



Public Health
England

C National
R Audit



British Heart
Foundation

Cardiac rehabilitation in the South West

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. We do this through world-leading science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health and Social Care, and a distinct delivery organisation with operational autonomy. We provide government, local government, the NHS, Parliament, industry and the public with evidence-based professional, scientific and delivery expertise and support.

Public Health England
Wellington House
133-155 Waterloo Road
London SE1 8UG
Tel: 020 7654 8000
www.gov.uk/phe
Twitter: [@PHE_uk](https://twitter.com/PHE_uk)
Facebook: www.facebook.com/PublicHealthEngland

Prepared by: Filiz Altinoluk-Davis, Nevila Kallfa, Alexander Harrison and Patrick Doherty.

For queries relating to this document, please contact: filiz.altinolukdavis@phe.gov.uk



© Crown copyright 2018

You may re-use this information (excluding logos) free of charge in any format or medium, under the terms of the Open Government Licence v3.0. To view this licence, visit [OGL](https://www.ogilive.com/). Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned.

Published: September 2018
PHE publications
gateway number: 2018427

PHE supports the UN
Sustainable Development Goals



Contents

About Public Health England	2	
Abbreviations	4	
Executive summary	5	
1. Introduction	9	
2. Methods	10	
2.1 Report method and caveats		10
2.2 Calculating uptake		10
2.3 Definitions		11
3. Findings	12	
3.1 The unmet need		12
3.2 The gaps in care		17
4. Opportunities	22	
4.1 National clinical standards and key performance indicators (KPIs)		22
4.2 Universal indicators		26
5. Recommendations	27	
Appendix	28	

Abbreviations

BACPR	British Association for Cardiovascular Prevention and Rehabilitation
BHF	British Heart Foundation
CABG	Coronary artery bypass graft
CR	Cardiac rehabilitation
CVD	Cardiovascular disease
DNA	Did not attend
HES	Hospital Episode Statistics
HF	Heart failure
KPI	Key performance indicator
MDT	Multidisciplinary team
MI	Myocardial infarction
NACR	National Audit of Cardiac Rehabilitation
NCP_CR	BACPR/NACR National Certification Programme for Cardiac Rehabilitation
NCVIN	National Cardiovascular Intelligence Network
PCI	Percutaneous coronary intervention
PHE	Public Health England

Executive summary

Background

Cardiac rehabilitation (CR) is an evidence-based and NICE-recommended service that should be routinely offered to patients following myocardial infarction (MI), percutaneous coronary intervention (PCI), coronary artery bypass graft (CABG) and to patients with heart failure (HF). In addition to this, those that have undergone valve surgery are also increasingly benefiting from these services.

This report has been undertaken in collaboration with the British Heart Foundation's (BHF) National Audit of Cardiac Rehabilitation (NACR) team. It aims to identify and document variation in service delivery across the South West, focussing on the gaps in care, the opportunities for quality improvement and raising awareness of unmet needs. The report and its findings are intended for use by service providers and commissioners.

The British Association for Cardiovascular Prevention and Rehabilitation (BACPR) is the national professional body for CR and co-leads the BACPR/NACR National Certification Programme for CR (NCP_CR) with the Director of the NACR. The NCP_CR aims to improve the quality of cardiovascular prevention and rehabilitation services to achieve the best possible outcomes for patients irrespective of where they live.

Methods

The data in this report were extracted and analysed by NACR in collaboration with PHE South West Centre cardiovascular disease leads. The analysis is based on reported cardiac patient level activity (inpatient or outpatient event) and CR provider level activity between 1 April 2016 and 31 March 2017.

Findings

In the 2016/17 financial year, there were 12 CCGs that delivered 20 different Core/Phase III CR programmes. 2 of these programmes, however, are not registered with NACR. Thus, do not have NACR codes or any data available for comparison. A further 3 programmes also have no data available on NACR. From the 15 reporting CR providers, a total of 4,418 patients started Core CR across the South West in 2016/17, according to the NACR dataset. The key findings for this cohort of patients are summarised below.

The unmet need

It is unclear how current service provision meets **population need** and how local commissioners evaluate this need:

- data are unavailable for 5 of the 20 programmes, 2 of which are not registered with NACR, therefore, population need is likely to be underestimated
- it is not possible to determine accurate referral rates for people in priority and non-priority groups referred to CR programmes

Access to CR is variable and dependent on the type of CR delivery model (eg home-based or group-based) and its availability:

- 3 of the 12 programmes reporting on mode of delivery do not appear to be offering a facilitated home-based option
- the reason given for the majority of patients not taking up core CR is patient not interested/refused

Reported average **uptake** of CR services in the South West is below the NHS England minimum ambition of 65%.¹ The uptake ranged between 32% for MI and 60% for MI/PCI:

- across the region between 40% and 54% of eligible patients aged <65, and between 39% and 72% of eligible patients aged 65+ in the priority groups are not being referred for CR

Early referral to CR is lagging behind national standards: 24% of referrals are not made early (while the patient is still in hospital), and 49% of all early referrals are not timely within 3 days.

7 out of 20 CR programmes are not meeting the post-discharge to start of Core CR target for MI/PCI (of 33 days) and 6 out of 20 for CABG (of 46 days).

¹ DoH 2013 Cardiovascular disease outcomes strategy:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/217118/9387-2900853-CVD-Outcomes_web1.pdf

The gaps in care

There is a high level of noncompliance to agreed national standards of care:

- 18 of the 20 CR programmes in the South West are not achieving the clinical standards and the 7 key performance indicators (KPIs) for certification from the NCP_CR, 2 programmes of which are not yet registered on NACR

There is further room for improvement in identifying and referring patients with HF to CR services:

- patients with HF are inadequately referred for CR, and in some cases not reported on NACR

5 programmes with data recorded on NACR are not achieving the median patient **programme duration** of 56 days.

6 programmes do not have multidisciplinary teams (MDTs) with at least 3 different professions supporting CR.

Patient **outcomes** post-CR, collected 8-12 weeks from baseline, were only completed for 58% of the South West population. Out of the varied CR assessment, 7 outcomes were chosen to investigate change:

- of patients included, 52% were deemed to be not in the target health state for at least one outcome measure at baseline
- the largest patient change was a movement in 3 outcomes into the target state at post-assessment
- the analysis also highlights a lack of follow up assessment, with many of the completed population not being assessed post-CR

5 programmes did not meet the 80% pre-CR assessment target, and 6 programmes did not meet the 57% post-CR assessment target.

Opportunities

This section of the report estimates the opportunities for programmes to achieve certification by comparing performance and activity in 2016/17 against each of the national clinical standards and NCP_CR KPIs. In addition to the KPIs, uptake is also a key area of opportunity to address the unmet need. In order to reach the NHS England 65% national uptake ambition, an additional 1,941 MI, 1,585 MI/PCI, 1,112 PCI and 688 CABG patients are required to take up CR.

PHE and NHS England are working with NACR and the National Cardiovascular Intelligence Network (NCVIN) to develop a methodology quantifying access to CR services in relation to population need. This will provide commissioners with a tool to support local CR service evaluation and programme commissioning.

Recommendations

- work with the National Cardiovascular Intelligence Network (NCVIN) and NACR to develop a methodology for evaluating and commissioning CR services based on population need
- review the funding arrangements currently in place across the South West to identify current barriers and gaps in provision
- model the potential cost-savings for acute settings through reduced readmissions if all programmes achieve the 65% uptake ambition and meet the national clinical standards and NCP_CR KPIs
- seek support from NACR in meeting the national clinical standards, particularly in relation to reviewing the staffing and IT needs of programmes to facilitate this

1. Introduction

Cardiac rehabilitation (CR) is an evidence-based and NICE-recommended service that should be routinely offered to patients following myocardial infarction (MI), percutaneous coronary intervention (PCI), coronary artery bypass graft (CABG) and to patients with heart failure (HF).^{2,3,4,5,6} In addition to this, patients that have undergone valve surgery are increasingly benefiting from these services in practice.⁷

Ongoing work across the NHS England South Region and Public Health England (PHE) has identified considerable variation in how services are funded, who is accessing them, and the quality of CR care. One of the implications of the 2012 Health and Social Care Act has been changes in the commissioning landscape of CR. As a result, there are also variations in the input of commissioning and public health expertise which should be considered when reviewing the outcomes at a local level.

This report on South West CR services is intended for use by commissioners and providers, and has been undertaken to identify and document variation in service delivery. It focuses on the gaps in care, the opportunities for quality improvement and raises awareness of unmet needs.

The report has been completed in collaboration with the British Heart Foundation's (BHF) National Audit of Cardiac Rehabilitation (NACR) team based at the University of York, in particular Alex Harrison, Nerina Onion and Professor Patrick Doherty.

² NICE CG172 - Myocardial infarction: cardiac rehabilitation and prevention of further cardiovascular disease: <https://www.nice.org.uk/guidance/cg172>

³ NICE CG94 - Unstable angina and NSTEMI: early management: <https://www.nice.org.uk/guidance/cg94>

⁴ NICE CG108 - Chronic heart failure in adults: management: <https://www.nice.org.uk/guidance/cg108/chapter/1-Guidance#rehabilitation>

⁵ Anderson et al. Exercise-based cardiac rehabilitation for coronary heart disease. Cochrane Database of Systematic Reviews 2016, Issue 1. Art. No.: CD001800. DOI: 10.1002/14651858.CD001800.pub3.

⁶ Taylor et al. Exercise-based rehabilitation for heart failure. Cochrane Database of Systematic Reviews 2017, Issue 4. Art. No.: CD003331. DOI: 10.1002/14651858.CD003331.pub4.

⁷ Sibillit et al. Exercise-based cardiac rehabilitation for adults after heart valve surgery. Cochrane Database of Systematic Reviews 2016, Issue 3. Art. No.: CD010876. DOI: 10.1002/14651858.CD010876.pub2.

2. Methods

The data included in this report were extracted and analysed by the NACR team, and were for patients following a cardiac event or procedure managed through inpatient or outpatient services (see definitions below), or who had treatment between 1 April 2016 and 31 March 2017. A full list of programmes and their associated NACR programme codes can be found in Table A in the appendix.

2.1 Report method and caveats

The eligible population is based on patients resident in a South West CCG that were discharged alive and in one of the 4 reported priority groups of MI, MI/PCI, PCI and CABG. The eligible population has been estimated from Hospital Episode Statistics (HES). It has not been possible to include HF patients in the eligible population as many diagnoses of HF will be long-standing and not following a recent hospital episode. Where data have been analysed by priority group, HF patients are excluded to avoid double counting.

There are differences in the number of patients reported as starting Core CR dependent on whether the data is analysed by programme or by CCG. Patients resident within the South West, but choosing to complete CR in a programme outside of the South West, are not included in the programme level data but are included in the CCG level data. These patients are included in the CCG level data as the commissioners are still responsible for funding their care.

It should be noted that some of the rates reported are over 100%. This is because the eligible population is estimated from HES, and the numerator is drawn from NACR. It is not currently possible to link the 2 datasets. Therefore, the HES eligible population estimate only represents those patients referred to CR following a hospital recorded event. There are a number of reasons why the numerator may be greater than the denominator. For example, if patients are self-referred, or referred by a GP having been diagnosed with HF 10 years previously.

2.2 Calculating uptake

Uptake has been estimated at programme-level by comparing the number of patients recorded in NACR as having started Core CR in a South West programme against the estimated eligible population. This methodology is the same as that used for calculating uptake in the annual statistical report, but at a smaller geography. In the annual report, programmes that do not submit data to NACR but do deliver CR to this area cannot be included in the calculations as there is no method of estimating throughput.

2.3 Definitions

Eligible: patient has diagnosis/treatment code for MI/PCI/CABG and has been admitted to hospital according to HES.

Referred: captured on the NACR system.

Early/Phase1 Referral: the referral date entered for patients during inpatient care.

Post-discharge referral: the referral date entered for patients once discharged from inpatient care. This is used for the waiting time to start of Core CR.

Starting Core CR: Core CR is the main exercise-based, 8-12 week programme delivered in the hospital, in the community or at home.

3. Findings

3.1 The unmet need

3.1.1 Current service provision

In the 2016/17 financial year, there were 12 CCGs with 20 different programmes delivering Core/Phase III CR. 2 of these programmes, however, do not have NACR codes and, therefore, no data available. A further 3 programmes also have no data available on NACR. During the year, a total of 4,418 patients from any disease or treatment group (not limited to the priority groups) started Core CR across the South West, according to the NACR dataset. The eligible population based on the 4 priority groups was 13,855.

3.1.2 Access

Access to CR is variable and dependent on the type of CR delivery model, including which patients are referred, who completes the referral, and whether the mode of local delivery enables patients to participate. Potential shortcomings in the way patients are encouraged to attend CR programmes are suggested from the reasons given for not attending Core CR.

There is clear variation in the number of eligible patients being referred for CR at all ages, <65 years old, and 65+ years old (see Table B in the appendix). On average, between 40% and 54% of eligible patients aged <65, and between 39% and 72% of eligible patients aged 65+ in the priority groups are not being referred for CR. In the priority groups, patients experiencing an MI aged 65+ were less likely, on average, to be referred for CR. In the other 3 priority groups, patients aged 65+ were more likely to be referred for CR than those aged <65.

The range of referral rates across the CCGs is wide, with Somerset and Kernow CCGs frequently at the lowest end of the spectrum. In contrast, Dorset and South Devon and Torbay CCGs are frequently at the highest end, referring additional patients to those identified from HES, resulting in a referral rate greater than 100% in these areas. It is not possible to determine accurate referral rates for people in priority and non-priority groups referred to CR programmes.

Data on which staff types are referring patients for CR is provided in Table C in the appendix. The majority of referrals are completed by a consultant or cardiac nurse. However, there is an 'other' group, which in Bristol and South Gloucestershire CCGs

are referring approximately half of their patients. NACR have advised that the 'other' group can include self-referrals and patients referred from private settings.

In relation to mode of delivery, data in Table D in the appendix highlight that Core CR is delivered through a range of components, including group-, telephone- and home-based approaches. The data also show that programmes in the South West often include more than one mode of delivery, although the majority are group-based and face-to-face.

There are no web-based services offered in the South West.⁸ This again demonstrates variation across the region in terms of how accessible the services are to patients, and also the degree of choice available to patients in how they undergo CR. Evidence suggests that facilitated home-based and centre-based CR programmes are similarly effective in terms of clinical and health-related quality of life outcomes for patients.⁹ 9 of the 12 programmes with this data available did offer a home-based component. Whether the other 3 programmes with data available have a home-based component is not clear, and could potentially pose a barrier to some patients in taking up CR.

Reasons for not taking part in Core CR in the South West are provided for only 1,223 patients in any treatment group in 2016/17 (see Table E in the appendix). As the number of patients not taking up Core CR in just the 4 priority groups is 10,432, the number not taking part from any treatment group is likely to be much higher. There is limited information, therefore, on the reasons why patients are not taking part in Core CR.

The main reason given for not attending Core CR in 56% of cases was patient not interested/refused or DNA/no contact, which suggests that services in the South West are not effective at attracting patients, or they do not operate in accordance with patients' needs. In the South West, the reason provided for 41 patients was local exclusion criteria, 28 of these patients were from the same programme. Local exclusion criteria vary based on funding for specific groups of patients and specialised staff availability. In total, 53 patients did not take part for unknown or other reasons, with 36 of these patients referred to 2 programmes. It is not known what the unknown or other reasons include.

⁸ An example of a web-based approach is 'Activate Your Heart', which was designed by cardiac rehabilitation specialists and patients at the University Hospitals of Leicester NHS Trust: <http://www.activateyourheart.org.uk/>. See also, NICE shared learning database: <https://www.nice.org.uk/sharedlearning/maximising-access-to-a-cardiac-rehabilitation-service-through-service-redesign-and-an-innovative-web-based-approach-activateyourheart>

⁹ Anderson L, Sharp GA, Norton RJ, Dalal H, Dean SG, Jolly K, Cowie A, Zawada A, Taylor RS. Home-based versus centre-based cardiac rehabilitation. *Cochrane Database of Systematic Reviews* 2017, Issue 6. Art. No.: CD007130. DOI: 10.1002/14651858.CD007130.pub4.

Of the patients not taking part in Core CR, 503 (41%) had at least one co-morbidity. The majority of these patients (45%) did not take part in Core CR because they were not interested/refused. Chart A in the appendix shows the reasons for not taking part by co-morbidity; patients with more than one co-morbidity are represented more than once.

Data on the proportion of the eligible population with one or more co-morbidities shows that 48% have hypertension, 23% have diabetes, 21% have angina and 19% have hypercholesterolaemia/dyslipidaemia (see Table F in the appendix). This suggests that a high proportion of patients with co-morbidities are not attending local CR services in the South West, despite having the capacity to benefit.

Chart B in the appendix shows the reasons for not taking part by programme. Patient not interested/refused or DNA are the most common reasons for patients not taking part in the majority of programmes. This is a key area for programmes to explore to understand why some patients refuse or are not interested in CR, and whether aspects of the services offered are seen as inaccessible to some.

3.1.3 Uptake

The Department of Health's 2013 CVD Outcomes Strategy sets the CR uptake ambition at 65% following an analysis of NACR data that found increased uptake could result in considerably fewer deaths and readmissions each year.¹⁰ This is further supported by evidence from a recent Cochrane systematic review, which highlights that exercise-based CR for coronary heart disease can reduce cardiovascular mortality and hospital readmissions post CR.¹¹

The South West uptake rate for the 4 reported priority groups is 25%. Therefore, 10,432 eligible patients (75%) are not taking part in Core CR from the 4 priority groups in the South West. In order to achieve the 65% ambition in the South West, efforts are required to not only increase uptake but also the number of referrals in to the service.

¹⁰ DoH 2013 Cardiovascular disease outcomes strategy:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/217118/9387-2900853-CVD-Outcomes_web1.pdf

¹¹ Anderson L, Thompson DR, Oldridge N, Zwisler AD, Rees K, Martin N, Taylor RS. Exercise-based cardiac rehabilitation for coronary heart disease. Cochrane Database of Systematic Reviews 2016, Issue 1. Art. No.: CD001800. DOI: 10.1002/14651858.CD001800.pub3.

In the South West there is considerable variation in uptake of Core CR between CCGs and priority groups:

- MI average uptake: 10%; ranging from 1% (Somerset) to 32% (South Devon and Torbay)
- MI/PCI average uptake: 30%; ranging from 3% (Somerset) to 73% (Dorset)
- PCI average uptake: 31%; ranging from 1% (Somerset) to 81% (Dorset)
- CABG average uptake: 26%; ranging from 0% (Somerset) to 64% (Dorset)

Somerset CCG consistently has the lowest uptake, compared to Dorset CCG, which has the highest uptake for 3 of the 4 priority groups. See Table G in the appendix.

3.1.4 Early referrals

Timeliness of referrals sheds light on whether patients are being referred appropriately according to need. See Table H in the appendix.

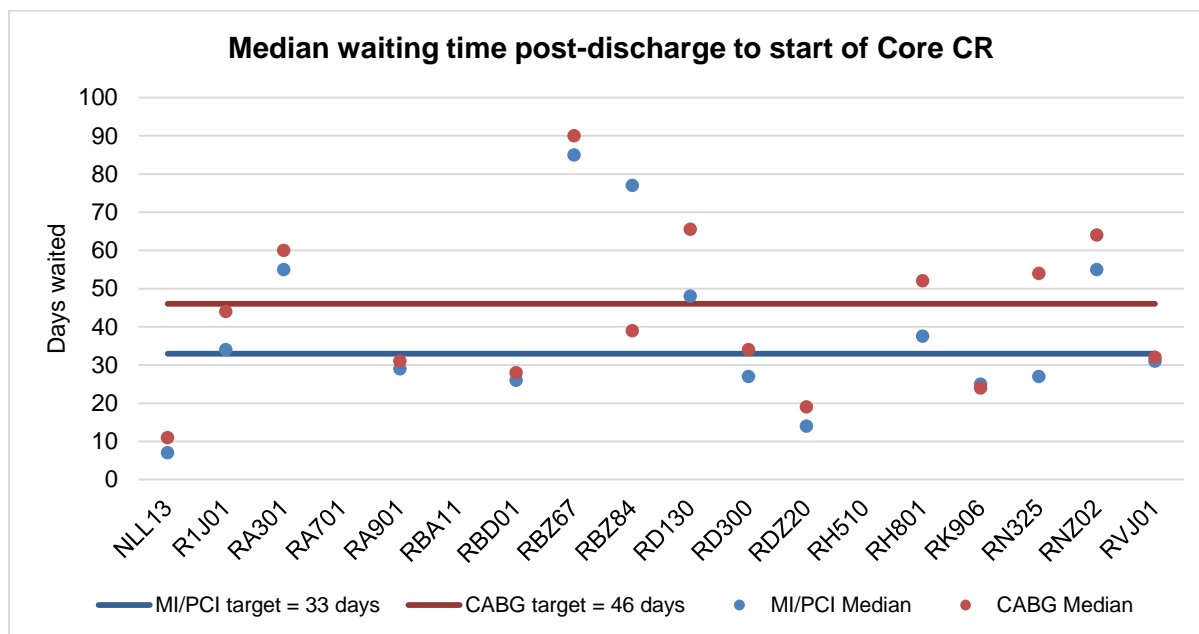
The findings show that, in the South West, of the 6,957 patients referred across the 4 priority groups during 2016/17, approximately 76% were early referrals (while the patient was still in hospital). Of these, 51% of early referrals were timely, within 3 days of the initiating event, which is the current gold standard for MI referrals.¹²

3.1.5 Post-discharge referral to start of Core CR

The variation in time waited by patients from post-discharge referral to start of Core CR is explored below (see Figure 1). The National Certification Programme for Cardiac Rehabilitation (NCP_CR) splits this in to 2 groups. For MI/PCI, the standard is a wait time of less than 33 days, and for CABG less than 46 days. This information is reported by programme, not CCG.

¹² NHS England and NHS Improvement 2017/18 and 2018/19 National Tariff Payment System Annex F: Guidance on best practice tariffs: https://improvement.nhs.uk/documents/1047/Annex_F_guidance_on_best_practice_tariffs.pdf

Figure 1: Median waiting time post-discharge to start of Core CR by programme, 2016/17



In the South West, 7 out of 20 CR programmes are not meeting the MI/PCI target of 33 days (ranging from 34 to 85 days waited). 6 programmes are also not meeting the CABG target of 46 days (ranging from 52 to 90 days waited)¹³. 5 of these programmes are missing both targets.¹⁴ Timely CR that is delivered soon after discharge from acute services is a key recommendation in NICE guideline CG172: Myocardial infarction: cardiac rehabilitation and prevention of further cardiovascular disease.¹⁵

3.1.6 Summary of the unmet need in the South West

- it is unclear how current service provision meets population need and how local commissioners evaluate this need
- access to CR is variable and dependent on the type of CR delivery model (eg home/group-based) and its availability
- average uptake of CR services in the South West for the 4 priority groups reported on here is below the national minimum ambition of 65%
- early referral to CR is lagging behind national standards
- 7 out of 20 CR programmes are not meeting the post-discharge to start of Core CR target for MI/PCI (of 33 days) and 6 out of 20 for CABG (of 46 days)

¹³ One of the programmes only had one post-discharge referral recorded, which is below the minimum threshold for sufficient data (3+ patients) and is therefore classed as a fail.

¹⁴ The Minimum Standards for National Certification Programme for Cardiovascular Rehabilitation: 2018: http://www.bacpr.com/resources/DCZ_Minimum_Standards_2018.pdf

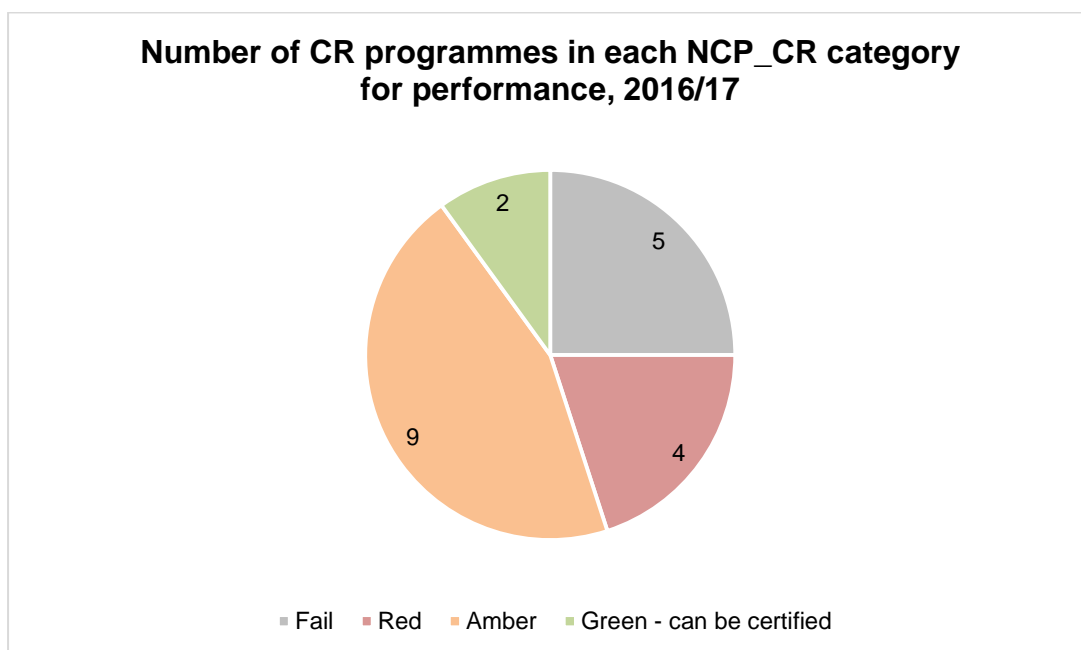
¹⁵ NICE CG172 - Myocardial infarction: cardiac rehabilitation and prevention of further cardiovascular disease: <https://www.nice.org.uk/guidance/cg172>

3.2 The gaps in care

3.2.1 Compliance with national minimum standards

According to the data held by NACR, 2 programmes in the South West are meeting all 7 minimum standards required to achieve NCP_CR certification (see Figure 2). 5 programmes have failed by either not meeting any of the 7 standards or by not entering data/being registered with NACR. The majority are achieving 4-6 of the standards (amber). One of the red-rated programmes has no data on NACR but meets the multidisciplinary team (MDT) standard.

Figure 2: The number of cardiac rehab programmes in each NCP_CR category for performance, 2016/17



Key to minimum standards:

- Green: Meeting all 7 minimum standards (can be certified)
- Amber: Meeting 4-6 minimum standards
- Red: Meeting 1-3 minimum standards
- Fail: Meeting 0 standards or not entering data on NACR

This raises concerns about the quality of the services patients are being referred in to. Each of the standards have been failed by at least 3 programmes (excluding the 5 programmes with no data available).

3.2.2 Referrals for HF patients

The priority group minimum standard includes HF patients as well as MI, MI/PCI, PCI and CABG patients. Table I in the appendix shows the number of patients recorded within each priority group, including HF, for the 14 programmes recording all or part of this information. For 10 of these programmes, the HF priority group had the smallest number of patients being referred (ranging from 1-24 patients). 2 programmes do not report any data on the number of HF patients but are reporting for all other priority groups.

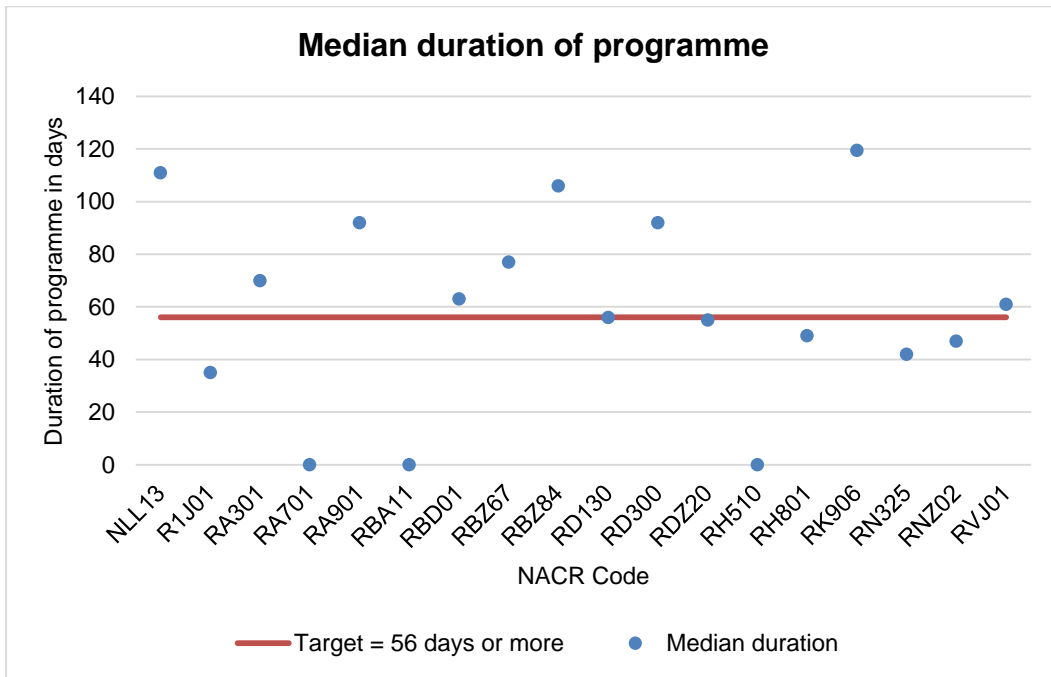
3.2.3 Programme duration

Another measure of quality is the median duration that patients attend Core CR for (see Figure 3). In the South West there are 5 programmes with data on NACR that are not achieving the median patient programme duration of 56 days (ranging from 35 to 55 days). Evidence suggests that duration at or above 12 weeks (84 days) is common to successful CR programmes in giving patients sufficient time to make required lifestyle changes and alter behaviour.¹⁶

The longest median duration of any programme in the South West was 119.5 days (just over 17 weeks). This was closely followed by 111 days.

¹⁶ BHF 2017 National Audit of Cardiac Rehabilitation – Annual Statistical Report:
<https://www.bhf.org.uk/publications/statistics/national-audit-of-cardiac-rehabilitation-annual-statistical-report-2017>

Figure 3: Median duration of each CR programme, 2016/17



3.2.4 Staffing

For the 18 CR programmes registered with NACR, 6 do not have MDTs. The minimum standards state that each programme should have staff from at least 3 different disciplines. Where the count of staff types is zero this is due to a lack of response to the NACR survey. The highest number of different professions represented is 8. See Table J in the appendix for further information.

3.2.5 Outcomes

Data from NACR on patient outcomes are not filtered by priority group and include patients in any disease or treatment group that started Core CR. Only those patients from the South West who had a pre- and post-CR assessment with at least one outcome measure recorded are included. This subset of patients is further defined as either in the target health state or in the negative health state for at least one of the 7 outcomes of interest listed in Table 1. The ability to improve is defined as:

- negative health state: the patient has a valid assessment with all or some outcome measures completed, and of those that are completed one or more measures are deemed as in the negative health state, eg smoking or BMI >30
- target health state: the patient has a valid assessment with all or some outcome measures completed, and of those that are completed the patient is already in the target health state, eg not smoking and BMI <30

Table 1: Patient outcomes and the categories determining change in outcome

Outcomes used	Category determining patients eligible for change
1. BMI	>30
2. Smoking	Smoking at baseline
3. Physical activity	Not physically active
4. HADS anxiety	HADS >8
5. HADS depression	HADS >8
6. Blood pressure	Blood pressure >140/90
7. Physical fitness	Any physical fitness measure

Patients defined as being in at least one negative health state for the 7 outcomes from CR had a maximum potential improvement score of 7. In the South West, of those patients defined as in a negative health state, the maximum number of outcome changes reported in any one patient was 3. The data for the South West in Table 2 are summarised by CCG to give the proportion of patients who at baseline had at least one outcome in the negative health state and achieved no change, one, 2 or 3 outcome changes. The final column presents the number of patients defined at baseline as having all outcomes recorded in the target health state.

Table 2: Patient outcomes in the South West, 2016/17

CCG	Defined as being in at least one negative health state					Defined as being in the target health state, n
	Zero change, n	One outcome change, n	Two outcome changes, n	Three outcome changes, n	Total, n	
B&NES	8	12	<5	0	21	21
Bristol	28	38	9	<5	77	60
Dorset	250	245	56	17	568	448
Gloucestershire	59	41	9	0	109	85
Kernow	7	5	0	0	12	197
North Somerset	21	22	<5	<5	48	37
Somerset	<5	<5	<5	<5	8	7
S.Gloucestershire	36	52	19	<5	110	97
Swindon	60	62	6	<5	129	39
Wiltshire	62	77	11	<5	154	108
NEW Devon	19	21	5	0	45	23
S.Devon and Torbay	0	30	17	11	58	90
Total	554	607	138	40	1339	1212

Across the South West, of those with the potential for improvement, 41% made no outcome changes, 45% made one outcome change, 10% made 2 outcome changes and 3% made 3 outcome changes. In contrast, 48% of patients were defined as not able to make an improvement. This is a considerable proportion, and it is not clear

whether this is due to all patients being in the desired state for all 7 outcomes, or the result of incomplete recording of patient outcomes during assessment. The true benefit of CR to improve patient outcomes is lost for this cohort of patients, which is 27% of the total patients that started Core CR in the South West.

3.2.6 Pre- and post-assessment

A total of 2,551 patients in the South West had a pre- and post-assessment recorded on NACR, which is 58% of all patients from any disease or treatment group that received Core CR. The national minimum standards state that 80% of patients should have a pre-CR assessment and that 57% should have a post-CR assessment. These are based on data for the England average.¹⁷ At a regional level, the CR programmes are collectively hitting the target for post-assessment. However, as Table K in the appendix shows, of the 14 programmes reporting this information, 5 did not meet the 80% pre-CR assessment target, and 6 did not meet the 57% post-CR assessment target.

The majority of patients with potential for improvement made one outcome change. Dorset is notable for having a large number of patients with pre- and post-assessments, and also with the number achieving 2 and 3 outcome changes.

3.2.7 Summary of the gaps in care in the South West

- there is a high level on noncompliance to agreed national standards of care
- there is further room for improvement in identifying and referring patients with HF to CR services
- 5 programmes with data recorded on NACR are not achieving the median programme duration of 56 days
- 6 programmes do not have MDTs with at least 3 different professions supporting CR
- Patient outcomes are reported for only 58% of patients in the South West from any disease or treatment group that received Core CR
- 5 programmes did not meet the 80% pre-CR assessment target, and 6 programmes did not meet the 57% post-CR assessment target

¹⁷ The Minimum Standards for National Certification Programme for Cardiovascular Rehabilitation: 2018: http://www.bacpr.com/resources/DCZ_Minimum_Standards_2018.pdf

4. Opportunities

4.1 National clinical standards and key performance indicators (KPIs)

The following section reviews the potential opportunities that can be achieved by programmes in the South West if the NCP_CR standards and KPIs were achieved in 2016/17.

MS 1.1: At least 3 professions in the CR team – these are professionals who regularly have input into the CR programme.

To achieve the minimum standard for MDT, the following programmes need to increase their count of staff types by the number indicated in Table 3 below.

Table 3: The number of additional staff required, by programme, to achieve MS 1.1

Programme	MDT	Additional staff disciplines required
RA301 Weston General Hospital	N	3
RA901 Torbay Hospital	N	1
RBZ84 Northern Devon Healthcare/Westbank Community Care	N	3
RH510 Somerset Partnership NHS Foundation Trust	N	2
RH801 Royal Devon and Exeter Hospital	N	1
RK906 Plymouth Community Healthcare - Plymouth	N	3
Plymouth Community Healthcare – Plymouth (not NACR registered)	N	3
Yeovil (not NACR registered)	N	3

MS 2.1: Cardiovascular rehabilitation is offered to all these priority groups: MI, MI+PCI, PCI, CABG, HF

This review has not been able to consider HF patients as a priority group in the majority of tables due to data availability from NACR. The data provided show that patients from each of the other 4 priority groups are being offered CR. However, the number of patients taking up CR in each priority group is a particular area of opportunity to focus on.

The national uptake target for cardiac rehabilitation priority groups is 65%. Table 4 below estimates the number of eligible patients that need to take up CR to achieve 65% for each priority group, and the difference between this figure and the number reported on NACR as taking up CR in 2016/17. A blank space indicates that the CCG is already achieving or exceeding the 65% ambition.

Table 4: The number of patients that need to take up CR to achieve 65% by CCG and priority group, and the difference between the current and predicted values

CCG	MI		MI/PCI		PCI		CABG	
	65% uptake	Additional patients	65% uptake	Additional patients	65% uptake	Additional patients	65% uptake	Additional patients
B&NES	71	61	96	61	75	49	25	21
Bristol	167	153	191	126	124	115	61	36
Dorset	424	286	544	-	600	-	177	2
Gloucestershire	215	187	317	194	243	174	121	95
Kernow	274	254	384	317	268	210	181	150
North Somerset	94	82	138	66	90	53	47	26
Somerset	243	240	263	249	201	199	96	92
South Gloucestershire	114	86	122	24	62	51	55	3
Swindon	83	57	111	22	75	27	31	7
Wiltshire	169	145	256	131	236	114	86	26
NEW Devon	369	338	517	417	267	239	283	223
South Devon and Torbay	101	51	175	49	85	32	77	7
Total	2325	1941	3115	1585	2325	1112	1240	688

Across the South West, there is the opportunity for an additional 1,941 MI, 1,585 MI/PCI, 1,112 PCI, and 688 CABG patients to take up CR.

MS 3.1: Percent of patients with recorded assessment 1 is equal to or more than: England 80%

Table 5 below estimates the number of additional pre-CR assessments that need to be carried out by five programmes to achieve the 80% target, based on 2016/17 data.

Table 5: The number of additional patients per programme that require assessment 1 completed to achieve MS 3.1

Programme	Patients starting cardiac rehabilitation	Percentage with assessment 1	Additional patients requiring assessment 1
RBD01 Dorset County Hospital	466	67%	61
RD130 Royal United Hospital Bath	236	72%	19
RD300 Poole General Hospital	584	73%	41
RH801 Royal Devon and Exeter Hospital	88	58%	19
RNZ02 Salisbury District Hospital	329	78%	7

MS 4.1: Time from post-discharge referral to start of Core CR programme for MI/PCI is equal to or less than national median of England 33 days

MS 4.2: Time from post-discharge referral to start of Core CR programme for CABG is equal to or less than national median of England 46 days

There are opportunities to improve both of these standards, particularly for 5 programmes, which are not currently achieving either. There is also scope for 3 programmes to improve the reporting on NACR for these standards. See Table 6 below.

Table 6: The reduction required in median days waited post-discharge for MI/PCI and CABG patients to achieve MS 4.1 and 4.2

Programme	Required reduction in median days waited post-discharge for MI/PCI patients (≤ 33 days)	Required reduction in median days waited post-discharge for CABG patients (≤ 46 days)
R1J01 Gloucestershire Care Services	-1	-
RA301 Weston General Hospital	-22	-14
RBZ67 North Devon District Hospital	-52	-44
RBZ84 Northern Devon Healthcare/Westbank Community Care	-44	-
RD130 Royal United Hospital Bath	-15	-19.5
RH801 Royal Devon and Exeter Hospital	-4.5	-6
RN325 Great Western Hospital	-	-8
RNZ02 Salisbury District Hospital	-22	-18
RA701 Bristol Royal Infirmary	No data available	No data available
RBA11 Musgrove Park Hospital	No data available	No data available
RH510 Somerset Partnership NHS Foundation Trust	No data available	No data available

MS 4.3 Duration of Core CR programme is equal to or more than national median of 56 days

There are opportunities for several programmes to increase the median patient duration of CR programmes, or to improve their reporting on NACR for this standard (Table 7).

Table 7: The additional days of programme duration required to meet MS 4.3

Programme	Additional days programme duration required to hit median target of 56 days
R1J01 Gloucestershire Care Services	21
RDZ20 Royal Bournemouth General Hospital	1
RH801 Royal Devon and Exeter Hospital	7
RN325 Great Western Hospital	14
RNZ02 Salisbury District Hospital	9
RA701 Bristol Royal Infirmary	No data available
RBA11 Musgrove Park Hospital	No data available
RH510 Somerset Partnership NHS Foundation Trust	No data available

MS 5.1: Percent of patients with recorded assessment 2 (end of CR) is equal to or more than: England 57%

The analysis identified that, at a South West level, 58% of people completing CR have a post-CR assessment. This is just above the England average. However, there is considerable variation at programme level to be addressed, with 6 programmes not reaching the 57% target. Lack of completion of the post-CR assessment affects the ability to review the patient outcomes achieved. Table 8 below estimates the additional number of patients that need to have a post-CR assessment completed in order to achieve the target.

Table 8: The additional number of patients that need a post-CR assessment to achieve MS 5.1

Programme	Patients starting cardiac rehabilitation	Percentage with assessment 2	Additional patients requiring assessment 2
RA301 Weston General Hospital	150	37%	30
RA901 Torbay Hospital	379	31%	99
RBD01 Dorset County Hospital	466	50%	33
RDZ20 Royal Bournemouth General Hospital	1136	46%	125
RH801 Royal Devon and Exeter Hospital	88	44%	11
RK906 Plymouth Community Healthcare - Plymouth	100	5%	52

MS 6.1: Obtaining a valid NACR NCP_CR report

This report has highlighted a number of gaps in the completion of certain fields on NACR, as well as in completion of the NACR annual survey. There is scope for 16 of the 18 NACR-registered programmes to improve on the above minimum standards to enable them to achieve certification, 2 in particular that are not currently registered with NACR. The information available suggests that only 2 of the total 20 programmes in the South West have achieved all 7 minimum standards required for certification.

4.2 Universal indicators

The NCP_CR provides a measure of quality assurance by certifying that services are being delivered according to evidence based minimum standards.¹⁸ However, certification is only available to those programmes reporting data in to NACR, and reported data does not always coincide with service level activity or population need.

Assessing population need for cardiac rehabilitation that is not based solely on hospital level activity is complex. Thus, there is a need to develop a framework to aid local commissioners. This gap has been noted by PHE and NHS England, who are working closely with NACR and the National Cardiovascular Intelligence Network (NCVIN) to develop a methodology quantifying access to CR services in relation to population need. This will provide commissioners with a tool to support local CR service evaluation and programme commissioning.

¹⁸ BHF/NACR National Certification Programme for Cardiac Rehabilitation: <http://www.cardiacrehabilitation.org.uk/NCP-CR.htm>

5. Recommendations

- work with the NCVIN and NACR to develop a methodology for evaluating and commissioning CR services based on population need
- review the funding arrangements currently in place across the South West to identify current barriers and gaps in provision
- model the potential cost-savings for acute settings through reduced readmissions if all programmes achieve the 65% uptake ambition and meet the national minimum standards
- seek support from NACR in meeting the national minimum standards, particularly in relation to reviewing the staffing and IT needs of programmes to facilitate this

Appendix

Table A: List of cardiac rehab programmes in the South West and their NACR code

NACR code	Cardiac rehab programme
NLL13	Cornwall Partnership Foundation Trust
R1J01	Gloucestershire Care Services
RA301	Weston General Hospital
RA701	Bristol Royal Infirmary
RA901	Torbay Hospital
RBA11	Musgrove Park Hospital
RBD01	Dorset County Hospital
RBZ67	North Devon District Hospital
RBZ84	Northern Devon Healthcare, Westbank Community Care
RD130	Royal United Hospital Bath
RD300	Poole General Hospital
RDZ20	Royal Bournemouth General Hospital
RH510	Somerset Partnership NHS Foundation Trust
RH801	Royal Devon and Exeter Hospital
RK906	Plymouth Community Healthcare - Plymouth
RN325	Great Western Hospital
RNZ02	Salisbury District Hospital
RVJ01	North Bristol NHS Trust - Southmead Hospital
No code	Plymouth Community Healthcare - South Hams Hospital
No code	Yeovil District Hospital

Table B: South West referral rates and ranges according to priority group for all ages, <65 years old and 65+ years old, 2016/17

Priority group	All-age			<65 years old			65+ years old		
	SW average	Lowest in SW	Highest in SW	SW average	Lowest in SW	Highest in SW	SW average	Lowest in SW	Highest in SW
MI	32%	8% Kernow	123% SD&T	54%	16% Kernow	133% SD&T	28%	7% Kernow	121% SD&T
MI/PCI	60%	14% Somerset	102% SD&T	60%	11% Somerset	104% SD&T/ Dorset	61%	16% Kernow/ Somerset	101% SD&T
PCI	55%	8% Somerset	105% Dorset	50%	9% Somerset	95% Dorset	58%	8% Bristol/ Somerset	110% SD&T
CABG	50%	7% Somerset	104% Dorset	46%	0% B&NES	142% S Glos	51%	7% Somerset	108% Dorset

SD&T = South Devon and Torbay; B&NES = Bath and North East Somerset.

Table C: The number of patients referred by different staff types by CCG, 2016/17

CCG	Patient referred by (staff type), n				
	Consultant	Cardiac Nurse	GP	Primary Care Nurse	Other
B&NES	46	103	<5	0	0
Bristol	101	24	<5	0	137
Dorset	174	2481	10	<5	37
Gloucestershire	11	529	7	<5	6
Kernow	<5	156	6	5	20
North Somerset	27	215	6	<5	49
Somerset	31	89	<5	0	<5
South Gloucestershire	151	32	7	0	163
Swindon	7	363	<5	0	6
Wiltshire	367	513	10	0	28
NEW Devon	15	623	<5	<5	91
South Devon and Torbay	221	569	7	<5	<5

Table D: Mode of CR delivery by programme, 2016/17

Programme	Group based		Home based		Web based		Home visits		Telephone programme		Ward programme		Clinical programme		Face to face programme		Other programme		Patients starting core CR
	n	% of Total	n	% of Total	n	% of Total	n	% of Total	n	% of Total	n	% of Total	n	% of Total	n	% of Total	n	% of Total	
NLL13	80	24.7%	33	10.2%	0	0.0%	152	46.9%	98	30.2%	<5	0.3%	85	26.2%	193	59.6%	<5	0.3%	298
RA301	129	48.7%	13	4.9%	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0%	0	0.0%	0	0%	166
RA901	290	47.9%	40	6.6%	0	0.0%	<5	0%	6	1%	8	1%	220	36%	313	51.7%	<5	0%	366
RBD01	320	63%	53	10%	0	0%	0	0%	134	27%	0	0%	9	2%	133	26%	0	0%	429
RBZ67	53	28%	31	16%	0	0%	0	0%	<5	1%	0	0%	0	0%	16	8%	0	0%	67
RBZ84	7	100%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	7
RD130	117	41%	12	4%	0	0%	0	0%	<5	1%	<5	1%	0	0%	<5	0%	0	0%	137
RD300	289	46%	32	5%	0	0%	0	0%	295	47%	5	1%	425	68%	427	68%	16	3%	546
RH801	70	76%	0	0%	0	0%	0	0%	0	0%	<5	1%	0	0%	<5	4%	0	0%	78
RN325	301	66%	<5	0%	0	0%	0	0%	<5	0%	0	0%	0	0%	0	0%	0	0%	317
RNZ02	258	55%	8	2%	0	0%	<5	0%	0	0%	0	0%	<5	0%	<5	1%	<5	1%	279
RVJ01	311	55%	0	0%	0	0%	0	0%	<5	0%	0	0%	<5	1%	<5	0%	0	0%	323

Table E: Reasons for not taking part in Core CR in the South West, 2016/17

Reason for not taking part in Core CR	Count	%
Patient not interested/Refused	587	48%
Ongoing Investigation	44	4%
Physical Incapacity	108	9%
Returned to Work	36	3%
Local Exclusion Criteria	41	3%
Language Barrier	0	0%
Holidaymaker	14	1%
Mental Incapacity	8	1%
No Transport	20	2%
Died	39	3%
Not Referred	0	0%
Too Ill	44	4%
Rehab Not Needed	44	4%
Rehab Not Appropriate	49	4%
Staff Not Available	<5	0%
Rapid Transfer to Tertiary Care	0	0%
DNA/No Contact	111	9%
Patient Request transfer to another programme	22	2%
No Service Available	0	0%
Transfer for PCI/Treatment	0	0%
Transfer to DGH/Trust	<5	0%
Other	40	3%
Unknown	13	1%
Total	1223	100%

Chart A: Reasons for not taking part in Core CR by co-morbidity, South West, 2016/17

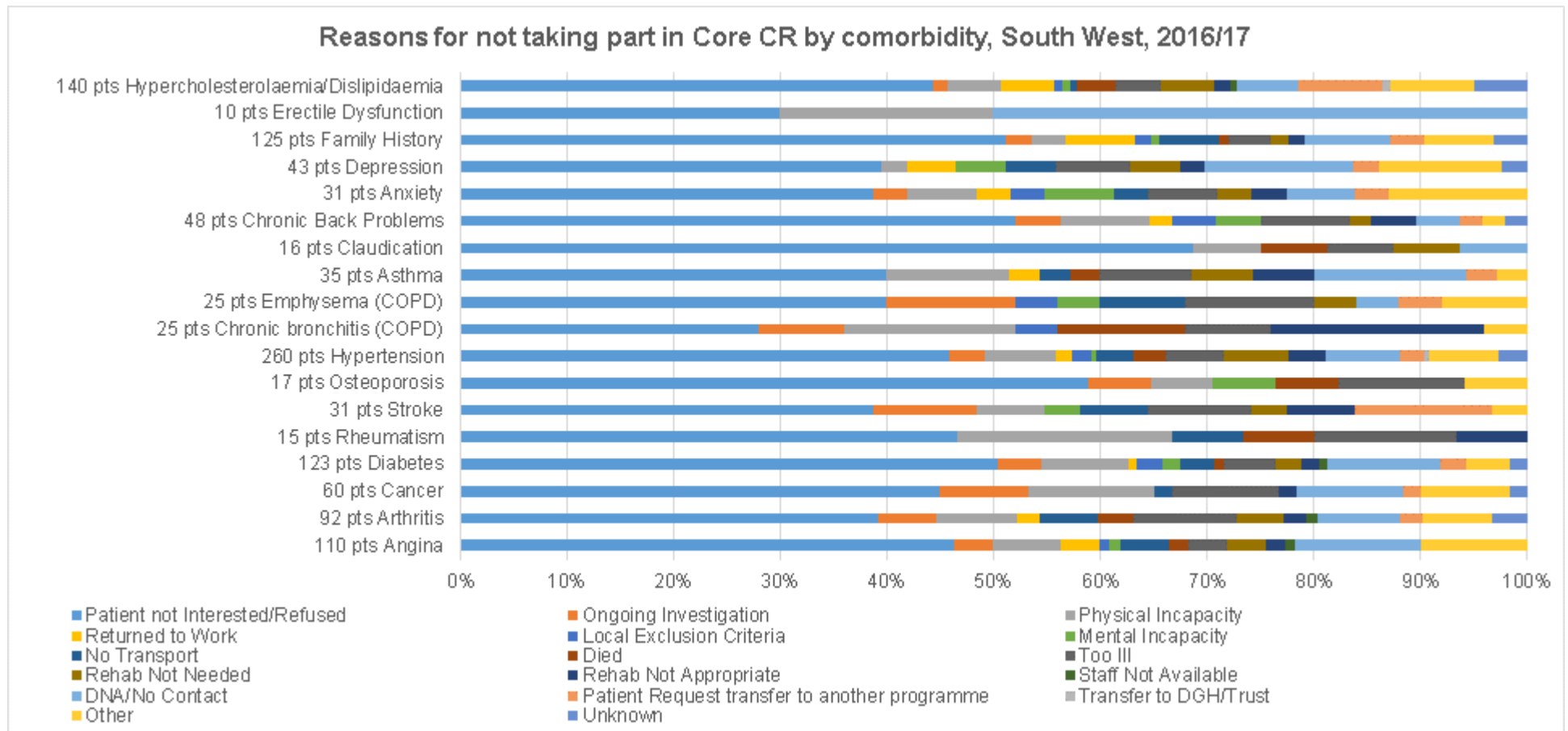


Table F: Number and proportion of co-morbidities by type, South West, 2016/17

Co-morbidity	Count	%
Angina	854	21%
Arthritis	652	16%
Cancer	403	10%
Diabetes	907	23%
Rheumatism	122	3%
Stroke	235	6%
Osteoporosis	102	3%
Hypertension	1940	48%
Chronic bronchitis (COPD)	121	3%
Emphysema (COPD)	146	4%
Asthma	384	10%
Claudication	101	3%
Chronic Back Problems	414	10%
Anxiety	259	6%
Depression	265	7%
Family History	765	19%
Erectile Dysfunction	116	3%
Hypercholesterolaemia/Dyslipidaemia	751	19%
Other Co-morbid Complaint	1010	25%
Total	4011	

Chart B: Reasons for not taking up Core CR by programme, South West, 2016/17

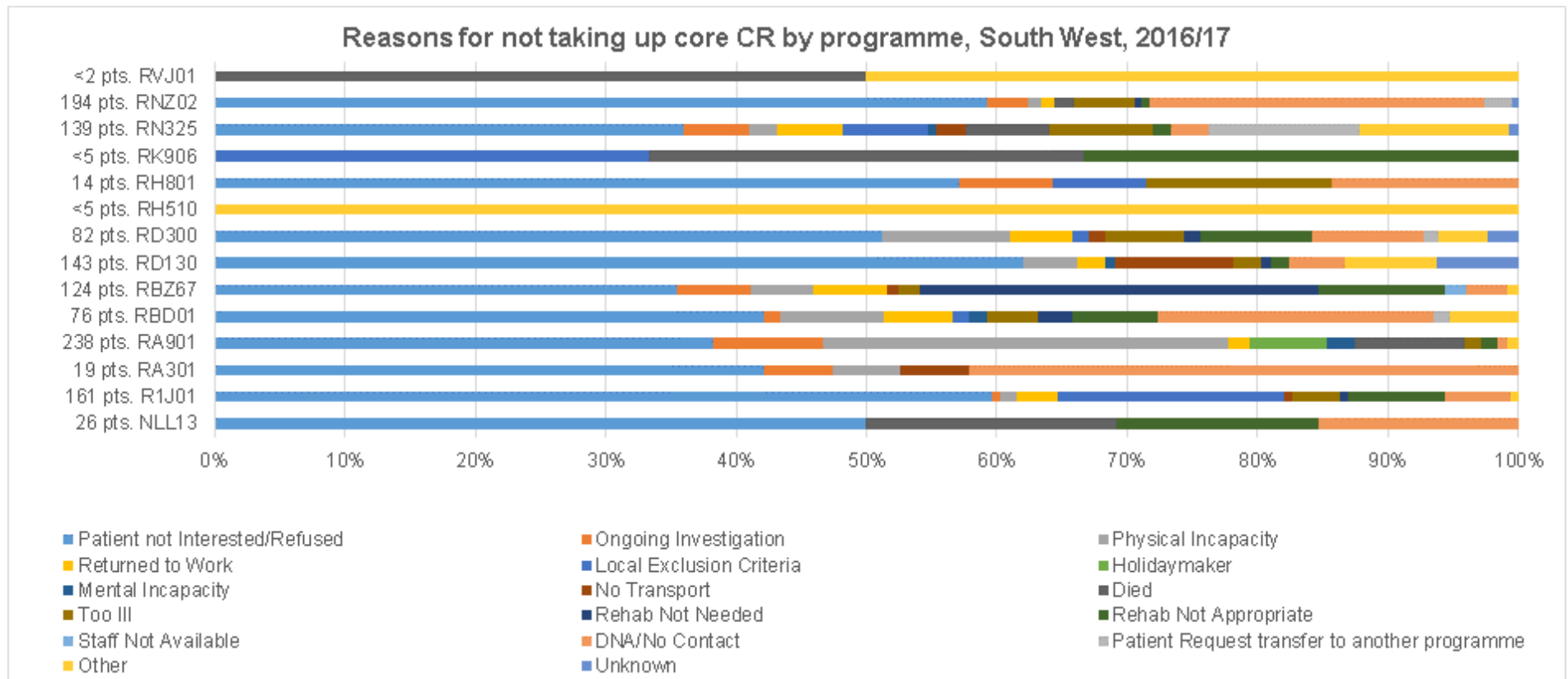


Table G: Uptake of CR by priority group and CCG, 2016/17

CCG	Uptake of CR by priority group			
	MI	MI/PCI	PCI	CABG
B&NES	9%	24%	22%	11%
Bristol	5%	22%	5%	27%
Dorset	21%	73%	81%	64%
Gloucestershire	8%	23%	17%	12%
Kernow	5%	11%	14%	11%
NEW Devon	5%	12%	7%	11%
North Somerset	8%	34%	27%	27%
Somerset	1%	3%	1%	0%
South Devon and Torbay	32%	45%	39%	57%
South Gloucestershire	16%	49%	11%	61%
Swindon	20%	52%	41%	51%
Wiltshire	6%	16%	12%	16%
Total	10%	30%	31%	26%

Table H: The number of early referrals to Phase I CR for inpatients, and the number of timely early referrals within 3 days of the initiating event, which is the current best practice for MI patients, 2016/17

CCG	Referred at Early/Phase 1 (Inpatient) n/(%)	Time from event to early referral n/(%)	
		≤3 days	>3 days
B&NES	123 (73%)	73 (59%)	49 (40%)
Bristol	266 (105%)	34 (13%)	232 (87%)
Dorset	2288 (98%)	1071 (47%)	1202 (53%)
Gloucestershire	55 (11%)	49 (89%)	6 (11%)
Kernow	40 (17%)	17 (43%)	22 (55%)
North Somerset	201 (68%)	110 (55%)	86 (43%)
Somerset	108 (81%)	67 (62%)	40 (37%)
South Gloucestershire	350 (102%)	60 (17%)	288 (82%)
Swindon	221 (63%)	197 (89%)	23 (10%)
Wiltshire	457 (54%)	257 (56%)	199 (44%)
NEW Devon	690 (84%)	367 (53%)	318 (46%)
South Devon and Torbay	492 (70%)	371 (75%)	119 (24%)
Total (all patients referred = 6,957)	5,291 (76%)	2,673 (51%)	2,584 (49%)

Table I: Number of patients referred by each CR programme, according to priority group, 2016/17

Programme	Priority groups					Number of priority groups recorded
	MI	MI/PCI	PCI	CABG	HF	
NLL13	73	305	261	123	468	5
R1J01	34	154	91	36	<5	5
RA301	13	64	36	11	<5	5
RA901	49	133	55	54	9	5
RBD01	28	165	144	49	14	5
RBZ67	8	12	7	8	-	4
RD130	32	98	66	26	5	5
RD300	31	204	210	49	35	5
RDZ20	91	322	499	83	24	5
RH801	13	30	10	17	-	4
RK906	8	61	6	19	<5	5
RN325	31	119	81	30	6	5
RNZ02	22	80	110	61	10	5
RVJ01	37	185	22	62	16	5

Table J: Table summarising whether each programme has an MDT, and the number of different staff types within each team, 2016/17

Programme	MDT	Number of different staff types
NLL13	Y	6
R1J01	Y	6
RA301	N	0
RA701	Y	3
RA901	N	2
RBA11	Y	3
RBD01	Y	4
RBZ67	Y	5
RBZ84	N	0
RD130	Y	3
RD300	Y	4
RDZ20	Y	4
RH510	N	1
RH801	N	2
RK906	N	0
RN325	Y	8
RNZ02	Y	3
RVJ01	Y	4

Table K: The proportion of patients starting CR with both pre- and post-assessments completed, 2016/17

Programme	Patients starting cardiac rehabilitation	Percentage with assessment 1	Percentage with assessment 2
NLL13	1237	87%	71%
R1J01	327	99%	79%
RA301	150	100%	37%
RA901	379	86%	31%
RBD01	466	67%	50%
RBZ67	47	98%	66%
RD130	236	72%	72%
RD300	584	73%	72%
RDZ20	1136	97%	46%
RH801	88	58%	44%
RK906	100	95%	5%
RN325	307	100%	78%
RNZ02	329	78%	62%
RVJ01	341	100%	90%