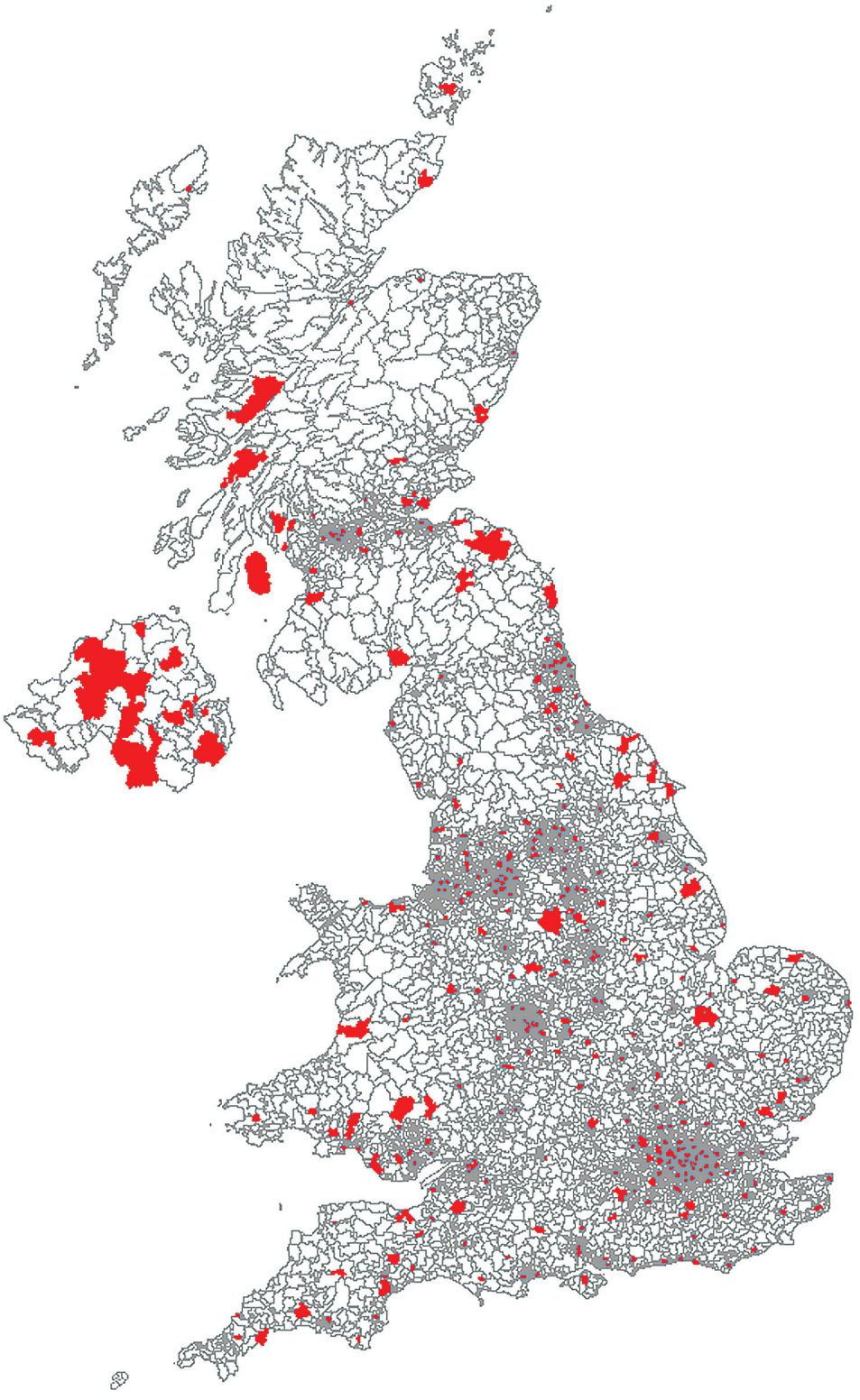


British Heart Foundation

The National Audit of Cardiac Rehabilitation

Annual Statistical Report 2008

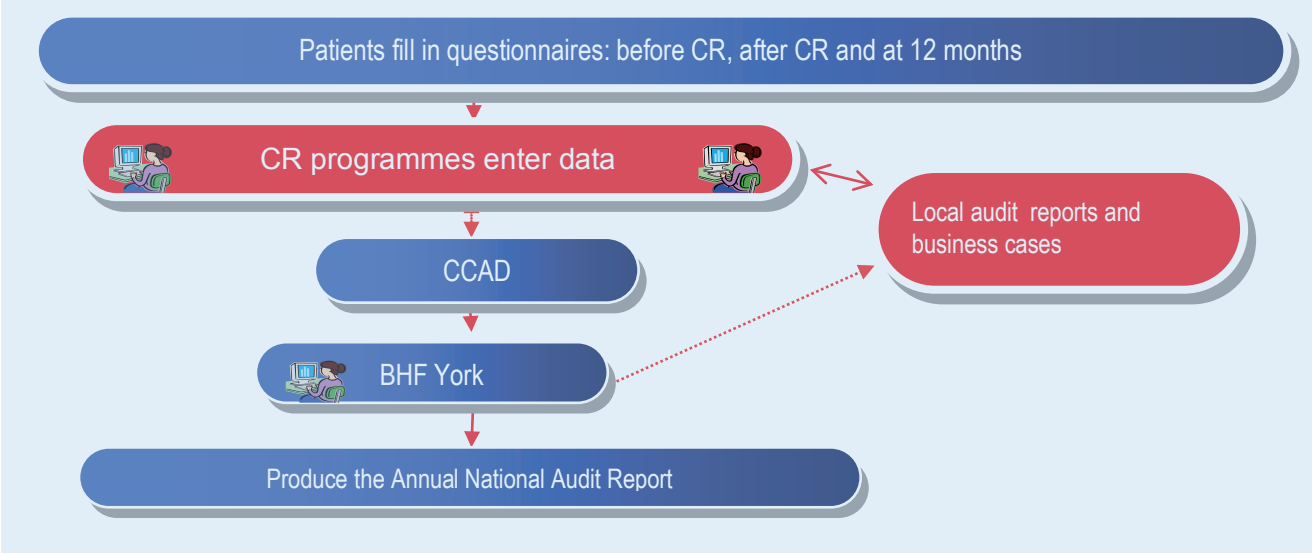
BEATING HEART DISEASE TOGETHER

The cover shows the Cardiac Rehabilitation programmes of the UK mapped to postcode areas. Areas with a greater population density have a smaller postcode sector footprint (Northern Ireland is mapped to Ordnance Survey counties).

The National Audit of Cardiac Rehabilitation (NACR) project

The National Audit of Cardiac Rehabilitation is funded by the British Heart Foundation and is part of the Central Cardiac Audit Dataset (CCAD) programme run by the NHS Information Centre. It has two main components, an electronic database installed by the contributing cardiac rehabilitation programmes that collects patient level data and an annual paper survey that collects the number of patients seen in a year from those centres not yet linked electronically. All centres complete this paper survey to supply information on their budget and staffing level.

Patients complete a questionnaire pack before, immediately after and (where resources allow) 12 months after attending rehabilitation. As well as medical and demographic information this captures secondary prevention, psychological and quality of life information. The staff of the CR programme enter the data which is then uploaded to the NHS Information Centre. Programmes can also view and download their data for local analysis. Two hundred and twenty programmes are currently submitting data, around 60% of the CR programmes of the UK.



Anonymised data is downloaded by staff of the BHF Care and Education Research Group who

- provide every centre with a quarterly summary of their activity and patient outcomes
- produce 'one off reports' as requested by staff or funders to improve local services
- produce the annual national audit report and support with statistical information the BHF Campaign for CR and the BACR Council in representing the service locally and nationally.

Aims

The aims of the project are to:

- show locally and nationally what services are achieving and where service levels are not reaching acceptable standards
- identify any problems of inequitable provision for particular sections of the population
- describe the typical benefits that a patient should expect
- find out which ways of delivering CR are most effective
- make information available to providers, cardiac patients and the general public.

Corinna Petre, Project Manager, NACR

Foreword

Dr Mike Knapton
Director of Prevention and Care
British Heart Foundation

The second annual report of the National Audit for Cardiac Rehabilitation shows that improvements are being made in the provision of cardiac rehabilitation in the UK. However, the majority of patients with heart disease still do not get cardiac rehabilitation and the postcode lottery remains.

In particular, this year's report highlights the great disparity between the advised and actual staffing levels, which means that many programmes are not able to offer the quality of service they would like to. This presents a real challenge for commissioners of health services. I hope we can report measurable progress in staffing provision for cardiac rehabilitation in next year's report.

There is evidence that the audit, linked to the National Campaign for Cardiac Rehabilitation is beginning to have a real impact across the UK. There have been local successes in saving and improving services. This progress is the result of the hard work of many patients and professionals working together to meet the five aims of this campaign:

- that every heart patient who is suitable and wishes to take part is offered a rehabilitation programme
- that patients should be offered alternative methods such as home-based rehabilitation, if they prefer not to take part in a group programme or attend hospital as an out-patient
- that efforts be made to ensure that rehabilitation programmes meet the needs of under-represented groups, particularly ethnic minorities and women
- that each programme should meet the minimum standards set out by the British Association for Cardiac Rehabilitation
- that this be monitored though the National Audit of Cardiac Rehabilitation.

The BHF is committed to ensuring that all cardiac patients in the UK receive the help that they want and need.

I am pleased to acknowledge the fantastic work and professionalism of cardiac rehabilitation staff around the UK, and their vital contribution to this project. Further thanks go to the BHF Care and Education Research Group at the University of York for compiling this report.

Dr Mike Knapton

Professor Patrick Doherty
President
British Association of Cardiac Rehabilitation

This year's report adds substantially to the last report. By having such high return rates it has helped clarify the state of play of Cardiac Rehabilitation throughout the UK. I know how much additional work the Audit can cause, especially for centres with little or no admin support but it remains the most powerful tool we have in improving funding and the number of patients who get access to CR and we must continue to work at it and roll it out until all centres are contributing data. Our aim should be to have data that is as authoritative and as complete as that of the cardiac surgeons and cardiologists.

It is clear from the commentaries from each of the four countries of the UK (pages 27-28) that in all of them major advances are already stemming from our joint work in collecting this information. Our thanks go to the BHF for taking our cause to heart and putting considerable weight and resources behind CR, both in funding the audit and running the National Campaign.

This audit is the most comprehensive collection of information about cardiac rehabilitation in the world and it shows that in many ways the UK leads not only in the extent of its cardiac rehabilitation service but also in the maturity of a service that is prepared to measure its outputs and present them to patients and health service funders. The work we do in our individual centres makes a very significant contribution to the health of our country and it is only by all working together to contribute to this dataset that we can show how large this contribution is.

One of the most important findings highlighted in this year's report is that staffing levels and resources for CR do not tally with the recommendations of the SIGN Guidance or the BACR Minimum Standards and Core Components. This is something we have always feared and armed with the NACR findings we are now able to begin to address this situation across the UK.

We should all take heart from the fact that more people are attending a rehab programme than ever before and that, despite some local problems, the service is becoming stronger and better recognised.

Thanks to your contributions our work can now be counted, literally, both nationally and for those contributing patient level data to NACR, locally. All of the signs are that as a result CR is increasingly becoming recognised as an essential mainstream clinical treatment for people with heart disease.

Professor Patrick Doherty

National Campaign for Cardiac Rehabilitation

The launch of the first report of the National Audit for Cardiac Rehabilitation last year signalled the start of the National Campaign for Cardiac Rehabilitation. Led by the British Heart Foundation (BHF), with support from the British Association of Cardiac Rehabilitation (BACR), the Campaign demands that all heart patients who can benefit have access to high-quality cardiac rehabilitation either in a medical setting or at home.

The Campaign is run separately in each of the four UK nations to ensure that all UK governments have the information necessary to meet the required level of provision. Further resources, an online petition and leaflets about the campaign can be found at bhf.org.uk/cardiacrehab.

England

The Campaign has played a vital role in raising the pressure for action at a national level. Thousands of heart patients around England were mobilised to bring the issue to the attention of their local MPs and PCT chiefs. In December 2007, patients and professionals descended on Westminster to directly lobby MPs. Many offered their support and some 20 questions about the lack of progress on cardiac rehabilitation were tabled in Parliament, drawing increasingly robust answers from ministers.

The next stage of the campaign in England will focus on local commissioners. The campaign in England is supported by partners including the Heart Care Partnership and Arrhythmia Alliance.

Wales

The Welsh Campaign has brought particularly impressive results in securing national level support. Launched as an alliance between BHF Cymru and the 'All Wales Cardiac Rehabilitation Working Group', the Campaign has gained the explicit support of both the First Minister Rhodri Morgan and Edwina Hart, the Minister for Health and Social Services.

A major milestone in the Welsh campaign involved an event held at the National Assembly for Wales in Spring 2008. This provided an opportunity for patients and health professionals to meet with Assembly Members and discuss the Campaign and local cardiac rehabilitation service issues. The twenty-three Assembly Members attending (over a third of all AMs) demonstrates the political commitment in Wales for Cardiac Rehabilitation. The Minister for Health and Social Services spoke in support of the Campaign for cardiac rehabilitation and pledged the Welsh Assembly Government's commitment to ensuring sustainability of cardiac rehabilitation services across Wales. This event coincided with the announcement of £2 million 'ring fenced' money for Cardiac Rehabilitation within the Local Health Board's discretionary allocations for 2008-09, which has substantially helped in sustaining services across Wales in 2008-2009.

Further announcements have included the allocation of a further £1.3 million investment for Cardiac Rehabilitation as part of the extension of 'Inequality in Health Fund' in Wales for 2008/2009, together with integration of 'Phase 4 Cardiac Rehabilitation' into the 'National Exercise Referral Scheme' within Wales.

Scotland

BHF Scotland has worked in partnership with Chest, Heart and Stroke Scotland (CHSS) to deliver the campaign. The Campaign has emphasised the need for services to be tailored to under-represented groups, such as women and people living in deprived or remote communities. It has also called for patients suffering from conditions like heart failure and angina to have access to the treatment. The Scottish campaign has achieved broad support from heart patients, with over 5000 signing a petition in support of rehabilitation services. The Scottish Parliament in March was treated to the first showing of a video featuring the Stirling Healthy Hearts Group talking about their experience of rehab. Cabinet Secretary for Health and Wellbeing, Nicola Sturgeon and 37 MSPs have lent their support. As a result, the Scottish Government's revised CHD and Stroke Strategy published in summer 2008 included a section specifically setting out the objective of improving access to rehabilitation. Furthermore, NHS Quality Improvement Scotland is establishing a work programme to monitor SIGN guidelines.

Northern Ireland

BHF will be exploring options for a campaign on cardiac rehabilitation with key partners in Northern Ireland over the next few months.

Ruairi O'Connor, Advocacy Manager, British Heart Foundation

The NACR Annual Report 2008

Contents

Acknowledgements

This project would not be possible without the dedication of the staff of the cardiac rehabilitation programmes of the UK who have collected the data. They do this often in the face of inadequate resources, using their own time to enter the data into NACR and the annual survey.

Many people have provided support and endorsement for the project, notably Professor Roger Boyle, Dr Mike Knapton and Betty McBride have spoken in public meetings and when it mattered in committees to support the work of the Audit. Two patient representatives, Mr Mel Clarke and Mr David Geldard, have worked tirelessly publicly and in steering groups to support and advise us. Without the support of the more than 40,000 patients who have completed the questionnaires for this year's audit there would be no information.

Section 1 Summary of main findings

In this Audit period (April 2006 to March 2007) 95% of CR programmes responded to the annual paper survey, the best return rate ever recorded. It is disturbing that 11% of programmes continue to report that they have insufficient resources to be able to record the number of patients they see each year. A further 11% could only report gross numbers and not the number for each diagnostic group. This may be linked to the fact that around 40% of programmes have no clerical or administrative support. It is encouraging that the number of programmes linked electronically has grown since the last audit period, from 55 to 220 currently.

It is also encouraging that the number of CR programmes in the UK rose from 351 to 374, helped in England by a BHF Big Lottery Grant of more than £4 million.

Uptake

In 2006-7 the percentage of patients starting a programme of CR in the three main patients groups that attend CR - heart attack (MI), elective angioplasty (PCI) and coronary artery bypass surgery (CABG) - increased slightly from 43 to 47% and waiting list times fell significantly. For example, MI patients on average waited ten days less than reported for the previous year. In the UK between April 2006 and March 2007 around 43% of MI patients, 73% of CABG patients and 28% of PCI patients started a rehabilitation programme. In the Audit period England was alone in the countries of the UK in having set a target for referral (85%) and clearly this was far from being met.

Despite recommendations from many expert groups CR remained almost exclusively limited to these three groups of patients and then only to those who experienced a recent acute event. Patients with heart failure, people who have experienced an acute coronary syndrome, or have had an ICD or other implanted device, people with angina and cardiac arrest survivors have almost no chance of attending. A patient's chance of attending CR may also depend on where they live, as uptake rates vary widely within geographical boundaries and between diagnostic groups across different locations. For example, the uptake by English Strategic Health Authority by people with PCI varied from 10% to 46%. Similar differences were seen between Health Boards in Scotland and Cardiac Networks in Wales.

Funding

Around 55% of CR programmes are significantly under-resourced. As a result patients face a second lottery in the degree to which they will receive adequate staff input. The median cost per patient in the UK was £461. None of the programmes responding to the survey fully met the minimum staffing levels recommended in the various national guidelines (SIGN, NICE, BACR). As a result the average patient can expect to receive only 79% of the nursing time, 36% of physiotherapy time, 16% of dietetic input and 12% of psychology time recommended by the SIGN Guideline for CR. Around half of the programmes have no secretarial or audit support, creating further pressure on clinical time.

Of the programmes responding to the question (80%) less than half said they had an accepted business case, an improvement on the previous year but a potential vulnerability, especially in England with the move to payment-by-results, as there is no agreed tariff for CR.

Clinical outcomes

The audit showed that programmes contributing to the NACR continue to provide the expected highly worthwhile benefits to patients. Following the programmes at 12 weeks 27% fewer patients were sedentary, and 20% more met the national target for activity. Body Mass Index (BMI), smoking, anxiety and depression were all reduced and some key aspects of health-related quality of life, particularly fitness and activities of daily living were greatly improved.

Conclusions and recommendations

This audit report shows that attending CR in the UK is associated with worthwhile and potentially lifesaving changes in behaviour as well as an improved health-related quality of life. There are numerous examples around the UK of well-resourced teams delivering a range and choice of programmes achieving good uptake rates and working in harmony across geographical boundaries in ways that make a very significant contribution to the health of the local population. There is only a slow improvement in the number of patients offered this opportunity, as there has been since the 1970s, but there is no evidence of the quantum leap in funding and quality of provision that has been experienced in other areas of cardiac care over the last eight years. As a result many patients are denied access to this lifesaving and life-enhancing treatment and any individual patient continues to face a lottery both in the possibility of being referred to a programme and in the resources that can be devoted to him or her if they are referred. Most of the CR programmes in the UK are understaffed and do not meet the minimum standards laid down by SIGN, the British Association of Cardiac Rehabilitation, or in England, the recent NICE commissioning advice.

Across the UK, CR is offered routinely to only three of the many diagnostic groups who might benefit and, as a result, it reaches only a fraction of those people with coronary heart disease who both want and need to attend. This is particularly unfortunate at a time when the governments of all four UK countries are encouraging the better management and self -management of chronic illness.

Strategic Health Authorities, Cardiac Networks, Managed Clinical Networks and those who commission services for local populations could achieve much by ensuring that local multi-disciplinary CR teams are strengthened to meet the BACR minimum standard; the additional cost per patient would be small. Until this is achieved, despite the dedication and skill of the staff providing CR programmes, many patients will fail to achieve the improvement in longevity and quality of life to which they are entitled.

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

Section 2 Questions about uptake, quality and outcomes

How many CR programmes are there and is the number increasing or decreasing?

What did we find?

The number of CR programmes on the BHF/BACR register of CR programmes increased between April 2005 and March 2007 from 351 to 374. This period coincided with more than £4 million of grant money being made available for developing CR programmes in primary care in England by the BHF Big Lottery Fund.

Method

The NACR staff at York maintain and continually update the BHF / BACR National Register of Cardiac Rehabilitation Programmes for the UK (see box below).

Caveats

Despite constant effort to update the register there may be programmes that do not appear, some that do that have recently ceased to operate, and satellite locations listed independently to the main organising programme. There is a constant churning in the number of programmes due to mergers, start-ups and programmes closing. This was especially true of this year's audit in England where the PCT boundaries were redrawn and some programmes merged.

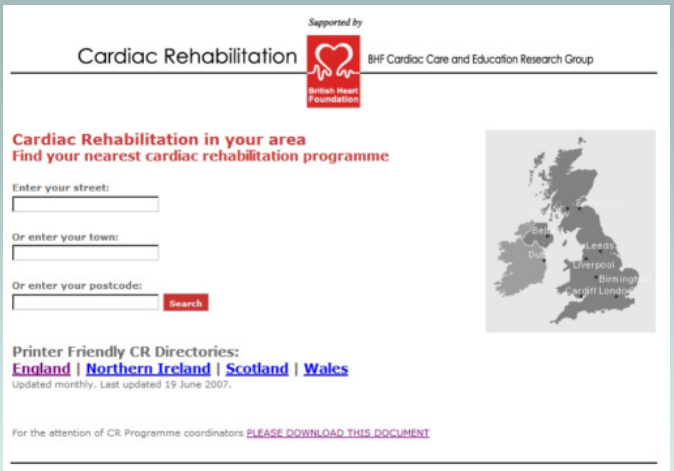
The online register is at

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.

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



There is also a Google Map showing how programmes are distributed across the UK.

Which patient groups were referred to cardiac rehabilitation?

What did we find?	Referral to CR was restricted to three main diagnostic groups: those who had sustained a heart attack (MI), elective angioplasty (PCI) or coronary artery bypass surgery (CABG). Only 20% of referrals were for other conditions that might benefit such as heart failure, acute coronary syndrome or ICD implantation.
Why is this important?	National and international authorities agree that patients with MI, PCI, CABG should attend and research has suggested that people with heart failure, implanted cardiac devices, acute coronary syndrome (other than MI or unstable angina) and people with chronic stable angina would also benefit. Each country of the UK has different policies about which patients should receive CR and within countries local funding agreements or staff shortages often impose arbitrary criteria for attendance.
Method	We used the data entered in the NACR database.
Further information	A table showing all of the reasons for referral to CR programmes using the online data collection in 2006-7 is presented on page 38.

Table 1. The main diagnostic groups recorded in the NACR database

Diagnosis	*% of all recorded in NACR*
MI	51%
CABG	16%
PCI	13%
ACS	6%
Angina	4%
Heart Failure	1%
ICD patients	<1%
All others	9%
(N=44307)	

What percentage of MI, PCI, and CABG patients attended CR in the UK?

What did we find?	Less than half of MI patients took part in a CR programme, around a third of PCI patients and three-quarters of CABG patients. 11% of the CR programmes on the national register who replied to our survey appeared to have no ability to report the number of patients they had treated.
Method	We used the data entered in the NACR database supplemented by the annual postal survey for those CR centres that are not yet linked electronically. We compared the numbers reported, using estimation to deal with missing data where appropriate, with the number of 'cases' reported by the various national statistical agencies.
Caveats	For 9% of programmes we had no information at all, about patients, staffing, or budget. Attempting to estimate patient numbers for those centres was likely to impose a greater degree of error than not including them. Our experience is that it is usually the programmes with very little resources and seeing few patients that are unable to provide any information. The result is that we have slightly underestimated the number of patients seen. However, our figures are in accord with other surveys and what we know about the increase in activity and staffing in CR over this period and this suggests that at the summated UK level, this information is likely to be reliable.
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, by Health Board (where data completeness allowed) in Scotland and in Wales by Cardiac Network (pages 39-48).

Table 2. Numbers and percentages of patients in the three main diagnostic groups attending CR in the UK

	No. of cases	*Receiving CR*	*% Uptake*
MI	90847	38874	43%
PCI	38296	10743	28%
CABG	20159	14671	73%
Total	149302	64288	43%

Number of centres able to provide the number seen by diagnostic group	*277/371 (75%)*
Number of centres where we estimated the ratio for the diagnostic group	*62/371 (17%)*
Number of centres whose data could be used in this analysis	*339/371 (91%)*

Has there been an increase in the percentage of people with MI, CABG and PCI attending CR in the UK?

What did we find?	We estimate that between the periods 2005-6 and 2006-7 there has been an increase in the percentage of patients in these three diagnostic groups of around 4%.
Why is this important?	Research shows that patients who attend CR live longer and have a better quality of life.
Method	We used the data entered in the NACR database supplemented by the annual postal survey for those CR centres that are not yet linked electronically. We compared the number reported, using estimation to deal with missing data where appropriate, with the number of 'cases' reported by the various national statistical agencies. To make a comparison with the 2005-6 survey period and for this analysis only we generated estimates for the 9% of centres on which we had no information by taking the median percentage of patients rehabilitated in each area per diagnosis.
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, by Health Board (where data completeness allowed) in Scotland and in Wales by Cardiac Network (pages 39-48).

Are the Department of Health's National Service Framework targets for England being met?

What are the targets?	In 2000 a target was set for England that, by 2002, 85% of patients who had had a heart attack (MI), angioplasty (PCI) or coronary artery bypass surgery (CABG) would be invited to attend CR. After that had been achieved CR would be rolled out to all other cardiac patient groups, apart from those with unstable conditions. This would include patients with heart failure, acute coronary syndrome, angina, congenital heart disease, valve and other cardiac surgery and people with implanted devices.
What did we find?	The slow improvement in uptake observed over the last eight years continues but the NSF-CHD 2002 targets are still far from being met. The longer term aim, to roll out CR provision to other groups of cardiac patients has barely started.
Method	We used the NACR database and the annual survey to establish the number of patients starting CR compared to the number of patients recorded in the Hospital Episode Statistics as having an acute event.
Caveats	There is a degree of uncertainty around all previous reports due to the need to estimate numbers for those centres that cannot or will not return data. In this audit period 10% of centres in England did not return data. Because they are not included in the analysis this probably leads to a slight underestimation of the uptake figure. However, centres that we have no data from are likely to be smaller and we are confident that this uptake is a fair, if slightly conservative, representation of the current situation.
Further information	Pages 40-42 present tables and maps showing uptake rates and degree of estimated data by Strategic Health Authority.

Table 3. Uptake of CR in England for MI, PCI and CABG patients

	Uptake
MI	42%
PCI	31%
CABG	73%
Total	44%

Are some demographic groups under-represented in CR programmes?

What did we find?	The majority of those referred to CR are white British, retired men in their mid to late 60s with MI, PCI or CABG. The proportion of men to women referred is around 2 to 1. Around 15% of patients are 80 years or older and very few people from the major ethnic groups or those recorded as permanently sick or disabled are referred. In the coming year studies of selected areas of the UK will be undertaken to determine how far these figures reflect disadvantage in the opportunity to attend or are the result of the natural demography of the disease.
Why is this important?	It has often been suggested that women, the elderly, people from ethnic minorities, rural populations and disabled people are not attending in the numbers that would be expected.
Methods	We use the data entered in the NACR electronic database.
Further information	The table showing the demographic data of those referred can be found on pages 33-35.

Table 4. Percentages of referrals recorded in NACR database

Group	*Referred*
Women <70	13%
Men <70	44%
Women >70	17%
Men >70	26%
Not recorded as White British or Irish	23%
Average age	67
Number over 80 years	15%
Permanently sick or disabled	5%

(N=44306)

Is the provision of CR geographically equitable?

What did we find?	There are significant differences in uptake within and across regional and in some cases national boundaries and across different diagnostic groups within those areas. For example, the uptake by English Strategic Health Authority where we had almost complete data for PCI varied from 10% to 46%.
Why is this important?	It is a principle of the NHS that where you live should not affect your chance of receiving an essential treatment.
Method	We used information from the register of CR, the NACR and the annual survey.
Caveats	There is some inevitable error when comparing geographical areas, such as Health Authorities or Health Boards as referral pathways often cross these boundaries, so that an SHA or Health Board may lose or may gain CR patients from an adjoining area. These tables should not be seen as league tables.
Further information	Pages 39-48 present tables and maps showing differences in uptake rates across countries, Health Boards and Health Authorities in England, Scotland and Wales.

How many patients who are referred to CR turn it down and why?

What did we find?

Around 80% of patients who were referred and entered into the NACR database took part in some element of a CR programme. Of the one fifth who did not attend, around a third were too ill, awaiting other investigations or had died, a third said they were not interested and the remaining third gave a wide variety of other explanations why they could not come. Thus for patients offered rehabilitation and medically able to take part uptake rates were around 83%. This confirms a previous survey by the Health Care Commission showing that the main reason for the low uptake rate in CR is the failure to make it available to patients.

Method

This data is recorded by staff in the NACR database for patients that are referred to them and with whom they have an initial contact.

Caveats

The completion rate of this part of the electronic audit is relatively poor, being completed by around 85% of centres. Of necessity, the data shown here only reflects the views of those who were offered rehabilitation.

Table 5. Percentage of patients offered rehabilitation but did not take part

Year	*2005-6*	*2006-7*
Did not take part	25%	23%

(N=15663, N=44307)

Table 6. Reasons given for patients not taking part

Reason	*2006-7*
Patient not interested/refused	34%
Physical incapacity	14%
Too ill	7%
Ongoing investigation	6%
Not referred	4%
Local exclusion criteria	4%
Too far to travel	3%
Returned to work	3%
Mental incapacity	2%
Holidaymaker	1%
No transport	1%
Language barrier	<1%
Died	5%
Other	16%

(N=3684)

How long are patients waiting to start CR?

What did we find?

There are very significant wait times for CR. The median delay between MI and rehabilitation starting is more than three weeks and for angioplasty a month. CABG rehabilitation is around six weeks, probably because in some centres this is part of the treatment protocol.

Encouragingly the wait time has declined significantly over the two years of the audit programme, particularly for MI patients where it has reduced by nearly 10 days. Across all diagnoses there has been a reduction of more than a week.

Why is this important?

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 7. Waiting time to referral and start of rehabilitation programme in days for the main diagnostic groups

Year	*2005-6*		*2006-7*	
	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)*
Myocardial Infarction	4	37	3	27
Bypass surgery	11	55	9	54
Angioplasty	4	37	3	33
Other	7	51	5	39
All	5	43	4	35

How multi-disciplinary are the programmes?

What did we find?	Almost all programmes had access to nursing skills and 71% to physiotherapy. Other professions were available to less than half of the programmes and psychological expertise to less than a quarter. Only 2% of programmes cited a doctor as part of the 'team'.
Why is this important?	All modern guidelines agree that CR should meet the medical, behavioural, psychological and social needs of the patient. This will require the skills of several different professions.
Method	In the annual survey we asked CR programmes how many and which professions took part in their programme.
Caveats	There is potential ambiguity in the answers given to this question, access may mean that a patient can be referred to an external department or service, or it may mean that the business case includes dedicated time from that professional. Where the former is the case such referral may be rarely made, for example, local waiting times for psychology services may be so long as to make a referral of little value or rationed so that only the most severe cases are referred. Furthermore although a professional may be 'part of the team', in reality they may have time only to give a group lecture once every few weeks, rather than deal with patients' individual needs. We suspect therefore that the survey may exaggerate the degree to which multi-disciplinary input is available.
Further information	A table showing all of the disciplines mentioned in response to the survey is shown on page 49.

Table 8. Percentage of programmes with access to the most commonly reported disciplines

Discipline available	*% of programmes*
Nurse	96%
Physiotherapist	71%
Dietitian	55%
Pharmacist	44%
Exercise specialist	28%
Occupational therapist	27%
Psychologist	23%

How many programmes met the SIGN guideline for staffing per patient?

What are the guidelines

In 2002 the Scottish Intercollegiate Guideline Network set out evidence-based guidelines for the minimum staffing of a CR programme per 500 patients attending. In 2008 this was slightly modified and adopted by the British Association of Cardiac Rehabilitation in its National Minimum Standards. Most recently, following the publication of the Post MI and Secondary Prevention Guideline by NICE, an online commissioning template have been made available that again slightly modifies the SIGN standard. In the analysis that follows we have used the original SIGN guideline as that was the recommendation in force at the time being reported on.

What did we find?

There were no programmes in the UK staffed at the level per patient recommended in the SIGN guideline. The table below shows the degree of shortfall by each of the professions listed by SIGN, 31% had no physiotherapy, 48% no dietetics, nearly 80% no psychologist on the staff (or available) and 42% no clerical or secretarial support.

The result is that the average patient in the UK can expect to receive only 79% of the nursing time recommended by SIGN, 36% of physiotherapy time, 16% of dietetic and around 12% of the psychology input indicated. Only half of the clerical support required is available, diluting patient time available from the clinical staff and preventing some from taking part in the NACR data collection.

Method

In the annual survey we asked all of the CR programmes on the register how many different professions took part in their programme, at what grade and the number of hours worked. SIGN also recommended pay banding levels for each profession which we did not account for in this analysis.

Caveats

Only two-thirds of programmes responded to this question and the adequately staffed and better funded centres may have been more likely to provide the information. If the correct band of staff had been taken into account, concordance with the recommendations would have been reduced, and further so if the additional personnel needed to staff rural programmes had been considered.

Further information

The SIGN recommendations are shown on page 49. Pages 49-56 show the staffing and economic data in a series of tables and graphs by country.

Table 9. Percentage of programmes in the UK with staffing levels equivalent to the SIGN guideline with personnel on any pay band

	Meets staffing guideline	*Staffed 50 to 99% of guideline*	*Staffed 1 to 49% of guideline*	*No staff of that profession*
Nursing	60%	20%	16%	4%
Physiotherapy	16%	15%	38%	31%
Pharmacy	2%	4%	33%	61%
Dietetics	8%	4%	39%	48%
Psychology	9%	3%	9%	79%
Clerical	42%	10%	5%	42%

(N=250, 67%)

How many programmes in the UK have an established budget?

What did we find?	Across the UK only 40% of programme co-ordinators responding to the question had an accepted business case and only 32% were able to report a discrete budget held solely for CR.
Why is this important?	This is particularly relevant to England where new funding methods have been introduced. There is currently no payment-by-results tariff for CR and programmes in Acute Trusts that have no identified budget are vulnerable to closure. With the majority becoming Foundation Trusts in the next year or so this pressure may become acute. Although in the other countries of the UK these pressures may not exist, the lack of a budget held by the programme coordinator may indicate decreased ability to determine the shape and extent of the service provided.
Method	In the annual survey we asked all the CR programmes on the register to indicate whether they had an accepted plan, and to quote their CR budget if known.
Caveat	Just over three-quarters of programmes completed this question, which was variable across countries (see table below) so caution must be exercised in interpreting these results.
Further information	Further economic information is presented in pages 50 and 54.

Table 10. Percentage of programmes with an accepted business plan and their budget figure

	2005-6		*2006-7*		
	% answering the question	*Budget quoted*	*% answering the question*	*% with accepted business plan*	*Budget quoted*
England	56%	31%	80%	42%	38%
N. Ireland	45%	18%	94%	18%	0%
Scotland	83%	42%	61%*	33%	13%
Wales	85%	45%	70%	53%	33%
Total	60%	32%	78%	40%	32%

*Method of data collection different for Scotland, see page 30.

What is the cost per patient?

What did we find?	The median cost per patient in the UK was £461. There appears to be a wide disparity in the cost per patient in CR programmes in the UK.
Why is this important?	Patients are entitled to receive the same level of care across the NHS and as the great majority of the cost of CR is in staff time the differences reflect the amount of attention patients receive.
Method	We asked every programme in the survey for details on staffing levels and the total number of patients seen. We calculated the cost to the NHS of these staff, together with a fixed amount for equipment depreciation. We divided this total cost by the number of patients seen that year to arrive at the '*cost per patient treated'* figure.
Caveat	The response rate for this question was only two-thirds of programmes, and we suspect that it was the better funded programmes that were more likely to reply. If this is the case the true cost per patient may be lower.
Further information	For more detailed information on the methods see page 31 and for the costs per patient see page 50.

Table 11. Mean and median cost per patient treated in the UK

	2005-6	*2006-7*
Mean (£)	542	625
Median (£)	411	461
% answering the question	60%	67%

How many programmes rely on charitable funding for part of their budget?

What did we find?	91% of programmes nationally had nearly all their funding supplied by the NHS, an improvement on previous years. In Wales, in the audit period reported here 50% still relied on charitable funding to a significant extent.
Why is this important?	For many years CR programmes often relied on charitable funding or the self-generation of funds for part of their income.
Method	We asked every programme in the survey to indicate the proportion of their budget supplied by NHS and non-NHS sources.
Caveat	There was a low response rate to this question of 55% nationally, so the information must be treated with caution.

Table 12. The percentage of funding from the NHS by quartile

	UK		*England*		*Northern Ireland*		*Scotland*		*Wales*	
	2005-6	*2006-7*	*2005-6*	*2006-7*	*2005-6*	*2006-7*	*2005-6*	*2006-7*	*2005-6*	*2006-7*
0-24%	8%	3%	5%	2%	20%	0	15%	0	23%	10%
25-49%	3%	2%	3%	1%	0	0	5%	5%	6%	20%
50-74%	5%	5%	3%	3%	0	0	5%	10%	18%	20%
75-100%	84%	91%	89%	94%	80%	100%	75%	85%	53%	50%
% answering question	60%	55%	56%	58%	45%	29%	83%	54%	85%	43%

What do patients receive in CR programmes?

What did we find?	Group exercise was the most common method of participating in an exercise programme, with 58% taking part, while 32% had a home exercise programme, often in conjunction with the group programme and a quarter had an individual exercise programme. Written lifestyle education was provided to 62% of individuals. Thirty-nine percent had a group dietary session. Around 39% took part in relaxation training and a quarter in a talk about the psychological aspects of heart disease. Only 1% had a vocational assessment.
Why is this important?	Comprehensive CR includes attention to medical, psychological and social needs of patients. Patients should be offered a menu of methods for reaching their individually-set goals for rehabilitation.
Method	The NACR data collection asks for a record of the activities each patient takes part in during their rehabilitation programme.
Caveats	In the year reported here, online audit data was contributed by 46% of all CR programmes. In the main it is likely that it is the better resourced programmes that take part, so any bias is likely to be towards presenting better practice than is the norm.
Further information	More detailed description of the elements that CR patients undertook is shown on page 58.

Are the targets for change set in the English National Service Framework for Coronary Heart Disease being met?

What are the targets?	In England, the National Service Framework for Coronary Heart Disease (2000) set some outcome targets for cardiac rehabilitation. These recommended that at twelve months at least 50% of people who took part are • taking regular physical activity of at least 30 minutes duration on average five times a week • not smoking • have a Body Mass Index (BMI) < 30 kg/m^2. 90% should be taking aspirin, 80% statins and 80% beta-blockers or ACE inhibitors.
What did we find	The target for aspirin was exceeded before rehabilitation and remained above target after rehab. The largest effect was seen in activity levels, with a 20% increase in the number of people exercising five or more times a week and a 27% reduction in those who never exercised. Improvements, although not as high, were still seen at 12 months after rehabilitation. The number of smokers also significantly decreased, from 13% to 8%.
Method	The NACR audit records these variables before CR and at 12 weeks and 12 months after CR.
Further information	Full information on the targets is shown in the tables on page 56.

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

What did we find?

It seems that people who take part in CR programmes contributing data to the NACR experience a significant improvement in quality of life over the course of the programme.

The biggest improvement in the COOP Quality of Life Charts scores was in the perceived fitness and activity domain. The number of people low in fitness declined by 24% at 12 weeks and 25% at 12 months. The number of people who said they could do heavy exercise rose from 14% to 27% at 12 weeks and from 13% to 25% at 12 months.

To a lesser but still worthwhile extent, problems with social activities and the patients' perceptions of their overall health all changed significantly for the better.

Method

The online NACR includes the Hospital Anxiety and Depression Scale (HADS) and the Dartmouth COOP Quality of Life Charts.

Further information

Full results are shown in the tables on pages 57-58.

Commentary from each of the four countries of the UK

England

This year has seen a great deal of work around setting a tariff for CR. The BACR, NACR, BHF, DH vascular team, PbR team, the Information Centre and the Heart Improvement Team and the NACR group at York have come together on several occasions to work on this. So far the main success is that from April 2009 there will be an unbundled CR tariff for Phase I, this means that it is not linked directly to a particular cardiac procedure but can be applied to a number of cardiac procedures. Alongside the acute tariff there will be an emerging tariff, guiding commissioners to consider Phase II and III. Over the next 18 months we will work to create a Health Resource Grouping (HRG) code which will then form part of the full CR tariff. Reference costs will be collected from five CR pilot sites; please rest assured that the costs obtained from the pilot sites will reflect a comprehensive range of service provision and approaches.

We have also been working hard on a CR commissioning guide and toolkit. The NICE Topic Advisory Group met in January 2008 and agreed to incorporate a greater number of patient groups and conditions than those referred to in the Post MI guideline. The NICE heart failure service guide now has a link to the NICE CR service commissioning guide, putting heart failure on the map for commissioners. The toolkits are available online for use by commissioners and reflect the staffing levels recommended in the BACR minimum standards guideline which should help to correct the poor staffing levels revealed by this report.

Patrick Doherty, National Clinical Lead for Cardiac Rehabilitation

Northern Ireland

Cardiovascular disease continues to be one of the biggest causes of death and disability in Northern Ireland and is being prioritised through the launch of a service framework for cardiovascular health and well being. This will establish standards on which to take forward service improvements including cardiac rehabilitation which has been identified as an area requiring improvement to bring it up to the standards recommended in recent CREST and BACR guidelines.

A lot of work has taken place through the creation of a clinical advisory sub group of the regional cardiac network to improve the delivery of services throughout NI and to standardise service provision. Recognition of our lack of meaningful CR data relating to NI has been addressed by implementing the NACR database into all CR sites. This has been endorsed not only by the regional cardiac network but also the service framework for cardiovascular health and wellbeing. Support from the BHF has helped this initiative and the CR teams are committed to it but IT and issues of consent that are unique to NI mean that we are still not returning data electronically from all CR sites. We are working together to try to reverse this situation and it is hoped that robust NI data will be available in the near future.

Although further investment is required and we need to consider different models of delivery, over the last year there has been an improvement in CR services in NI.

Bernie Downey, Chairperson, Clinical Advisory Group for Cardiac Rehabilitation and Prevention

Regional Cardiac Services Network for Northern Ireland

Scotland

There are many examples of excellent practice in Scotland that have been captured in this NACR report and the cardiac rehabilitation community in Scotland are united in their aims to improve services. However, it is clear that the recommendations for cardiac rehabilitation services in the SIGN guideline 57 have not been fully implemented.

The Scottish Government have recently published a refreshed strategy for Coronary Heart Disease and Stroke for consultation: ‘Better Coronary Heart Disease and Stroke Care’. This states that all suitable

patients who undergo a step change in their CHD condition: myocardial infarction, other acute coronary syndromes, revascularisation, new onset or worsening angina and chronic heart failure will be assessed for comprehensive menu-based cardiac rehabilitation. It also recognised the need to engage cardiologists in cardiac rehabilitation.

Data collection by rehabilitation programmes is not standardised and recently significant effort has been directed to improve our electronic clinical information systems. We plan to introduce a single electronic cardiac rehabilitation record for Scotland to collect as part of a Scottish National Audit . This will facilitate the implementation of the clinical standards programme currently being developed in partnership with NHS Quality Improvement Scotland. A set of clinical standards which cover participation rates for programmes and optimal aspects of clinical management will be established as a part of this programme and will act as a lever for service development. An extract from the Scottish National Audit will be submitted to the UK NACR to allow comparisons across the four countries of the UK.

Dr Paul MacIntyre, Lead Clinician for CHD, Chair of the National Advisory Committee for CHD
Dr Sue Payne, Consultant in Public Health Medicine, Lothian

Wales

In political and strategic terms, this last year has seen the achievement of many milestones in the development of Cardiac Rehabilitation services in Wales. The most notable of these include the announcement of extended short-term funding for 2008-2009, integration of 'Phase 4 Cardiac Rehabilitation' into the 'National Exercise Referral Scheme', and imminent publication of the first 'Standard' for Cardiac Rehabilitation in the 2nd Welsh 'National Service Framework for Cardiac Disease'. Together with the thrust of the 'National Campaign' in Wales, these achievements can be attributed to the effective partnership-working of local Cardiac Rehabilitation Services, the 'All Wales Cardiac Rehabilitation Working Group' and 'Cardiac Networks'.

Wales has a commendable record of its participation in the National Audit for Cardiac Rehabilitation and has worked to gather complete data. There is however room for improvement, particularly in terms of the need for greater consistency in approach across Wales. A particular challenge facing Wales within the next year will be the potential impact of cessation of the three year BHF funded clerical support and whether teams will have sufficient capacity to continue contributing data. The 'All Wales Cardiac Rehabilitation Working Group' is working to address these issues.

The 2008 data for Wales demonstrates effective clinical patient outcomes achieved by dedicated cardiac rehabilitation services in Wales. There is nevertheless the sobering message that this last year has seen a 6% reduction in uptake of Cardiac Rehabilitation in Wales, representing the lowest uptake across UK. The publication of the Welsh data is timely as it coincides with and will complement the current benchmarking exercise of the 'National Baseline Review of Cardiac Rehabilitation Services in Wales'. The outcomes of this Review will result in the submission of a 'National Strategy for Cardiac Rehabilitation in Wales for 2009-2011' to the Welsh Assembly Government, outlining key recommendations for the future commissioning and modernisation of services, focusing on aspects such as funding, efficiency, sustainability, staffing levels, skill mix, patient uptake and accessibility, service models, quality, audit, etc. As part of this modernisation agenda, local teams are already making evidence based changes to their services where appropriate. Key recommendations within the 'Strategy', will emphasise the role of the National Audit of Cardiac Rehabilitation as an essential means of performance monitoring and highlight the need for further investment.

Paul Smith, Chair - All Wales Cardiac Rehabilitation Working Group

Section 3 Methods and results

Methods

The audit consists of two elements

The NACR, an electronic database collecting data using the NHS Information Centre portal (CCAD) and for those programmes that have not yet linked up, an annual postal survey.

Methodology for the NACR data collection

The NACR audit method was described on page 1. 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** .

Methodology for the Annual Survey of CR programmes

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 CR register of programmes. If they did not respond they were reminded again by letter and then by phone.

In Scotland data were reported either directly by the programmes or collected for us in aggregate form via the clinical network leads of the Health Board.

Notes on the methodology and analysis

Coping with missing survey data

Where centres 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 centres in that country which did provide the information. Where centres did not provide the total number of patients seen but did provide staffing data we estimated the total number of patients using the average number of patients treated for increments of staffing from centres in that country who did provide the information. Diagnostic ratios were then estimated as above. In the few cases where an estimate yielded a number higher than a denominator for a particular area, we applied that country's median percentage treated to the denominator to derive the estimate. In Scotland there were a few cases where the number of patients reportedly receiving rehabilitation exceeded the denominator. For these cases we presented that data for the within-country figures without the percentage uptake, but removed and estimated the numerator when calculating the percentage uptake by country. For these cases we also applied that country's median percentage treated to the denominator to derive the estimate. In the few cases where we had no other information but the denominator for an area in which there was only one rehab programme, we used the median ratio of patients treated in that country to estimate the numbers treated. Where we had no information about the size of the rehab programme or from where the patient population was drawn, we made no attempt to estimate the patient numbers and the outcome tables should be read with this in mind.

In mid-2006 the Strategic Health Authority Boundaries were redrawn in England, consolidating them from 28 to 10. Accordingly we have not compared results with the previous audit by SHA. We used the map of Strategic Health Authority configurations, published by the NHS, to determine the new configuration and reallocated the programmes from the old to the new SHA accordingly.

Not all centres returned data about the salary band of their health professionals; where this was the case we estimated by using the median pay band from those centres that had provided data.

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 2006-7. The method of doing this in each of the four 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

Hospital Episode Statistics (HES) provided individual anonymised patient level data on those discharged alive after having an MI, PCI and CABG in any diagnostic category.

In Northern Ireland

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 Scotland

The denominator in Scotland was developed by the Information Services Division, NHS National Services Scotland, who provided aggregated data for 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.

Calculating the cost of staff

Where it was indicated that the professional was available by referral only and no approximate weekly hours were given no costs were entered (few cases). Where weekly hours for multiple staff members were missing the programme was excluded from the analysis. Staff salary, on-costs, overheads, capital overheads, and travel and training where applicable were taken from Netten and Curtis, *Unit Costs of Health and Social Care (2006-7)* with appropriate weighting for London. If not otherwise annotated, managers were assumed to be clinical managers and costed using nurse manager multipliers. Bilingual workers and health promotion officers were costed using administrative grade multipliers. Where not specified, practitioners were costed using nurse manager multipliers. Rehab assistants were assumed to be HCAs. Cardiac support group leaders were assumed to be volunteers. Societal costs were not estimated. As per Beswick et al 2004, a constant was added to account for equipment of £940 for each programme (e.g. £861 multiplied by 3% inflation). Staff costs plus equipment costs were summed and divided by the total number of patients to give the cost per patient.

The SIGN guideline recommended the following staffing levels (and pay bandings) per 500 patients:

Nursing Specialists	3.0 WTE Band 6 to 7	Physiotherapy Specialists	2.0 WTE Band 6 to 7
Pharmacy	0.2 WTE Band 6 to 7	Dietetics	0.3 WTE Band 6 to 7
Psychology	0.2 WTE Band 6 to 7	Audit and Clerical	0.5 WTE Band 3

Actual costs of SIGN-recommended staff were calculated using the salary band reported by the programme. The staffing levels shown above assume a predominantly urban population and underestimate the level needed to staff a rural programme.

Notes on interpreting the results on uptake of CR

An obvious question is, what percentage would be 'enough' or, to put it another way, what percentage of patients should be taking part in CR, what should the definition of success be?

The standard NHS answer would be 'all those who would benefit within an acceptable cost-benefit ratio range should take part' simply begets another question what percentage will benefit? This figure is currently unknown and as CR has multiple therapeutic aims that go beyond survival or secondary prevention (for example return to work, psychological adjustment) any answer is likely to be very complex. Clearly the answer is not 100%, not every patient is well enough, or needs to take part in rehabilitation, nor will every patient ever choose to take part. In setting targets for England, the Department of Health specified a figure of 85% of those having an acute event. This figure was a guestimate and is probably too low for use in CABG but too high in heart failure, where some patients are very elderly or at a very late stage. Clinical opinion is little help in setting a marker for 'success' because while it is argued by most authorities that almost every patient can benefit from some aspect of cardiac rehabilitation, it is equally firmly held by others that the key element is increasing physical fitness or secondary prevention and people who cannot benefit in this way should not be referred. Some programmes, by offering a choice of methods such as group or home-based rehabilitation, achieve markedly higher uptake rates than others, uptake for MI patients can exceed the 80% level. Here we simply report uptake as a percentage of those surviving the acute event, because there is no established 'finishing post' and any attempt to manipulate the denominator from the actual number with the condition to an estimate of how many 'should' take part is likely to introduce bias.

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. However, it is likely that the degree of such error is reasonably constant across these organisational boundaries and especially in the English SHAs where there are usually many programmes: therefore, we are certain that the observed 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, a fact that they and the relevant clinical networks should investigate.

Finally, although we have the best response rate ever recorded for CR, there is still some degree of underestimate of the numbers having some kind of rehabilitation experience because we have not attempted to guess attendance in 9% of the programmes that are on the CR register but from whom we have been unable to gather any data at all.

Results

Return rate of the Annual Postal Survey

The survey response rate across the UK was excellent at 95%. 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 13. Return rate for the Annual Postal Survey of CR Programmes

	*UK**	*England*	*N Ireland*	*Scotland***	*Wales*
Returned	353/371	275/291	17/18	37/38	24/24
	95%	95%	94%	97%	100%
% surveys used to determine uptake by diagnosis	91%	90%	89%	97%	100%
% with no diagnoses provided	26%	28%	22%	18%	13%
% of replies where diagnosis was estimated	17%	18%	11%	16%	13%
% where estimate not possible	9%	10%	11%	3%	0%

*Channel Islands and Isle of Man 100% returns, but not included in uptake by diagnoses
**Method of data collection different for Scotland, see page 30
NB Numbers may not total to exactly 100% due to rounding errors

Descriptors and demographics of those referred to CR

Table 14. Average age and gender of patients referred to CR in the three largest patient groups as recorded in the NACR

		2005-6		*2006-7*	
		Average Age	*%*	*Average Age*	*%*
Myocardial Infarction	Male	66	67%	66	68%
	Female	73	33%	72	32%
Bypass surgery	Male	66	80%	66	80%
	Female	69	20%	69	20%
Angioplasty	Male	63	73%	63	74%
	Female	66	27%	68	26%
Other	Male	65	63%	65	64%
	Female	68	37%	68	36%
All	Male	66	69%	65	70%
	Female	70	31%	70	30%

(N=15663, N=44307)

Table 15. Marital status of patients referred to CR as recorded in NACR

Status	*2005-6*	*2006-7*
	% of cases	*% of cases*
Married	74%	73%
Widowed	12%	12%
Single	6%	7%
Permanent partnership	4%	4%
Divorced	4%	4%

(N=11308, N=33289)

Table 16. Ethnicity of patients referred to CR as recorded in NACR

	2005-6	*2006-7*
	% of cases	*% of cases*
White (British)	84%	76%
White (Irish)	1%	1%
White (Other)	1%	2%
Mixed White/Black Caribbean	<1%	<1%
Mixed White/Black African	<1%	<1%
Mixed White/Asian	<1%	<1%
Mixed Other	<1%	<1%
Indian	2%	2%
Pakistani	1%	3%
Bangladeshi	<1%	<1%
Other Asian	<1%	1%
Black Caribbean	<1%	<1%
Black African	<1%	<1%
Black Other	<1%	<1%
Chinese	<1%	<1%
Other Ethnic Group	<1%	1%
Not stated	11%	14%

(N=14400, N=40669)

Note on interpretation of this information

The percentage of White British has decreased by 8% and the proportion of Pakistani patients has increased, however the number not stating their ethnicity also increased for this audit period. Also, in the first year of the audit there were fewer programmes contributing data, making any firm conclusion as to an apparent change in referral rates unsafe. In future years we will be able to provide more reliable conclusions regarding change in uptake in different demographic groups.

Table 17. Employment status of patients referred to CR as recorded in NACR

	2005-6	*2006-7*
	% of cases	*% of cases*
Employed - full time	16%	18%
Employed - part time	4%	4%
Self employed - full time	4%	4%
Self employed - part time	1%	2%
Unemployed looking for work	2%	1%
Government training scheme	<1%	<1%
Looking after family/home	2%	2%
Retired	61%	58%
Permanently sick/disabled	5%	5%
Temporarily sick or injured	6%	7%
Student	<1%	<1%
Other reasons for not working	1%	1%

(N=7208, N=19101)

The medical status of those referred to CR

Table 18. Percentage of patients referred to CR with various co-morbidities as recorded in NACR

	2005-6	*2006-7*
	% of cases	*% of cases*
Angina	40%	36%
Arthritis	24%	21%
Diabetes	18%	20%
Rheumatism	10%	5%
Stroke	10%	7%
Osteoporosis	8%	4%
Chronic bronchitis	8%	4%
Emphysema	5%	3%
Asthma	14%	12%
Claudication	11%	7%
Chronic back	16%	14%
Hypertension	37%	44%
Cancer	10%	7%
Other complaint	25%	31%

(N=10149, N=35637)

Table 19. Percentage of patients referred to CR with previous cardiac events as recorded in NACR

	2005-6 *% of cases*	*2006-7* *% of cases*
Myocardial Infarction	19%	19%
Acute Coronary Syndrome	2%	2%
Bypass surgery	5%	5%
Angioplasty	6%	6%
Cardiac arrest	1%	2%
Angina	18%	17%
Other surgery	2%	2%
Heart failure	2%	2%
Pacemaker	1%	1%
ICD	<1%	<1%
Congenital Heart	<1%	<1%
Transplant	<1%	<1%
LV assist device	<1%	<1%
Other	4%	4%
Unknown	14%	2%

(N=15663, N=44307)

Table 20. Risk profile of patients referred to CR as recorded in NACR

	2005-6 *% of cases*	*2006-7* *% of cases*
% BMI > 30	26%	27%
% Systolic BP >140 or Diastolic BP >90	27%	28%
% Smoking	16%	17%
% Less than 5 episodes moderate exercise for 30 mins per week	65%	68%
% Border line query case of depression	9%	12%
% Depressed	6%	7%

(N=10937, N=29127)

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

Table 21. Activity levels in patients referred to CR as recorded in NACR

In an average 7 day period how often are you moderately active (ie raise a slight sweat, raised heart beat)	*2005-6 % agreeing*	*2006-7 % agreeing*
Often	13%	14%
Sometimes	33%	31%
Never	54%	55%

(N=5372, N=15602)

Table 22. Activities of daily living in patients referred to CR as recorded in NACR

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?	*2005-6 % agreeing*	*2006-7 % agreeing*
No difficulty at all	31%	31%
A little bit of difficulty	28%	26%
Some difficulty	26%	26%
Much difficulty	10%	11%
Could not do	5%	6%

(N=5209, N=14922)

Table 23. Physical fitness in patients referred to CR as recorded in NACR

During the past week what was the hardest physical activity you could do for at least two minutes?	*2005-6 % agreeing*	*2006-7 % agreeing*
Very heavy: e.g. run at a fast pace or carry a heavy load upstairs or uphill	5%	5%
Heavy: e.g. jog, slow pace or climb stairs or a hill at moderate pace	14%	14%
Moderate: e.g. walk at medium pace or carry a heavy load on level ground	23%	21%
Light: e.g. walk, medium pace or carry a light load on level ground	30%	31%
Very light: e.g. walk at a slow pace, wash dishes	28%	29%

(N=5169, N=14742)

Table 24. Reasons for referral to CR by year as recorded in NACR

	2005-6	*2006-7*
	% of cases	*% of cases*
MI Total		
Myocardial Infarction	*49%*	*45%*
MI with PCI	*1%*	*4%*
MI with recent PCI	*1%*	*2%*
Total MI	51%	51%
Acute Coronary Syndrome	4%	6%
Revascularisation		
Angioplasty	12%	13%
Bypass surgery	18%	16%
Other surgery	4%	5%
Transplant	<1%	<1%
Cardiac arrest	<1%	<1%
Pacemaker	<1%	<1%
ICD	<1%	<1%
LV assist device	<1%	<1%
Angina	4%	4%
Heart failure	1%	1%
Congenital heart conditions	<1%	<1%
Other	4%	3%
Unknown	1%	1%
Missing	<1%	<1%

(N=15663, N=44307)

Uptake

Table 25. Numbers and percentages of patients in the three main diagnostic groups attending

UK	*No. of cases*	*Receiving CR*	*% uptake*
MI	90847	38874	43%
PCI	38296	10743	28%
CABG	20159	14671	73%
Total	149302	64288	43%
	Number of centres able to provide the number seen by diagnostic group		*277/371 (75%)*
	Number of centres where we estimated the ratio for the diagnostic group		*62/371 (17%)*
	Number of centres whose data could be used in this analysis		*339/371 (91%)*

England	*No. of cases*	*Receiving CR*	*% uptake*
MI	74048	31307	42%
PCI	31923	9960	31%
CABG	16668	12179	73%
Total	122639	53446	44%
	Number of centres able to provide the number seen by diagnostic group		*211/291 (73%)*
	Number of centres where we estimated the ratio for the diagnostic group		*51/291 (18%)*
	Number of centres whose data could be used in this analysis		*262/291 (90%)*

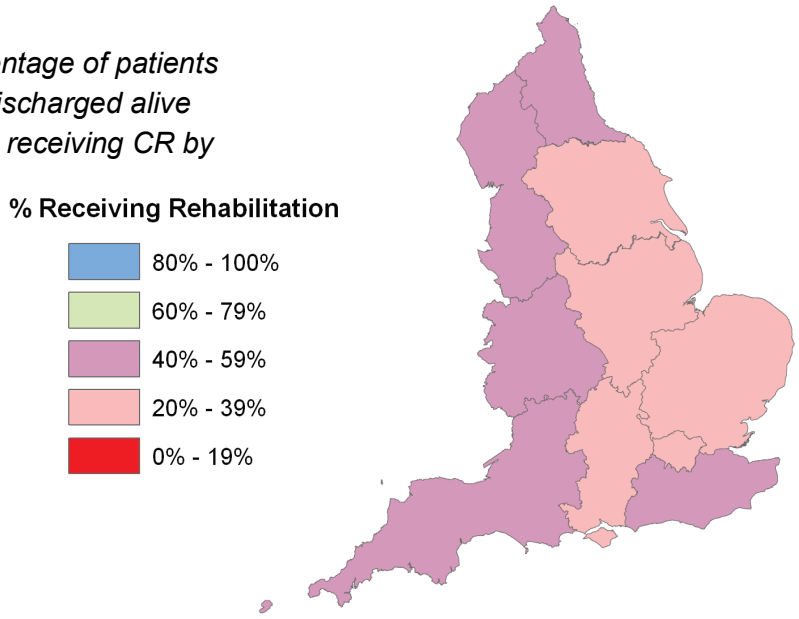
Northern Ireland	*No. of cases*	*Receiving CR*	*% uptake*
MI	3562	1575	44%
PCI	1518	276	18%
CABG	531	340	64%
Total	5611	2191	39%
	Number of centres able to provide the number seen by diagnostic group		*14/18 (78%)*
	Number of centres where we estimated the ratio for the diagnostic group		*2/18 (11%)*
	Number of centres whose data could be used in this analysis		*16/18 (89%)*

Scotland	*No. of cases*	*Receiving CR*	*% uptake*
MI	7436	3897	52%
PCI	3288	366	11%
CABG	1918	1424	74%
Total	12642	5687	45%
	Number of centres able to provide the number seen by diagnostic group		*31/38 (82%)*
	Number of centres where we estimated the ratio for the diagnostic group		*6/38 (16%)*
	Number of centres whose data could be used in this analysis		*37/38 (97%)*

Wales	*No. of cases*	*Receiving CR*	*% uptake*
MI	5801	2095	36%
PCI	1567	141	9%
CABG	1042	728	70%
Total	8410	2964	35%
	Number of centres able to provide the number seen by diagnostic group		*21/24 (88%)*
	Number of centres where we estimated the ratio for the diagnostic group		*3/24 (13%)*
	Number of centres whose data could be used in this analysis		*24/24 (100%)*

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



Strategic Health Authority	*No. of programmes*	*Provided MI numbers (%)*	*Estimated (%)*	*Analysed (%)*	*No. of cases*	*No. receiving CR*	*Uptake (%)**
East Midlands	23	91%	-	91%	7383	2900	39%
South East Coast	25	88%	8%	96%	6075	2537	42%
South West	33	73%	15%	88%	7811	3650	47%
Yorkshire and the Humber	41	71%	20%	90%	8345	3282	39%
South Central	15	73%	20%	93%	4893	1785	36%
London	39	77%	10%	87%	7733	2428	31%
North East	24	67%	25%	92%	4551	2376	52%
West Midlands	24	63%	29%	92%	7386	3667	50%
East of England	28	64%	25%	89%	8360	3274	39%
North West	39	64%	23%	87%	11511	5408	47%
Total	291	73%**	18%	90%	74048	31307	42%

*Important note, % uptake is likely to be slightly underestimated for all SHAs due to missing data
** N=211

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

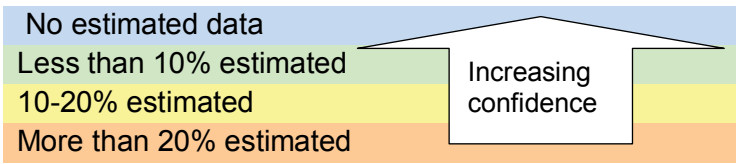
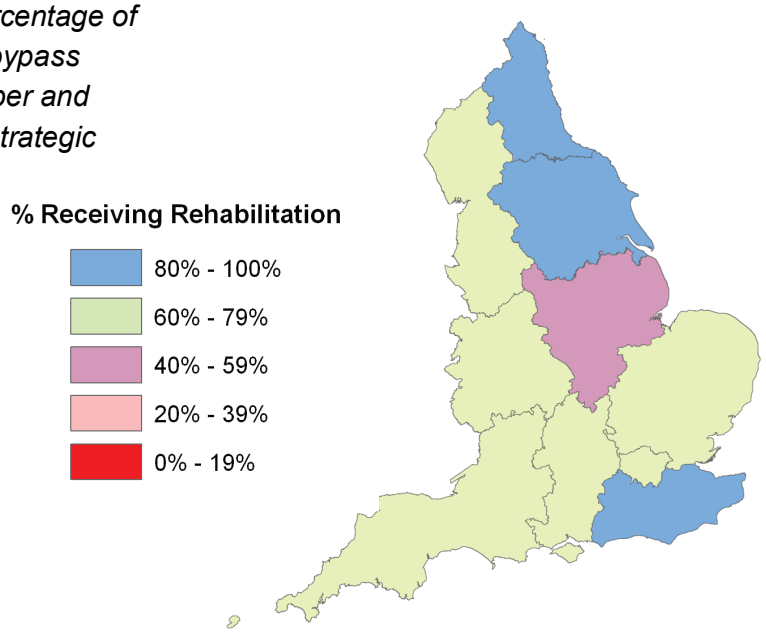


Figure 2. The number and percentage of patients with coronary artery bypass surgery (CAGB) and the number and percentage receiving CR by Strategic Health Authority in England



Strategic Health Authority	*No. of programmes*	*Provided CAGB numbers (%)*	*Estimated (%)*	*Analysed (%)*	*No. of cases*	*No. receiving CR*	*Uptake (%)**
East Midlands	23	91%	-	91%	1410	803	57%
South East Coast	25	88%	8%	96%	1342	1212	90%
Yorkshire and the Humber	41	73%	17%	90%	1480	1236	84%
South West	33	73%	15%	88%	1960	1437	73%
London	39	77%	10%	87%	1935	1233	64%
North East	24	67%	25%	92%	1012	939	93%
North West	39	64%	23%	87%	2548	1970	77%
East of England	28	64%	25%	89%	1967	1444	73%
West Midlands	24	63%	29%	92%	2027	1223	60%
South Central	15	67%	27%	93%	987	682	69%
Total	291	73% **	18%	90%	16668	12179	73%

*Important note, % uptake is likely to be slightly underestimated for all SHAs due to missing data
** N=211

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

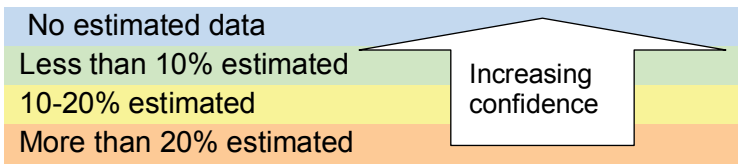
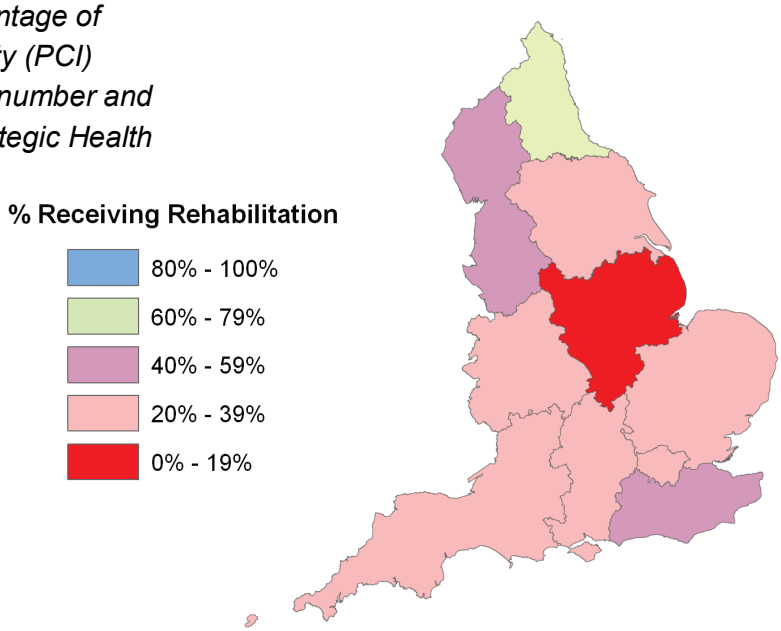


Figure 3. The number and percentage of patients with coronary angioplasty (PCI) eligible for rehabilitation and the number and percentage receiving CR by Strategic Health Authority in England

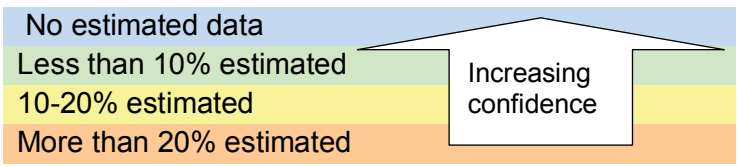


Strategic Health Authority	*No. of programmes*	*Provided PCI numbers (%)*	*Estimated (%)*	*Analysed (%)*	*No. of cases*	*No. receiving CR*	*Uptake (%)**
East Midlands	23	91%	-	91%	2508	240	10%
South East Coast	25	88%	8%	96%	2617	1197	46%
London	39	77%	10%	87%	5343	1336	25%
Yorkshire and the Humber	41	73%	17%	90%	3233	987	31%
South West	33	73%	15%	88%	3546	1101	31%
South Central	15	73%	20%	93%	2523	503	20%
North East	24	67%	25%	92%	1490	940	63%
North West	39	64%	23%	87%	3915	1609	41%
West Midlands	24	63%	29%	92%	3329	1026	31%
East of England	28	64%	25%	89%	3419	1021	30%
Total	291	73% **	17%	90%	31923	9960	31%

*Important note, % uptake is likely to be slightly underestimated for all SHAs due to missing data
** N=212

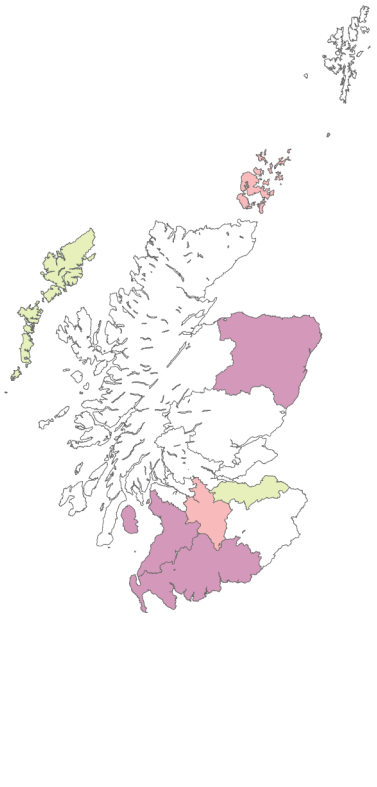
Results are likely to be less accurate with greater amounts of estimated data.
Be more confident about the results according to the following key

Key for degree of estimation



Scotland

Figure 4. The number and percentage of patients with myocardial infarction (MI) discharged alive and the number and percentage receiving CR by Health Board in Scotland



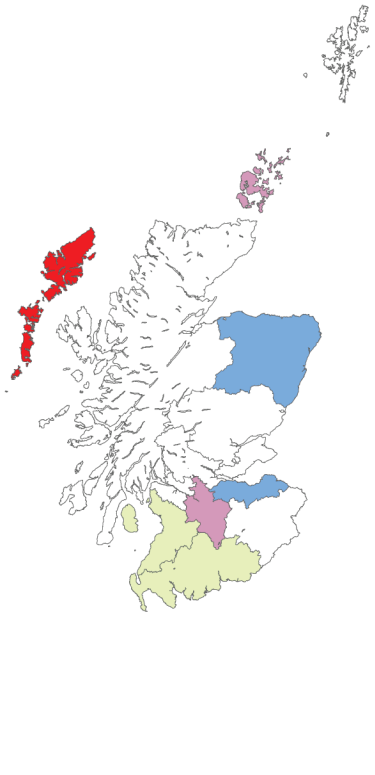
Note on interpretation of this information

Due to the small number of centres in each Health Board we were unable to make a confident estimate of the number treated. As a result, the percentage receiving rehabilitation are presented only where complete data was provided. Where this was not the case the table shows N/A and the map no colour.

Health Board	*No. of CR programmes*	*No. who provided MI numbers*	*No. who did not provide MI numbers*	*No. of cases*	*No. receiving CR*	*Uptake (%)*
Lothian	5	5	-	1021	699	68%
Western Isles	1	1	-	36	22	61%
Dumfries & Galloway	1	1	-	177	94	53%
Grampian	2	2	-	944	463	49%
Ayrshire & Arran	3	3	-	474	196	41%
Lanarkshire	3	3	-	785	188	24%
Orkney	1	1	-	44	10	23%
Sub-total	*16*	*16*	-	*3481*	*1672*	*48%*
Greater Glasgow & Clyde*	8	7	2	1793	994	N/A
Highland**	5	3	1	559	65	N/A
Tayside	2	1	1	465	87	N/A
Borders	2	1	1	231	7	N/A
Fife	3	1	2	588	108	N/A
Forth Valley	1	0	1	290	N/A	N/A
Shetland	1	1	0	29	38	N/A
Total	38	30 (79%)	8 (21%)	7436	2971	N/A

* 'No. receiving CR' includes count of patients from Dunoon (Highland), leading to over-counting of numbers treated
** 'No. of cases' includes patients treated at Dunoon but counted under Greater Glasgow and Clyde leading to undercounting of numbers treated

Figure 5. The number and percentage of patients with coronary artery bypass surgery (CABG) and the number and percentage receiving CR by Health Board in Scotland



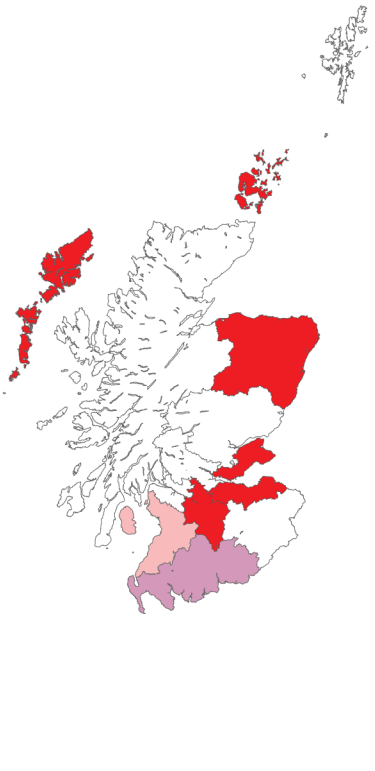
Note on interpretation of this information

Due to the small number of centres in each Health Board we were unable to make a confident estimate of the number treated. As a result, the percentage receiving rehabilitation are presented only where complete data was provided. Where this was not the case the table shows N/A and the map no colour.

Health Board	*No. of CR programmes*	*No. who provided CABG numbers*	*No. who did not provide CABG numbers*	*No. of cases*	*No. receiving CR*	*Uptake (%)*
Lothian	5	5	-	251	224	89%
Grampian	2	2	-	197	164	83%
Dumfries & Galloway	1	1	-	50	36	72%
Ayrshire & Arran	3	3	-	124	80	65%
Lanarkshire	3	3	-	245	138	56%
Orkney	1	1	-	2	1	50%
Western Isles	1	1	-	10	0	0%
Sub-total	*16*	*16*	-	*879*	*643*	*73%*
Greater Glasgow & Clyde*	8	8	1	470	614	N/A
Highland**	5	3	1	158	20	N/A
Tayside	2	1	1	135	30	N/A
Borders	2	1	1	74	23	N/A
Fife	3	2	1	113	54	N/A
Forth Valley	1	0	1	82	N/A	N/A
Shetland	1	1	0	7	8	N/A
Total	38	32 (84%)	6 (16%)	1918	1392	N/A

* 'No. receiving CR' includes count of patients from Dunoon (Highland), leading to over-counting of numbers treated
** 'No. of cases' includes patients treated at Dunoon but counted under Greater Glasgow and Clyde leading to undercounting of numbers treated

Figure 6. The number and percentage of patients with coronary angioplasty (PCI) and the number and percentage receiving CR by Health Board in Scotland



Note on interpretation of this information

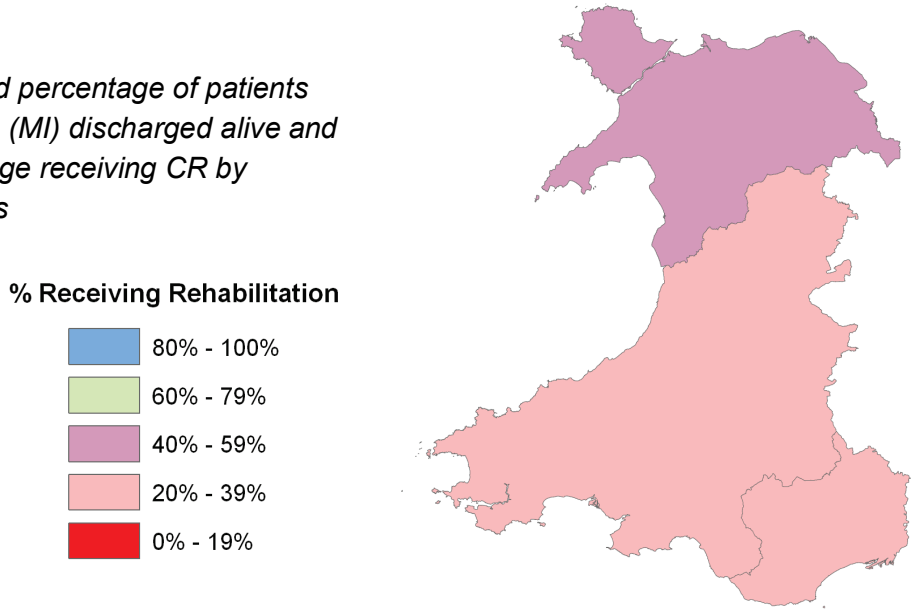
Due to the small number of centres in each Health Board we were unable to make a confident estimate of the number treated. As a result, the percentage receiving rehabilitation are presented only where complete data was provided. Where this was not the case the table shows N/A and the map no colour.

Health Board	*No. of CR programmes*	*No. who provided PCI numbers*	*No who did not provide PCI numbers*	*No. of cases*	*No. receiving CR*	*Uptake (%)*
Dumfries & Galloway	1	1	-	68	28	41%
Ayrshire & Arran	3	3	-	234	69	29%
Orkney	1	1	-	10	1	10%
Lanarkshire	3	3	-	431	29	7%
Fife	3	3	-	182	10	5%
Western Isles	1	1	-	12	0	0%
Grampian	2	2	-	319	0	0%
Lothian	5	5	-	503	0	0%
Sub-total	*19*	*19*	-	*1759*	*137*	*8%*
Greater Glasgow & Clyde*	8	7	2	785	229	N/A
Highland**	5	3	1	149	0	N/A
Tayside	2	1	1	250	0	N/A
Borders	2	1	1	73	0	N/A
Forth Valley	1	0	1	267	N/A	N/A
Shetland	1	1	0	5	12	N/A
Total	38	32 (84%)	6 (16%)	3288	378	N/A

* 'No. receiving CR' includes count of patients from Dunoon (Highland), leading to over-counting of numbers treated
** 'No. of cases' includes patients treated at Dunoon but counted under Greater Glasgow and Clyde leading to undercounting of numbers treated

Wales

Figure 7. The number and percentage of patients with myocardial infarction (MI) discharged alive and the number and percentage receiving CR by Cardiac Network in Wales



Cardiac Network	*No. of programmes*	*No. who provided MI numbers (%)*	*Estimated (%)*	*Analysed (%)*	*No. of cases*	*No. receiving CR*	*Uptake (%)**
Mid & South West Wales	10	100%	-	100%	2032	612	30%
South East Wales	9	89%	11%	100%	2294	756	33%
North Wales	5	60%	40%	100%	1475	727	49%
Total	24	88% (N=21)	13%	100%	5801	2095	36%

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

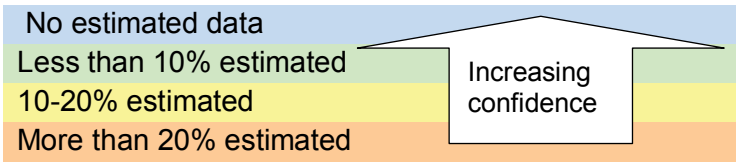
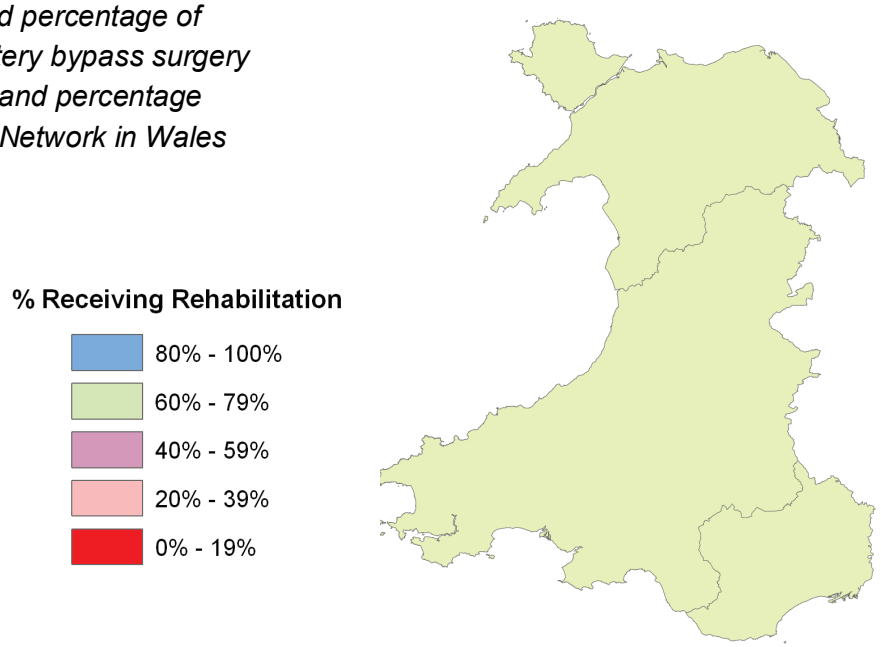


Figure 8. The number and percentage of patients with coronary artery bypass surgery (CABG) and the number and percentage receiving CR by Cardiac Network in Wales



Cardiac Network	*No. of programmes*	*No who provided CABG numbers (%)*	*Estimated (%)*	*Analysed (%)*	*No. of cases*	*No. receiving CR*	*Uptake (%)**
Mid & South West Wales	10	100%	-	100%	431	291	68%
South East Wales	9	89%	11%	100%	355	263	74%
North Wales	5	60%	40%	100%	256	174	68%
Total	24	88% (N=21)	13%	100%	1042	728	70%

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

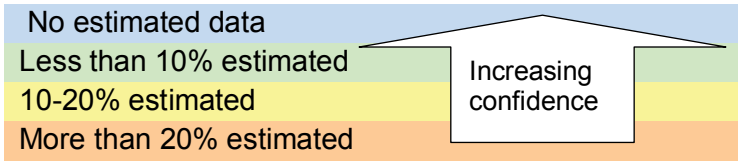
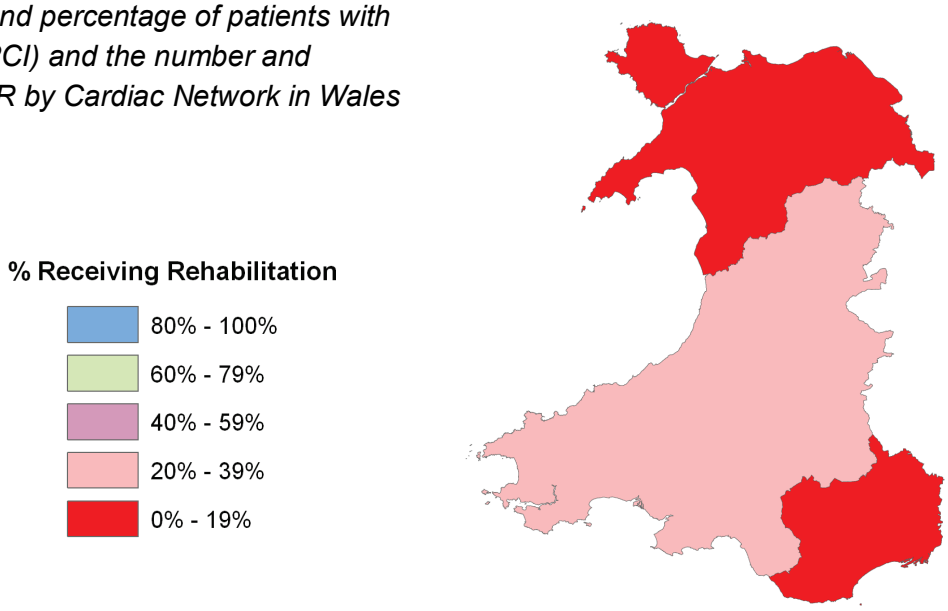


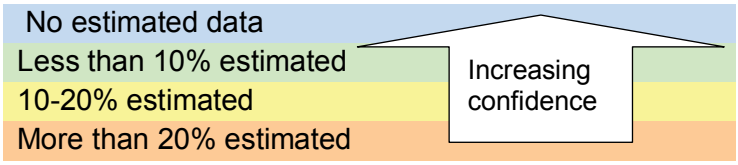
Figure 9. The number and percentage of patients with coronary angioplasty (PCI) and the number and percentage receiving CR by Cardiac Network in Wales



Cardiac Network	*No. of programmes*	*No. who provided PCI numbers (%)*	*Estimated (%)*	*Analysed (%)*	*No. of cases*	*No. receiving CR*	*Uptake (%)**
Mid & South West Wales	10	100%	-	100%	550	115	21%
South East Wales	9	89%	11%	100%	657	4	1%
North Wales	5	60%	40%	100%	360	22	6%
Total	24	88% (N=21)	13%	100%	1567	141	9%

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 and budgets

Note on interpretation of this information

The SIGN guideline recommended the following staffing levels (and pay bandings) per 500 patients:

Nursing Specialists	3.0 WTE Band 6 to 7	Physiotherapy Specialists	2.0 WTE Band 6 to 7
Pharmacy	0.2 WTE Band 6 to 7	Dietetics	0.3 WTE Band 6 to 7
Psychology	0.2 WTE Band 6 to 7	Audit and Clerical	0.5 WTE Band 3

Note on reading data: Only three-quarters of programmes surveyed supplied staffing data, and only two-thirds enough information for us to calculate the cost of treating each patient. Adequately staffed and better funded centres may have been over-represented amongst them. Comparing costs by country is complicated by the differing response rate and because there was a wide range of programmes able to provide the information needed for us to calculate the cost per patient treated; it should be interpreted with caution.

Table 26. The percentage of programmes which mentioned access to each profession for Phase 3 by country

Profession	*UK*	*England*	*N Ireland*	*Scotland**	*Wales*
Number and percentage answering the question	306 / 374	242 / 291	16 / 18	24 / 38	21 / 24
	82%	83%	89%	63%	88%
Nurse	96%	96%	100%	92%	100%
Physiotherapist	71%	67%	75%	92%	91%
Clerical	57%	61%	24%	46%	62%
Dietitian	55%	55%	75%	42%	48%
Pharmacist	44%	45%	69%	29%	33%
Occupational therapist	27%	26%	13%	17%	48%
Psychologist	23%	27%	25%	33%	14%
Physical activity / Exercise specialist**	28%	34%	6%	4%	14%
Fitness Instructor	11%	14%	6%	0	5%
Physiologist / Sports Scientist	11%	13%	0	4%	10%
Exercise Specialist	8%	10%	0	0	0
BACR Instructor	2%	2%	0	0	0
Administrator / Coordinator	10%	11%	6%	17%	5%
Counsellor	5%	6%	0	0	5%
Healthcare assistant	4%	4%	0	4%	0
Social worker	2%	2%	6%	0	5%
Doctor	2%	1%	6%	4%	0

*Method of data collection different for Scotland, see page 30
** Some programmes reported more than one type of exercise professional

Table 27. Percentage of programmes with 1, 2, 3, 4, 5 or 6 of the professions listed in the SIGN guideline (any pay band in that profession)

	*UK**	*England*	*N Ireland*	*Scotland***	*Wales*
Number and percentage answering the question	306/374 82%	242/291 83%	16/18 89%	24/38 63%	21/24 88%
Number of professions					
1	11%	12%	13%	13%	0
2	20%	19%	13%	25%	29%
3	19%	19%	0	17%	29%
4	19%	19%	44%	13%	10%
5	24%	22%	25%	33%	33%
6	7%	9%	6%	0	0
Median number of professions	3.5	3	4	3	3

* Includes Channel Islands and Isle of Man
**Method of data collection different for Scotland, see page 30

Table 28. Cost per patient treated by country

	UK	*England*	*N Ireland*	*Scotland**	*Wales*
Number and percentage answering the question	248/371 67%	201/291 69%	15/18 83%	18/38 47%	14/24 58%
Cost per patient					
Mean	£625	£616	£440	£759	£772
Median	£461	£443	£358	£776	£839
Interquartile range	£304 to £774	£301 to £713	£237 to £671	£431 to £976	£345 to £1040

*Method of data collection different for Scotland, see page 30

Table 29. Cost per patient treated by SIGN recommended staff only (any pay band) by country

	UK	*London**	*England (ex. London)*	*N Ireland*	*Scotland***	*Wales*
Number answering the question	248/371 67%	25/42 60%	176/249 71%	15/18 83%	18/38 47%	14/24 58%
Cost per patient						
Mean	£568	£823	£515	£430	£767	£673
Median	£441	£734	£372	£358	£741	£644
Interquartile range	£250 to £706	£421 to £1172	£235 to £599	£232 to £671	£420 to £1029	£404 to £893
*Reference cost of SIGN staffing****						
Cost	£518	£603				
Min	£477	£540				
Max	£558	£667				

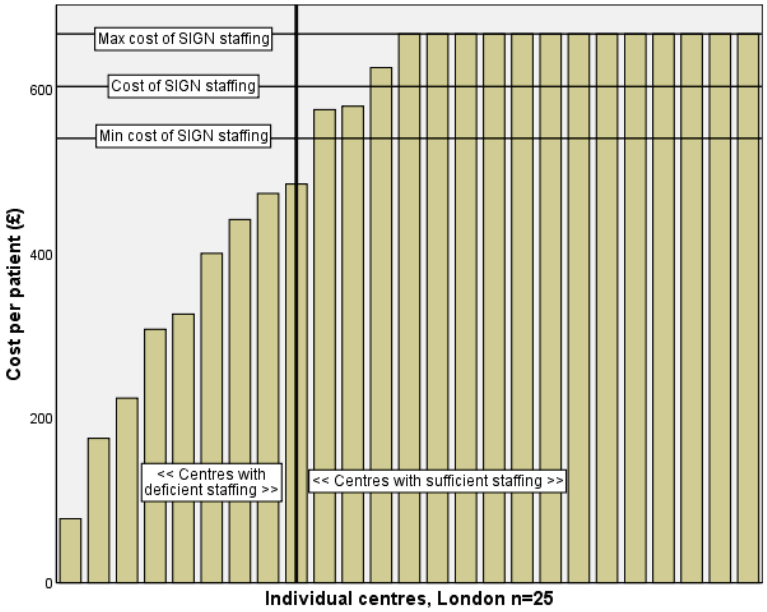
*Salaries costed with London weightings **Method of data collection different for Scotland, see page 30
***'Min' costs staff on the lower of the suggested pay bands and 'Max' costs staff on the higher of the suggested pay bands, 'Cost' is the average of the two.

Figure 10. Costs of SIGN staffing per patient (any pay band): England (not London)

Note on interpretation of this information

'Min' costs staff on the lower of the suggested pay bands and 'Max' costs staff on the higher of the suggested pay bands, 'Cost' is the average of the two.

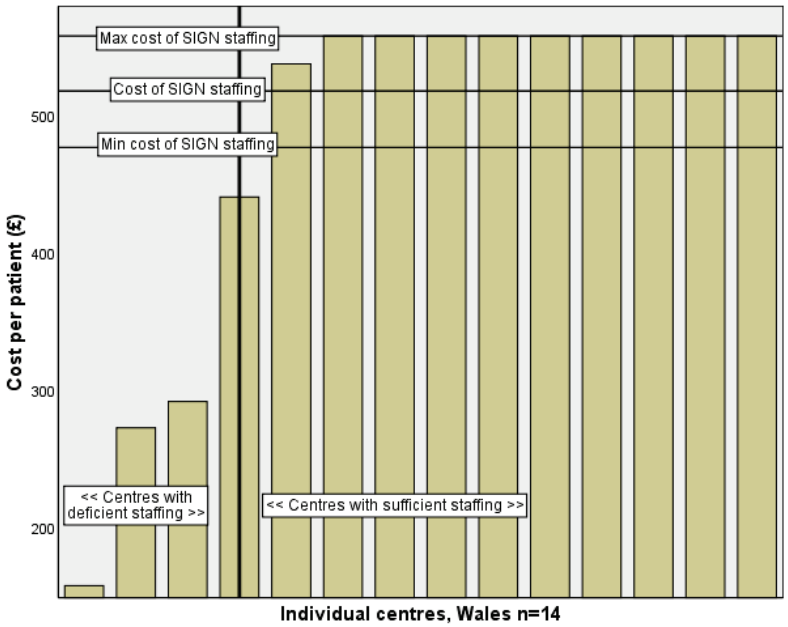
Figure 11. Costs of SIGN staffing per patient (any pay band): London



Note on interpretation of this information

'Min' costs staff on the lower of the suggested pay bands and 'Max' costs staff on the higher of the suggested pay bands, 'Cost' is the average of the two. This graph reflects salaries costed with London weightings

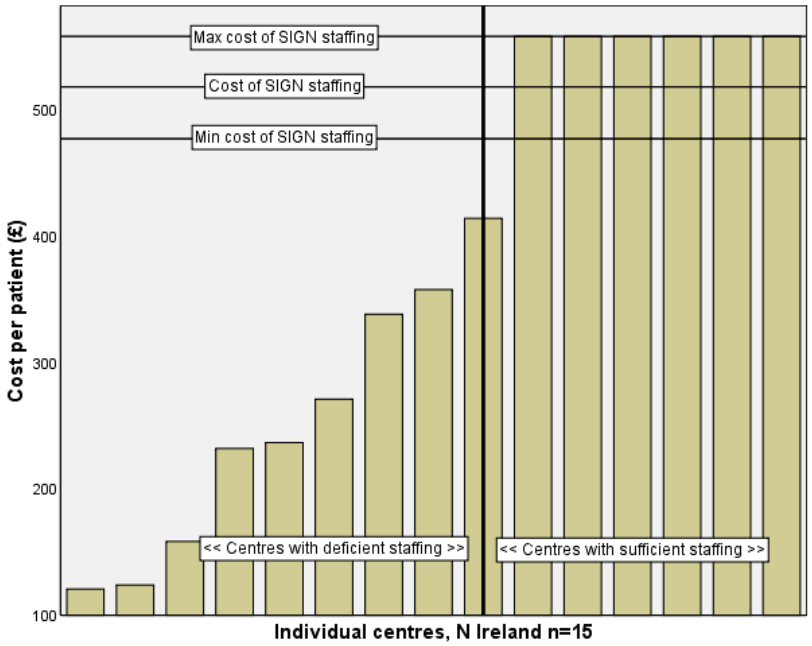
Figure 12. Costs of SIGN staffing per patient (any pay band): Wales



Note on interpretation of this information

'Min' costs staff on the lower of the suggested pay bands and 'Max' costs staff on the higher of the suggested pay bands, 'Cost' is the average of the two.

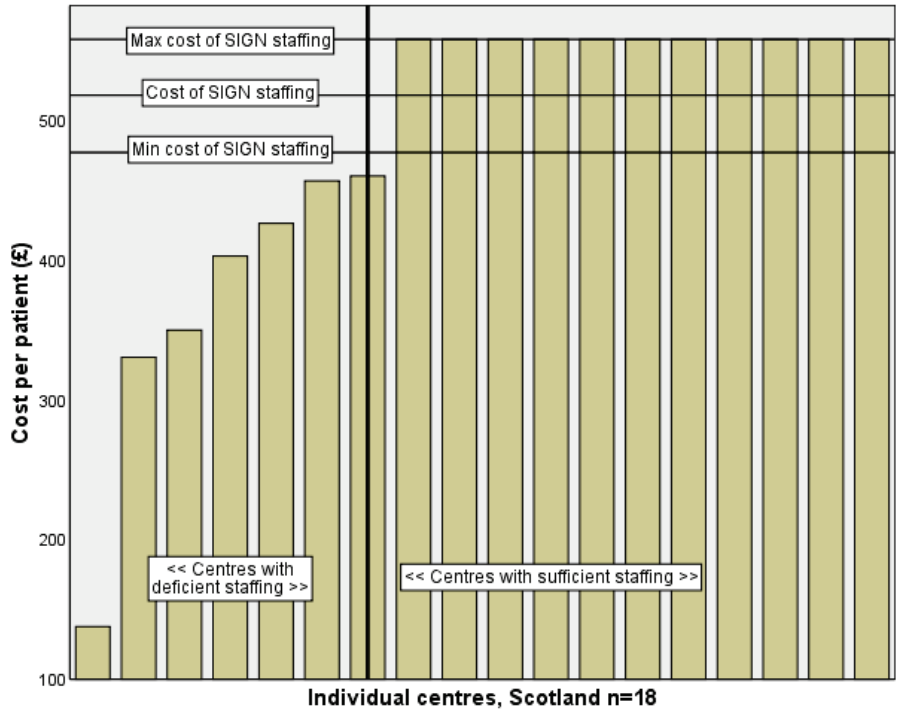
Figure 13. Costs of SIGN staffing per patient (any pay band): Northern Ireland



Note on interpretation of this information

'Min' costs staff on the lower of the suggested pay bands and 'Max' costs staff on the higher of the suggested pay bands, 'Cost' is the average of the two.

Figure 14. Costs of SIGN staffing per patient (any pay band): Scotland



Note on interpretation of this information

'Min' costs staff on the lower of the suggested pay bands and 'Max' costs staff on the higher of the suggested pay bands, 'Cost' is the average of the two. Method of data collection different for Scotland, see page 30.

Table 30. Number and percentage of programmes falling above and below the lowest cost estimate per patient of SIGN-recommended staff only (any pay band) by country

Minimum estimate cost of SIGN recommended staffing per patient				
Country (% answering the question)	*Meets guideline*	*Up to £100 below*	*up to £200 below*	*>£200 below*
*Min estimate, £477**				
England, not London (70%)	38%	11%	18%	32%
Wales (58%)	71%	7%	7%	14%
N Ireland (83%)	40%	7%	13%	40%
Scotland (47%)**	61%	22%	6%	11%
*Min estimate, £540**				
London (64%)	64%	12%	4%	20%
Total (67%)	44%	12%	15%	30%

*'Min estimate' reflects staff costed on the lower of the suggested pay bands
**Method of data collection different for Scotland, see page 30

Table 31. Budget per patient by country

	*UK**	*England*	*N Ireland*	*Scotland***	*Wales*
Number answering the question	88/374	74/291	0/18	6/38	7/24
	24%	25%	0%	16%	29%
Budget per patient					
Mean	£613	£579	N/A	£712	£1006
Median	£492	£465	N/A	£763	£838
Interquartile Range	£304 to £673	£296 to £716		£392 to £982	£667 to £1563

*Includes Channel Islands and Isle of Man
**Method of data collection different for Scotland, see page 30

*Table 32. Number and percentage of programmes in the UK with staff levels equivalent to the SIGN guideline (any pay band)**

	Meets staffing guideline	*Staffed 50 to 99% of guideline*	*Staffed 1 to 49% of guideline*	*No staff of that profession*
Nursing	60%	20%	16%	4%
Physiotherapy	16%	15%	38%	31%
Pharmacy	2%	4%	33%	61%
Dietetics	8%	4%	39%	48%
Psychology	9%	3%	9%	79%
Clerical	42%	10%	5%	42%

*Includes Channel Islands and Isle of Man
(N=250, 67%)

Table 33. Number and percentage of programmes in England with staff levels equivalent to the SIGN guideline (any pay band)

	Meets staffing guideline	*Staffed 50 to 99% of guideline*	*Staffed 1 to 49% of guideline*	*No staff of that profession*
Nursing	57%	21%	17%	4%
Physiotherapy	10%	15%	41%	34%
Pharmacy	1%	3%	34%	61%
Dietetics	8%	4%	41%	47%
Psychology	7%	3%	10%	80%
Clerical	46%	12%	4%	38%

(N=201, 69%)

Table 34. Number and percentage of programmes in Northern Ireland with staff levels equivalent to the SIGN guideline (any pay band)

	Meets staffing guideline	*Staffed 50 to 99% of guideline*	*Staffed 1 to 49% of guideline*	*No staff of that profession*
Nursing	47%	33%	20%	0%
Physiotherapy	20%	7%	47%	27%
Pharmacy	0%	13%	53%	33%
Dietetics	0%	7%	67%	27%
Psychology	7%	0%	20%	73%
Clerical	7%	0%	13%	80%

(N=15, 83%)

*Table 35. Number and percentage of programmes in Scotland with staff levels equivalent to the SIGN guideline (any pay band)**

	Meets staffing guideline	*Staffed 50 to 99% of guideline*	*Staffed 1 to 49% of guideline*	*No staff of that profession*
Nursing	83%	11%	0%	6%
Physiotherapy	67%	17%	6%	11%
Pharmacy	11%	0%	17%	72%
Dietetics	11%	6%	17%	67%
Psychology	28%	0%	0%	72%
Clerical	33%	0%	6%	61%

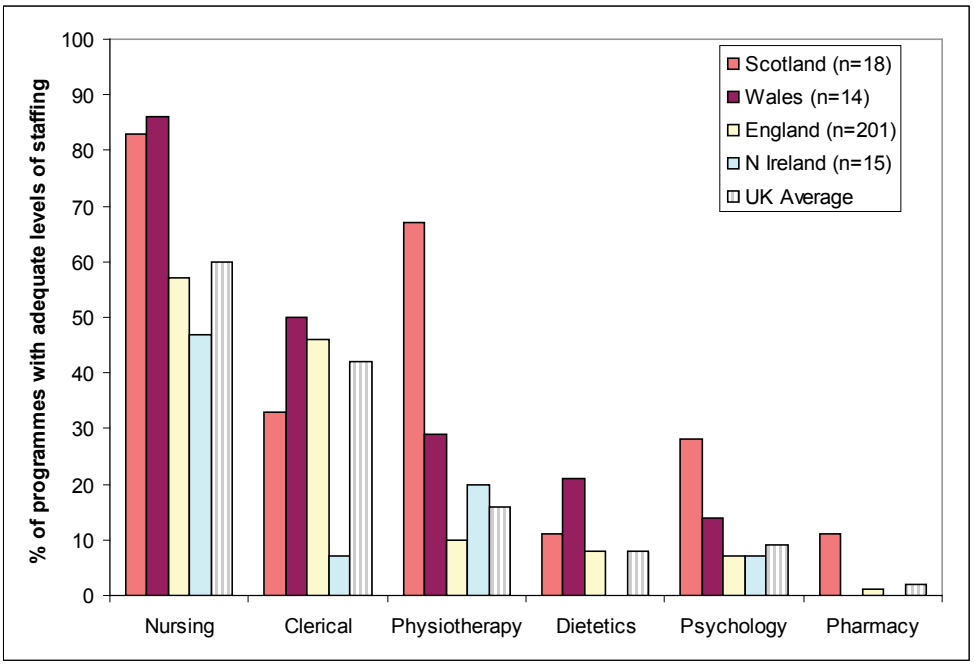
*Method of data collection different for Scotland, see page 30
(N=18, 47%)

Table 36. Number and percentage of programmes in Wales with staffing levels equivalent to the SIGN guideline (any pay band)

	Meets staffing guideline	*Staffed 50 to 99% of guideline*	*Staffed 1 to 49% of guideline*	*No staff of that profession*
Nursing	86%	7%	7%	0%
Physiotherapy	29%	29%	36%	7%
Pharmacy	0%	7%	21%	71%
Dietetics	21%	0%	21%	57%
Psychology	14%	0%	0%	86%
Clerical	50%	14%	0%	36%

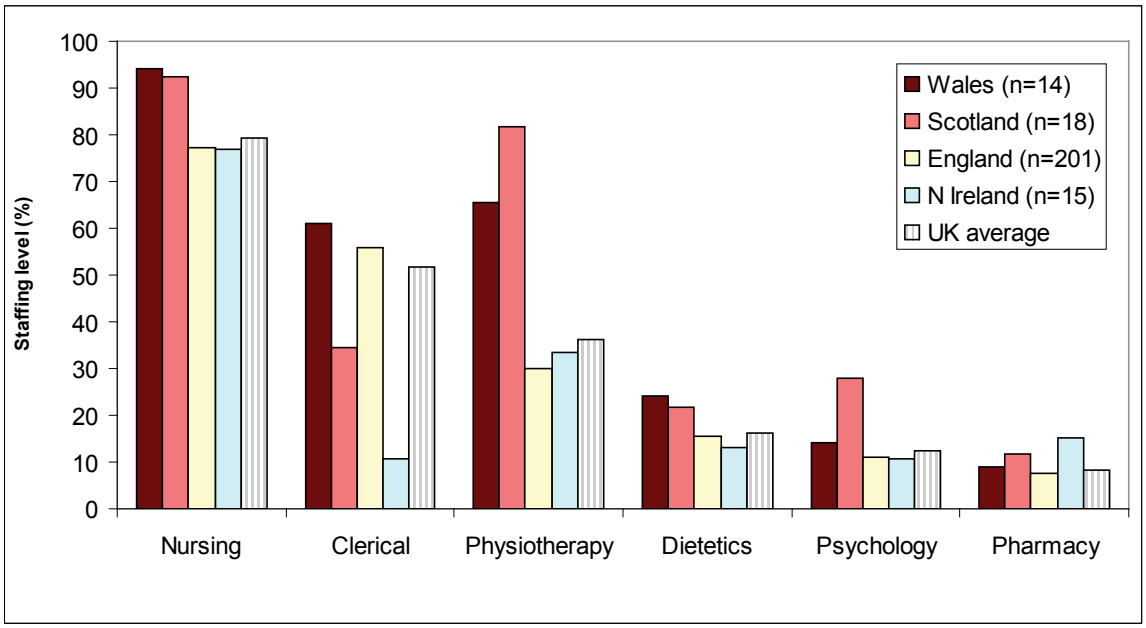
(N=14, 58%)

Figure 15. Percentage of programmes in each country meeting the SIGN guideline for levels of staffing (any pay band)



Method of data collection different for Scotland, see page 30

Figure 16. Level of individual professional staffing available per patient compared to SIGN guideline (any pay band), by country



Method of data collection different for Scotland, see page 30

Outcomes from NACR data

Table 37. Twelve week National Service Framework targets

	2005-6			*2006-7*		
	Before	*After*	*Change*	*Before*	*After*	*Change*
BMI <30	74%	75%	+1	73%	74%	+1
Exercise 5x 30 minutes	40%	56%	+16	36%	56%	+20
Exercise						
Often	13%	26%	+13	13%	26%	+13
Sometimes	34%	45%	+11	32%	46%	+14
Rarely/Never	53%	29%	-24	55%	28%	-27
Non smoker	87%	92%	+5	87%	92%	+5
(N=3406, N=9502)						

Table 38. Twelve month National Service Framework targets

	2005-6			*2006-7*		
	Before	*After*	*Change*	*Before*	*After*	*Change*
BMI <30	75%	76%	+1	74%	74%	0
Exercise 5x 30 minutes	41%	50%	+9	36%	49%	+13
Exercise						
Often	13%	23%	+10	13%	24%	+11
Sometimes	34%	44%	+10	32%	43%	+11
Rarely/Never	53%	33%	-20	55%	33%	-22
Non smoker	87%	92%	+5	88%	92%	+5
(N=2145, N=4642)						

Table 39. Hospital Anxiety and Depression Scale (HADS) - Twelve week outcomes

	2005-6			*2006-7*		
	Before	*After*	*Change*	*Before*	*After*	*Change*
HADS Anxiety						
Normal	70%	76%	+6	70%	76%	+6
Borderline	17%	14%	-3	17%	14%	-3
Clinically anxious	13%	10%	-3	13%	10%	-3
HADS Depression						
Normal	83%	86%	+3	83%	86%	+3
Borderline	11%	9%	-2	11%	9%	-2
Clinically depressed	6%	5%	-1	6%	5%	-1

(N=3386, N=8681)

Table 40. Hospital Anxiety and Depression Scale (HADS) - Twelve month outcomes

	2005-6			*2006-7*		
	Before	After	Change	Before	After	Change
HADS Anxiety						
Normal	70%	76%	+6	71%	75%	+4
Borderline	17%	13%	-4	17%	15%	-2
Clinically anxious	13%	11%	-2	12%	10%	-2
HADS Depression						
Normal	84%	84%	0	83%	85%	+2
Borderline	10%	10%	0	11%	9%	-2
Clinically depressed	6%	6%	0	6%	6%	0

(N=2231, N=4777)

Table 41. Dartmouth COOP - Twelve week outcomes % patients with a Normal Score

	2005-6			*2006-7*		
	Before	*After*	*Change*	*Before*	*After*	*Change*
Physical fitness	44%	66%	22	41%	65%	24
Feelings	83%	87%	4	83%	88%	5
Daily activities	87%	92%	5	85%	93%	8
Social activities	81%	90%	9	81%	91%	10
Social support	89%	87%	-2	87%	86%	-1
Pain	78%	80%	2	75%	81%	6
Overall health	68%	77%	9	67%	76%	9
Quality of life	94%	97%	3	94%	96%	2

(N=3173, N=7874)

Table 42. Dartmouth COOP - Twelve month outcomes - % patients with a Normal Score

	2005-6			*2006-7*		
	Before	*After*	*Change*	*Before*	*After*	*Change*
Physical fitness	43%	64%	21	39%	64%	25
Feelings	83%	87%	4	84%	86%	2
Daily activities	86%	91%	5	83%	91%	8
Social activities	81%	90%	9	78%	90%	12
Social support	89%	85%	-4	89%	84%	-5
Pain	77%	79%	2	74%	78%	4
Overall health	68%	74%	6	67%	73%	6
Quality of life	93%	96%	3	93%	96%	3

(N=2149, N=4495)

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 43. What did patients that attended CR receive?

Type	*2005-6*	*2006-7*
	% of all cases	*% of all cases*
Lifestyle Education -written	53%	62%
Group Exercise	56%	58%
Lifestyle Education –talks/video	48%	53%
Relaxation training	37%	39%
Dietary – Group class	37%	39%
Home Exercise	25%	32%
Diet - Individual	25%	28%
Psychological – group talk	24%	26%
Individual Exercise	24%	25%
Home visits	23%	18%
Other	9%	11%
Heart manual	15%	10%
OT group sessions	12%	9%
Road to Recovery	4%	6%
Psychological –individual counsellor	3%	4%
Physiotherapy – individual	1%	3%
Angina plan	2%	2%
Other home based programme	2%	1%
OT individual	1%	1%
Vocational assessment	1%	1%

(N=8051, N=24233)

Table 44. Medication Record - Twelve week outcomes

	2005-6			2006-7		
	Before	*After*	*Change*	*Before*	*After*	*Change*
Aspirin						
No	4%	5%	+1	4%	4%	0
Yes	94%	94%	0	95%	94%	0
Contraindicated	1%	1%	0	1%	1%	0
Patient declined treatment	<1%	<1%	0	<1%	<1%	0
Not indicated	1%	1%	0	1%	1%	0
ACE inhibitor						
No	25%	24%	-1	24%	23%	-1
Yes	71%	72%	+1	71%	73%	+2
Contraindicated	1%	1%	0	1%	1%	0
Patient declined treatment	<1%	<1%	0	<1%	<1%	0
Not indicated	3%	3%	0	3%	3%	0
Beta Blocker						
No	18%	18%	0	18%	19%	+1
Yes	77%	77%	0	78%	77%	-1
Contraindicated	3%	3%	0	2%	2%	0
Patient declined treatment	<1%	<1%	0	<1%	<1%	0
Not indicated	2%	2%	0	2%	2%	0
Statin						
No	7%	6%	-1	5%	5%	0
Yes	92%	93%	+1	94%	94%	0
Contraindicated	<1%	<1%	0	<1%	<1%	0
Patient declined treatment	<1%	<1%	0	<1%	<1%	0
Not indicated	1%	1%	0	1%	1%	0

(N=3861, N=10251)

Table 45. The percentage of patients giving their maximum level of effort as light, moderate, heavy or very heavy before and after CR: twelve week outcomes

	2005-6			2006-7		
	Before	*After*	*Change*	*Before*	*After*	*Change*
Very heavy	4%	11%	+7	5%	10%	+5
Heavy	16%	27%	+11	14%	27%	+13
Moderate	24%	28%	+4	22%	28%	+6
Light	31%	21%	-10	32%	23%	-9
Very light	25%	13%	-12	27%	12%	-15

(N=3173, N=7874)

Table 46. The percentage of patients giving their maximum level of effort as light, moderate, heavy or very heavy before and after CR: twelve month outcomes

	2005-6			*2006-7*		
	Before	*After*	*Change*	*Before*	*After*	*Change*
Very heavy	3%	12%	+9	4%	11%	+7
Heavy	15%	25%	+10	13%	25%	+12
Moderate	25%	27%	+2	22%	28%	+6
Light	31%	23%	-8	32%	23%	-9
Very light	26%	13%	-13	29%	13%	-16

(N=2149, N=4495)

Appendix 1 NACR at York

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Appendix 2 Index of tables and figures

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