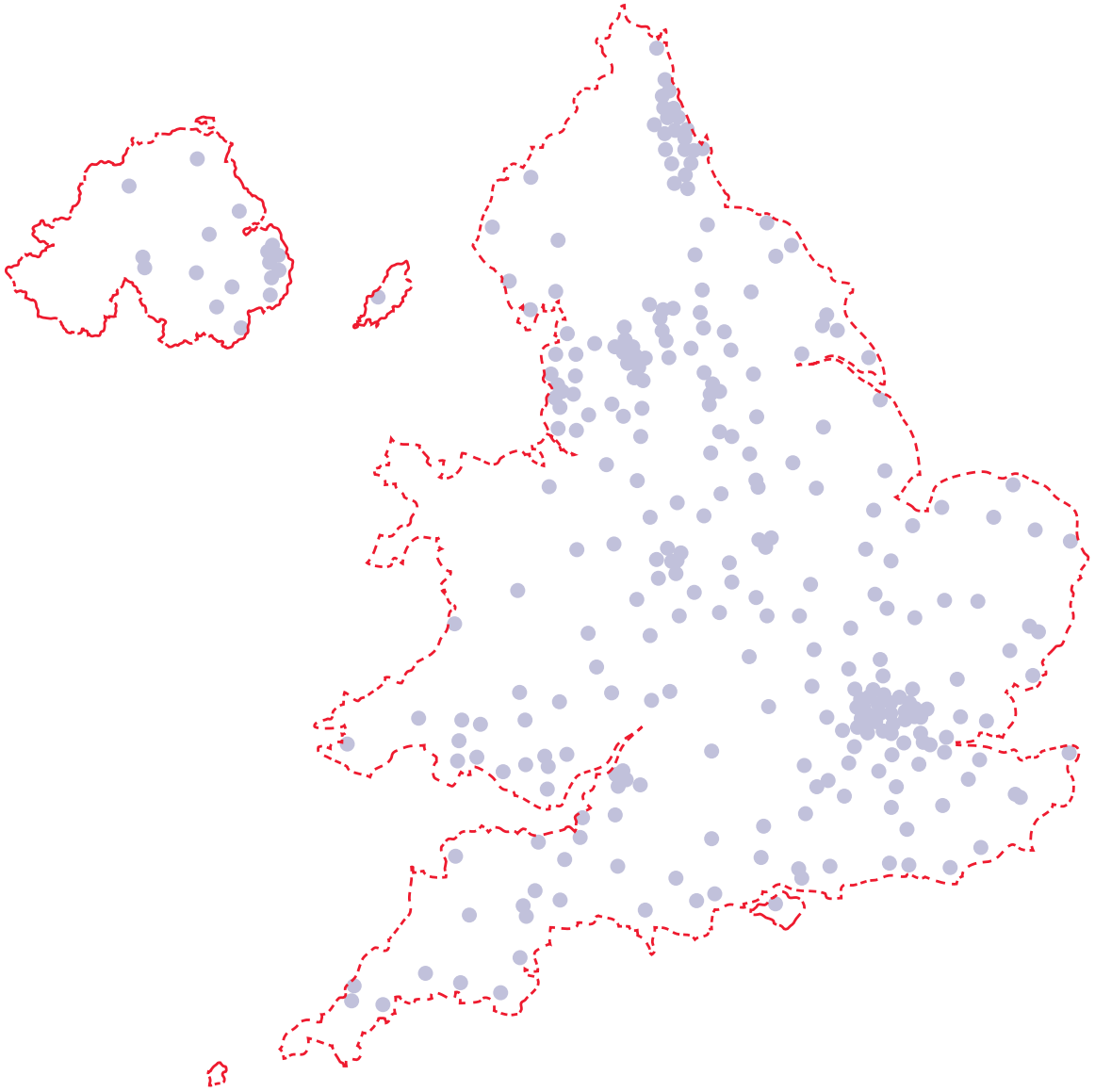
British Heart Foundation

The National Audit of Cardiac Rehabilitation

Annual Statistical Report 2010



BEATING HEART DISEASE TOGETHER

The cover shows the Cardiac Rehabilitation programmes of England, Wales and Northern Ireland.

Foreword

The fourth National Audit of Cardiac Rehabilitation covering England, Wales and Northern Ireland continues to show significant reductions in waiting times for cardiac rehabilitation and an increase in the numbers of people taking part. Overall, 41% of heart patients from the target groups (heart attack, bypass surgery and angioplasty) took part during 2008-2009, building on the 38% that took part during 2007-2008.

The percentage of coronary artery bypass patients taking part rose again to 76% but there was no significant change in the number of patients taking part following angioplasty which remains particularly low at 28%.

The recently published NICE guideline on Chronic Heart Failure (August 2010) recommends cardiac rehabilitation for many of the heart patients that live with heart failure. Disappointingly, there has been no improvement in the numbers of patients with heart failure attending cardiac rehabilitation.

The Department of Health in England has worked with patients, the NHS and other partners in the field to develop a pack to help the NHS commission high quality cardiac rehabilitation services for those who are eligible, including people with heart failure. When it is published this autumn we would encourage commissioners of care to use this support for the benefit of their heart patients.

Heart disease affects an estimated 2.6 million people in the UK. For many heart patients, it is a long term condition. Cardiac rehabilitation is a cost-effective, evidence based approach to managing heart disease. With the Westminster Government focusing on achieving clinically relevant outcomes and improving the patient experience, and health care systems across the UK facing significant financial pressures, we hope that uptake of cardiac rehabilitation will continue to improve in years to come.

Mike Knapton
Associate Medical Director
British Heart Foundation

It is extremely encouraging that more cardiac rehabilitation programmes than ever before across England, Wales and Northern Ireland have contributed to this year's National Audit of Cardiac Rehabilitation (NACR). The audit highlights the increase in average uptake compared to last year - over 5,000 more patients receiving cardiac rehabilitation. And although the results continue to show many areas of service inequity, encouragingly there are indications that uptake amongst ethnic groups was not one of these.

However, uptake needs to be improved in many parts of the UK. The British Association for Cardiac Rehabilitation (BACR) believes that a significant contributor of poor uptake is the lack of understanding amongst key decision makers of the cost-effective and health-gain benefits of cardiac rehabilitation when matched against traditional medical management of cardiovascular disease. Across the country there are leading examples of high uptake. Generally these programmes take a systematic approach to encouraging patients to take part, and have dedicated support and clinical involvement from cardiologists or specialist practitioners in cardiovascular disease.

We are grateful for and commend the continued joint efforts of the British Heart Foundation and The University of York in championing the cause of cardiac rehabilitation. The NACR continues to show the progress that has been made to meet patients' needs from a clinical and quality of life perspective, as well as highlighting what more needs to be done.

Dr John Buckley
President
British Association for Cardiac Rehabilitation

Acknowledgements

The British Heart Foundation funds the NACR and the National Campaign for Cardiac Rehabilitation.

This project would not be possible without the continuing dedication of the staff of the cardiac rehabilitation programmes of the UK or the patients who completed the questionnaire.

This year, rehabilitation staff collected data on more than 90,000 patients, despite the fact that due to inadequate secretarial and administrative resources they often have to use their own time to conduct this audit.

What is Cardiac Rehabilitation?

Cardiac rehabilitation is a structured programme of care to help patients slow or even reverse the progression of coronary disease through changes in lifestyle and appropriate use of medication.

Many people are shaken when they realise that they have a life-threatening illness and an equally important part of rehabilitation is to help patients overcome their fears and become fully active and integrated into society.

Cardiac rehabilitation programmes vary in length, content and the place of delivery. Increasingly, there is a drive to offer patients a choice, for example between home, a community resource such as a leisure centre or in hospital. However it is delivered, a programme should include:

- an assessment of a patient's rehabilitative needs: medical, psychological and social;
- education as to the causes of the illness and those things that can help to ensure that the patient enjoys the best possible health in the future;
- help in setting realistic goals for any required lifestyle change;
- ongoing support and review of these goals.

Cardiac rehabilitation should be seamless, taking a person through from finding out they have a problem to long-term lifestyle changes.

It should be offered to everyone with heart disease. Unfortunately only a small percentage of those people living with heart disease are offered a chance to take part.

Why is it important?

- Analysis of more than 48 randomised trials demonstrates that people who take part have a 26% relative reduction in cardiac mortality over the following five years. In fact, for many cardiac patients, cardiac rehabilitation is one of the most cost-effective treatments available.
- Cardiac rehabilitation can also improve peoples' lives through reducing symptoms, helping them regain the ability to take part in activities they enjoy, be less dependent on others and empowering them to fight back against a frightening disease.

The National Audit of Cardiac Rehabilitation

The National Audit of Cardiac Rehabilitation covers England, Wales and Northern Ireland (Scotland has its own audit). It is funded by the British Heart Foundation and its aims are to:

- show locally and nationally what cardiac rehabilitation services are achieving;
- demonstrate where services are not fully developed;
- identify problems of inequitable provision for particular sections of the population;
- describe the typical benefits that a patient should expect.

Further information about the audit and the methods and measures we use are available at *www.cardiacrehabilitation.org.uk/nacr.*

Summary of main findings: April 2008 to March 2009

Cardiac rehabilitation remains a Cinderella service with patchy distribution and large disparities in staffing and uptake. However, this year there are signs of an improvement in the number of people taking part and for the third year a further reduction in waiting times. Once again there was evidence of a postcode lottery both in the opportunity to attend and in the staffing level of programmes.

Engagement with the audit

Participation in the audit is voluntary and represents a significant investment in time and effort from the rehabilitation staff. This year the number of programmes providing patient level data electronically rose from 200 to 247 and we received the best ever response (99.7%) to the annual paper based survey.

Uptake of CR in patients with MI, PCI and CABG

It is encouraging to report that there was an increase in the percentage of patients who took part in cardiac rehabilitation when compared with last year's Audit. In some parts of the UK the rate of participation by bypass surgery (CABG) patients was as high as 80%. Overall, the cardiac rehabilitation attendance rate was 76%. This is close to the goal set out in the National Service Framework (NSF) for Coronary Heart Disease (CHD), that 85% should attend.

Taking heart attack (MI), angioplasty (PCI) and bypass surgery (CABG) patients together, 56,589 of the 138,258 (41%) patients in England, Northern Ireland and Wales took part compared to 38% in the previous year. However, it remains the case that only around 40% of people who had a heart attack or 28% of people having angioplasty in England, Northern Ireland and Wales took part in a cardiac rehabilitation programme. A figure that is still far too low.

Sadly there has been no significant increase in the number of people with heart failure or angina taking part in cardiac rehabilitation. Only 1% of the patients were referred because of heart failure, 4% for angina. Part of the explanation is that around a quarter of programmes still routinely exclude people with heart failure and nearly a fifth exclude people with an implanted cardiac defibrillator or angina. It is clear that there is a long way to go before cardiac rehabilitation is part of the routine treatment pathways for the majority of cardiac patients.

Waiting times

The time heart attack patients waited to start cardiac rehabilitation has declined in each of the three years of the audit. The greatest reduction occurred in 2006-7 when the British Heart Foundation and the BIG Lottery Fund put £4m into CR to improve access and quality and it is gratifying that since this funding ended there has been continuing improvement.

Equity

Last year we demonstrated that women are under-represented in cardiac rehabilitation. If men and women were taking part in proportion to the case rates for heart attack we would expect there to be 63% men and 37% women. In practice, women made up 32% of referrals but only 26% of participants. If the uptake rate for rehabilitation had been equal, even at the current poor level of uptake, we estimate that another 3,500 women would have benefited from rehabilitation in 2008-9. It is mainly older women who are under-represented in cardiac rehabilitation, women over the age of 80 are less likely to take part than men of the same age.

This year for the first time, we looked at the proportion of people from different ethnic groups who were present as cases in English Hospital Episode Statistics (HES) data and the proportions attending cardiac rehabilitation for heart attack as recorded in the full patient level National Audit of Cardiac Rehabilitation database. Contrary to the commonly reported concern that few people from BME groups attend, there was no evidence of a disparity in uptake across ethnic groups. This finding has to be treated with some caution as not all centres complete the ethnicity data and it may be that those who do are those who are also most careful to ensure that there is equity. However, the two datasets contain almost identical percentages. Obviously it is possible that across England, Wales and Northern Ireland there may be areas where there is a local problem.

It was of interest that, where reason for non-attendance had been recorded, the group reporting the highest number of cases where 'language' was the barrier to attending were the 'white non-British' patients. Anecdotally, programmes told us that this was mainly people from the new European states.

Psychological support

In all national and international guidelines for cardiac rehabilitation it is recognised that an important aspect of a programme is identifying and alleviating the anxiety and depression that often accompanies heart disease. We found that 17% of patients were borderline or clinically depressed and 28% of patients had a similar incidence of anxiety. Despite this, fewer than 3% of patients were recorded as having had individual psychological help or counselling.

There was only a small improvement in these figures three months after starting cardiac rehabilitation and no sign of any further improvement at 12 months.

Staffing

In the previous audit there was an increase in the range of professions within cardiac rehabilitation programmes, although none of the programmes were staffed at the level recommended by the British Association of Cardiac Rehabilitation (BACR).

In this audit period there appears to have been a slight overall decrease in the range of professions available within cardiac rehabilitation programmes. In particular, there appears to have been a very sharp decline in the degree to which programmes have access to psychology services, from 34% in the previous audit to 11% in this. In view of the need for

psychological support reported above this is a worrying trend, 89% of programmes reported having no dedicated psychology time for their patients.

The availability of one group of professionals increased (exercise specialists) from 45% to 56%.

Benefits that accrued over the course of the programmes

Once again the most striking improvement was the effect on physical activity levels, maximum level of effort and health-related quality of life. There was a 20 percentage point increase in the number of people exercising five or more times a week and a 28 percentage point reduction in those who never exercised. The number of people who reported smoking decreased, from 12% to 7%, Quality of Life scores improved significantly. The biggest gains in quality of life were in physical fitness, overall health, social activities and daily activities. Once again, there was no improvement in the percentage of patients who were obese (27%).

Professor Bob Lewin for the NACR Team
BHF Care & Education Research Group
University of York

The report

This report is in two sections.

Section 1 answers some of the more important questions about provision and uptake, quality and the outcomes of CR.

Section 2 presents the methods we use and a selection of the data in greater detail, in a series of tables and figures.

SECTION 1

How many CR programmes are there in England, Northern Ireland and Wales?

The number of CR programmes on the BHF/BACR Register of Cardiac Rehabilitation Programmes increased from 382 to 395.

Some of this increase is due to Phase IV programmes, that are run in sports programmes, joining the register, these are usually for people who have completed an NHS rehabilitation programme.

Method

The NACR staff at York maintain and update the online BHF/BACR National Register of Cardiac Rehabilitation Programmes for the UK. The register contains the addresses and contact details for each programme. Some of these are run by single providers. In Table 1 we have reported the number of providers of CR (excluding Scotland).

Table 1. CR programmes in England, Northern Ireland, Wales in 2008-9

	number of programmes
Combined	342
England	300
N. Ireland	15
Wales	24
Isle of Man and Channel Islands	3

The online register is at

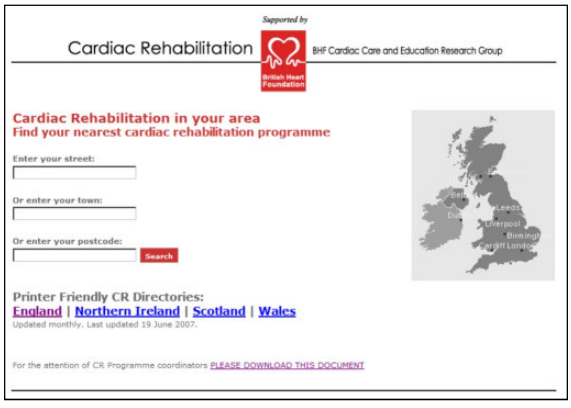
www.cardiac-rehabilitation.net

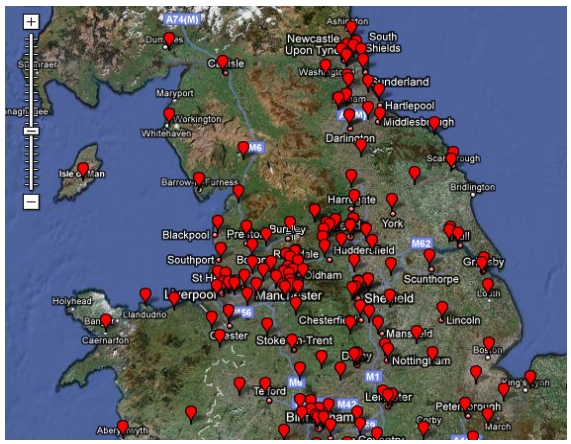
Anyone can use it to search for the four nearest rehabilitation programmes to a postcode, town or street name.

The register can be downloaded as a PDF file.

It is updated regularly from information entered by the CR programmes and the NACR team at York.

On the same site is a searchable Google Map showing where the programmes are located across the UK.





Are the relevant patient groups being referred?

Referral to CR was almost entirely restricted to people in one of three diagnostic groups: those who had sustained a heart attack (MI), elective angioplasty (PCI) or coronary artery bypass surgery (CABG). There has been no improvement in the last three years in the percentage of people in other diagnostic groups who would also benefit.

It was clear that the great majority of those patients being referred are those that would benefit as they had one or more significant risk factors. Around a third of those were clinically obese and had a high systolic BP (>140) or diastolic BP (>90), 17% were smokers, 72% did not meet the national recommendations for exercise and nearly 20% were either borderline or clinically depressed.

Further information A table showing all of the 'reasons for referral' recorded in 2008-9 is presented on page 27 in Section 2.

Table 2. The main diagnostic groups (% of all recorded in NACR)

Diagnosis	*2007-8*	*2008-9*
	%	*%*
MI	49	45
CABG	16	15
PCI	15	15
ACS	5	5
Angina	4	4
Heart Failure	1	1
ICD patients	<1	<1
All others	10	15

(N FOR EACH YEAR RESPECTIVELY = 71,324; 92,750)

Table 3. Risk profile of patients referred to CR as recorded in NACR in 2008-9

	2008-9
	%
% BMI > 30	29
% Systolic BP >140 or Diastolic BP >90	26
% Smoking	17
% <5 episodes moderate exercise for 30 mins per week	72
% Borderline query case of depression	12
% Depressed	8

(N=40,748)

Which patient groups are excluded from CR?

A significant number of programmes exclude people who would benefit.

For example, a quarter of programmes routinely excluded people with heart failure or with a pacemaker and nearly a fifth excluded people with an implanted cardiac defibrillator or angina.

Sometimes this is because of a lack of resources such as staff time and sometimes because local referral protocols exclude these patients.

Why is this important?	Research has shown that people with heart failure, implanted cardiac devices and people with chronic stable angina would also benefit.
Method	We asked all CR programmes which groups they 'don't typically accept' in their programme.
Caveats	It is possible that in a few cases the exclusion may be because programmes cross-refer such patients to another centre.

Table 4. Number and percentage of programmes who reported a policy of not accepting certain diagnoses for phase III rehabilitation

Diagnosis	*N*	*%*
Pacemaker	78	28
Heart failure	67	24
Implanted cardioverter-defibrillator	54	20
Angina	63	23
Acute coronary syndrome	52	19
Cardiac arrest	54	20
Surgical (exc. valve or CABG)	46	17
PCI	26	9
Valve surgery	18	7

Number of phase III programmes answering question: N=277

What percentage of MI, PCI and CABG patients attended CR in England, Northern Ireland and Wales?

There has been a slight but significant improvement in the number of patients taking part in a rehabilitation programme, which rose from 51,232 to 56,589.

Table 5 shows that the greatest increase was in CABG, followed by MI. There was a very slight reduction in the percentage of PCI patients taking part.

Unfortunately, despite this increase, it is still the case that only 41% of the people who had an MI, PCI or CABG in England, Northern Ireland and Wales in 2008-9 took part in CR.

Method	We compared the numbers reported as having rehabilitation with the number of 'cases' reported by the various national statistical agencies (see Methods).
Caveats	Some programmes were unable to break down the patients they had seen by reason for referral, for 5% of programmes previous data was used to estimate the figures and for 4% of programmes these were calculated using the average proportion for that country.
Further information	Section 2 gives further detail of the methods used and presents tables and illustrations mapping the uptake by Strategic Health Authorities in England, in Wales by Cardiac Network and for Northern Ireland as a whole.

Table 5. Percentages of patients in the three main diagnostic groups attending CR in England, Northern Ireland and Wales 2007-8 and 2008-9

Reason for referral	*2007-8 %*	*2008-9 %*	*Improvement % point*
MI	34	39	+5
PCI	30	28	-2
CABG	68	76	+8
Total	38	41	+3

Is the National Service Framework for Coronary Heart Disease goal of 85% attendance for MI, PCI and CABG being met?

The English NSF for CHD (2000) suggested that 85% of patients who have had an MI, PCI or CABG should be invited and would attend CR.

Although the numbers have moved in the right direction, an overall increase of four percentage points, the 85% aim was not achieved for any diagnostic group. However, it is clear that for CABG many areas are getting close to the target.

Table 6 shows what was achieved compared with the previous audit.

Method	We compared the numbers reported as having rehabilitation with the number of 'cases' of MI, PCI or CABG reported in the HES for England.
Caveats	Some programmes were unable to break down the number of patients they had seen by reason for referral; the missing data was estimated using the average case mix.
Further information	Pages 31-37 present tables and maps showing uptake rates and degree of estimated data by Strategic Health Authority in England or Cardiac Network in Wales and for Northern Ireland as a whole.

Table 6. Uptake of CR in England for MI, PCI and CABG patients

	Uptake 2007-8	*Uptake 2008-9*
	%	*%*
MI	35	40
PCI	32	29
CABG	67	76
Total	38	42

Are people from minority ethnic groups under-represented in CR programmes?

It has been suggested that people from ethnic minorities may be under-represented in CR. We used HES data to look at the ethnic profile of people recorded as surviving a heart attack in England and of those recorded in the full patient level NACR database, as Table 7 shows, these were strikingly similar.

Caveats	This finding has to be treated with some caution as not all centres complete the ethnicity data and it may be that those who do are those who are also most careful to ensure that there is equity. These figures are from programmes across England and it remains possible, as has been widely noted, that there is a problem of equity of uptake in some areas.
Further information	Language has often been cited as a barrier to uptake for people from ethnic minorities. The group with the highest proportion citing language barrier for not attending CR was 'White (Other)' at 5%, the other groups cited this less than 1% of the time. It seems, therefore, that language may be a barrier for some new immigrants from European states.

Table 7. Comparison of ethnicity of MI patients, as recorded in HES data and those taking part in CR as recorded in NACR

	Percentage of all MI patients	*Percentage who took part in CR*
White (British)	81.1	82.0
White (Irish)	0.8	2.0
White (Other)	3.0	1.9
Mixed White/Black Caribbean	<0.1	0.1
Mixed White/Black African	<0.1	<0.1
Mixed White/Asian	0.1	0.1
Mixed Other	0.2	<0.1
Indian	2.0	2.0
Pakistani	1.5	1.8
Bangladeshi	0.5	0.2
Other Asian	0.8	1.0
Black Caribbean	0.5	0.4
Black African	0.2	0.2
Black Other	0.1	<0.1
Chinese	0.1	<0.1
Other Ethnic Group	1.0	0.5
Not stated	7.9	7.7

Are women with MI under-represented in CR programmes and do they benefit in the same ways as men?

If men and women were entering rehabilitation in proportion to the case rates for MI we would expect there to be 63% men and 37% women in programmes. Instead we found that women made up 32% of referrals and only 26% of participants (a reduction from 28% last year). If the take-up rate for rehabilitation had been equal, we estimate that another 3,500 women would have benefited from rehabilitation in 2008-9.

After rehabilitation women were very slightly less likely to meet the nationally recommended activity level than men but they had a greater improvement in anxiety and depression. They also made the same, significant, improvements in quality of life.

Why is this important? It has often been suggested that women attend rehabilitation less than would be expected and sometimes it has been asked if they make the same gains.

Further Information The outcomes of rehabilitation that were significantly different by gender are shown in the tables below.

Table 8. Statistically significant differences in demographic measures by gender

Demographics at entry to rehabilitation	*Men*	*Women*
Average age	65	70
Depression % 'borderline' or 'depressed'	18	23
Anxiety % 'borderline' or 'anxiety disorder'	29	41
% BMI >30	28	30
% 5 x 30 min moderate exercise per week	32	20
% smoking	17	16

Table 9. Comparison of outcomes of CR between males and females as recorded in NACR

	Men			*Women*		
	Before %	*After %*	*Change (% point)*	*Before %*	*After %*	*Change (% point)*
% smoking	13	7	-6	13	8	-5
% 5 x 30 min exercise per week*	36	55	+19	24	45	+21
% Normal score HADs Anxiety*	74	79	+5	62	69	+7
% Normal score HADs Depression*	84	88	+4	79	85	+6

*Statistically significant

NB. The large number of cases mean that even slight differences are likely to be statistically significant

How many patients who were referred to CR did not take part and why?

Many patients are not referred to CR. Of those who were referred and entered into the NACR database, 24% did not take part in CR. A quarter of those were recorded as being 'too ill', 'having further investigations' or as 'physically incapacitated'.

Of those who were medically suitable and were referred to a programme the uptake rate was around 80%. There has been little change in these figures over the last three years.

Method This data is recorded in the NACR electronic database.

Caveats The completion rate of this part of the electronic audit is relatively poor, being completed by around 80% of programmes.

Therefore, the data shown here only reflects the views of those who were known to the CR service and were offered rehabilitation in programmes that complete this part of the database.

Table 10. Percentage of patients referred who did not take part

Year	*2007-8*	*2008-9*
Did not take part	*27%*	24%

(N FOR EACH YEAR RESPECTIVELY = 71,324; 92,750)

Table 11. Reasons given for patients not taking part

Reason	*2007-8* *%*	*2008-9* *%*
Patient not interested/refused	33	34
Physical incapacity	15	15
Too ill	5	5
Ongoing investigation	6	5
Not referred	3	1
Local exclusion criteria	3	3
Too far to travel	3	7
Returned to work	3	3
Mental incapacity	2	2
Holidaymaker	1	2
No transport	1	1
Language barrier	<1	<1
Died	5	5
Other	20	17

(N FOR EACH YEAR RESPECTIVELY = 19,369; 17,398)

How long are patients waiting to start CR?

There are very significant wait times for CR. For example, the median delay between MI and rehabilitation starting is three weeks and for PCI over a month.

The wait for post-bypass rehabilitation is more than seven weeks, this is probably because, in some programmes, this is part of the CR protocol.

Encouragingly the wait time has declined significantly over the three years of the audit. The greatest reduction occurred in 2006-7, a year in which the BHF and the BIG Lottery put £4m into CR through a series of grants to programmes to improve access and quality. It is gratifying to see that for MI this improvement has been maintained and even improved on slightly.

Why is this important?	Waiting three weeks to start post-MI rehabilitation is not acceptable. All modern clinical guidelines agree that rehabilitation should start in hospital or as soon after diagnosis as possible.
Method	The NACR electronic database asks for the date of the event leading to rehabilitation, the date of referral to rehabilitation and the date the patient started on their rehabilitation programme.

Table 12. Time from event to referral and from referral to commencing rehabilitation

Year	*2006-7*		*2007-8*		*2008-9*	
	Median time from event to referral (days)	*Median time from event to rehab start (days)*	*Median time from event to referral (days)*	*Median time from event to rehab start (days)*	*Median time from event to referral (days)*	*Median time from event to rehab start (days)*
MI	3	27	3	25	3	21
CABG	9	54	9	54	8	54
PCI	3	33	2	30	1	34
Other	5	39	5	35	5	35
All	4	35	4	33	4	33

How multi-disciplinary are the programmes?

There appears to have been a decrease in the range of professions available within CR programmes.

Clerical and administrative staff remained the same, exercise specialist increased (45% to 56%) but all other disciplines decreased. There appears to have been a very significant reduction in the degree to which programmes have access to psychology services: from 34% in the previous audit to 11% in this.

Thirty nine percent of programmes had no clerical support, taking professional staff away from patients and imposing difficulties in carrying out this audit. 44% had no dietetics input and 89% no dedicated psychology time.

Why is this important?	Cardiac rehabilitation aims to help patients with medical, psychological and social adjustment to illness. Staff running programmes often say that access to psychology and dealing with the psychological problems of their patients is one of their biggest difficulties so it is worrying that access to psychology is diminishing.
Caveats	Although a professional may be reported as 'part of the team', in reality they may have time only to give a talk once every few weeks, rather than deal with patients' individual needs, for example to lose weight or with face-to-face individualised treatment for anxiety and depression.
Further information	A table showing all of the disciplines mentioned in response to the survey is shown on page 28.

Table 13. Percentage of phase III programmes with access to the most commonly reported disciplines

Discipline available	*2007-8 % of programmes*	*2008-9 % of programmes*
Nurse	97	96
Physiotherapist	75	70
Dietician	66	56
Pharmacist	56	50
Exercise specialist	45	56
Occupational therapist	36	34
Psychologist	34	11

What do patients receive in CR programmes?

The common components of CR and the percentage of people recorded as having received them, is shown below. Group based, 'educational' classes remain the predominant method for delivering CR. There is a very low rate of people undertaking evidence based home-based programmes and little in the way of vocational support.

Why is this important?	Patients should be offered a menu of methods for reaching their individually set goals for rehabilitation. They should also be offered a choice of venue. Not all patients like to take part in group-based rehabilitation or want to come back to the hospital. Attendance might be significantly improved if choice were extended.
Method	The NACR data collection asks for a record of the activities each patient takes part in during their rehabilitation programme.
Caveats	In the main it is likely that it is the better resourced programmes that take part in the electronic collection of data, so any bias is likely to be towards presenting better practice than is the norm.

Table 14. What did patients that attended CR receive?

	2007-8	*2008-9*
Type	*%*	*%*
Lifestyle education: written	53	57
Group exercise	60	68
Lifestyle education: talks/video	51	56
Relaxation training	44	41
Dietary: group class	43	46
Home exercise	28	29
Diet: individual	21	23
Psychological: group talk	32	26
Individual exercise	23	22
Home visits	14	16
Other	10	3
Heart manual	7	7
OT group sessions	10	7
Road to Recovery	2	1
Psychological: individual counsellor	3	3
Physiotherapy: individual	3	2
Angina plan	2	1
Other home based programme	1	1
OT individual	1	1
Vocational assessment	1	1

(N FOR EACH YEAR RESPECTIVELY = 22,723; 17,506)

How many programmes offer all four phases of CR?

What are the Phases?	CR has been described as having four phases: Phase I is prior to discharge; Phase II is the period when the patient is at home and waiting to start the 6-12 week programme; Phase III the 6-12 week programme; Phase IV is long term maintenance of health behaviour change.
What did we find?	The great majority of CR programmes offered phase III, around half provide phases I and II, and a third of programmes provided a phase IV programme.
Why is this important?	Some patients do not receive all of the phases and therefore have an incomplete rehabilitation experience.
Method	We asked programmes which phases of CR they provided.

Table 15. Number and (percentage) of CR programmes on the BHF register by phases provided: 2009

	Total number of programmes	*Provide phase I*	*Provide phase II*	*Provide phase III*	*Provide phase IV*
UK	395	181 (46%)	211 (53%)	363 (92%)	121 (31%)

Are the aims for improved health behaviour described in the English NSF for CHD being met?

What are the aims?	In England, the NSF for CHD (2000) set some outcome targets for CR. These recommended that at twelve months at least 50% of people who took part should be: • taking regular physical activity of at least 30 minutes duration on average for five times a week; • not smoking; • have a Body Mass Index (BMI) < 30 kg/m^2. Furthermore, 90% should be taking aspirin, 80% statins and 80% beta-blockers or ACE inhibitors.
What did we find	In relation to activity levels, there was a 19 percentage point increase in the number of people exercising five or more times a week for 30 minutes (to 53%) and a 29 percentage point reduction in those who never take exercise. The number of people who reported smoking decreased from 12% to 7%. 27% of people attending CR had a BMI > 30 and there was no change in this percentage at three or twelve months.
Method	The NACR audit records these variables before cardiac rehabilitation and, where resources allow, at 12 weeks and 12 months after cardiac rehabilitation.
Further information	Full information on the targets is shown in the tables on page 37-39.

Do patients have less anxiety and depression and a better quality of life after taking part in CR?

Patients' quality of life as measured by the Dartmouth Questionnaire improved significantly (the aspects of life which the questionnaire measures are shown below). Only 'social support' showed a reduction, this was most likely because people became less dependent on the help of others. The biggest gains were in physical fitness, overall health, social and daily activities.

Freedom from anxiety and depression are also important aspects of the quality of life for some people with heart disease. Before starting a programme, 29% of patients were borderline or clinically anxious and 17% borderline or clinically depressed. Here there was very little evidence of an improvement in anxiety or depression.

Why is this important?	As part of helping people return to a 'normal' life it is important to tackle the distress that is caused by chronic anxiety or depression. Depression is a risk marker for earlier death, and non-compliance with medication and lifestyle advice.
Further information	Full results are shown in the tables on pages 29-31

Table 16. Dartmouth COOP: Twelve week outcomes: % patients with a Normal Score

	Before *%*	*After* *%*	*Change* *% point*
Physical fitness	42	70	+28
Feelings (emotions)	84	89	+5
Daily activities	86	95	+9
Social activities	83	92	+9
Social support	89	87	-2
Pain	77	83	+6
Overall health	68	79	+11
General quality of life	95	97	+2

Table 17. Hospital Anxiety and Depression Scale (HADS): Twelve week outcomes

	Before *%*	*After* *%*	*Change* *% point*
HADS Anxiety: in Normal Range	71	76	+5
Borderline or Clinically anxious	29	24	-5
HADS Depression: in Normal Range	83	87	+4
Borderline or clinically depressed	17	13	-4

(N=13,319)

Section 2 Methods and results

Methods

The audit consists of two elements:

1) an electronic database collecting data using the NHS Information Centre portal (CCAD);

2) an annual postal survey to collect information on staffing and for those programmes who are not yet linked up to collect patient numbers.

How was the data collected for the annual postal survey?

In England, Northern Ireland, Wales, the Channel Islands and the Isle of Man a questionnaire was sent to the coordinator of every rehabilitation programme on the Cardiac Rehabilitation Register of Programmes. If programmes did not respond, they were reminded again by letter and then by phone and email.

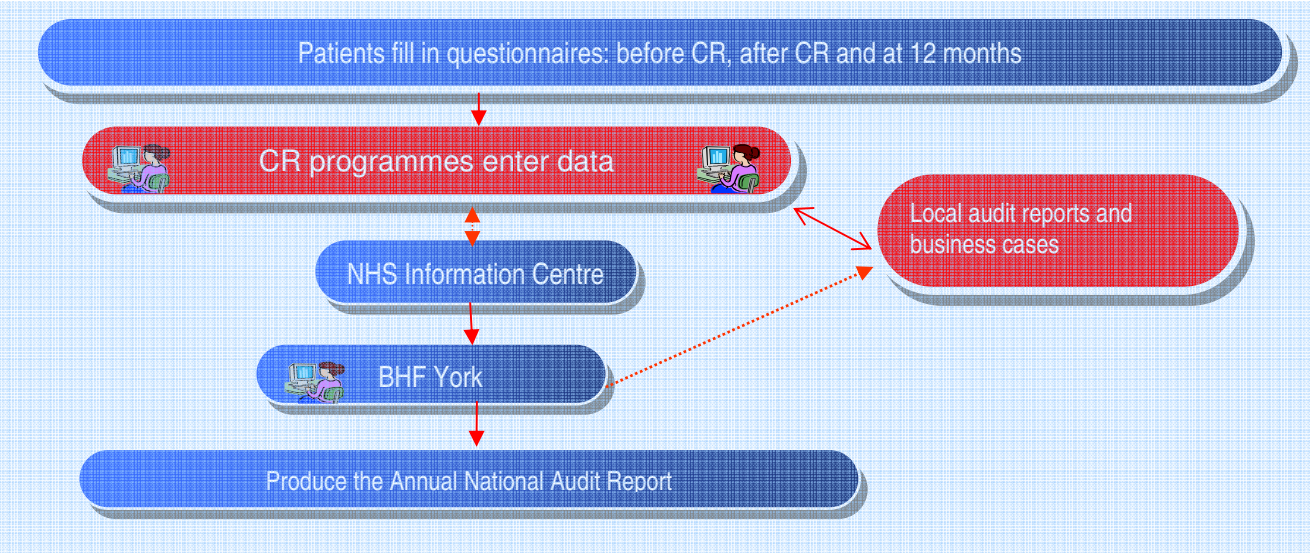
How is the patient level data collected for the electronic database?

Patients complete a questionnaire pack before they start their rehabilitation and, where resources allow, immediately after finishing the programme and 12 months after discharge from rehabilitation.

The staff of the CR programmes enter this data which is then uploaded to the NHS Information Centre. Programmes can also view and download their data for local analysis. Anonymised data is passed to us at York to compile this report.

Who took part?

Two hundred and forty-seven programmes are currently submitting data using the electronic database, around 70% of the cardiac rehabilitation programmes of the UK. This year the postal survey achieved a 99.7% return rate.



Further information about the Audit, how the measures were chosen, the variables collected and their definition, the collection methods and the patient questionnaire pack are available at **www.cardiacrehabilitation.org.uk/nacr**.

Notes on the methodology and analysis

Coping with missing data

Where programmes provided the total number of patients seen but were unable to specify the reason for referral, we estimated the numbers in each of the three main diagnostic categories using the median ratio (diagnosis/total) from programmes that did provide the information in the same country. Where programmes were unable to provide figures but had done so in previous years, the figures were estimated using the previous data after confirming with the centre that their service had not changed.

Finding out how many patients had an acute event

To work out the percentage of people taking part for each condition, the 'denominator', we required to know the number of people who had that condition in 2008-9. The method of doing this in each of the three countries is presented below. Those people who were recorded as having both an MI and a PCI/CABG in the same year were counted as having an MI.

In England

We used the HES (from the NHS Information Centre for Health and Social Care), which contained individual anonymised patient level data (with death on discharge recorded) on those who had an MI, PCI and CABG in any diagnostic category.

In Northern Ireland

The Department of Health, Social Services and Public Safety Northern Ireland Statistics provided aggregated data on those discharged alive after having an MI, PCI and CABG in any diagnostic category.

In Wales

Health Solution Wales provided aggregated data on those discharged alive after having an MI, PCI and CABG in any diagnostic category.

Return rate of the Annual Postal Survey

The survey response rate across the UK was excellent at 99.7%. The table below shows the return rate by country and the number of programmes that were unable to answer the question because they had no way to record numbers.

Table 18. Return rate for the Annual Postal Survey of CR Programmes

	*UK**	*England*	*N. Ireland*	*Wales*
Returned survey or provided data: providers of all phases	341/342 (99.7%)	298/299 (99.7%)	15/15 (100%)	24/24 (100%)
All Phase III providers only	N=306	N=264	N=15	N=24
Returned survey	305 (99.7%)	263 (99.6%)	15 (100%)	24 (100%)
Provided figures	278 (91%)	237 (90%)	15 (100%)	23 (96%)
Estimated figures	12 (5%)	12 (5%)	-	-
Estimated from previous figures	16 (2%)	15 (6%)	-	1 (4%)

**Includes three programmes from the Isle of Man and Channel Islands*

Comparing the results on uptake by geographical region

Where we have broken down uptake by geographical area it would be a mistake to regard these results as a league table accurate to a few percentage points. This is because, while a CR programme is located within a SHA or Health Board boundary, it may take patients from a second SHA or Health Board or the SHA may 'lose them' to a rehabilitation programme just across that border.

It is clear a postcode lottery does exist in the UK. It is also clear that there are very large differences in performance between SHAs and Health Boards and that some are doing much better than others.

For Northern Ireland, because of the small number of programmes in each Health Board, as in previous reports, we have presented the figures for the whole country only and not provided a map.

Finally, there is likely to be a small degree of underestimation of the numbers receiving rehabilitation because 7% of programmes were unable to tell us how many patients they have seen and this was estimated.

Descriptors and demographics of those referred to CR

Table 19. Average age and gender of patients referred to CR in the three largest patient groups as recorded in the NACR

		2006-7		*2007-8*		*2008-9*	
		Average age	*%*	*Average age*	*%*	*Average age*	*%*
Myocardial Infarction	Male	66	68	66	68	65	68
	Female	72	32	73	32	72	32
Bypass surgery	Male	66	80	66	81	66	80
	Female	69	20	69	19	70	20
Angioplasty	Male	63	74	64	74	63	74
	Female	68	26	67	26	67	26
Other	Male	65	64	65	65	64	71
	Female	68	36	68	35	67	29
All	Male	65	70	65	70	65	70
	Female	70	30	71	30	70	30

(N FOR EACH YEAR RESPECTIVELY = 44,307; 71,324; 92,151)

Table 20. Marital status of patients referred to CR as recorded in NACR

Status	*2006-7*	*2007-8*	*2008-9*
	% of cases	*% of cases*	*% of cases*
Married	73	72	71
Widowed	12	12	12
Single	7	7	8
Permanent partnership	4	5	4
Divorced	4	4	5

(N FOR EACH YEAR RESPECTIVELY = 33,289; 53,630; 69,521)

Table 21. Ethnicity of patients referred to CR as recorded in NACR

	2006-7	*2007-8*	*2008-9*
	% of cases	*% of cases*	*% of cases*
White (British)	76	74	77
White (Irish)	1	2	2
White (Other)	2	2	2
Mixed White/Black Caribbean	<1	<1	<1
Mixed White/Black African	<1	<1	<1
Mixed White/Asian	<1	<1	<1
Mixed Other	<1	<1	<1
Indian	2	2	2
Pakistani	3	4	3
Bangladeshi	<1	<1	1
Other Asian	1	1	1
Black Caribbean	<1	<1	<1
Black African	<1	<1	<1
Black Other	<1	<1	<1
Chinese	<1	<1	<1
Other Ethnic Group	1	<1	1
Not stated	14	14	10

(N FOR EACH YEAR RESPECTIVELY = 40,669; 63,388; 80,033)

Table 22. Employment status of patients referred to CR as recorded in NACR

	2006-7	*2007-8*	*2008-9*
	% of cases	*% of cases*	*% of cases*
Employed: full-time	18	19	18
Employed: part-time	4	4	4
Self employed: full-time	4	4	4
Self employed: part-time	2	1	2
Unemployed: looking for work	1	1	2
Government training scheme	<1	<1	<1
Looking after family/home	2	2	2
Retired	58	58	58
Permanently sick/disabled	5	4	4
Temporarily sick or injured	7	6	6
Student	<1	<1	<1
Other reasons for not working	1	1	<1

(N FOR EACH YEAR RESPECTIVELY = 19,101; 28,652; 34,023)

The medical status of those referred to CR

Table 23. Percentage of patients referred to CR with various co-morbidities as recorded in NACR

	2006-7 *% of cases*	*2007-8* *% of cases*	*2008-9* *% of cases*
Angina	36	35	33
Arthritis	21	18	17
Diabetes	20	20	21
Rheumatism	5	4	4
Stroke	7	6	6
Osteoporosis	4	3	3
Chronic bronchitis	4	3	3
Emphysema	3	2	2
Asthma	12	11	11
Claudication	7	6	5
Chronic back	14	11	10
Hypertension	44	45	47
Cancer	7	6	6
Other complaint	31	31	30

(N FOR EACH YEAR RESPECTIVELY = 35,637; 49,171; 60,660)

Table 24. Percentage of patients referred to CR with previous cardiac events as recorded in NACR

	2006-7 *% of cases*	*2007-8* *% of cases*	*2008-9* *% of cases*
Myocardial Infarction	19	18	16
Acute Coronary Syndrome	2	1	1
Bypass surgery	5	5	5
Angioplasty	6	7	7
Cardiac arrest	2	2	2
Angina	17	17	16
Other surgery	2	1	2
Heart failure	2	2	2
Pacemaker	1	1	1
ICD	<1	<1	<1
Congenital Heart	<1	<1	<1
Transplant	<1	<1	<1
LV assist device	<1	<1	<1
Other	4	4	4
Unknown	2	1	2

(N FOR EACH YEAR RESPECTIVELY = 44,307; 71,324; 92,750)

Activity levels and physical fitness (from patients' response to questions)

Table 25. Activity levels in patients before starting CR

In an average 7 day period how often are you moderately active (ie raise a slight sweat, raised heart beat)?	*2006-7 % agreeing*	*2007-8 % agreeing*	*2008-9 % agreeing*
Often	14	17	23
Sometimes	31	30	28
Never	55	53	49

(N FOR EACH YEAR RESPECTIVELY = 15,602; 24,087; 29,619)

Table 26. Activities of daily living in patients before starting CR

During the past week how much difficulty have you had doing your usual activities or tasks, both inside and outside the house, because of your physical and emotional health?	*2006-7 % agreeing*	*2007-8 % agreeing*	*2008-9 % agreeing*
No difficulty at all	31	30	30
A little bit of difficulty	26	28	27
Some difficulty	26	25	26
Much difficulty	11	11	11
Could not do	6	6	6

(N FOR EACH YEAR RESPECTIVELY = 5,209; 14,922; 25,343)

Table 27. Physical fitness in patients before starting CR

During the past week what was the hardest physical activity you could do for at least two minutes?	*2006-7 % agreeing*	*2007-8 % agreeing*	*2008-9 % agreeing*
Very heavy: e.g. run at a fast pace or carry a heavy load upstairs or uphill	5	5	5
Heavy: e.g. jog, slow pace or climb stairs or a hill at moderate pace	14	14	13
Moderate: e.g. walk at medium pace or carry a heavy load on level ground	21	22	22
Light: e.g. walk, medium pace or carry a light load on level ground	31	30	31
Very light: e.g. walk at a slow pace, wash dishes	29	29	29

(N FOR EACH YEAR RESPECTIVELY = 5,169; 14,742; 25,343)

Reasons for referral to CR

Table 28. Reasons for referral to CR by year

	2006-7	*2007-8*	*2008-9*
	% of cases	*% of cases*	*% of cases*
Myocardial Infarction			
Unknown	45	41	33
NSTEMI	-	-	3
STEMI	-	-	2
MI with PCI	4	6	6
MI with recent PCI	2	2	1
Total MI	51	49	45
Acute Coronary Syndrome	6	5	5
Revascularisation			
Angioplasty	13	15	15
Bypass surgery	16	16	15
Other surgery	5	5	4
Transplant	<1	<1	<1
Cardiac arrest	<1	<1	<1
Pacemaker	<1	<1	<1
ICD	<1	<1	<1
LV assist device	<1	<1	<1
Angina	4	3	4
Heart failure	1	1	1
Congenital heart conditions	<1	<1	<1
Other	3	3	5
Unknown	1	1	4
Missing	<1	<1	<1

(N FOR EACH YEAR RESPECTIVELY = 44,307; 71,324; 92,750)

Uptake

Table 29. Numbers and percentages of patients in the three main diagnostic groups attending

Combined data	*No. of cases*	*Receiving CR*	*% uptake*
MI	86,106	33,204	39
PCI	33,761	9,368	28
CABG	18,391	14,017	76
Total	138,258	56,589	41
	Number of programmes able to provide the numbers seen		275/303 (91%)
	Number of programmes where we estimated the number attending		28/303 (9%)

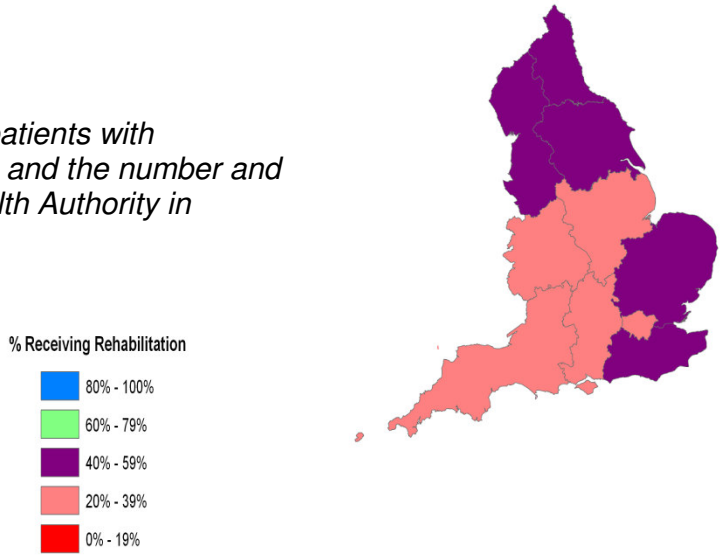
England	*No. of cases*	*Receiving CR*	*% uptake*
MI	76,112	30,128	40
PCI	30,318	8,813	29
CABG	16,740	12,681	76
Total	123,170	51,622	42
	Number of programmes able to provide the numbers seen		237/264 (89%)
	Number of programmes where we estimated the numbers attending		27/264 (11%)

Northern Ireland	*No. of cases*	*Receiving CR*	*% uptake*
MI	3494	1,019	29
PCI	1811	297	16
CABG	519	428	82
Total	5824	1,744	30
	Number of programmes able to provide the numbers seen		15/15 (100%)

Wales	*No. of cases*	*Receiving CR*	*% uptake*
MI	6,500	2,057	32
PCI	1,632	258	16
CABG	1,132	908	80
Total	9,264	3,223	35
	Number of programmes able to provide the numbers seen		23/24 (96%)
	Number of programmes where we estimated the number attending		1/24 (4%)

England

Figure 1. The number and percentage of patients with myocardial infarction (MI) discharged alive and the number and percentage receiving CR by Strategic Health Authority in England



Programmes	*No.*	*Estimated N (%)*	*Cases 2007-8*	*% Uptake 2007-8*	*Cases 2008-9*	*Receiving CR 2008-9*	*% Uptake 2008-9*
North East	20	7 (35)	4,387	46	4,672	2,356	50
North West	39	5 (13)	11,736	40	11,501	5,568	48
Yorkshire and the Humber	30	6 (20)	8,472	33	8,634	3,890	45
East Midlands	21	1 (5)	7,962	31	7,956	2,884	36
West Midlands	26	2 (8)	7,250	33	7,451	2,792	37
East of England	28	2 (7)	7,927	38	8,325	3,294	40
London	33	3 (9)	7,700	31	8,352	2,225	27
South East Coast	21	1 (5)	5,985	35	5,998	2,497	42
South Central	14	0	5,177	24	5,452	1,611	30
South West	32	2 (6)	7,524	34	7,771	3,011	39
TOTAL	264	27 (11)	74,120	35	76,112	30,128	40

Results are likely to be less accurate with greater amounts of estimated data. Be more confident about the results according to the following key.

Key for degree of estimation

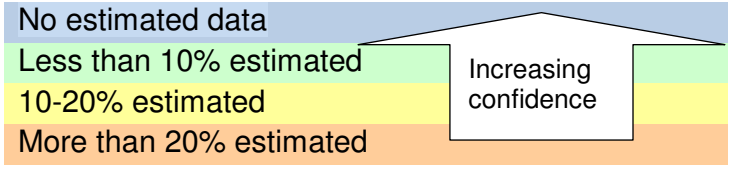
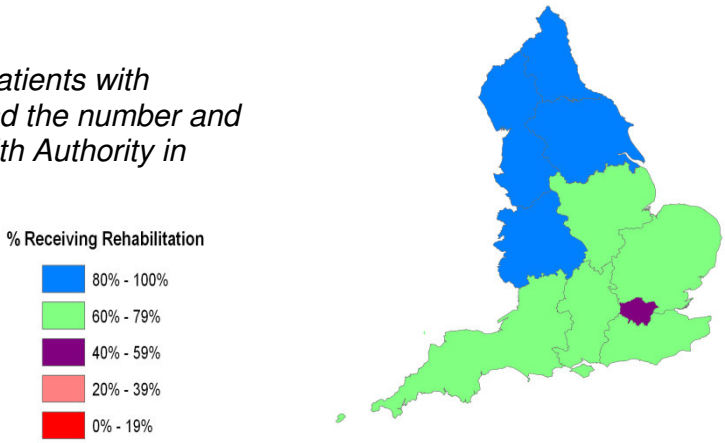


Figure 2. The number and percentage of patients with coronary artery bypass surgery (CABG) and the number and percentage receiving CR by Strategic Health Authority in England



Programmes	*No.*	*Estimated N (%)*	*Cases 2007-8*	*% Uptake 2007-8*	*Cases 2008-9*	*Receiving CR 2008-9*	*% Uptake 2008-9*
North East	20	7 (35)	1,052	88	971	859	88
North West	39	5 (13)	2,694	89	2678	2422	90
Yorkshire and the Humber	30	6 (20)	1,384	65	1450	1182	82
East Midlands	21	1 (5)	1,310	63	1231	802	65
West Midlands	26	2 (8)	1,849	61	1863	1489	80
East of England	28	2 (7)	2,183	62	2020	1574	78
London	33	3 (9)	2,044	59	1969	925	47
South East Coast	21	1 (5)	1,532	67	1468	1140	78
South Central	14	0	1,241	54	1074	780	73
South West	32	2 (6)	2,092	60	2016	1508	75
TOTAL	264	27 (11)	17,381	67	16740	12681	76

Results are likely to be less accurate with greater amounts of estimated data. Be more confident about the results according to the following key.

Key for degree of estimation

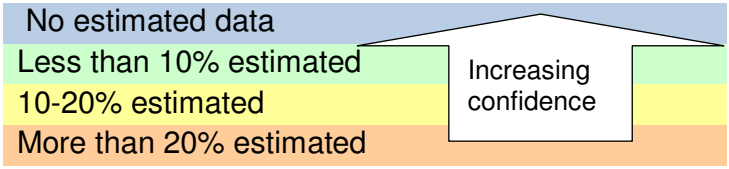
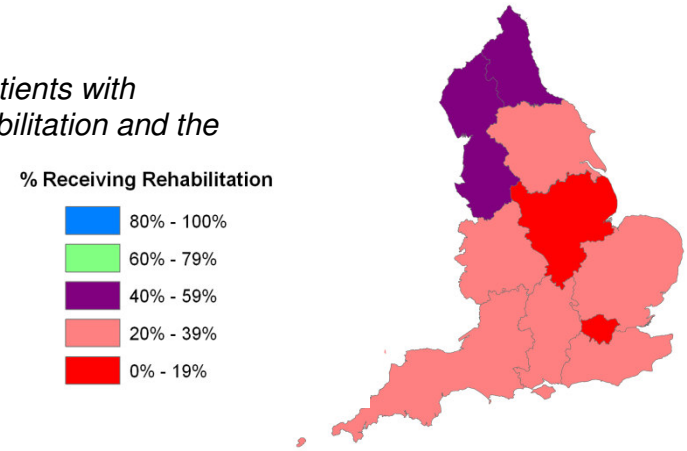


Figure 3 The number and percentage of patients with coronary angioplasty (PCI) eligible for rehabilitation and the number and percentage receiving CR by Strategic Health Authority in England

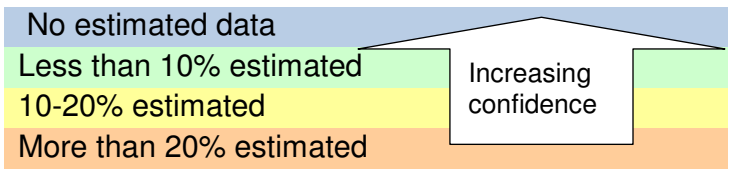


Programmes	*No.*	*Estimated N (%)*	*Cases 2007-8*	*% Uptake 2007-8*	*Cases 2008-9*	*Receiving CR 2008-9*	*% Uptake 2008-9*
North East	20	7 (35)	1,438	51	1750	801	46
North West	39	5 (13)	4,069	51	3979	1726	43
Yorkshire and the Humber	30	6 (20)	2,965	24	2771	567	20
East Midlands	21	1 (5)	2,244	19	2458	359	15
West Midlands	26	2 (8)	2,551	31	2630	945	36
East of England	28	2 (7)	3,341	24	3240	1109	34
London	33	3 (9)	4,954	28	4778	858	18
South East Coast	21	1 (5)	2,640	43	2514	979	39
South Central	14	0	2,556	20	2445	497	20
South West	32	2 (6)	3,216	29	3753	972	26
TOTAL	264	27 (11)	29,974	32	30318	8813	29

Overall the number of patients receiving rehab increased from 25,603 to 30,1028, with the overall percentage rehabbed increasing from 35% to 40%

Results are likely to be less accurate with greater amounts of estimated data. Be more confident about the results according to the following key.

Key for degree of estimation



Northern Ireland: Numbers and percentages of patients by diagnostic groups

Myocardial infarction (MI)

Programmes	*No.*	*Estimated N (%)*	*Cases 2007-8*	*% Uptake 2007-8*	*Cases 2008-9*	*Receiving CR 2008-9*	*% Uptake 2008-9*
Northern Ireland	15	0	3747	31	3494	1019	29

Coronary artery bypass surgery (CABG)

Programmes	*No.*	*Estimated N (%)*	*Cases 2007-8*	*% Uptake 2007-8*	*Cases 2008-9*	*Receiving CR 2008-9*	*% Uptake 2008-9*
Northern Ireland	15	0	520	72	519	428	82

Coronary angioplasty (PCI)

Programmes	*No.*	*Estimated N (%)*	*Cases 2007-8*	*% Uptake 2007-8*	*Cases 2008-9*	*Receiving CR 2008-9*	*% Uptake 2008-9*
Northern Ireland	15	0	1294	17	1811	297	16

Wales

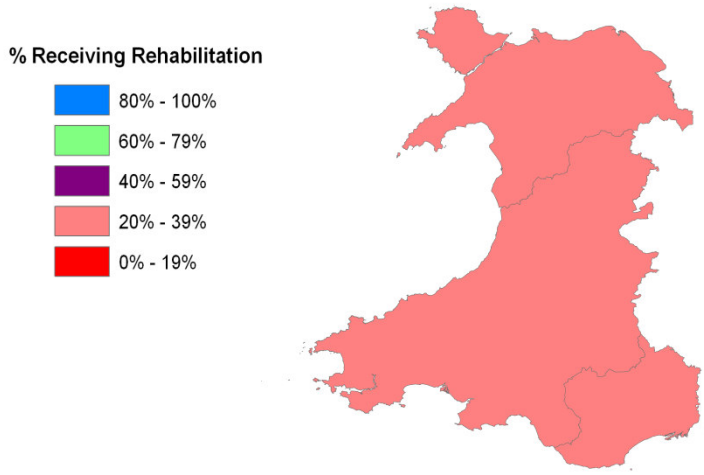


Figure 4. The number and percentage of patients with myocardial infarction (MI) discharged alive and the number and percentage receiving CR by Cardiac Network in Wales

Programmes	*No.*	*Estimated N (%)*	*Cases 2007-8*	*% Uptake 2007-8*	*Cases 2008-9*	*Receiving CR 2008-9*	*% Uptake 2008-9*
Mid and South West Wales	10	1 (10)	1,944	28	2237	878	39
North Wales	5	0	1,697	22	1512	304	20
South East Wales*	9	0	2,032	40	2751	875	32
Total	24	1 (4)	5,673	30	6500	2057	32

* In South East Wales although the percentage receiving CR has decreased since 2007/08, the number of patients actually receiving rehab has increased from 813 to 875. The low percentage was due to a very significant rise in MI reported.

Results are likely to be less accurate with greater amounts of estimated data. Be more confident about the results according to the following key.

Key for degree of estimation

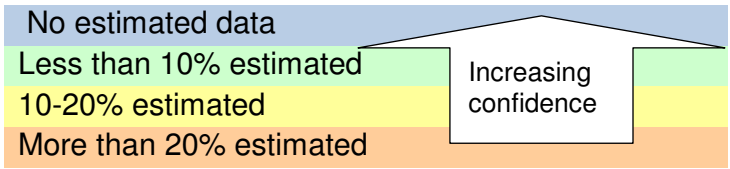
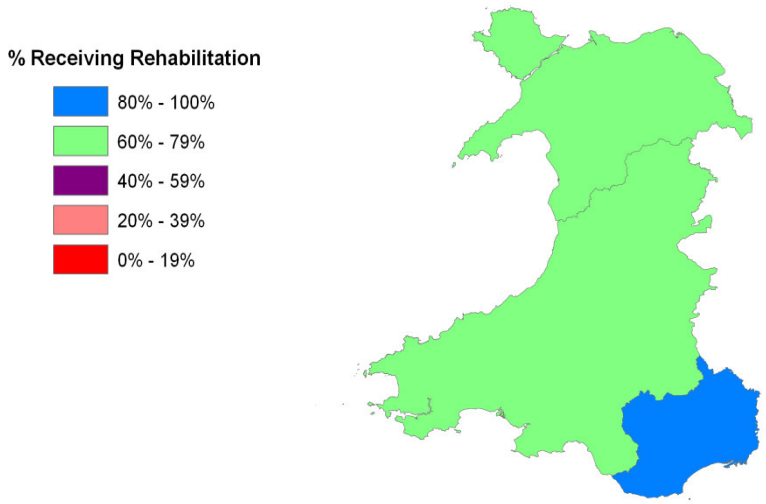


Figure 5. The number and percentage of patients with coronary artery bypass surgery (CABG) and the number and percentage receiving CR by Cardiac Network in Wales



Programmes	*No.*	*Estimated N (%)*	*Cases 2007-8*	*% Uptake 2007-8*	*Cases 2008-9*	*Receiving CR 2008-9*	*% Uptake 2008-9*
Mid and South West Wales	10	1 (10)	421	52	432	308	71
North Wales	5	0	274	57	256	159	62
South East Wales	9	0	351	101*	444	441	99
Total	24	1 (4)	1046	69	1132	908	80

* this is an artefact almost certainly caused by cross boundary referrals to CR

Results are likely to be less accurate with greater amounts of estimated data. Be more confident about the results according to the following key

Key for degree of estimation

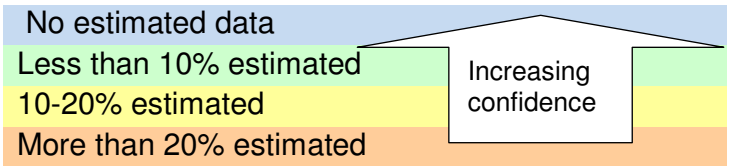
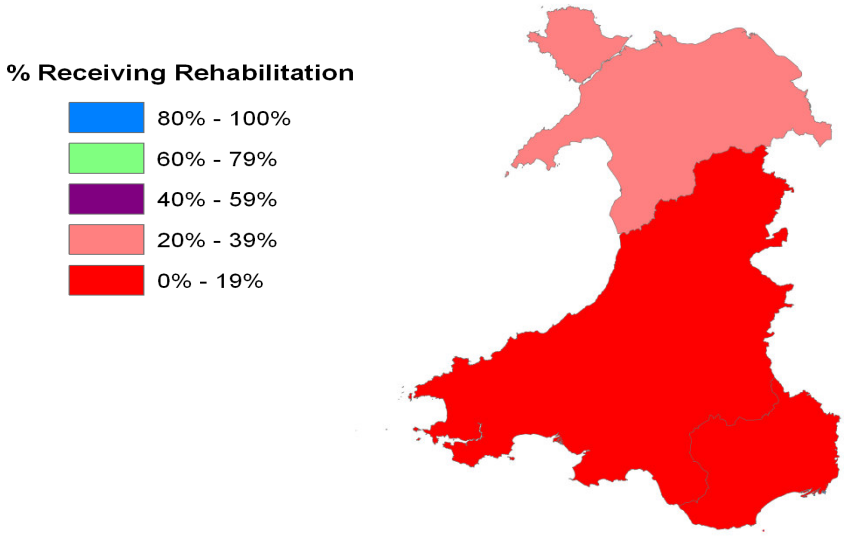


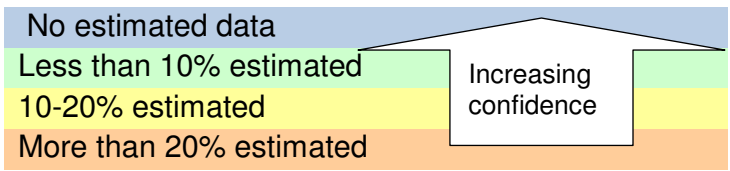
Figure 6. The number and percentage of patients with coronary angioplasty (PCI) and the number and percentage receiving CR by Cardiac Network in Wales



Programmes	*No.*	*Estimated N (%)*	*Cases 2007-8*	*Uptake 2007-8*	*Cases 2008-9*	*Receiving CR 2008-9*	*Uptake 2008-9*
Mid and South West Wales	10	1 (10)	484	12	488	109	22
North Wales	5	0	378	20	491	94	19
South East Wales	9	0	677	1	653	55	8
Total	24	1 (4)	1539	9	1632	258	16

Results are likely to be less accurate with greater amounts of estimated data. Be more confident about the results according to the following key.

Key for degree of estimation



Quality issues

Staffing

Table 30. The number and percentage of programmes providing (any phase of) CR reporting having access to each professional, by country, N (%) of programmes

	Total N=241	*England N=205*	*NI N=15*	*Wales N=21*
Nurse	231 (96%)	195 (95%)	15 (100%)	21 (100%)
Physiotherapist	169 (70%)	138 (67%)	13 (87%)	18 (86%)
Dietitian	136 (56%)	111 (54%)	10 (67%)	15 (71%)
Clerical	147 (61%)	125 (61%)	4 (27%)	18 (86%)
Pharmacist	121 (50%)	98 (48%)	11 (73%)	12 (57%)
Psychologist	26 (11%)	23 (11%)	1 (7%)	2 (10%)
Exercise specialist	134 (56%)	123 (60%)	1 (7%)	10 (48%)
Occupational therapist	81 (34%)	61 (28%)	6 (40%)	14 (67%)
Doctor	22 (9%)	19 (9%)	3 (20%)	0
Health care assistant	25 (10%)	22 (11%)	3 (20%)	0
Counsellor	5 (2%)	5 (2%)	0	0
Social worker	3 (1%)	1 (<1%)	0	2 (10%)
Administrator	14 (6%)	13 (6%)	0	1 (5%)

Outcomes from NACR data

Table 31. Twelve week National Service Framework aims

	2007-8			2008-9		
	Before %	*After %*	*Change (% point)*	*Before %*	*After %*	*Change (% point)*
BMI <30	74	74	0	73	73	0
Exercise: 5x 30 minutes	34	53	+19	33	53	+20
Exercise						
Often	14	29	+15	16	28	+12
Sometimes	32	46	+14	32	48	+16
Rarely/Never	54	25	-29	52	24	-28
Non smoker	88	93	+5	87	92	+5

(N FOR EACH YEAR RESPECTIVELY = 14,410; 16,278)

Table 32. Twelve month National Service Framework aims

	2007-8			2008-9		
	Before %	*After %*	*Change (% point)*	*Before %*	*After %*	*Change (% point)*
BMI <30	74	74	0	73	73	0
Exercise: 5x 30 minutes	34	51	+17	35	51	+16
Exercise						
Often	12	24	+12	15	24	+9
Sometimes	31	43	+12	31	45	+14
Rarely/Never	57	33	-24	54	31	-23
Non smoker	88	92	+4	87	92	+5

(N FOR EACH YEAR RESPECTIVELY = 4,642; 5,968)

Table 33. Hospital Anxiety and Depression Scale (HADS): Twelve week outcomes

	2007-8			2008-9		
	Before %	*After %*	*Change (% point)*	*Before %*	*After %*	*Change (% point)*
HADS Anxiety						
Normal	72	76	+4	71	76	+5
Borderline	16	15	-1	16	14	-2
Clinically anxious	12	9	-3	13	10	-3
HADS Depression						
Normal	83	87	+4	83	87	+4
Borderline	11	9	-2	11	8	-3
Clinically depressed	6	4	-2	6	5	-1

(N FOR EACH YEAR RESPECTIVELY = 11,966; 13,319)

Table 34. Hospital Anxiety and Depression Scale (HADS): Twelve month outcomes

	2007-8			*2008-9*		
	Before %	*After %*	*Change (% point)*	*Before %*	*After %*	*Change (% point)*
HADS Anxiety						
Normal	72	75	+3	71	75	+4
Borderline	16	14	-2	17	14	-3
Clinically anxious	12	11	-1	13	11	-2
HADS Depression						
Normal	82	84	+2	84	84	0
Borderline	12	10	-2	10	10	0
Clinically depressed	6	6	0	6	6	0

(N FOR EACH YEAR RESPECTIVELY = 3,961; 4,922)

Table 35. Dartmouth COOP: Twelve week outcomes: % patients with a Normal Score

	2007-8			*2008-9*		
	Before %	*After %*	*Change (% point)*	*Before %*	*After %*	*Change (% point)*
Physical fitness	41	69	+28	42	70	+28
Feelings	84	87	+3	84	89	+5
Daily activities	85	94	+9	86	95	+9
Social activities	81	92	+11	83	92	+9
Social support	89	87	-2	89	87	-2
Pain	76	82	+6	77	83	+6
Overall health	67	78	+11	68	79	+11
Quality of life	95	97	+2	95	97	+2

(N FOR EACH YEAR RESPECTIVELY = 10,966; 11,846)

Table 36. Dartmouth COOP: Twelve month outcomes: % patients with a Normal Score

	2007-8			2008-9		
	Before %	*After %*	*Change (% point)*	*Before %*	*After %*	*Change (% point)*
Physical fitness	36	64	+28	40	65	+25
Feelings	83	86	+3	83	87	+4
Daily activities	82	91	+9	86	92	+6
Social activities	77	89	+12	81	91	+10
Social support	89	85	-4	89	84	-5
Pain	73	77	+4	76	78	+2
Overall health	64	72	+8	66	74	+8
Quality of life	93	95	+2	94	96	+2

(N FOR EACH YEAR RESPECTIVELY = 4,293; 4,282)

Note on interpretation of this information

Each item in the Dartmouth COOP quality of life scale is scored from 1 to 5, a score of 1-3 is categorised as normal and 4-5 as abnormal.

Table 37. Medication record: Aspirin: Twelve week outcomes

	2007-8			2008-9		
	Before %	*After %*	*Change (% point)*	*Before %*	*After %*	*Change (% point)*
No	4	5	+1	4	5	+1
Yes	95	94	-1	94	94	0
Contraindicated	<1	<1	0	1	<1	0
Patient declined treatment	0	0	0	0	0	0
Not indicated	1	1	0	1	1	0

(N FOR EACH YEAR RESPECTIVELY = 13,277; 16,625)

Table 38. The percentage of patients giving their maximum level of effort as light, moderate, heavy or very heavy before and after CR: twelve week outcomes

	2007-8			2008-9		
	Before %	*After %*	*Change (% point)*	*Before %*	*After %*	*Change (% point)*
Very heavy	4	9	+5	4	9	+5
Heavy	14	29	+15	14	29	+15
Moderate	23	30	+7	24	31	+7
Light	32	21	-11	33	21	-12
Very light	27	11	-16	25	10	-15

(N FOR EACH YEAR RESPECTIVELY = 10,845; 11,846)

Table 39. The percentage of patients giving their maximum level of effort as light, moderate, heavy or very heavy before and after CR: twelve month outcomes

	2007-8			*2008-9*		
	Before %	*After %*	*Change (% point)*	*Before %*	*After %*	*Change (% point)*
Very heavy	4	11	+7	4	11	+7
Heavy	13	25	+12	14	25	+11
Moderate	20	28	+8	22	28	+6
Light	31	21	-10	33	22	-11
Very light	32	15	-17	27	14	-13

(N FOR EACH YEAR RESPECTIVELY = 4,239; 4,282)

Appendix 1. NACR at York

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Appendix 2. Index of tables and figures