in the context of the Programme's overall aims;
- the overall BIG CR Programme has contributed to the provision of evidence-based health promotions services and addressed inequalities;
- programmes have linked with and met the targets of local and national strategies; and to
- identify evidence of good / effective practice in running successful CR programmes.

The winning bid was from the University of York, with a three-part evaluation:

- a rolling quarterly survey measuring progress towards the individualised aims of each programme and recording the barriers to and facilitators of success;
- case studies involving interviews with staff, patients and carers in eight centres, half of which have met their criteria for success and half that have not met their objectives;
- the synthesis of qualitative data with quantitative data from the National Audit of Cardiac Rehabilitation (NACR) an online national audit of CR.

Progress

The main activities during this year have been:

- Continuing the rolling survey of the CR programmes . Two additional rounds of the survey have been completed with around a 83% return rate at round three and a 92% return rate at round four.

- Carrying out analysis of data from the survey in order to select the case study CR programmes.
- Preparing applications for research governance approval for the case study work with eight of the CR programmes, including drafting of information sheets, consent forms, topic guides and associated documents for the interviews with patients, carers and professionals.
- Helping centres adopt the NACR, install the software and train in its use. Thirty three centres now have the software and records have been entered for approximately 3000 patients.

Interim findings

- By the fourth round of the survey, approximately 45% of the aims stated by the programmes were on or ahead of target.
- By the fourth round of the survey, carried out in October 2006 (almost half-way through their BIG funding period), the majority of programmes appeared to be behind in terms of meeting at least one of their aims as individually defined for the evaluation. In the previous report, programmes had appeared to be catching up at round two. However, data from rounds three and four shows that since then more have dropped behind on achieving their aims. We suspect this could be related to the major structural changes to PCTs which has affected staffing.
- Facilitators of progress included: joint working with other trusts and leisure centres; the introduction of extra menu options, clear referral systems.
- There was a great variety of barriers to aims being achieved, the most common were staffing problems and the low number of referrals received, either due to poor referral systems or due to fewer cardiac procedures having being undertaken.
- The BIG sites are in the main similar to the other rehabilitation programmes of the UK, in terms of the range of patients attending.
- More angioplasty patients took part in BIG CR programmes suggesting that access was widened for this group who are less likely to attend.
- Fewer participants were white in BIG CR programmes suggesting that they may have increased ethnic uptake.
- In most outcomes BIG patients had similar levels of improvement to those in the other programmes of the UK but there are some indications that they may have started from a lower base, for example, being less likely to take exercise and smoking more.

Conclusion and interim recommendations

The evaluation is progressing as planned. Most of the effort this year has been focussed on implementing the NACR in all programmes, identifying the sites for the qualitative interviews, establishing R&D approval for these sites and developing the topic guides for the interviews. These are now in place and we will be commencing the interview stage imminently.

In the previous report it was indicated that the organisational features of the PCTs which affected the appointment of staff was considered a hindrance in those programmes achieving their aims. These barriers have changed somewhat over time in that it appeared that by April 2006 these problems were less evident and that more programmes were meeting their aims, but in the most recent survey this improvement has been reversed with additional staffing issues being reported, probably due to the poor financial situation in many PCTs.

1. Introduction

This report describes the work undertaken during the second year of a three year evaluation of the Big Lottery Fund's (BIG) Cardiac Rehabilitation Programme (hereafter referred to as the BIG CR Programme).^{*} It is intended as a progress report, for administrative purposes. All analyses are provisional. The report was compiled by the research team and discussed with the evaluation's local and national steering groups (Appendix A). There are six sections:

Section 2 - an overview of the programme, its aims and the commissioning process.

Section 3 - the aims and methods of the evaluation.

Section 4 - progress made in the second year of the evaluation.

Section 5 – interim findings.

Section 6 - brief conclusions and recommendations.

The first annual report was published in 2006 and is available on the Big Lottery Fund website.²

2. Overview of the Big Lottery Fund Cardiac Rehabilitation Programme

Background

Cardiac rehabilitation is a life saving intervention that the Department of Health (DH) has said should be available to the majority of cardiac patients.³ It teaches patients to be better 'self-managers' of their illness and 'through their own efforts' helps them live as full and healthy a life as possible. The most recent Cochrane review demonstrates the dramatic effect it can have on survival: patients who were randomised to attend CR had a 26% lower death rate over the next 2-5 years.⁴ Unfortunately cardiac rehabilitation is under-provided and under-resourced and it has been estimated that less than 40% of the patients who should be benefiting from a longer and more enjoyable life are offered a chance to attend CR.⁵

Although there is no definitive information there is a widely held perception that certain groups of people are less likely to attend - people from ethnic minorities, the elderly, women, smokers, the depressed, and people in rural locations have all been identified as under-represented at some time. Some groups are unlikely to be asked to attend, especially those with heart failure or arrhythmias. Similarly it is clear that many programmes are not compliant with national guidelines for staffing and content.

^{*} Throughout this report we use the terms 'Big Lottery Fund Programme', 'BIG Programme', 'initiative' or 'scheme' to refer to the overall BIG CR Programme; the terms 'CR programme', 'project', 'site' or 'centre' are used to refer to the individual CR programmes that have been funded by this Programme.

Aims

The BIG CR Programme is one of several health initiatives funded by the Big Lottery Fund (formerly the New Opportunities Fund). This £4.7 million Programme, supported by the British Heart Foundation (BHF), was launched in England in March 2004. It has two main priorities¹

1. To increase the uptake of CR services, particularly among groups of people who currently make low use of existing services.
2. To drive sustainable improvements in the quality of services on offer to patients.

Commissioning of the cardiac rehabilitation programmes

Funding for a number of individual CR programmes was made available to primary care trusts (PCTs) in England, via the BHF. Applicants were informed that, if successful, they would be required to collect audit data and take part in an evaluation of the CR Programme. Thirty six PCTs were awarded funding. Two subsequently withdrew and the funds were reallocated. Funds requested ranged from £97,401 to £179,994. Twenty five of the 36 applications were from single PCTs and 11 were joint applications (from between two and four PCTs). The CR programmes commenced operation from February 2005, the last beginning in October 2006. A list of the successful programmes is provided in Appendix F.

Commissioning of the evaluation

In order to assess the outcomes of the BIG CR Programme, a quantitative and qualitative evaluation was tendered and the work awarded to the University of York. The present qualitative evaluation is being jointly carried out by staff from the BHF Care and Education Research Group and the Social Policy Research Unit (SPRU) at the University of York. The qualitative evaluation will draw on data collected through the BHF funded National Audit of Cardiac Rehabilitation (NACR). This involves the use of an online database to collect audit data. The NACR is being carried out by the BHF Care and Education Research Group at the University of York. Both projects are led by Professor Bob Lewin.

3. Outline of the evaluation

Timetable

The three year evaluation began in July 2005 and is due to be completed in June 2008 (see Appendix E).

Aims

The evaluation was required to assess five key issues:

- how far the BIG CR Programme has succeeded in meeting its overall aims;
- how far selected programmes have succeeded in delivering their own aims in the context of the BIG Programme's overall aims;
- how far the overall BIG CR Programme has contributed to the provision of evidence-based health promotions services and addressed inequalities;
- how far programmes have linked with and met the targets of local and national strategies;
- and to identify evidence of good / effective practice in running successful CR programmes.

Methods

A three-part evaluation was designed to investigate the above questions.

1. *A rolling quarterly survey* determining the progress towards the individualised aims of each programme, and the barriers and facilitators of success. Up to three main aims to be agreed with programmes. Programmes will be surveyed every three months to examine progress towards their targets. A total of nine rounds of the survey will be carried out.* The interim results will be used to select eight case study sites.
2. *Case studies* involving interviews with staff, patients and carers in eight centres, half that have met their criteria for success and half that have not. The purpose is to identify and explore the factors that have helped and/or hindered progress, from both staff and users' perspectives. Data from this work will be examined in conjunction with data from other aspects of the evaluation. This part of the evaluation is scheduled to be carried out from July 2007.
3. *Quantitative data from the NACR will be used* to validate the qualitative findings and examine specific questions about equity and uptake. The dataset includes process and outcome data, including health gain and health related quality of life as well as social data such as employment status. This information is collected upon starting the programme, 12 weeks later and 12 months later (by post). It was anticipated that it would take a year for all programmes to have installed the NACR software and begun to send data.

* This has since been revised to eight rounds (see section 4: rolling survey).

4. Update on work undertaken

The main research tasks and associated work undertaken in the second year of the evaluation are described below.

Rolling survey

At the start of the evaluation an individualised, one-page questionnaire was devised for each CR programme. The questionnaire re-stated the programme's agreed evaluation aim(s) and asked respondents to report their progress toward each aim, indicate whether or not they were on target, and to comment on what had helped and hindered their progress to date (see Appendix D for an example). The survey was sent to project leads (or their nominated staff) initially by email and by post, and by whatever method respondents' preferred thereafter (usually email). Up to two reminders were sent.

Two rounds of the survey were carried out in the first year of the evaluation, involving 35 of the 36 CR programmes (one was very late to start and so was excluded from all rounds of the survey). In the second year, three additional rounds were completed. Round three was undertaken in July 2006 and round four in October 2006. It was agreed at the Local Research Meeting that round five was omitted to coordinate the survey with the BHF's own reporting requirements. Round six was carried out in March 2007.

Selection of the case study programmes

Using quantitative data obtained from the first three rounds of the email survey, we calculated the progress each programme had made towards achieving each of its aims by July 2006. For example, if a programme aimed to increase uptake to 360 patients after three years and had achieved 50 patients at round three of the survey, it would have achieved a score of 14%. The results relating to uptake aims and quality aims were recorded separately. Where data was missing at round three (two programmes), these aims were excluded. Where PCTs had been awarded funds late (two programmes), they were also excluded.

Each programme's *best* achieved score for uptake and/or for quality aims was then recorded and ranked. The ranked results were divided into tertiles and mapped onto a two-dimensional chart showing results for both best uptake and/or best quality scores. As more programmes had specified uptake rather than quality aims, more of the former appeared in each tertile.

Likewise, each of the programme's *worst* score for uptake and/or quality was recorded, ranked and charted as above.

The eight case study sites were selected purposively to ensure that the final sample was diverse in terms of making most/least progress towards uptake targets and progress towards quality targets at round three of the survey (tertiles for 'most progress' and 'least progress' scores). In addition, of those programmes that appeared in the 'most' and 'least' progressive tertiles, those which included one or more aims which targeted 'hard-to-reach' groups were selected (regardless of which aim the score related to, as once selected, the site's progress on all its aims would be explored in-depth as part of the case study work). Finally, a check was made to ensure that the final selection of sites was geographically diverse.

As the majority of the programme's aims related to uptake rather than quality, it was decided that the final sample would include six based on uptake and two on quality (best and worst), those that specifically targeted hard to reach groups and that they were spread geographically.

All the scores and ranking were independently checked by two researchers.

Short-listing of four programmes that had made most progress in relation to their uptake and/or quality aims

Thirty programmes were ranked on their 'best' uptake scores and seven were ranked on their 'best' quality scores (the remainder were excluded because of lack of data or they were late-starters or had not specified any uptake/quality aims). These were divided into tertiles, with 10 programmes in the upper and lower tertiles for uptake, and two in the upper and lower tertiles for quality. Three of these programmes were short-listed as case study sites.

Of the two programmes that had the best scores for *quality*, one was short-listed for selection on the basis of specifying all-quality aims and having provided full data at each stage of the rolling survey.

Short-listing of four programmes that had made least progress in relation to their uptake and/or quality aims

Again, thirty programmes were ranked on their 'worst' uptake scores and seven were ranked on their 'worst' quality scores (the remainder were excluded because of lack of data or they

were late-starters or had not specified any uptake/quality aims). These were divided into tertiles, with 10 programmes in the upper and lower tertiles for uptake, and two in the upper and lower tertiles for quality. Three of these programmes were short-listed as case study sites.

Of the two programmes that had made the least progress on their *quality* aims, one was short-listed for selection on the basis of so far being by far the most co-operative of the two with the evaluation.

Overall, four of the eight short-listed programmes specified one or more aims that related to hard-to-reach groups, namely: women, older people and people who live in rural areas.

The short-list of programmes was given to the BHF Cardiac Rehabilitation Coordinators (CRCs) at the Steering Group meeting in November 2006, without identifying whether sites were from the groups that had made most or least progress in relation to one of their aims. CRCs were asked if there were any major practical or logistical reasons why any of the short-listed programmes should not be included as a case study site. It was at this stage that one programme was found to be 'suspended' and hence it was de-selected and replaced with a reserve that had already been identified.

In order to preserve the anonymity of the eight case study sites they are not listed in this report. However it is hoped that, in future, where any examples of good progress are identified, CR programmes will agree to being identified with this.

Applications for research governance approval

On 16 November 2006, the Central Office for Research Ethics Committees (COREC) advised that the case study phase of the evaluation was considered to be 'service evaluation' and hence did not need ethical approval from an NHS research ethics committee. The University of York's ethics committee chairman also advised that the study did not need its approval. Under the terms of the research governance framework for health and social care research, this part of the evaluation did still require research governance approval from the PCTs involved. The Research and Development (R&D) Departments for the eight PCTs, and one umbrella R&D organisation in the North-West of England, were all approached for advice on their local requirements for this evaluation. For some R&D departments, the fact that the evaluation did not require formal ethical approval meant that there was no clear

protocol for granting approval and this had to be negotiated at length. One R&D department had no procedure for dealing with this type of evaluation and an individual had to be identified by the local CR staff to review the proposal and give approval on behalf of the PCT. In another PCT, the case study work was simply approved by a relevant manager without having to go through a formal R&D process.

All the necessary documentation was prepared and submitted for approval to all of the eight case study sites early in May 2007. To date, approval has been received from four sites.

Preparation for qualitative work with the case study programmes

In order to obtain research governance approval for the case study phase of the evaluation, a number of documents for the interviews with patients, carers and professionals have been prepared and submitted as part of the applications for approval. These included a summary of the project and a recruitment flowchart as well as the following documents for those to be interviewed:

- Invitation letter for patients/carers/professionals from researchers
- Appointment letter (sent with consent form) for patients/carers/professionals
- Information Sheet for patients/carers/professionals
- Response Form for patients/carers/professionals
- Consent Form for patients/carers/professionals
- Summary telephone interview topic guide for patients/carers/professionals
- Thank you letter (sent with copy of consent form) for patients/carers/professionals

It was agreed by the evaluation Steering Group that the topic guide for the interviews would be piloted within one or more of the case study sites where research governance approval was to be obtained (rather than in a separate site where we might have had to make an additional application).

Links with the quantitative evaluation

Work has continued to help implement the NACR in all BIG sites. To date, all but three sites have installed the software and are submitting data. Initial analysis of baseline data is presented in section 5 of this report.

Local and national steering group meetings

The local steering group meeting has met on three occasions on 10 January 2006, 28 March 2006 and 16 November 2006 at the University of York. A joint local and annual national steering group meeting was held on 20 July 2006 in York. The next local and annual national steering group meeting will be held on 24 July 2007 in London. Members of the groups are listed in Appendix A.

Problems encountered

There have been two main issues.

- As ethical approval was not required some R&D Departments do not have a clear formal protocol for granting approval and some this meant it had to be negotiated at length. This has resulted in a slight delay to receiving approval from all eight case study sites.
- In order to make the collection of data easier for programmes it was agreed that the fifth round of the survey be skipped so that our requests for information were better coordinated with the BHF reporting requirements.

5. Interim findings

Interim findings from the rolling survey

A total of six rounds of the rolling survey have been completed to date. For the present report, data from rounds three and four of survey have been analysed (as noted above, the fifth round was skipped and the sixth round was carried out too recently to be included in this analysis).

In the second year of the survey, response rates have continued to be good. In round three, responses were received from 33 of the 35 eligible CR programmes surveyed: a 94% response rate. And in the fourth round, 31 responses were received: an 89% response rate.

At the beginning of the evaluation, the programmes were asked to complete a statement for each aim, providing a numerical indication of their progress towards the final goal, for example that 100 of the hoped for 600 patients had completed a home-based programme. They were also asked to choose if they were 'on target', 'ahead of target' or 'behind target' for each aim, and to comment on what had helped and hindered their progress to date (see Appendix D for an example of the questionnaire). At each round of the survey, analysis of these self-assessed responses was carried out, together with views on what had helped and

hindered their progress (see below). In addition, at round three of the survey, a numerical indicator of the progress sites had made towards achieving their individual aims was calculated in percentage terms and the results were used to inform the selection of the case study sites (see above).

In our previous report we found that CR programmes had shown improvement in their performance between the first and second rounds of the survey. At the third round of the survey, the number of valid responses that were received had increased from 27 to 33 programmes (94% of those surveyed); they rated their progress on a total of 74 aims. There was a decline in the number of CR programmes that were ‘on’ or ‘ahead of target’ in their performance compared with the findings from round two. This time programmes were ‘behind target’ in relation to 36 of the 74 aims assessed (Appendix G, Table 1). They were ‘on target’ in relation to another 27 aims, and ‘ahead of target’ in relation to eight more aims. Overall, 11 of the 33 CR programmes that submitted a valid response at the third survey point (33% respondents) were ‘behind target’ on all of their aims, and 10 programmes (30%) were ‘on’ or ‘ahead of target’ on all of their aims.

In the fourth round, valid responses were received from 30 programmes (86% of those surveyed), with progress rated on a total of 65 aims. At this point, the CR programmes showed a small improvement in their performance from the third survey. At round four the programmes were ‘behind target’ in relation to 30 of the 65 aims assessed. They were ‘on target’ in relation to another 26 aims, and ‘ahead of target’ in relation to nine more aims (Appendix G, Table 1). Overall, nine of the 30 CR programmes that submitted a valid response at the third survey point (30% respondents) were ‘behind target’ on all of their aims, and nine programmes (30%) were ‘on’ or ‘ahead of target’ on all of their aims. This shows that approximately 45% of aims are on or ahead of target.

What helped and hindered progress?

Joint working and good relationships with either trusts or leisure services was seen as an important factor in helping programmes achieve their aims, in all four rounds of the survey completed to date. By round three, this was still regarded as an important factor in the ongoing success of the programmes. It was reported to have helped progress in relation to 13 (10%) aims, and eight of these were rated as being ‘on’ or ‘ahead of target’. In round four it

was mentioned less as six (4%) aims were felt to have been helped by links and four of these were 'on' or 'ahead of target'.

By the fourth round of the survey the choice of extra optional sessions was reported as a help in the achievement of eight (5%) aims. Awareness of the CR programme was also mentioned as an important positive factor, with its promotion to both healthcare professionals and the public being thought to help improve attendance.

By far the greatest obstacle reported in all of the surveys carried out to date has been staffing issues. In the first round, 19 (33%) of the aims were hindered by problems appointing staff and three (5%) by the lack of qualified instructors. Of those aims, 13 were 'behind target' at this point. In the second round, 14 (25%) aims were hindered by staff appointments and eight of these were 'behind target'. By the third round, more staffing problems were reported, with the achievement of 27 (20%) aims being affected, primarily due to staff holidays and sickness which meant that there was no cover to continue offering a service to patients during those periods; 19 of these were aims were adjudged as being 'behind target'. By the fourth round, this trend had continued with the achievement of 24 (16%) aims hindered by the lack of availability of staff, and 16 of these aims were rated 'behind target'.

Referral systems were reported to have both hindered and helped some programmes in achieving their aims in the first and second rounds of the survey. This theme continued in rounds three and four. In round three, progress on seven aims was reported to have been helped by having developed a good referral system and were rated either 'ahead' or 'on target' in five of these aims. In the fourth round, problems with referrals was mentioned as a hinderance on nine (6%) occasions. The majority of these aims (six) were adjudged 'behind target'. However, this was not just because there were problems with the referral system but also because of the number of procedures being lower at that time of year.

Initial analysis of quantitative data from the NACR

Introduction to the National Audit of Cardiac Rehabilitation (NACR)

The National Audit of Cardiac Rehabilitation (NACR) is a collaboration between the British Heart Foundation (BHF) the British Association for Cardiac Rehabilitation (BACR) and many of the cardiac rehabilitation (CR) programmes of the UK to collect data about their

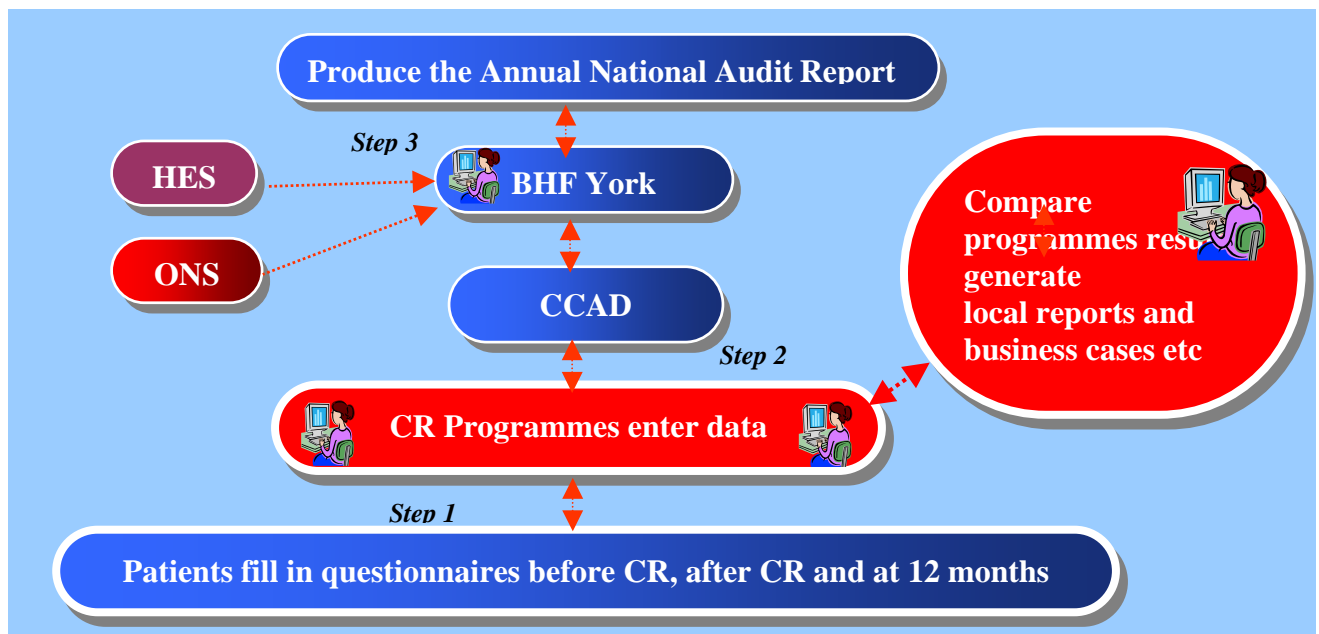
programmes so that they can improve services for patients. The diagram below represents the process.

Step 1. Patients complete the minimum dataset questionnaires three times: before they start their rehabilitation, after the rehabilitation programme, and 12 months later.

The CR programme staff score the questionnaires and add some data of their own then enter it in to the Lotus Notes database. CR staff can also download their data to analyse themselves to create local reports or business cases.

Step 2. Data are automatically uploaded to the CCAD servers using the NHS network. CCAD show the data to the programme with benchmarks added, that is showing how well the programme is doing compare to all the others in NACR. They also take off any personal identification (name, address etc) and make it available to the York NACR Team for further analysis.

Step 3. The York team take the NACR data and combine it with other sources of information, for example the Department of Health’s Hospital Episode Statistics to write reports.



All of the CR programmes were sent the NACR software in June 2005 (with the exception of North East Lincolnshire which had not started then but has since been sent the software).

Some of the CR programmes have been slow to install the database, the most common reason

being that NHS Trust IT departments have been tardy in installing the software and opening the firewalls to allow for online connection. Thus some of the data being submitted is less than a year old and this has delayed quantitative evaluation of the data.

The BHF CRCs have been providing support and advice to centres and have contacted those sites that are not sending data. This has been very successful and currently 33 of the 36 programmes are sending data. Three centres have only just recruited staff and have not installed the software yet. Therefore the majority are collecting the data and those that are not will be shortly. To date we have received data on nearly 3000 patients.

Baseline data

For this year the analysis concentrates on demographic and baseline data, there is as yet insufficient outcome data to look at outcomes in a reliable way.

Who is attending the cardiac rehabilitation programmes in the BIG CR scheme?

Three cardiac conditions accounted for 91% of all referrals to Lottery sites, they were heart attack (MI) 46%, angioplasty (PCI) 25% and bypass surgery (CABG) 20%. Table 2 (see Appendix G) in the appendices shows the referral rates to BIG CR programmes compared with those for the other programmes in the National Audit. Almost twice as many angioplasty patients attended BIG CR programmes compared with the other programmes (25% vs. 13%) suggesting that the aim of improving the uptake in one of the less commonly referred diagnoses of patients attending is being achieved. Table 3 (see Appendix G) shows that more patients attending the BIG CR programmes had previous experience of angina (27% vs. 17%) and of myocardial infarction (21% vs. 17%).

Ages of those taking part ranged from 24 to 106 with the mean age of 72 for BIG patients and 70 for women. Given the ages of patients it was surprising that men outnumbered women by 2 to 1, by the age of 70 women have caught up with men in the incidence of heart disease (Table 4, Appendix G). There was no difference in the percentage of women or in the marital status of those attending BIG or other programmes. Seventy four percent of those who attended BIG CR programmes were married, 5% were single and 12% widowed (Table 5, Appendix G). Just over half (59%) were retired, with 16% in employment full time, 4% worked part time, 6% were self employed either part or full time, 2% were looking after the

family home, and 1% were unemployed and again this was similar to those attending all other cardiac rehabilitation programmes (Table 6, Appendix G).

Ethnicity

In the BIG Lottery-funded schemes more people classified themselves in other ethnic groups as opposed to white British which was a higher proportion than the rest of the CR programmes of the UK (9% vs 2%); this may indicate that the BIG CR programme has succeeded in widening the ethnic mix of people attending (Table 7, Appendix G).

Why did they not come?

The number of eligible patients who did not attend because they were unknown to the programme and therefore not invited must remain unknown. However some of the programmes did gather data on those who either declined an invitation or whom it was felt could not be invited. The reason was given for 356 patients; the most common reported was 'patient not interested' (60%). The next most common reason was 'mental incapacity' (24%) in most cases due to cognitive problems such as dementia. 'Physical incapacity' was the next most common reason (10%), followed by 'too far to travel' (3%) and 'already returned to work' (2%). Some early modelling on the potential predictors of not attending showed advanced age to be the best predictor.

What was their lifestyle?

The body mass index of patients ranged from 17 to 49 (sd 5) with a mean of 27, the recommended ideal is 18 – 25: 25 or more is classified as being overweight with 30 and greater obese. Only 15% had smoked in the previous four weeks, but less than a quarter took the recommended amount of exercise which is 30 minutes three or more times per week.

What other health problems did they have?

The most common comorbidity was hypertension with 43% reporting it, this was followed by 42% with angina, 21% with arthritis, and 18% with diabetes and 16% with chronic back problems (Table 8, Appendix G).

Anxiety, depression and Health Related Quality of Life

A third of the patients attending were anxious on entering the programme. Of these, 14% met the criteria for clinical anxiety and 22% were depressed, of whom 8% scored as clinically depressed on the Hospital Anxiety and Depression (Table 9, Appendix G). By the end of the programmes 28% were anxious and 19% depressed with 11% and 8% respectively scoring at the clinical level (Tables 10, 11, 12, 13, Appendix G). Because of the relatively low numbers at this point we have not compared this with national results but the lack of improvement is disappointing.

The scores on the Dartmouth Coop Quality of Life Charts showed highly statistically significant improvements the greatest improvements being in physical fitness, daily activities and social activities (Tables 14, 15, Appendix G). Once again until we have a larger more representative sample we have not compared these results to all of the UK CR programmes.

Funding

As might be expected in the BIG CR programmes a greater number relied to some extent on charitable monies (Table 16, Appendix G), but encouragingly the mean budget per patient was £200 more (£702 vs. £525) (Table 17, Appendix G).

Quality issues

The wait time between BIG CR programmes and the other programmes was significantly different (13 days vs. 33 days) (Table 18, Appendix G). The multidisciplinary staffing levels were similar, both had a median of three professions engaged, BIG programmes were more likely to have administrative support and access to a psychologist (Tables 19, 20, Appendix G).

What did patients do when they came to the BIG CR programmes?

All patients took part in some kind of exercise or activity programme, the most common being a group exercise programme. This was half as likely in BIG CR programmes (42% vs. 84%). An initial examination of other differences showed BIG programmes to have quite different profile of activities, something that will be investigated further (Table 21, Appendix G).

NSF CHD Targets

There were fewer patients taking an ACE inhibitor and a trend for fewer patients to be taking a beta-blocker before and after rehabilitation in the BIG CR programmes, this most probably represented a difference in the patient mix (Tables 22, 23, Appendix G). Patients were similarly less likely to be taking adequate exercise before and slightly less likely after rehabilitation in the BIG programmes (Tables 24, 25, Appendix G). Significantly more were smokers (17% vs. 13%) a difference that had disappeared by the end of the programme. Table 26 (Appendix G) shows that BIG programmes produced similar changes in the targets set in the NSF-CHD to those in the other programmes of the UK. Changes in anxiety and depression were also the same between BIG and the other programmes, as has been noted changes that were disappointingly small (Tables 12, 13, Appendix G).

6. Conclusion and interim recommendations

The second year of the evaluation has been conducted as planned with the exception of delays in the submission of audit data for just three programmes but these are currently being addressed. Thirty three of the 36 programmes are sending audit data and we have so far collected data on more than nearly 3000 patients. Minor revisions to the number of rounds of the survey carried out and arrangements for piloting the interviews have also been agreed with the Steering Group. Response rates to the rolling survey have been good.

The second year of the evaluation has been mainly spent continuing the rolling survey, implementing the NACR database, carrying out analysis for selecting the case study sites, and preparing applications for research governance approval for the case study phase of the evaluation. There are therefore only limited results to report at this stage of the evaluation.

The main findings of the evaluation so far are (including the first year's work):

- Textual analysis of the applications revealed a huge range of aspirations, aims and methods and many appeared to have little relation to the support being applied for.
- A significant number of programmes wished to change their aims when they were required to quantify exactly what they would achieve, usually because they were aware that their initial claims were overly optimistic. When asked to provide concrete aims many of the aspirations mentioned in the applications, for example to recruit more people from disadvantaged groups, were not selected.

- The great majority of aims revolved around increasing access and uptake, very few were about directly improving the quality of an existing rehabilitation programme without increasing access and uptake.
- In many cases the strategy was to move the programme closer to the patient through home visits, satellite clinics and programmes, phone calls, provision in local fitness centres or home based programmes.
- Another common strategy was to link to other facilities in the community (e.g., walking for health) to be able to offer patients an improved ‘menu’ of opportunities.
- Only three aims were to improve access for ethnic minorities, this was surprising given the well know disparity of uptake. The quantitative data is currently reflecting this disparity with 71% of attendees being white British and 5% Indian. Of approximately 3000 patient records entered so far, only 1% has been of Pakistani origin. We will examine the progress in the improvement of ethnic uptake in the qualitative and quantitative studies.
- Programmes got off to a slow start mainly due to delays or problems with staff recruitment (reported by 38% of programmes). After recovering, other staff issues have emerged, such as sickness and holidays, as factors affecting successful achievement of the aims of the programmes. We will investigate this further in the case studies.
- The main facilitators of progress reported in the survey were good relationships with existing local NHS bodies and dedicated and hard working staff. This will be investigated further in the case studies.
- Problems were staff recruitment and a wide variety of local difficulties, the main one reported several times was a problem getting referrals to the programme. This may be the result of competition between healthcare sectors or due to poor planning or to poor integration of CR services - possibilities that will be explored further in the qualitative work.
- There have been ongoing problems with installation of the NACR database. Delays have largely been attributed to IT departments and their reluctance to load unfamiliar software. As we undertake more complex analysis we will be looking at data completeness to ensure this is satisfactory.

Acknowledgements

Julie Ferguson (Research Assistant, Health Sciences, University of York) assisted JH and CP with extracting data from the application forms using the proforma. The authors would like to thank members of the evaluation's local steering group for all their help and advice over the first and second years of the research.

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Appendices

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- A. Members of the evaluation's local and national steering groups
- B. Study information sheet (sent to project leads)
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- D. Sample survey questionnaire (first survey)
- E. Evaluation timetable
- F. List of programmes funded under the Big Lottery Fund Cardiac Rehabilitation Programme
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A. Members of the evaluation's local and national steering groups

Diane Card	Cardiac Rehabilitation Coordinator, BHF
Stephanie Dilnot	Cardiac Rehabilitation Coordinator, BHF
Shirley Hall	Cardiac Rehabilitation Manager, BHF
Janet Heaton	Research Fellow, SPRU, University of York
Bob Lewin	PI, BHF Care & Education Research Group, Health Sciences, University of York
Stefanie Lillie	Cardiac Rehabilitation Coordinator, BHF
Corinna Petre	Project administrator, BHF Care & Education Research Group, Health Sciences, University of York
Stacy Sharman	Evaluation and Research Analyst, Big Lottery Fund
Elaine Tanner	Cardiac Rehabilitation Coordinator, BHF
Clare Valentine	Programme representative
Robin Hurst	Patient representative
Martin Winterbourne	Patient representative

Other contributors to one or more meetings

Karen Greenwood	Programme representative
Steve Murray	Programme representative
Jackie Sutcliffe	Former Cardiac Rehabilitation Co-ordinator, BHF
Veronica Morton	Research Fellow, BHF Care & Education Research Group, Health Sciences, University of York

B. Study information sheet (sent to project leads)

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Evaluation of the Big Lottery Fund Cardiac Rehabilitation Programme

Information sheet for projects

Overview

The Big Lottery Fund (BIG Lottery) has funded the Department of Health Sciences and Social Policy Research Unit (SPRU) at the University of York to undertake an evaluation of cardiac rehabilitation schemes based in primary health care in England. The schemes were set up through the British Heart Foundation (BHF) with funding from the Big Lottery Fund. This project is linked to but separate from the National Audit of Cardiac Rehabilitation also being carried out by the University of York.

The Cardiac Rehabilitation Programme has two main aims:

- to increase the uptake of cardiac rehabilitation services, particularly among groups of people who currently make low use of existing services and
- to drive sustainable improvements in the quality of services on offer to patients.

As part of its commitment to evaluate this and other programmes it funds, the Big Lottery Fund has funded the research to examine to what extent the programme has met its overall aims and how far individual schemes have achieved their goals. This includes examination of how effective services have been at improving access, involving patients, impacting on outcomes, improving quality of life and addressing inequalities.

Elements of the evaluation and timescale

The evaluation will commence in July 2005 and end in June 2008. There are three main elements to the evaluation:

- **Survey:** a brief, ongoing, survey of all the projects will be carried out. The purpose of this is to assess progress in achieving the aims, agreed with projects at the outset of the programme. The survey will commence in 2006 and will be carried out periodically by email through to 2008.

- **Case studies:** the results of the survey will be used to select eight case study sites for more detailed research. This work will involve interviews with staff and service users and their relatives, to be carried out in person and over the telephone. The purpose of this aspect of the evaluation is to identify and explore the factors that have helped and/or hindered progress, from both staff and users' perspectives.
- **Audit:** quantitative analysis of audit data kept by the projects will be examined in conjunction with the data from the other elements of the evaluation, to help examine the effectiveness of projects in improving access to and uptake of cardiac rehabilitation programmes for different groups of people.

Contacts

The evaluation is led by Professor Bob Lewin in the Department of Health Sciences. Other members of the research team are Corinna Petre (British Heart Foundation Care and Education Research Group, Department of Health Sciences) and Janet Heaton (Social Policy Research Unit).

For further information about the evaluation, please contact one of the researchers involved:

Name	Email/ telephone	Address/website
Bob Lewin or Jessica Hemingway	rjpl1@york.ac.uk 01904-321393 jah14@york.ac.uk 01904-321327	British Heart Foundation (BHF) Care and Education Research Group, 2nd Floor Research, Department of Health Sciences, Seebohm Rowntree Building, University of York, York. YO10 5DG. Tel: 01904 321336. Fax: 01904 321383. http://www.york.ac.uk/healthsciences/gsp/themes/cardiarehab/BHFcontact.htm
Corinna Petre	cbp1@york.ac.uk 01904-321336	
Janet Heaton	jh35@york.ac.uk 01904-321950	Social Policy Research Unit (SPRU), University of York, York. YO10 5DD. Tel: 01904 321950. Fax: 01904 321956. http://www.york.ac.uk/inst/spru/

C. Proforma for data extraction from application form

Evaluation of Cardiac Rehabilitation programme ~ Data extraction sheet

**To be copied to a spreadsheet for comparative analysis to help construct descriptive matrix.*

*Project ID	
--------------------	--

CONTACT DETAILS (CF BL FORM)

Lead organization	
*N organizations involved in project (state names of additional orgs)	
Lead contact name	
Lead contact job title	
Lead contact address and postcode	
Lead contact telephone	
Lead contact email	
BHF CRC contact/rep	
BL/BHF own award reference	

AWARD DETAILS (CF BL FORM)

Title of project	
Amount awarded	
Start date	
End date	

EXISTING CR PROVISION (CF PROTOCOL)

Features of existing CR provision	
*Measures of existing usage/performance (with any dates)	
*Main limitations/problems with existing CR provision	

PROPOSED CR PROVISION (CF FORM; PROTOCOL)

*Aims in application (as stated in application)	
*Evaluation aims agreed with CRCs (max 3)	
*Target group(s) – socio-demographics cf 5.4 – 5.7 + rural + carers/family	
*Target group(s) – medical	
*Number of new staff to be appointed/funded through award	
*Type/grade/time of staff to be appointed/funded through award	
*How/where CR to be provided (through Lottery award)	
*Award to be used to (NB say if brand new provision or extension of existing provision)	
*Measures of expected usage/performance cf 2.4 & 5.3	
*Inclu Road to Recovery/Papworth model?	
*Inclu The Heart Manual?	

STAFF INVOLVED WITH PROPOSED CR PROVISION

--

DOCUMENTS SUBMITTED WITH APPLICATION (exclu BL form, protocol, refs, EO policies)

--

D. Sample survey questionnaire (first round)

EVALUATION OF BIG LOTTERY FUND CARDIAC REHABILITATION PROGRAMME

Dear

Progress with aims, barriers and facilitators

As you know every 3 months we are going to ask you to fill in a very brief questionnaire. All you need to do is fill in the blanks in your statement of aims and under each note down anything that is hindering you and anything that is helping you.

Your reply will only be seen by the researchers at the University of York. The results of the survey will only ever be presented in such a way that it is impossible to identify any centre. No other information will be divulged to the Lottery or the BHF or any of their employees. If in preparing the final report we want to highlight the work of a particular centre as an example of good or innovative practice we would write to that centre for their approval. This level of anonymity is to enable you to be absolutely honest with no fear of reprisals or embarrassment: essential if the results are to be accurate and therefore capable of helping improve future award schemes.

On this occasion you will receive the questionnaire by both email and by post, the final question asks how you would like to be contacted in the future.

Please return the survey, within two weeks of receipt, to Janet Heaton via email (jh35@york.ac.uk) or post (Janet Heaton, Research Fellow, Social Policy Research Unit (SPRU), University of York, York. YO10 5DD).

If you have any queries about the survey or the evaluation please contact Janet Heaton (see above, or tel: 01904 321950), or Corinna Petre (cbp1@york.ac.uk or tel 01904 321336).

WE KNOW YOU ARE ALL VERY BUSY - THANKS FOR YOUR HELP

Best wishes,

Janet Heaton

SURVEY POINT: JANUARY 2006

CONFIDENTIAL

Name of project:

Name of contact:

AIM 1: So far we have ___ patients using a [INDIVIDUALISED DETAIL ADDED] CR Programme

Our progress on Aim 1 is (please mark one box):

On target

Ahead of target

Behind target

A) Things that have helped are:

B) Things that have hindered are:

AIM 2: To date we have enrolled ___ patients on a [INDIVIDUALISED DETAIL ADDED] programme

Our progress on Aim 2 is (please mark one box):

On target

Ahead of target

Behind target

A) Things that have helped are:

B) Things that have hindered are:

AIM 3: To date we have ___ patients using the [INDIVIDUALISED DETAIL ADDED] CR Service

Our progress on Aim 3 is (please mark one box):

On target

Ahead of target

Behind target

A) Things that have helped are:

B) Things that have hindered are:

Please send future questionnaires by email or by post

Thank you

Project ID:

E. Evaluation timetable

Tasks 2005 - 2006	Jy	Au	Se	Oc	No	De	Ja	Fe	Ma	Ap	Ma	Ju
Programme Description Matrix												
Identify goals & define criteria for success												
Design email questionnaire												
Email survey							1st			2nd		
Email survey analysis of success, facilitators/barriers & rela to Matrix												
Design links with quantitative data												
Start on MREC application												
Local research team mtg												
National Steering Group mtg 1												
Annual report 1												

Tasks 2006 - 2007	Jy	Au	Se	Oc	No	De	Ja	Fe	Ma	Ap	Ma	Ju
Email survey	3rd			4th			5th			6th		
Email survey analysis of success, facilitators/barriers & rela to Matrix												
Define index score of success – 3 groups = highly, moderately and least successful												
Develop interview schedules, information & consent docs												
Identify 2 pilot sites												
LREC application for pilot work												
Pilot work 2 sites												
Select 8 case studies from most & least successful groups												
MREC application for 8 case studies												
R&D application for 8 case studies												
HC application if needed for 8 case studies												
Links w quantitative data												
Local research team mtg												
National Steering Group mtg 2												
Annual report 2												

Tasks 2007 - 2008	Jy	Au	Se	Oc	No	De	Ja	Fe	Ma	Ap	Ma	Ju
Email survey	7th			8th			9th					
Email survey analysis of success, facilitators/barriers & rela to Matrix												
Case study interviews with patients & carers												
Case study interviews with staff												
Case study qualitative data analysis												
Links w quantitative data												
Local research team mtg												
National Steering Group mtg 3												
Final report												
Dissemination												

F. List of programmes funded under the Big Lottery Fund CR

Programme

PCT	Programme title
Adur, Arun and Worthing Teaching PCT	Adur, Arun and Worthing Community Cardiac Rehabilitation Project
Barnet PCT	Mobile Outreach Service for Provision of Cardiac Rehabilitation to Barnet's local communities
Blackburn with Darwen PCT	Be Heart Smart
Blackwater Valley and Hart PCT	Expansion of BVHPCT and FPH Cardiac Rehabilitation Services
Bristol South and West PCT	BHF Cardiac Rehabilitation Project
Camden PCT	Empowering Patients to Optimise Attendance, Recovery and Secondary Prevention after Coronary Events
Central Cornwall PCT	Capture Cornwall
Central Suffolk PCT	Suffolk Cardiac Rehabilitation Programme
Dartford, Gravesham and Swanley PCT	Heart of the Community – Dartford, Gravesham & Swanley Community Cardiac Rehabilitation Programme
Leicestershire and South Northants PCT	Community Cardiac Rehabilitation: Improving services, access and patient choice in South Northants
East Cambridgeshire and Fenland PCT	Healing Hearts in Fenland
Eastern Birmingham PCT	Can I take your order? The facilitation of menu-driven cardiac rehabilitation service in primary care
Eastern Cheshire PCT	Comprehensive Multidisciplinary Cardiac Rehabilitation Services in Eastern Cheshire
Eastern Wakefield PCT	Cardiac Rehabilitation Programme
Ellesmere Port and Neston PCT	Restart with a Heart: Ellesmere Port's joint phase 3 and phase 4 Cardiac Rehabilitation Service
Exeter PCT	TLC: Training, Learning and Co-ordination. An integrated programme to support patients in Exeter
Gateshead PCT	Gateshead expansion of cardiac rehabilitation services for the ageing and less able population
Gedling PCT (Queen's Medical Centre)	Positive moves – cardiac rehabilitation in the community
Harrow PCT	Tackling the Challenges of Cardiac Rehabilitation using the Menu based Flexi Heart Plan
Herefordshire PCT	Cardiac Rehabilitation Herefordshire
High Peak and Dales PCT	'Filling the gaps' The further development of cardiac rehabilitation services in North Derbyshire
Hillingdon PCT	The Hillingdon community HEART cardiac rehabilitation programme
Lincolnshire PCT	North Lincolnshire PCT Community Based Cardiac Rehabilitation Initiative
North & East Cornwall PCT	North and East Cornwall extending options in Cardiac Rehabilitation

PCT	Programme title
North East Lincolnshire PCT	North East Lincolnshire PCT Cardiac Rehabilitation Programme
North Norfolk PCT	Healthy Living in Central Norfolk following Angioplasty
Northumberland PCT	Reaching into Rural Rehab – Building Northumberland's Cardiac Rehabilitation Programme
Salford PCT	Cardiac Rehabilitation Menu and Community Exercise Group Project
Scarborough, Whitby and Ryedale PCT	Community Cardiac Rehabilitation Programme
Somerset Coast PCT	West Somerset Cardiac Rehabilitation Patient Pathway Programme
Southampton City PCT	'Active Hearts' – Community Cardiac Event Recovery programme
South Sefton PCT	Coronary Revascularisation Home-based Intervention Service
Southwark PCT	The Camberwell and Peckham Rehabilitation Initiative - CAPRI
Western Sussex PCT	Creating Choice in Cardiac Rehabilitation
Wolverhampton City PCT	Locality based cardiac rehabilitation: responding to patients needs
Yorkshire Wolds and Coast PCT	Regional Exercise and Health Assisting Benefits Programme

G. TABLES

Table 1: Self-assessed progress with aims at rounds 1-4 of rolling survey

	Behind target	On target	Ahead target
First survey: Jan/Feb 2006 (total aims = 57)	37	13	7
Second survey: April 2006 (total aims = 55)	23	23	9
Third survey: July 2006 (total aims = 74)	36	27	8
Fourth survey: Oct 2006 (total aims = 65)	30	26	9

Table 2. Reasons for referral to CR as a percentage of all referrals in Big Lottery sites and the other CR sites of the UK

Reason for referral to CR	% of cases BL	% other CR
Myocardial infarction	46	53
Bypass surgery	20	14
Angioplasty	25	13
Other	9	20

(N= 4518, N=34418)

Table 3. Percentage of patients with previous cardiac events in the Big Lottery programmes and in the other CR programmes of the UK

Previous Event	% BIG sites	% rest CR
Angina	27	17
Myocardial infarction	21	17
Unknown	3	6
Angioplasty	6	7
Other	4	5
Bypass surgery	5	5
Other surgery	1	2
Heart failure	2	2
Cardiac arrest	2	2
Acute coronary syndrome	2	2
Pacemaker	2	1
Transplant	0	<1
LV assist device	<1	<1
ICD	<1	<1
Congenital heart	<1	<1

(N=3505, N=20747)

Table 4. Age and gender of patients attending CR in the Big Lottery programmes and the other programmes of the UK

Diagnostic group	% males	Mean age male	% female	female mean age
Big lottery patients	72	65	28	70
Other rehab programmes	71	65	29	70

Table 5. Marital status of patients in the Big Lottery programmes and in the other CR programmes of the UK

Status	% Big Lottery	% Other CR programmes of the UK
Married	74	74
Widowed	12	12
Single	5	6
Permanent partnership	4	4
Divorced	5	4

(N=3024, N=15774)

Table 6. Employment status of patients in the Big Lottery programmes and in the other CR programmes of the UK

Employment status	% Big Lottery	% other CR
Retired	59	58
Employed - Full time	16	18
Temporarily sick or injured	6	7
Permanently sick/disabled	6	5
Employed - part time	4	4
Self-employed - full time	4	4
Looking after family/home	2	2
Self-employed - part time	2	1
Unemployed looking for work	1	1
Government training scheme	0	<1
Student	0	<1

(N=2146, N=13206)

Table 7. Ethnicity of those in the Big Lottery programmes and in the other CR programmes of the UK

Ethnicity	% BL	% other CR
White (British)	86	86
White (Irish)	1	1
White (Other)	1	1
Mixed White/Black Caribbean	<1	<1
Mixed White/Black African	<1	<1
Mixed Other	<1	<1
Indian	6	1
Pakistani	1	1
Bangladeshi	<1	<1
Other Asian	1	<1
Black Caribbean	1	<1
Black African	<1	<1
Black Other	<1	<1
Chinese	<1	<1
Other ethnic group	<1	<1
Not stated	2	8

(N=2779, N=18803)

NB: One programme had to be excluded as all returns were unknown, to include it may have distorted the results

Table 8. Percentage of patients undertaking cardiac rehabilitation who have various co-morbidities in the Big Lottery programmes and the other CR programmes of the UK

Co-morbidity	% BL	% other CR
Hypertension	43	40
Angina	42	35
Arthritis	21	19
Diabetes	18	19
Chronic back	16	13
Asthma	11	10
Stroke	6	6
Claudication	7	7
Cancer	6	6
Rheumatism	6	5
Osteoporosis	3	3
Emphysema	2	2
Other complaints	22	28

(N= 3071, N=14263)

Table 9. Percentage of patients in the Big Lottery programmes scoring above or below the cut-off point for clinical anxiety and depression on entering CR

Scores	Not clinically significant %	Borderline clinical significance %	Clinically significant %
Anxiety	67	19	14
Depression	78	14	8

(N=790)

Table 10. Percentage of patients in the Big Lottery programmes scoring above or below the cut-off point for clinical anxiety and depression after CR

Scores	Not clinically significant %	Borderline clinical significance %	Clinically significant %
Anxiety	72	17	11
Depression	81	11	8

(N= 790)

Table 11. Percentage of patients in the Big Lottery programmes scoring borderline or above on anxiety and depression before and after CR

Scores	Distressed before %	Distressed after %	significance %
Anxiety	33	28	-5
Depression	22	19	-3

(N= 790)

Table 12. The change in the number of patients not anxious or depressed or borderline or clinically anxious or depressed before and after CR in Big Lottery programmes

Scores	Not %	Borderline %	Clinically significant %
Anxiety	+5	-2	-3
Depression	+3	-3	0

(N=789)

Table 13. The change in the number of patients not anxious or depressed or borderline or clinically anxious or depressed before and after CR in the other programmes of the UK

Scores	Not %	Borderline %	Clinically significant %
Anxiety	+5	-2	-3
Depression	+3	-2	-1

(N=4054)

Table 14. Percentage of people with a normal and with poor health related quality of life entering the Big Lottery programmes and after completing the programme as measured by the Dartmouth COOP Charts

	Before Normal %	Before poor HRQOL %	After CR Normal %	After CR poor HRQOL %	Significance
Physical fitness	33	67	56	44	<0.001
Daily activities	78	22	88	12	<0.001
Social activities	74	26	87	13	<0.001
Social support	89	11	86	14	<0.001
Pain	73	27	75	25	<0.001
Overall health	61	39	69	31	<0.001
Quality of life	93	7	95	5	<0.001

(N=753)

Table 15. The change in health-related quality of life (HRQOL) scores after CR in patients attending Big Lottery Programmes

Dartmouth COOP Domain	Poor HRQOL Before rehab %	Poor HRQOL After rehab %	Change %	Significance
Physical fitness	67	44	-23	<0.001
Feelings				
Daily activities	22	12	-10	<0.001
Social activities	26	13	-13	<0.001
Social support	11	14	+3	<0.001
Pain	27	25	-2	<0.001
Overall health	39	31	-8	<0.001
Quality of life	7	5	-2	<0.001

(N=762)

Table 16. Percentage of the budget funded by charity in Big Lottery programmes and in the other CR programmes of the UK

	Big Lottery	Rest of CR
% answering the question	63	57
Budget known	41%	31%
% funded by NHS		
0-24%	17	7
25-49%	12	2
50-74%	12	4
75-100%	59	87

Table 17. Budget per patient and cost per patients treated in Big Lottery programmes and the other CR programmes of the UK: April 2005 - March 2006

	BL	Other
Budget per patient		
Mean	702	525
Median	594	419
Cost per patient treated		
Mean	643	534
Median	454	410

Table 18. Median time between the event and referral and the event and starting rehabilitation for MI, PCI and CABG in days

Diagnosis	Median time (days) from the event to referral to a programme BL	Median time (days) from the event to referral to a programme other CR	Median time (days) from the event to the patient starting a rehabilitation programme BL	Median time (days) from the event to the patient starting a rehabilitation programme other CR
Heart Attack (MI)	4	8	8	24
Angioplasty (PCI)	4	2	12	34
Bypass surgery (CABG)	9	8	20	52
All diagnoses	6	4	13	33

Table 19. The mean, median and range in the number of professions per programme in the Big Lottery sites and the other CR programmes of the UK

	Big Lottery	Other programmes
Mean	3	3
Median	3	3
Range	1-6	1-7

Table 20. Percentage of programmes which mentioned each profession as a member of the multi-disciplinary team

Profession	Big Lottery sites %	Other programmes %
Nurse	95	93
Physiotherapist	50	62
Instructor	60	48
Administrator	65	52
Psychologist	15	10
Occupational therapist	20	22
Dietitian	15	21
Doctor	0	1
Advisor	10	11
Healthcare Assistant	0	6
Social worker	0	1

Table 21. Percentage of patients receiving various components of CR Big Lottery sites and the other CR programmes of the UK

Activity	BIG %	Other CR %	Psychosocial	BIG %	Other CR %
Group Exercise Class	42	84	Relaxation training	18	58
Individual programme	5	27	Psychological - group talk	8	40
Home exercise plan	9	35	Individual counsellor	1	4
			OT group sessions	2	17
<i>Lifestyle</i>			OT individual referral	<1	2
Education - written	12	50	Vocational assessment	0	<1
Education - Talks/Video	26	61			
Dietary - group class	10	62	<i>Home based / Other</i>		
Dietary individual	6	19	Home based programmes		
			Angina plan	2	3
			Home visits	8	9

(N=562, N=4448)

Table 22. Percentage of patients meeting the English NSF targets for medication use before CR in the Big Lottery programmes and the other programmes of the UK

Medication	Big Lottery	Other Programmes	Significance
Aspirin/Anti-platelet	96	95	0.054
ACE inhibitor	65	72	<0.001
Beta blocker	76	78	0.022
Statin	95	94	0.079

(N=2954, N=16309)

Table 23. Percentage of patients meeting the English NSF targets for medication use after CR in the Big Lottery programmes and the other programmes of the UK

Medication	Big Lottery	Other Programmes	Significance
Aspirin/Anti-platelet	95	95	0.426
ACE inhibitor	70	75	<0.001
Beta blocker	76	77	<0.001
Statin	96	94	0.131

(N=2954, N=16309)

Table 24. Percentage of patients meeting the English NSF targets before cardiac rehabilitation in the Big Lottery programmes and the other programmes of the UK

	Big Lottery %	Other Programmes %	difference	Significance
BMI BMI<30	72	74	1	0.197
YES to - exercise 5 x30 min sessions per week or more	30	38	8	<0.001
Exercise				<0.001
Often	16	12	1	
Sometimes	25	35	8	
Rarely/Never	60	53	6	
Non-smoker	83	87	4	0.001

(N=789, N=3658)

Table 25. Percentage of patients meeting the English NSF targets after CR in the Big Lottery programmes and the other programmes of the UK

	Big Lottery %	Other Programmes %	difference	Significance
BMI BMI<30	74	75	1	0.621
YES to - exercise 5 x30 min sessions per week or more	51	58	7	<0.001
Exercise				<0.001
Often	28	24	4	
Sometimes	36	50	14	
Rarely/Never	36	26	10	
Non-smoker	90	92	2	0.016

(N=789, N=3658)

Table 26. Percentage of patients meeting the English NSF targets before and after CR at Big Lottery programmes

	Change BL %	Change other CR %	difference	Significance
BMI BMI<30	+2	+1	1	0.328
YES to - exercise 5 x30 min sessions per week or more	+21	+20	1	0.018
Exercise				0.011
Often	+12	+12	0	
Sometimes	+11	+15	4	
Rarely/Never	-24	-27	3	
Non-smoker	+7	+5	2	0.596

(N=789, N=3658)