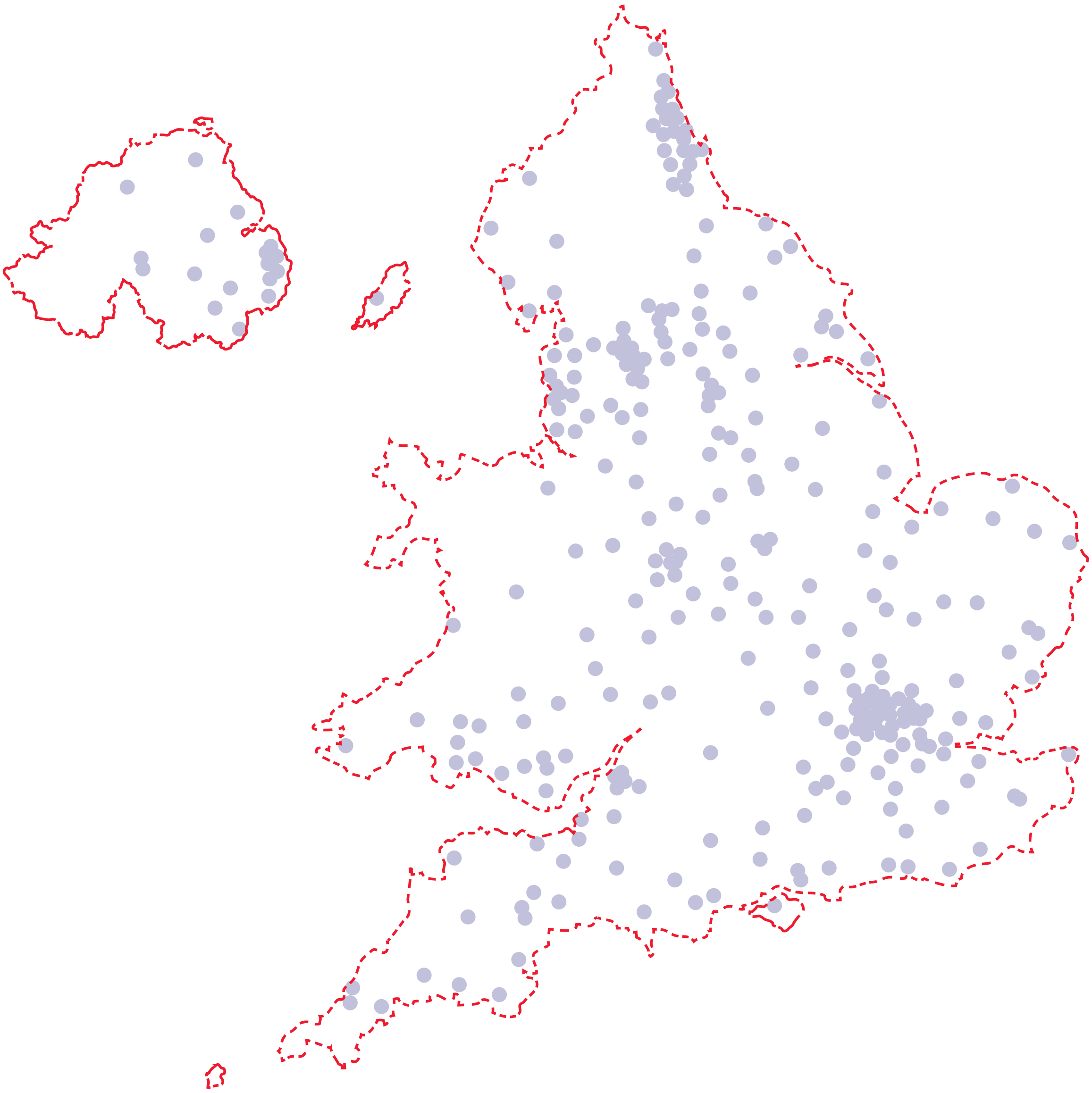
British Heart Foundation

The National Audit of Cardiac Rehabilitation

Annual Statistical Report 2011



BEATING HEART DISEASE TOGETHER

Acknowledgements

The BHF funds the NACR.

This project would not be possible without the continuing dedication of the staff of the CR programmes in England, Wales and Northern Ireland, who collect, score and enter the data into the NACR online database and complete the annual postal survey.

We would like to thank the patients who complete the questionnaires, before, after and at 12 months following completion of CR.

We would also like to thank the members of the steering committee who helped to keep us on the right track. They are Linda Binder, Prof Nick Black, Mel Clark, Dr Susan Connolly, Prof Patrick Doherty, Dr Jane Flint, Dr Chris Gale, Shirley Hall, Julie Henderson, Suzanne Indge, Dr Mike Knapton, Rachel Owen, Helen Tomkys, Dr Sally Turner and Prof Peter Weissberg.

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

Foreword by the British Heart Foundation (BHF) - Dr. Mike Knapton

The fifth annual report of the National Audit of Cardiac Rehabilitation (NACR) shows that the number of people taking part in cardiac rehabilitation is continuing to increase. But there is still a long way to go. *Every* eligible heart patient should have access to cardiac rehabilitation.

Cardiac rehabilitation is a cost-effective programme that reduces cardiac mortality, as well as promoting self management and improving quality of life. There is increasing evidence that cardiac rehabilitation also reduces unplanned hospital admissions, which not only improves the patient experience but has the potential to achieve substantial cost savings for the NHS.

In England, the publication of the Department of Health (DH) *Commissioning Pack for Cardiac Rehabilitation* and the new *National Institute of Health and Clinical Evidence (NICE) Guide for Commissioners on Cardiac Rehabilitation Services*, have been important steps forward. We also look forward to the outcomes from an important tranche of work currently being undertaken by NHS Improvement which aims to demonstrate the potential cost benefit of high quality cardiac rehabilitation and which will help augment the business case for cardiac rehabilitation. We urge commissioners in England to use these valuable resources to deliver high-quality services, and we hope to see learning from this work translate into benefits for people with heart disease across the UK.

I would like to extend my gratitude to staff in cardiac rehabilitation programmes across England, Wales and Northern Ireland, whose continuing commitment to the audit will be essential in driving improvements in access to high quality cardiac rehabilitation.

Dr Mike Knapton
Associate Medical Director, BHF

Foreword for the BACPR - Dr. Jenni Jones

The British Association for Cardiovascular Prevention and Rehabilitation revised *Standards and Core Components* that will be published in spring 2012 build on the first edition by incorporating the latest clinical evidence and developments in policy. Important updates include the need for early assessment and goal setting and a patient-centred approach to care. The importance of audit is recognised by the fact that it is one of the core components. The standards, like the NACR, align with the DH *Commissioning Pack for Cardiac Rehabilitation* and the *National Institute of Health and Clinical Evidence (NICE) Guide for Commissioners on Cardiac Rehabilitation Services*. Implementation of these will lead to programmes that are both clinically and cost effective.

Providing effective high-quality care requires a multi-disciplinary approach and it is a matter of concern that this NACR report shows a steadily increasing reduction in the skill mix available to patients. This report provides us with the clearest picture to date of cardiac rehabilitation in England, Wales and Northern Ireland and patient outcomes. The gradual increase in uptake is encouraging but it is still the case that three out of every five eligible patients do not access this life-saving service. So above all we must continue to strive for our ultimate goal, namely to ensure that *all* eligible patients receive high-quality care in cardiovascular prevention and rehabilitation.

Jenni Jones
President, BACPR

Summary of main findings: April 2009 - March 2010

In 2009-10, 42% of patients who had a heart attack (MI), bypass surgery (CABG), or an angioplasty (PCI) took part in cardiac rehabilitation (CR) across England, Wales and Northern Ireland, an increase of one percentage point on the previous year and four percentage points on 2007-08. Some regions improved significantly more than others and the participation rate for Northern Ireland as a whole increased from an encouraging 30% in 2008-09 to 40% in 2009-10, an increase of 10 percentage points.

Some diagnostic/treatment groups benefit more than others. There was a 2 percentage point increase between 2008-09 and 2009-10 in the proportion of people across England, Wales and Northern Ireland who had an MI taking part in CR, and a 3 percentage point increase in the proportion of people who had a PCI taking part. Over the same period uptake among patients who had a CABG declined by 5 percentage points. The number of cases of CABG also dropped by 10% (from 18,391 in 2008-09 to 16,534 in 2009-10) but this does not explain the reduction in the *proportion* taking part in CR.

Once again, despite clinical guidelines and recommendations, we found that only 1% of patients were referred because of a diagnosis of heart failure: 20% of programmes still exclude patients with any degree of heart failure. In an additional survey we examined the reason why only 16% of centres offer a dedicated heart failure programme. Comparing these programmes with all of the other CR programmes showed that they differed only in the number of patients they saw but that the range of staff and the knowledge and skills were not the issue. The main reasons were lack of resources, a lack of referrals, or the service not being commissioned.

Clinical guidelines emphasise the importance of a multi-disciplinary approach to CR. In 2008-09 there was a reduction in the range of disciplines available to programmes, and this report shows that the trend continued in 2009-10. Between 2007-8 and 2009-10 the proportion of programmes with access to a psychologist fell from 34% to 16%; access to a dietician fell from 66% to 51%; access to an occupational therapist fell from 36% to 26%; and access to a physiotherapist fell from 75% to 62%. There is also evidence that this is affecting the support that patients receive. Over three years (2007-08 to 2009-10) the proportion of patients receiving relaxation training fell from 44% to 29%; the proportion receiving psychology talks fell from 32% to 19%; and the proportion receiving dietary sessions fell from 43% to 32%.

Taken together this suggests that across the three audit countries 2009-10 was a year in which CR held its ground in terms of uptake but lost some key skills.

Over the last two years, the NACR and the BHF Campaign for CR have led to CR taking centre stage in a number of policy initiatives in England. Thanks to another three years of funding from the BHF, we look forward to the NACR recording a step change in the number of patients having access to high quality CR.

Professor Bob Lewin for the NACR Team, University of York

Structure of the report

This report is divided into two sections.

Section 1 answers the most important questions about how CR is being provided in England, Wales and Northern Ireland (Scotland has its own audit mechanisms).

The questions explore: the extent of provision and the equity of that provision, the quality of the programmes in terms of what is provided and waiting times and the clinical outcomes for patients attending CR.

Section 2 is composed of tables and figures that explore the data in greater detail.

Changes to the report this year

This year for the first time the results are reported for the four ‘phases’ of CR. These are:

- Phase I: pre-discharge care
- Phase II: the immediate post-discharge period
- Phase III: a six to 14-week multi-disciplinary behaviour change and rehabilitation programme, usually consisting of group sessions once or twice a week or a home based individualised programme for a similar period
- Phase IV: the application of a strategy to maintain any beneficial new lifestyle changes for the rest of the patient’s life.

Technically, Phase IV is anything a patient does to maintain the beneficial lifestyle changes he or she made during Phases I to III, but in the UK it has largely come to mean an exercise opportunity, usually provided in sports or leisure centres, for people who choose to use this method of keeping physically active, after they have finished a CR programme. Phase IV programmes are usually not part of the NHS provided pathways and are beyond the remit of NACR (although data is collected on the number of patients being referred on to a Phase IV programme).

This year the report also presents the results of a brief additional survey that was undertaken to explore the barriers to providing CR for people with heart failure.

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

There were 348 Phase I – III CR programmes in England, Northern Ireland and Wales in 2009-10 (Table 1 shows this by country), and there were a total of 307 CR centres. Some centres provide more than one programme, although registered under separate names, they are part of the same provider organisation and return their audit figures together.

There were six more programmes in 2009-10 than compared with the previous year, 2008-09. This increase in the number of programmes was due to three private hospitals informing us that they are now providing Phase III, and three programmes requesting to be registered separately rather than together.

Table 1. CR programmes in England, Northern Ireland and Wales

Country	*2008-9*	*2009-10*
England	300	306
Northern Ireland	15	15
Wales	24	24
Isle of Man and Channel Islands	3	3
Total of programmes for annual survey	342	348

Caveats

Maintaining an accurate record of the number of programmes is dependent on new programmes (or neighbouring programmes) reporting to the NACR team and existing programmes notifying the team of changes.

Are the relevant patient groups being referred?

People who take part in CR are still almost entirely from just three diagnostic/treatment groups: people who have had an MI, a PCI, or a CABG.

Table 2. The most frequently occurring diagnostic/treatment groups (percent of all patients) as recorded in NACR

Reason for referral	*2008-9* *%*	*2009-10* *%*
MI	45	52
PCI	15	13
CABG	15	12
Acute Coronary Syndrome (ACS)	5	3
Angina	4	4
Heart Failure	1	1
Implantable Cardioverter-Defibrillator (ICD)	<1	<1
All others	15	15

(N for each year, 92,750, 100,380)

Before rehabilitation, 29% of participants were assessed as clinically obese; 30% as hypertensive; 18% were smokers; and 75% did not meet the national recommendations for physical activity (5 or more episodes of 30 minutes of moderate exercise each week). The vast majority had sustained a major cardiac event, often life-threatening, and on entry to the programme 31% were borderline or clinically anxious and 19% borderline or clinically depressed.

Table 3. Risk profile of patients in different diagnostic/treatment groups referred to CR in 2009-10 as recorded in NACR

Risk profile	*MI*	*PCI*	*CABG*	*Other*	*Total*
BMI > 30	27	34	27	30	29
% Systolic blood pressure (BP) >140 or Diastolic BP >90	28	36	35	31	30
% Smoking	24	14	7	11	18
% <5 episodes 30 minutes moderate exercise a week	75	76	68	76	75
% Borderline or clinically anxious	32	35	22	31	31
% Borderline or clinically depressed	19	21	17	21	19

(*N, 44,939*)

Which patient groups are being excluded from referral protocols?

There are many reasons why patients do not attend CR but in some areas local referral protocols specifically exclude people with certain diagnoses. As Table 4 shows, the prevalence of such policies is decreasing.

Table 4. Number and percentage of programmes that reported a policy of not accepting certain diagnoses for Phase III CR

Reason for referral	*2008-09*		*2009-10*	
	N	*%*	*N*	*%*
Pacemaker	78	28	51	20
Heart failure	67	24	51	20
ICD	54	20	41	16
Angina	63	23	45	18
ACS	52	19	32	13
Cardiac arrest	54	20	38	15
Surgical (excluding valve or CABG)	46	17	28	11
PCI	26	9	14	6
Valve surgery	18	7	9	4

(*N for each year, 277, 251*)

Caveats

It is possible that in a few cases the exclusion may be because programmes cross-refer patients with certain diagnoses to another centre.

Why do so few provide a programme for heart failure patients?

In 2010, NICE issued guidance on the management of heart failure and recommended CR as an effective and safe intervention.[1] In previous years the NACR had reported that very few people were referred to CR because they had heart failure, and that some programmes would not accept patients with heart failure.

During 2010 further research was conducted to explore how many programmes had a programme specifically for people with heart failure and what the most common barriers were to prevent them offering this. A postal questionnaire was sent to 277 Phase III CR programmes in England, Wales and Northern Ireland. The response rate was 84%.

Forty percent of programmes reported accepting some people with heart failure and 16% reported that they provided a specific heart failure programme.

The majority of respondents believed there to be sufficient evidence on the benefits of CR for people with heart failure (82%). The majority did not believe safety to be an issue (79%) and reported that the appropriate staff and skills were available to run such programmes (81%).

The survey asked what prevented a specific heart failure programme from being offered. The responses are shown in Table 5 below.

Table 5. Reasons cited for not offering a heart failure CR programme

Reason cited	*N*	*%*
Lack of resources	29	32
No contract for heart failure	16	18
Heart failure specialist nurse already caters for these patients	14	16
Lack of referrals from the heart failure service	11	12
Patients already go to another CR programme in the area	9	10
Not confident that we have the right skill mix	8	9

(N of programmes responding, 91)

Using data from the annual NACR postal survey, the programmes that did offer a CR programme for heart failure were compared with those that did not. They varied only in seeing slightly more patients every year (median 286 vs. 202, $p<0.03$) and having a higher percentage of people referred because of heart failure (5% vs.1%, $p=0.002$). The staffing of programmes offering a dedicated heart failure programme was no different from those that accepted heart failure patients only after an acute event.

It seems that the main obstacle to meeting the NICE Guideline is inadequate commissioning rather than any lack of skills or willingness among CR programme staff. The DH Commissioning Pack for CR in England recommends that heart failure patients be included and provides a framework for doing so.

1. NICE. Chronic heart failure: management of chronic heart failure in adults in primary and secondary care. Clinical guidelines CG108 London: 2010.

What percentage of people who have had an MI, PCI or CABG took part in CR in England, Northern Ireland and Wales?

Across the three countries and people who had an MI, a PCI, or a CABG - there was a 1 percentage point increase in the uptake of CR.

There was a 2 percentage point increase in the proportion of people who had an MI taking part, and a 3 percentage point increase in the proportion of people who had a PCI taking part. However, in England, there was a 5 percentage point decrease in the proportion of people who had a CABG taking part. Averaged across all programmes in the audit, each programme recruited around 10 fewer CABG patients in 2009-10 than in the previous year.

The reasons for this drop in CABG patients are unknown. There was a reduction in the number of people undergoing CABG in 2009-10 but this does not explain the decrease in the *proportion* of the total number taking part in rehabilitation.

Table 6. Percentages of patients who had an MI, a PCI or a CABG taking part in CR in England, Northern Ireland and Wales

Reason for referral	*2008-9 %*	*2009-10 %*	*Change % point*
MI	39	41	+2
PCI	28	31	+3
CABG	76	71	-5
Total	41	42	+1

Tables in Section 2 (pages 26 to 32) show that some Strategic Health Authorities (SHAs) in England, Northern Ireland as a whole, and networks in Wales made significant improvements in uptake whilst other areas remained the same or declined by a few percentage points.

Is the goal in the England NSF for Coronary Heart Disease (CHD) for 85% of people who have had an MI, PCI or CABG to take part in CR being met?

In 2000 the NSF for CHD (England) suggested that 85% of patients who have had an MI, PCI or CABG should be invited to take part in CR. Once that was achieved, patients with heart failure and other cardiac conditions were also to be invited. We are clearly far from meeting this target.

Are people from black and minority ethnic groups under-represented in CR programmes and do those who do take part benefit to the same extent?

Some studies have suggested that uptake of CR may be lower among people from black and minority ethnic groups. Table 7 below compares Hospital Episode Statistics (HES) data on the ethnic profile of people recorded as surviving an MI in England with the ethnic profile of people who attended CR in England (as recorded in the NACR database). As Table 7 shows, the figures are strikingly similar.

Table 7. Comparison of ethnicity of all MI patients in England, as recorded in HES data, and MI patients in England taking part in CR in 2009-10 as recorded in NACR

Ethnic group	*% of all MI patients*	*% who took part in CR*
White (British)	80.3	79.2
White (Irish)	0.9	1.1
White (Other)	2.7	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	2.5
Pakistani	1.6	3.4
Bangladeshi	0.5	0.4
Other Asian	0.8	1.1
Black Caribbean	0.5	0.5
Black African	0.3	0.3
Black Other	0.2	<0.1
Chinese	0.1	<0.1
Other Ethnic Group	1.1	0.7
Not stated	8.7	8.6

There also appeared to be no difference in the patient outcomes following CR between different ethnic groups (see Tables 47-51 on pages 37 to 38).

Caveats

The 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. With regard to the outcome data, it should be noted that for some ethnic groups the numbers of patients participating are very small.

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

If participation in CR among men and women following an MI was proportionate to case rates, 37% of participants would be women. However, women made up 31% of referrals and only 26% of Phase III participants (estimated from NACR figures). If the rate of participation for rehabilitation had been proportionate to the case rate, approximately 3,570 more women would have benefited from rehabilitation in 2009-10.

Table 8. Gender and age at entry to CR in 2009-10 as recorded in the NACR

Number referred and age	*Men*	*Women*
% referred	69	31
Average age	65	70

(N, 99,768)

After rehabilitation, women were very slightly less likely to meet the nationally recommended physical activity level than men, but they demonstrated greater improvements in levels of anxiety and depression. Women also made the same, significant, improvements in quality of life following rehabilitation (see pages 36 to 37).

Table 9. Comparison of outcomes from CR between men and women in 2009-10 as recorded in NACR

Outcomes	*Men*			*Women*		
	Before	*After*	*Change*	*Before*	*After*	*Change*
% smoking	13	8	-5	13	8	-5
% 5 x 30 min exercise per week*	34	55	22	26	49	+23
% Normal score HADs Anxiety*	74	78	4	60	68	+8
% Normal HADs Depression*	84	88	4	79	86	+7

(N, 16,811)

*Statistically significant - the large number of cases means that even slight differences are likely to be statistically significant

What proportion of patients who were referred to CR did not take part, and why?

Of those who were referred and entered into the NACR database, 25% did not go on to take part in a CR programme.

Table 10. Percentage of patients referred to CR who did not take part as recorded in NACR

	2008-09 *%*	*2009-10* *%*
Did not take part	24	25

(N for each year 92,750, 100,380)

The reasons given for not taking part in the different phases of the programme are shown below. The greatest loss of patients in the rehabilitation pathway is at entry to Phase III and the most commonly given reason is a lack of interest/refusal by the patient.

Table 11. Reasons given for patients not taking part in CR in 2009-10 as recorded in NACR

Reason	Phase I %	Phase II %	Phase III %	Phase IV %
Not interested/refused	6	12	31	36
Ongoing investigation	3	2	3	3
Too far to travel	3	5	4	3
Physical incapacity	2	4	10	8
Returned to work	<1	<1	2	3
Local exclusion criteria	2	3	2	1
Language barrier	<1	<1	<1	<1
Holidaymaker	<1	1	1	1
Mental incapacity	1	1	1	1
No transport	<1	<1	1	<1
Died	2	3	2	2
Not referred	8	3	<1	1
Too ill	2	3	3	3
Rehabilitation not needed	3	2	3	2
Rehabilitation not appropriate	3	4	5	6
Other	15	9	7	5
Unknown	47	47	26	26

(N for each phase, 14,701, 13,771, 27,381, 6,139)

Caveats

The completion rate of this part of the electronic audit is relatively poor - the data is provided by around 80% of programmes.

How long are patients waiting for the first assessment and to start each of the four phases of CR?

There are very significant wait times for CR. The median time between having an MI and the start of Phase III rehabilitation is 56 days, and following a PCI 50 days. The wait for post-CABG CR is 69 days (the protocol in many centres is a six-week wait).

In earlier reports, the time between the cardiac event and 'starting a programme' was measured, rather than the time between a cardiac event and starting each specific Phase of CR, as has been done this year. This means that wait times cannot be compared directly with previous years.

Table 12. Time from event to referral and from referral to commencing each phase of CR (median) in 2009-10 as recorded by NACR

Initiating Event	*Wait for referral (days)*	*Phase 1 wait (days)*	*Phase 2 wait (days)*	*Phase 3 wait (days)*	*Phase 4 wait (days)*
MI	3	1	13	56	127
PCI	2	0	13	50	116
CABG	8	3	21	69	134
Other	6	1	16	68	135
Total	4	1	15	60	128

(N for each phase, 90,713, 45,088, 42,235, 29,787, 3,217)

In England, the DH Commissioning Pack for CR (2010) states that assessment and goal setting should be carried out within ten days of the initiating event or procedure. Table 13 below shows that only MI and ACS fall within this time limit but substantial work is required to meet this target for all CR groups.

Table 13. Time (median) from event to the first assessment by diagnostic/treatment group in England, Northern Ireland and Wales in 2009-10 as recorded in NACR

Initiating event	*N*	*Median (Days)*
MI	17793	10
MI & Primary PCI	3306	16
MI & PCI	7856	23
ACS	1292	8
CABG	6912	43
PCI	7168	23
Angina	1886	21
Heart Failure	595	54
ICD	207	40
Total	7038	34

How multi-disciplinary are CR programmes?

The range of disciplines available to programmes has declined significantly over the last three years. There has been a significant reduction in the proportion of programmes with access to psychologists (from 34% in 2007-08, down to 16% in 2009-10). There has also been a reduction in access to dieticians, pharmacists, occupational therapists and physiotherapists. The only staff group that has become more available are exercise specialists. Nine centres in England and one in Wales reported having only one discipline.

It is particularly worrying that access to psychology time is diminishing year on year given the proportion of patients who are assessed as borderline or clinically anxious and depressed. Thirty percent of patients were anxious before starting rehabilitation and 17% were depressed.

Forty-five per cent of programmes had no clerical support (potentially resulting in clinical staff having to do clerical work, and creating challenges in providing the necessary data for the audit).

Table 14. Percentage of Phase III programmes with access to the most commonly reported disciplines

Discipline available	*2007-8*	*2008-9*	*2009-10*
	% of programmes	*% of programmes*	*% of programmes*
Nurse*	97	96	93
Physiotherapist*	75	70	62
Dietician*	66	56	51
Pharmacist*	56	50	42
Exercise specialist†	45	56	55
Occupational therapist*	36	34	26
Psychologist*	34	11	16

*Statistically significant decrease between 2007 and 2010

†Statistically significant increase between 2007 and 2010

Is the reduction in multi-disciplinary input consistent across England, Wales and Northern Ireland?

A greater proportion of programmes in Wales and Northern Ireland have access to a pharmacist, dietician and physiotherapist than in England. The decline in access to psychological services has been similar across England and Wales.

Table 15. Change in disciplines available to CR programmes by country

Discipline available	*2007-8*	*2008-9*	*2009-10*	*Change*
In England	*% of programmes*	*% of programmes*	*% of programmes*	*% point*
Nurse	98	95	92	-6
Physiotherapist	75	67	58	-17
Dietician	64	54	48	-16
Pharmacist	53	48	37	-16
Exercise specialist	48	60	59	+11
Occupational therapist	34	28	24	-10
Psychologist	35	11	16	-19
(N for each year, 259, 205, 228)				
In Wales				
Nurse	100	100	100	0
Physiotherapist	83	86	86	+3
Dietician	75	71	71	-4
Pharmacist	71	57	71	0
Exercise specialist	50	48	29	-21
Occupational therapist	63	67	57	-6
Psychologist	29	10	14	-15
(N for each year, 24, 21, 21)				
In Northern Ireland				
Nurse	100	100	100	0
Physiotherapist	94	87	85	-9
Dietician	88	67	69	-19
Pharmacist	94	73	69	-21
(N for each year, 16, 15, 13)				

Caveats

The data for Wales and Northern Ireland must be treated with caution because the number of programmes is relatively small and therefore the loss of a single member of staff can have a disproportionately large effect on percentage change.

What do patients receive through CR programmes?

Group-based, ‘educational’ classes remain the predominant method for delivering behaviour change in CR.

Table 16 below shows the effect of the loss of multi-disciplinary input on the range of programme components that patients receive. For example, the reduction in psychologists is reflected in the reduction in psychological talks and relaxation/stress management classes.

Table 16. The CR programme components that patients took part in as recorded in NACR

Programme component	*2007-8* *%*	*2008-9* *%*	*2009-10* *%*
Lifestyle education: written	53	57	62
Group exercise	60	68	50
Lifestyle education: talks/video	51	56	45
Relaxation training	44	41	29
Dietary: group class	43	46	32
Home exercise	28	29	27
Diet: individual	21	23	25
Psychological: group talk	32	26	19
Individual exercise	23	22	17
Home visits	14	16	16
Other	10	3	2
Heart Manual	7	7	7
Occupational therapy group sessions	10	7	5
Road to Recovery	2	1	1
Psychological: individual counsellor	3	3	2
Physiotherapy: individual	3	2	2
Angina Plan	2	1	2
Other home based programme	1	1	<1
OT individual	1	1	1
Vocational assessment	1	1	1

(N for each year, 22,723, 17,506, 44,606)

How many programmes offer each phase of CR and how many patients receive the first three phases?

We found that 91% of centres provided a Phase III programme, around 66% Phases I and II, and 50% referred on to Phase IV programmes.

Table 17. Number (and percentage) of CR programmes in England, Wales and Northern Ireland providing or referring on to each phase in 2009-10

Total number of programmes	*Phase I*	*Phase II*	*Phase III*	*Phase IV*
348	231 (66%)	234 (67%)	317 (91%)	175 (50%)

Each centre provided figures for the total number of patients passing through their centre and how many of these received each phase. The percentage of patients in each centre starting each phase was calculated. The average percentage is presented in Table 18.

Table 18. The mean percentage of patients starting each of the phases or referred to Phase IV in 2009-10

Phase	*Average % of patients per centre*
Phase I	62
Phase II	70
Phase III	49
Phase IV	18

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

What are the aims?

In England, the NSF for CHD (2000) recommended that at 12 months at least 50% of people who took part in CR should be:

- Taking regular physical activity of at least 30 minutes duration on average for five times each week
- Not smoking
- Have a Body Mass Index (BMI) of less than 30 kg/m².

What does the NACR show?

In relation to activity levels, at twelve months after participation in CR, there was a 15 percentage point increase in the number of people exercising five or more times a week for 30 minutes (from 34% before CR to 49% after) and a 20 percentage point reduction in those who rarely/never took exercise (from 49% before CR to 29% after).

The proportion of people who reported smoking decreased from 12% to 8% after CR.

Twenty-five percent of people attending CR did not reach the target level for BMI, and there was no change in this percentage at three or twelve months.

Table 19. Percentage of patients meeting NSF recommendations before and at twelve months after CR in 2009-10 as recorded in NACR

Outcome	*Before CR*	*After CR*	*Change*
	% of patients	*% of patients*	*% point*
BMI <30kg/m²	75	75	0
Exercise: 5 x 30 minutes	34	49	+15
Exercise			
Often	19	25	+6
Sometimes	32	46	+14
Rarely/Never	49	29	-20
Smoker	12	8	-4

(N, 5,325)

What impact does CR have on levels of anxiety and depression, and quality of life?

Following CR, patients' quality of life improved significantly. Only levels of 'social support' showed a reduction, and this was most likely because people became less dependent on the help of others. The greatest gains were in physical fitness, overall health, and participation in social and daily activities.

Table 20. Dartmouth COOP: Twelve week outcomes from participation in CR: percent of patients with a Normal Score in 2009-10 as recorded in NACR

	Before % of patients	*After % of patients*	*Change % point*
Physical fitness	42	71	+29
Feelings	83	89	+6
Daily activities	85	94	+9
Social activities	82	93	+11
Pain	77	83	+6
Overall health	67	79	+11
Social support	88	86	-2
Quality of life	94	97	+3

(N, 12,431)

Freedom from anxiety and depression is also an important aspect of quality of life. Before starting CR, 30% of patients were borderline or clinically anxious and 17% borderline or clinically depressed. The table below shows that there was a statistically significant improvement in both levels of anxiety and depression.

Table 21. Hospital Anxiety and Depression Scale (HADS): Twelve week outcomes following participation in CR in 2009-10 as recorded in NACR

	Before % of patients	*After % of patients*	*Change % point*
HADS Anxiety: in Normal Range	70	76	+6
Borderline or Clinically anxious	30	24	-6
HADS Depression: in Normal Range	83	87	+4
Borderline or clinically depressed	17	13	-4

(N, 13,795)

Further information
A description of all of the measures used and a copy of the questionnaire pack completed by patients is available at www.cardiacrehabilitation.org.uk/nacr

Section 2

The electronic database and annual postal survey

The audit consists of two elements:

1) an electronic database collecting data using the NHS Information Centre portal (CCAD)
2) an annual postal survey that collects information on staffing and the number of patients in each diagnostic/treatment group seen by the programmes.

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 CR 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 CR and, where resources allow, immediately after finishing the programme, and then 12 months after discharge from CR.

The programme staff enter this data into the National Database, which is then uploaded to the NHS Information Centre. Programmes can view and download their data for local analysis. Anonymised data is passed to the NACR team at the University of York to compile the annual report.

How many programmes took part in the NACR?
Two hundred and eighteen programmes submitted data using the electronic database in 2009-10. This represents around 70% of the CR programmes in England, Wales and Northern Ireland.

Return rate of the annual postal survey
The survey response rate was 97.7%. The table below shows the return rate by country and the number of programmes that were unable to answer the question about how many patients they had seen because they do not record this.

Table 22. Return rate for the annual postal survey of CR Programmes

	*UK**	*England*	*Northern Ireland*	*Wales*
Returned survey or provided data: providers of all phases	340/348 (97.7%)	301/309 (97.4%)	15/15 (100%)	24/24 (100%)
All Phase III providers only	N=320	N=278	N=15	N=24
Returned survey	312 (98%)	270 (98%)	15 (100%)	24 (100%)
Provided figures	295 (92%)	254(91%)	15 (100%)	23 (96%)
Estimated figures	9 (3%)	9 (3%)	-	-
Estimated from previous figures	16 (5%)	15 (5%)	-	1(4%)

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

For further information about the NACR methodology please visit
www.cardiacrehabilitation.org.uk/nacr

Notes on the methodology and analysis

Missing data

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

Calculating the proportion of patients who have had an MI, PCI or CABG taking part in CR

To work out the proportion of people who have had an MI, PCI or CABG taking part in CR, data was needed for each nation on the total number of people in 2009-10 in each diagnostic/treatment group. Those people who were recorded as having both an MI and a PCI or CABG in the same year were counted as having an MI. The data source and methodology for each of the three countries is listed below:

England:

Individual anonymised patient level HES data (with death on discharge recorded) was provided by the NHS Information Centre for Health and Social Care on the number of people who had an MI, PCI and CABG in any diagnostic/treatment category.

Northern Ireland:

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

Wales:

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

Comparing the results on uptake by geographical region

The data on uptake of CR by region should not be regarded as a league table as CR programmes may accept patients from outside their own SHA or Cardiac Network.

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

There is likely to be a small degree of underestimation in the numbers on uptake of rehabilitation because 8% of programmes were unable to provide data on how many patients they had seen and this was therefore estimated.

Descriptors and demographics of those referred to CR

Table 23. Age and gender of patients referred to CR in people who have had an MI, PCI or CABG as recorded in NACR

Reason for referral	*Gender*	*2007-8*		*2008-9*		*2009-10*	
		Average age	*%*	*Average age*	*%*	*Average age*	*%*
MI	Male	66	68	65	68	65	69
	Female	73	32	72	32	72	31
CABG	Male	66	81	66	80	67	80
	Female	69	19	70	20	69	20
PCI	Male	64	74	63	74	64	74
	Female	67	26	67	26	67	26
Other	Male	65	65	64	71	65	65
	Female	68	35	67	29	68	35
All	Male	65	70	65	70	65	70
	Female	71	30	70	30	70	30

(N for each year, 71,324, 92,151, 100,380)

Table 24. Marital status of patients referred to CR as recorded in NACR

Status	*2007-8*	*2008-9*	*2009-10*
	% of patients	*% of patients*	*% of patients*
Married	72	71	70
Widowed	12	12	12
Single	7	8	8
Permanent partnership	5	4	4
Divorced	4	5	5
Separated	<1	<1	1

(N for each year, 53,630, 69,521, 88,841)

Table 25. Ethnicity of patients referred to CR as recorded in NACR

Ethnicity	*2007-8* *% of patients*	*2008-9* *% of patients*	*2009-10* *% of patients*
White (British)	74	77	74
White (Irish)	2	2	2
White (Other)	2	2	3
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	4	3	2
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	10	14

(N for each year, 63,388, 80,033, 90,545)

Table 26. Employment status of patients referred to CR as recorded in NACR

Status	*2007-8* *% of patients*	*2008-9* *% of patients*	*2009-10* *% of patients*
Employed: full-time	19	18	17
Employed: part-time	4	4	4
Self employed: full-time	4	4	4
Self employed: part-time	1	2	2
Unemployed: looking for work	1	2	2
Government training scheme	<1	<1	0
Looking after family/home	2	2	2
Retired	58	58	58
Permanently sick/disabled	4	4	4
Temporarily sick or injured	6	6	6
Student	<1	<1	<1
Other reasons for not working	1	<1	1

(N for each year, 28,652, 34,023, 37,252)

The medical status of people referred to CR

Table 27. Percentage of patients referred to CR with various co-morbidities as recorded in NACR

Co-morbidity category	*2007-8* *% of patients*	*2008-9* *% of patients*	*2009-10* *% of patients*
Angina	35	33	29
Arthritis	18	17	16
Diabetes	20	21	22
Rheumatism	4	4	4
Stroke	6	6	6
Osteoporosis	3	3	3
Chronic bronchitis	3	3	2
Emphysema	2	2	2
Asthma	11	11	10
Claudication	6	5	5
Chronic back	11	10	11
Hypertension	45	47	49
Cancer	6	6	6
Other complaint	31	30	30

(N for each year, 49,171, 60,660, 64,074)

Table 28. Percentage of patients referred to CR who have had previous cardiac events as recorded in NACR

Cardiac events or procedures	*2007-8* *% of patients*	*2008-9* *% of patients*	*2009-10* *% of patients*
MI	18	16	15
ACS	1	1	1
CABG	5	5	5
PCI	7	7	7
Cardiac arrest	2	2	2
Angina	17	16	13
Other surgery	1	2	2
Heart failure	2	2	2
Pacemaker	1	1	1
ICD	<1	<1	<1
CHD	<1	<1	<1
Transplant	<1	<1	<1
Left Ventricular Assist Device	<1	<1	<1
Other	4	4	4
Unknown	1	2	3

(N for each year, 71,324, 92,750, 100,380)

Reasons for referral to CR

Table 29. Reasons for referral to CR by year as recorded in NACR

Reason	*2007-8* *% of patients*	*2008-9* *% of patients*	*2009-10* *% of patients*
TOTAL MI	49	45	52
Unknown	41	33	8
NSTEMI	-	3	19
STEMI	-	2	6
MI with PCI or recent PCI	8	7	19
ACS	5	5	3
Revascularisation			
PCI	15	15	13
CABG	16	15	12
Other surgery	5	4	1
Transplant	<1	<1	<1
Cardiac arrest	<1	<1	<1
Pacemaker	<1	<1	<1
ICD	<1	<1	<1
Left Ventricular Assist Device	<1	<1	
Angina	3	4	4
Heart failure	1	1	1
CHD	<1	<1	<1
Other	3	5	8
Unknown	1	4	1

(N for each year, 71,324, 92,750, 100,380)

Uptake

Table 30. Numbers and percentages of people who have had an MI, PCI or CABG attending CR in 2009-10

Combined data

	No. of patients	*Receiving CR*	*% uptake*
MI	84,814	34,754	41
PCI	32,392	9,960	31
CABG	16,534	11,695	71
Total	133,740	56,409	42
	Number of programmes able to provide the numbers seen		292/317 (92%)
	Number of programmes where we estimated the number attending		25/317(8%)

England

	No. of patients	*Receiving CR*	*% uptake*
MI	76,610	31,724	41
PCI	28,873	9,335	32
CABG	15,146	10,483	69
Total	120,629	51,542	43
	Number of programmes able to provide the numbers seen		254/278 (91%)
	Number of programmes where we estimated the numbers attending		24/278 (9%)

Northern Ireland

	No. of patients	*Receiving CR*	*% uptake*
MI	2,563	1,106	43
PCI	1,765	368	21
CABG	466	453	97
Total	4,794	1,927	40
	Number of programmes able to provide the numbers seen		15/15 (100%)

Wales

	No. of patients	*Receiving CR*	*% uptake*
MI	5,641	1,924	34
PCI	1,754	257	15
CABG	922	759	82
Total	8,317	2,940	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 people who have had an MI who took part in CR by SHA in England

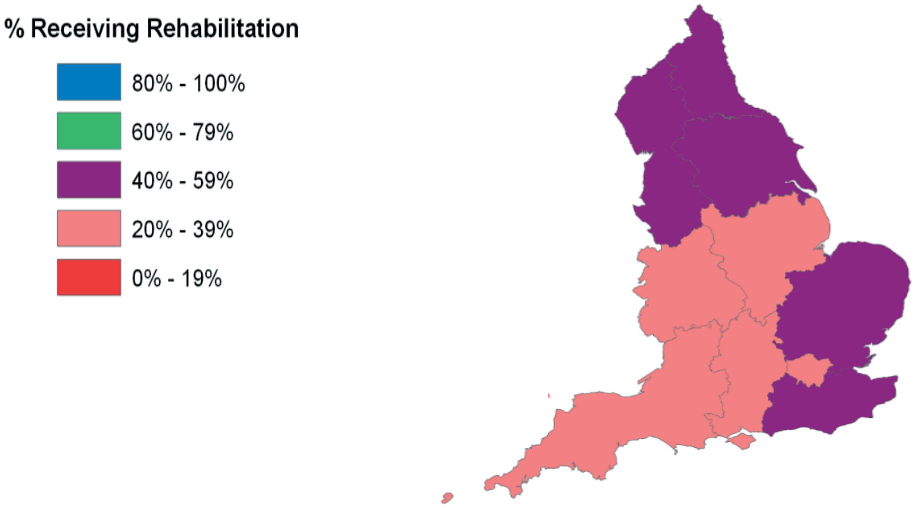


Table 31. The number and percentage of people who have had an MI who took part in CR by SHA in England

				2008-2009			*2009-2010*	
SHA	*N*	*Estimated* N %*	*N** Patients 08-09*	*N Receiving CR 08-09*	*% Uptake*	*N** Patients 09-10*	*N Receiving CR 09-10*	*% Uptake*
North East	21	0	4,672	2,356	50	5169	3032	59
North West	40	2(5)	11,501	5,568	48	11769	5251	45
Yorkshire and the Humber	33	4(12)	8,634	3,890	45	8896	4240	48
East Midlands	21	1(5)	7,956	2,884	36	7720	2775	36
West Midlands	26	2(8)	7,451	2,792	37	7308	2869	39
East of England	30	5(17)	8,325	3,294	40	8079	3532	44
London	36	2 (6)	8,352	2,225	27	8657	2573	30
South East Coast	26	2 (8)	5,998	2,497	42	6031	2772	46
South Central	14	1(7)	5,452	1,611	30	5000	1650	33
South West	31	5(16)	7,771	3,011	39	7981	3030	38
TOTAL	278	24(9)	76,112	30,128	40	76610	31724	41

*the number and % of programmes where data had to be estimated

** patients taken from national statistical sources

Figure 2. The number and percentage of people who have had a PCI who took part in CR by SHA in England.

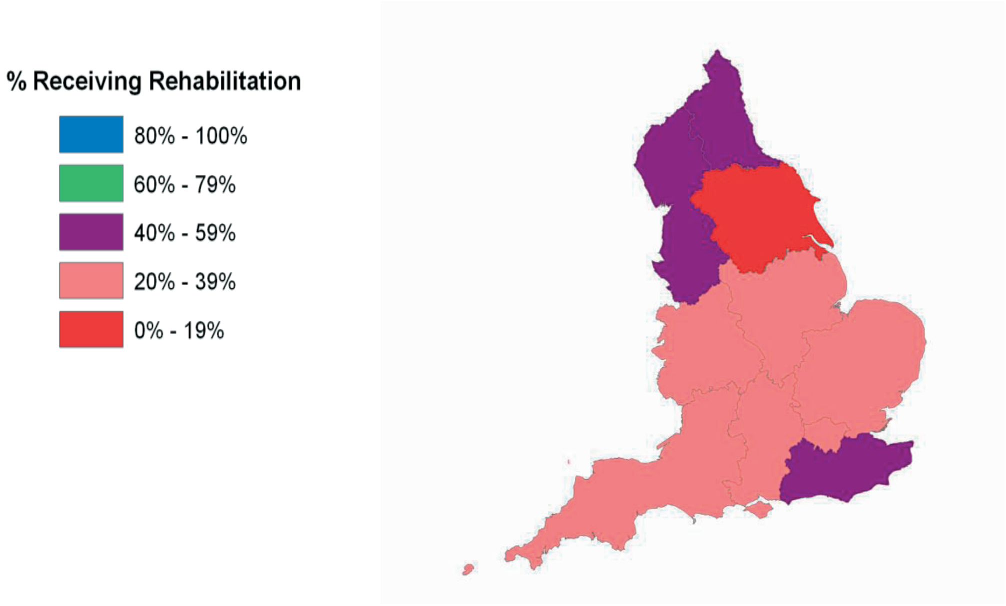


Table 32. The number and percentage of people who have had a PCI who took part in CR by SHA in England

				2008-2009			*2009-2010*	
SHA	*N*	*Estimated* N %*	*N** Patients 08-09*	*N Receiving CR 08-09*	*% Uptake*	*N** Patients 09-10*	*N Receiving CR 09-10*	*% Uptake*
North East	20	0	1750	801	46	1469	613	42
North West	39	2(5)	3979	1726	43	3554	1630	46
Yorkshire and the Humber	30	4(12)	2771	567	20	2613	464	18
East Midlands	21	1(5)	2458	359	15	2421	510	21
West Midlands	26	2(8)	2630	945	36	2763	838	30
East of England	28	5(17)	3240	1109	34	3426	1305	38
London	33	2 (6)	4778	858	18	4226	1162	27
South East Coast	21	2 (8)	2514	979	39	2590	1355	52
South Central	14	1(7)	2445	497	20	2516	514	20
South West	32	5(16)	3753	972	26	3295	944	29
TOTAL	264	24(9)	30318	8813	29	28873	9335	32

Figure 3. The number and percentage of people who have had a CABG who took part in CR by SHA in England

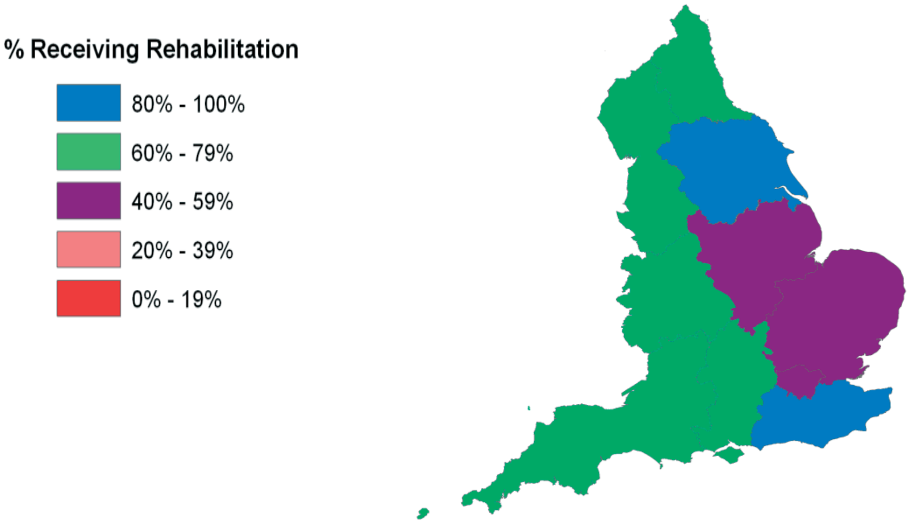


Table 33. The number and percentage of people who have had a CABG who took part in CR by SHA in England

			2008-2009			*2009-2010*		
SHA	*N*	*Estimated* N %*	*N** Patients 08-09*	*N Receiving CR 08-09*	*% Uptake*	*N** Patients 09-10*	*N Receiving CR 09-10*	*% Uptake*
North East	21	0	971	859	88	792	637	80
North West	40	2(5)	2678	2422	90	2241	1833	82
Yorkshire and the Humber	33	4(12)	1450	1182	82	1289	1154	90
East Midlands	21	1(5)	1231	802	65	1107	578	52
West Midlands	26	2(8)	1863	1489	80	1657	1114	67
East of England	30	5(17)	2020	1574	78	2094	1190	57
London	36	2 (6)	1969	925	47	1803	1011	56
South East Coast	26	2 (8)	1468	1140	78	1321	1058	80
South Central	14	1(7)	1074	780	73	1051	661	63
South West	31	5(16)	2016	1508	75	1791	1247	70
TOTAL	278	24(9)	16740	12681	76	15146	10483	69

*the number and % of programmes where data had to be estimated

** patients taken from national statistical sources

Northern Ireland

Table 34. The number and percentage of people who have had an MI, PCI or CABG who took part in CR in Northern Ireland

MI

	N	*Estimated N %*	*N Patients 08-09*	*N Receiving CR 08-09*	*% Uptake*	*N Patients 09-10*	*N Receiving CR 09-10*	*% Uptake*
NI	15	0	3494	1019	29	2563	1106	43

CABG

	N	*Estimated N %*	*N Patients 08-09*	*N Receiving CR 08-09*	*% Uptake*	*N Patients 09-10*	*N Receiving CR 09-10*	*% Uptake*
NI	15	0	519	428	82	466	453	97

PCI

	N	*Estimated N %*	*N Patients 08-09*	*N Receiving CR 08-09*	*% Uptake*	*N Patients 09-10*	*N Receiving CR 09-10*	*% Uptake*
NI	15	0	1811	297	16	1765	368	21

Wales

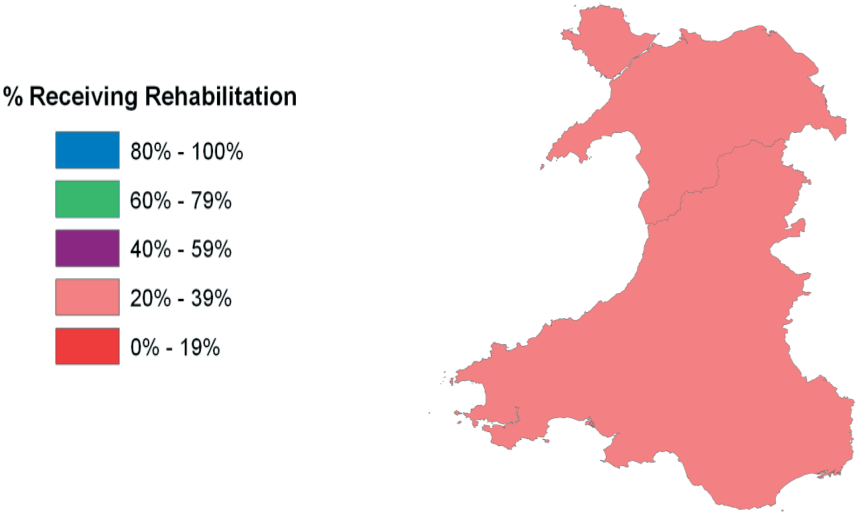


Figure 4. The number and percentage of people who have had an MI who took part in CR by Cardiac Network in Wales

Table 35. The number and percentage of people who have had an MI who took part in CR by Cardiac Network in Wales

				2008-2009			*2009-2010*	
Cardiac Network	*N*	*Estimated* N %*	*N** Patients 08-09*	*N Receiving CR 08-09*	*% Uptake*	*N** Patients 09-10*	*N Receiving CR 09-10*	*% Uptake*
North Wales	5	0	1512	304	20	1410	360	26
South Wales	19	1 (5)	4988	1753	35	4231	1564	37
Total	24	1 (4)	6500	2057	32	5641	1924	34

*the number and % of programmes where data had to be estimated

** patients taken from national statistical sources

Figure 5. The number and percentage of people who have had a PCI who took part in CR by Cardiac Network in Wales

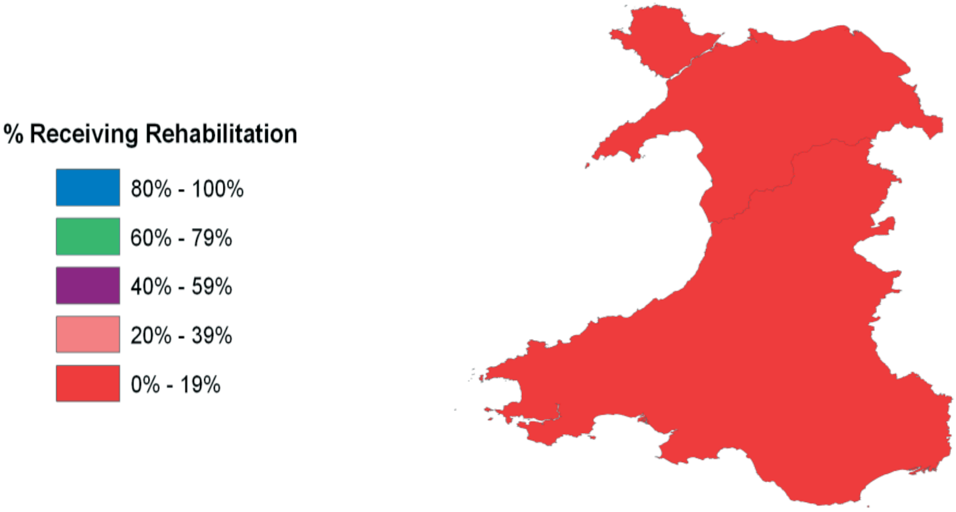


Table 36. The number and percentage of people who have had a PCI who took part in CR by Cardiac Network in Wales

				2008-2009			*2009-2010*	
Cardiac Network	*N*	*Estimated* N %*	*N** Patients 08-09*	*N Receiving CR 08-09*	*% Uptake*	*N** Patients 09-10*	*N Receiving CR 09-10*	*% Uptake*
North Wales	5	0	491	94	19	474	85	18
South Wales	19	1 (5)	1141	164	14	1280	172	13
Total	24	1 (4)	1632	258	16	1754	257	15

*the number and % of programmes where data had to be estimated

** patients taken from national statistical sources

Figure 6. The number and percentage of people who have had a CABG who took part in CR by Cardiac Network in Wales

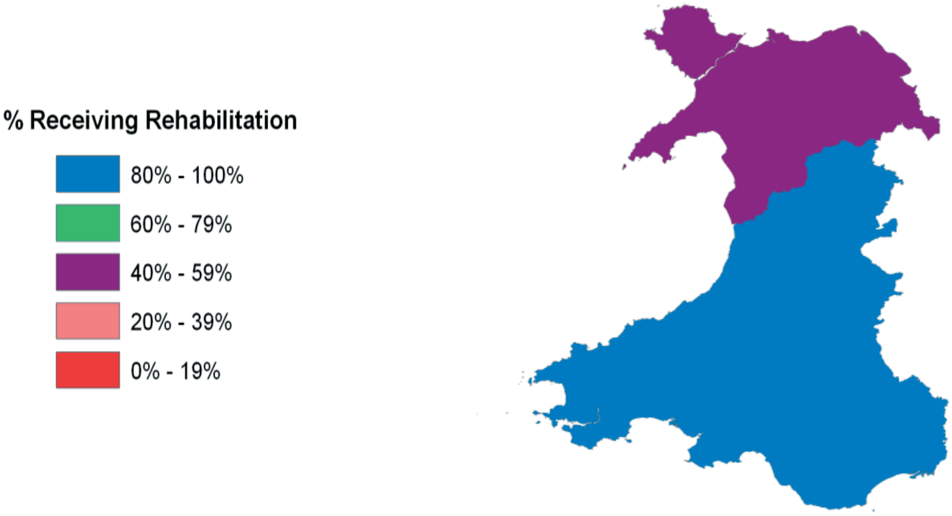


Table 37. The number and percentage of people who have had a CABG who took part in CR by Cardiac Network in Wales

			2008-2009			*2009-2010*		
Cardiac Network	*N*	*Estimated* N %*	*N** Patients 08-09*	*N Receiving CR 08-09*	*% Uptake*	*N** Patients 09-10*	*N Receiving CR 09-10*	*% Uptake*
North Wales	5	0	256	159	62	241	111	46
South Wales	19	1 (5)	876	749	86	681	648	95
Total	24	1 (4)	1132	908	80	922	759	82

*the number and % of programmes where data had to be estimated

** patients taken from national statistical sources

Staffing

Table 38. The number and percentage of CR programmes across each country with access to different professionals in 2009-10

	England		Wales		Northern Ireland			
	N	%	N	%	N	%	Total	%
Nurse	210	92	21	100	13	100	244	93
Physiotherapist	133	58	18	86	11	85	162	62
Dietician	110	48	15	71	9	69	134	51
Psychologist	37	16	3	14	2	15	42	16
Social Worker	2	1	0	0	0	0	2	1
Counsellor	5	2	0	0	0	0	5	2
Doctor	13	6	0	0	1	8	14	5
Healthcare Assistant	27	12	0	0	2	15	29	11
Clerical	123	54	17	81	3	23	143	55
Administrator	12	5	2	10	0	0	14	5
Exercise Specialist	135	59	6	29	2	15	143	55
Occupational Therapist	54	24	12	57	3	23	69	26
Pharmacist	85	37	15	71	9	69	109	42

(N for each country, 228, 21, 13, 262)

Patient outcomes as recorded in NACR

Table 39. Patient outcomes twelve weeks after completing CR against NSF health behaviour aims as recorded in NACR

	2008-9			2009-10		
	Before %	*After %*	*Change % point*	*Before %*	*After %*	*Change % point*
BMI <30	73	73	0	73	73	0
Exercise: 5 x 30 minutes	33	53	+20	32	53	+21
Exercise						
Often	16	28	+12	18	29	+11
Sometimes	32	48	+16	32	49	+17
Rarely/Never	52	24	-28	50	23	-27
Non smoker	87	92	+5	87	92	+5
BP Systolic <140 and diastolic <90	-	-	-	69	71	2
Total Cholesterol<4	-	-	-	31	52	+21
Cholesterol LDL <2				40	56	+16
Waist < 102cm (men) or <88cm (women)				59	62	+3

(N for each year, 16,278, 16,901)

Table 40. Patient outcomes twelve months after completing CR against NSF health behaviour aims as recorded in NACR

	2008-9			2009-10		
	Before %	*After %*	*Change % point*	*Before %*	*After %*	*Change % point*
BMI <30	73	73	0	75	75	0
Exercise: 5 x 30 minutes	35	51	+16	34	49	+15
Exercise						
Often	15	24	+9	19	25	+6
Sometimes	31	45	+14	32	46	+14
Rarely/Never	54	31	-23	49	29	-20
Non smoker	87	92	+5	88	92	+4
BP Systolic <140 and diastolic <90	-	-	-	70	70	0
Total Cholesterol<4				30	57	+27
Cholesterol LDL <2				47	60	+13
Waist < 102cm (men) or <88cm (women)				63	69	+6

(N for each year, 5,968, 5,325)

Table 41. Hospital Anxiety and Depression Scale (HADS): twelve week outcomes as recorded in NACR

	2008-9			*2009-10*		
	Before %	*After %*	*Change % point*	*Before %*	*After %*	*Change % point*
HADS Anxiety						
Normal	71	76	+5	70	76	+6
Borderline	16	14	-2	17	15	-2
Clinically anxious	13	10	-3	13	9	-4
HADS Depression						
Normal	83	87	+4	83	87	+4
Borderline	11	8	-3	11	9	-2
Clinically depressed	6	5	-1	6	4	-2

(N for each year, 13,319, 13,795)

Table 42. Hospital Anxiety and Depression Scale (HADS): twelve month outcomes as recorded in NACR

	2008-9			*2009-10*		
	Before %	*After %*	*Change % point*	*Before %*	*After %*	*Change % point*
HADS Anxiety						
Normal	71	75	+4	71	75	+4
Borderline	17	14	-3	17	15	-2
Clinically anxious	13	11	-2	12	11	-1
HADS Depression						
Normal	84	84	0	83	84	+1
Borderline	10	10	0	11	10	-1
Clinically depressed	6	6	0	6	6	0

(N for each year, 4,922, 4,574)

Table 43. Dartmouth COOP: twelve week outcomes: percent of patients with a Normal Score as recorded in NACR

	2008-9			*2009-10*		
	Before %	*After %*	*Change % point*	*Before %*	*After %*	*Change % point*
Physical fitness	42	70	+28	42	71	+29
Feelings	84	89	+5	83	89	+6
Daily activities	86	95	+9	85	94	+9
Social activities	83	92	+9	82	93	+11
Social support	89	87	-2	88	86	-2
Pain	77	83	+6	77	83	+6
Overall health	68	79	+11	67	79	+12
Quality of life	95	97	+2	94	97	+3

(N for each year, 11,846, 12,431)

Table 44. Dartmouth COOP: twelve month outcomes: percent of patients with a Normal Score as recorded in NACR

	2008-9			*2009-10*		
	Before %	*After %*	*Change (% point)*	*Before %*	*After %*	*Change % point*
Physical fitness	40	65	+25	40	66	+26
Feelings	83	87	+4	83	87	+4
Daily activities	86	92	+6	84	92	+8
Social activities	81	91	+10	80	90	+10
Social support	89	84	-5	89	84	-5
Pain	76	78	+2	75	78	+3
Overall health	66	74	+8	65	73	+8
Quality of life	94	96	+2	94	96	+2

(N for each year, 4,282, 3,950)

Table 45. Medication record: Aspirin and Ace Inhibitor: twelve week outcomes as recorded in NACR

	Aspirin			*Ace-Inhibitor*		
	Before %	*After %*	*Change % point*	*Before %*	*After %*	*Change % point*
No	5	5	0	21	20	-1
Yes	92	92	1	72	74	3
Contra-indicated	0	0	0	1	1	0
Patient declined	0	0	0	0	0	0
Not indicated	2	1	0	4	3	-1
Unknown	2	1	0	3	2	-1

(N, 17,426, 16,755)

Table 46. Medication record: Beta blocker and Statin: twelve week outcomes as recorded in NACR

	Beta blocker			*Statin*		
	Before %	*After %*	*Change % point*	*Before %*	*After %*	*Change % point*
No	15	15	1	7	6	0
Yes	78	79	1	90	91	1
Contra-indicated	2	1	0	0	0	0
Patient declined	0	0	0	0	0	0
Not indicated	3	2	-1	1	1	0
Unknown	2	2	-1	2	1	-1

(N, 17,024, 17,291)

Patient outcomes by ethnicity

Table 47. Percentage of patients by age and ethnicity at twelve weeks as recorded in NACR

Ethnicity	*N (% of those followed up)*	*Average Age*	*% Male*
White	18297 (86%)	65	74
Mixed	77 (<1%)	58	74
Asian	1092 (5%)	61	80
Black	133 (1%)	60	65
Other	131 (1%)	59	73
Not stated	1536 (7%)	65	75
Total	21,266	65	75

Table 48. Percentage of patients exercising at least 5 x 30 mins per week: twelve week outcomes as recorded in NACR

	% 5 x 30 min exercise per week		
Ethnicity	*Before*	*After*	*Change % point*
White	33	54	21
Mixed	32	55	23
Asian	31	58	27
Black	23	66	43
Other	24	49	25
Not stated	25	38	13

(N, 14,232)

Table 49. Percentage of patients smoking by ethnic group: twelve week outcomes as recorded in NACR

	% Smoking		
Ethnicity	*Before*	*After*	*Change % point*
White	13	7	-6
Mixed	15	8	-7
Asian	9	6	-3
Black	15	10	-5
Other	9	7	-2
Not stated	17	11	-6

(N, 16,404)

Table 50. HAD scale showing percentage of patients with a normal anxiety score by ethnic group: twelve week outcomes as recorded in NACR

	% Normal HADS Anxiety		
Ethnicity	*Before*	*After*	*Change % point*
White	71	76	5
Mixed	56	64	8
Asian	64	68	4
Black	70	68	-2
Other	68	75	7
Not stated	73	81	8

(N, 13,384)

Table 51. HAD scale showing percentage of patients with a normal depression score by ethnic group: twelve week outcomes as recorded in NACR

	% Normal HADS Depression		
Ethnicity	*Before*	*After*	*Change % point*
White	83	88	5
Mixed	78	86	8
Asian	75	80	5
Black	67	86	19
Other	79	81	2
Not stated	86	89	3

(N, 13,361)

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