National Audit

NHS

National Audit of Cardiac Rehabilitation

Quality and Outcomes Report 2025

Arden&GEM

Executive Summary

The National Audit of Cardiac Rehabilitation (NACR) Annual Quality and Outcomes Report 2025 is pleased to present improvements in the uptake, quality of service delivery and benefit to patients completing cardiac rehabilitation (CR). From a UK perspective, CR delivery has a diverse model throughout this year, enabling services to adapt to varying patient needs and preferences, which may have contributed to the highest levels of participation observed to date. Data for England shows an increase in uptake of 3% for acute coronary syndrome (ACS) patients and 3.4% for patients with heart failure (HF). Once again Wales has demonstrated an increase in patients receiving CR, resulting in the highest uptake with an increase of 20.3% and 10.9% for ACS and HF patients respectively. Within Northern Ireland, ongoing implementation of a new country-wide database has limited presentation of data this year. As the data flows into the audit, data on uptake and service quality will be reported in the future.

As part of routine reporting NACR continues to monitor staffing, and this year's data indicates a positive trend with 96% of services comprising a multi-disciplinary team (three or more staff types). The findings further indicate that staffing levels may have stabilised following the impact of COVID-19, with 58% of programmes reporting no recruitment and of those recruiting an additional 36% were successful at appointing new staff during the audit period. One important caveat to this good news story is the replacement of staff lost due to temporary and permanent absence remains challenging for two thirds of programmes.

A key element of supporting patients with cardiovascular disease (CVD) is optimal titration of medications. The majority of CR teams contain staff prescribers (medical and non-medical), meaning they can provide this component as part of their staff complement rather than referring out to GPs or pharmacists. Only 85 programmes out of 205 did not have a prescriber as part of their team.

Summarising findings from our quarterly report on comprehensive Assessment 1 (pre-CR) we found that 93% of patients had their CVD risk factors assessed, 63% completed a psychosocial assessment, and 53% a physical fitness test.

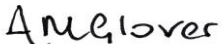
Of patients that had an Assessment 1 (pre-CR) and Assessment 2 (post-CR) 57% had employment status recorded and 18,450 were of working age (<=70 years old). At the point of commencing CR, 26% were not in-work, whereas at completion of CR this proportion fell to 17%. The positive association of CR on return to work is promising both to patients and the wider economy.

In alignment with the NHS shift from analogue to digital, a recent NACR survey on the use of digital technology, collecting responses from 182 services, found that it is widely used in Group-based CR, particularly for education sessions. The most common Web- and App-based solutions include the Digital Heart Manual (30 services), D-REACH-HF (18 services), myHeart (16 services), and Pumping Marvellous (25 services), with some services planning future digital adoption. However, additional comments highlighted challenges such as resource inequality, technical barriers, and inconsistent integration, all of which limit scalability and hinder wider adoption of

digital technology. To drive progress, respondents emphasised the need for sustained support, adequate funding, and shared digital infrastructure across services.

NACR would like to thank CR teams for their continued support in submitting and inputting patient data along with responding to the staffing and digital surveys this year. Working collectively with CR Teams, NHS England, the British Association of Cardiovascular Prevention and Rehabilitation (BACPR), Northern Ireland Department of Health and Social Care, All Wales Group, British Heart Foundation (BHF) and the Coronary Care Partnership (UK) (CCPUK). NACR will aim to support teams to meet the recommendations in this report.

Professor Patrick Doherty, Clinical Lead -
National Audit of Cardiac Rehabilitation



Maria Glover, President -
British Association for Cardiovascular Prevention and Rehabilitation

Diane Saunders, Head of CVD-R Programme
Prevention & Long Term Conditions -
NHS England

Roland Malkin, President -
Cardiovascular Care Partnership UK

Contents

SECTION 1

Uptake to Cardiac Rehabilitation by Country

Number and Type of Patients Starting Cardiac Rehabilitation by Country

Last year NACR adopted a new method for reporting the uptake to Cardiac Rehabilitation (CR). This involves using only digitally captured NACR data to calculate numbers starting core CR (numerator) and national hospital admission data from the different nations for the eligible numbers (denominator).

The submission of digitally captured data to the audit has been increasing for several years, with more than 95% of services participating in the 2024 data collection period. This is exceptionally high for a non-mandated national dataset and allows for wide coverage of services in the audit reports.

This report's analysis is on uptake for acute coronary syndrome (ACS) and heart failure (HF). We recognise that different patient groups attend CR including revascularisation without myocardial infarction (MI), valve disease/surgery etc. The audit aims to report these groups in more detail and at a programme level in 2026.

England

The uptake metric for England is hosted on two dashboards, FutureNHS and the Model Health System. The method for calculating the metric uses Hospital Episode Statistics (HES) and this is applied across both the dashboards and this report which means as a result, the information is aligned allowing areas/regions to access any of the data and obtain comparable results. The data presented in the dashboards is updated quarterly whereas in contrast, the Quality and Outcomes Report uses the previous calendar year. While the report provides national-level data for England, the dashboards offer more granular reporting at the Integrated Care Board (ICB), Network and Regional levels.

This year, both patient groups - ACS and HF - have shown an increase in overall numbers and percentage uptake to CR. Each group saw an increase of approximately 1,900 patients, with uptake rising by 3% and 3.4% for ACS and HF (from 41.3% and 13% respectively) compared to last year's report.

Northern Ireland

Ongoing implementation of a new country-wide database in Northern Ireland is currently impacting data entry levels. As a result, uptake metrics for Northern Ireland cannot be included in this year's annual report.

Wales

The Digital Health and Care Team Wales provides the eligibility data for the uptake metrics. The data is aligned to England's HES to ensure consistency in methodologies.

The uptake rate for ACS is 71.3% and HF is 27.5%. This is a substantial increase in uptake from last year with 20.3% and 10.9% in ACS and HF, respectively. Whilst the eligible number has remained static from last year, there was an increase in the number of patients accessing CR. In the 2023 data there was an average of 898 patients per Health Board (50% ACS and 12% HF) in 2024 this increased to 954 patients per Health Board (48% ACS and 14% HF).

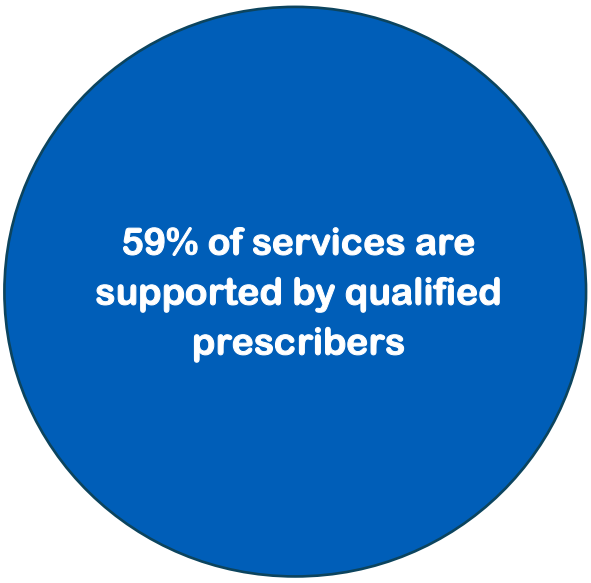
Table 1. CR uptake split by country and main diagnosis/treatment group

Country	Diagnosis/Treatment Type	Eligible Number	Number Starting/Accessing CR	Uptake %
England*	ACS (MI w/o Revascularisation)	66170	29474	44.5
	HF	59011	9668	16.4
Northern Ireland	ACS (MI w/o Revascularisation)	Not reported		
	HF			
Wales	ACS (MI w/o Revascularisation)	4461	3180	71.3
	HF	3506	965	27.5

*Due to method of processing, a small number of outliers in both denominator and numerator have been removed
CR – Cardiac Rehabilitation, ACS – Acute Coronary Syndrome, MI – Myocardial Infarction, HF – Heart Failure

SECTION 2

Staffing



Cardiac Rehabilitation Workforce in 2024

As part of the regular data collection and audit, NACR surveys all programmes, annually, in order to understand the workforce providing CR and associated changes in staffing and services. This year, the audit has collated information on staff types delivering CR, who has left the team (permanently or temporarily), recruitment of new staff and information on the presence of prescribers.

Staffing

Table 2 shows the proportion of staff types in England, Northern Ireland and Wales. Across the three nations, the highest staff type is Nurse (between 99-100%), followed by Secretarial/Clerical/ Admin (76%), Exercise Staff (specialist or physiologist) (72%) and Physiotherapist (64%).

Programmes in England make up the greatest proportion of the services and therefore the UK national average tends to mirror England. However, some regional difference is apparent - the Northern Ireland staff profile has a greater proportion of Physiotherapist (100%), Pharmacist (100%) and Dietitian (71%) whereas Wales has a much higher proportion of Any Secretarial/Clerical/ Admin (92%) and Occupational Therapist (67%) across their programmes.

When looking at the combination of staff, this year's survey showed that 96% of services have a multi-disciplinary team (three or more staff types). This is a positive development as it means more services are meeting the staffing Key Performance Indicator (KPI) of the National Certification Programme of Cardiac Rehabilitation (NCP_CR). However, there remains a small group of services not meeting the multi-disciplinary staff requirement for comprehensive CR.

Table 2. Proportion of staff type by country

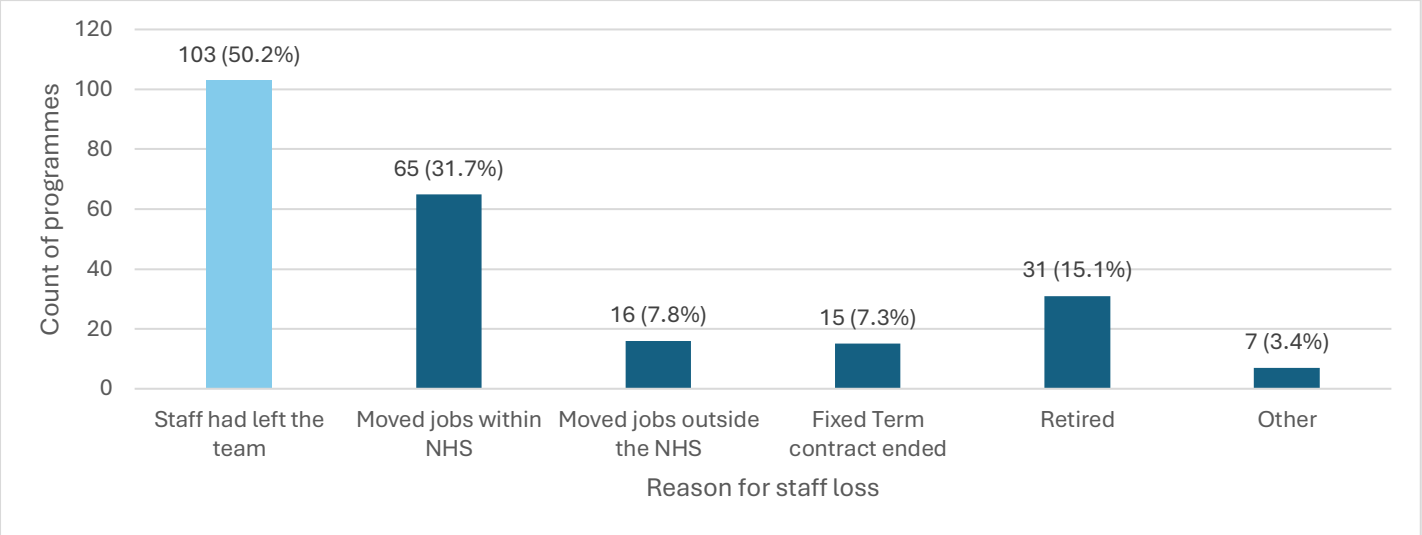
Staff Types	Programmes in England (n=185)		Programmes in Northern Ireland (n=7)		Programmes in Wales (n=12)		Total*** (n=206)	
	Count	%	Count	%	Count	%	Count	%
Assistant Practitioner	17	9	0	0	2	17	19	9
Counsellor	16	9	0	0	0	0	16	8
Dietitian	75	41	5	71	5	42	85	41
Doctor*	53	29	3	43	0	0	58	28
Exercise Staff (any)	140	76	0	0	8	67	149	72
Health Care Assistant	33	18	3	43	1	8	37	18
Nurse (any)	184	99	7	100	12	100	204	99
Occupational Therapist	25	14	3	43	8	67	36	17
Pharmacist	52	28	7	100	4	33	64	31
Physiotherapist (any)	114	62	7	100	8	67	131	64
Psychologist	43	23	1	14	3	25	48	23
Secretarial /Clerical/ Admin (any)	142	77	4	57	11	92	157	76
Other**	24	13	1	14	2	17	28	14

*Includes Registrar/Consultant, ** Includes social prescriber, patient volunteer and CR assistant, *** Total includes programmes from Channel Islands

Staff Loss

As part of the survey, programmes were asked whether staff had left the team permanently or temporarily. Figure 1 shows the extent of services reporting permanent staff loss, and the reasons for staff leaving the team. Overall, under half of all services reported no permanent staff loss (49.8%). More than 30% of all programmes reported that staff had moved jobs within the NHS, followed by 15.1% reporting retirement. The remaining three reasons were moving jobs outside the NHS (7.8%), end of fixed term contracts (7.3%) and 3.4% of services with Other reasons (e.g. education and travelling). Next year's survey will explore vacant posts in more detail.

Figure 1. Responses to the question 'In 2024, have any of your staff permanently left the CR team?' (N=205)



Note – staff loss reason was non-exclusive so will add up to greater than the number with staff leaving the team

In addition to permanent staff departure, NACR also asked about temporary staff loss (see Table 3). This is important as it may highlight additional staff workload as temporary absence may not necessarily result in cover or replacement of staff.

Of all services in 2024, almost two-thirds experienced some form of temporary staff absence (64%). Across all services the breakdown of reason for absence were 39% related to long term sickness, 21% maternity leave and 6% from staff training. Other included sickness-related absences (4%), and vacancy or recruitment issues (2%).

Table 3. Responses to the question 'Have any staff been temporarily absent in 2024 from any staff type?'

Reason	Count	% of total (N=205)
Staff Temporarily Absent	131	64
Maternity Leave	43	21
Long Term Sickness	79	39
Secondment	6	3
Training	12	6
Other*	20	10

*Other includes Sickness-related absence = 8, Vacancy/recruitment issues = 4
Bereavement, Family leave, Retirement, Medical (surgeries) and Training/education <3.

Staff Recruitment in 2024

Building on previous staffing data, which reflected service changes due to COVID-19, NACR can now report signs of recovery in CR services. This progress is partly linked to NHS funding often targeted at addressing local CR staffing needs, with the goal of increasing uptake, reducing inequalities, and enhancing service delivery.

In this context, services were asked if they had attempted to recruit new members of staff in 2024 and also indicate if the recruitment was successful. Table 4 shows that over half did not try to recruit new staff in this time period (58%). This is 6% higher than last year.

Of those services that did attempt to recruit new staff the majority were successful (73 out of 84), however, there were some services that attempted to recruit, but either no candidates applied (three) or applicants were deemed unsuitable (eight).

Table 4. Responses to the question 'Finally, did you try to recruit to NEW posts in 2024?'

	Count	% of total (N=205)
No	119	58
Yes, adverts went out but no candidates applied	3	1
Yes, adverts went out and interviews held but no successful candidates	8	4
Yes, new post recruited	73	36

Staff Prescribers

A core component of CR, as outlined in the BACPR Standards and Core Components 2023, is medication titration and management. Last year's audit found that 50% of services had non-medical prescribers (NMPs). This year, more staff types were included in the scope of the survey and the results showed that 59% of programmes had either NMP or doctors embedded in their workforce (Table 5a).

The services with prescribers are made up as follows: 10% where Doctors are working with no NMPs, 18% where Doctors are working alongside NMPs and 31% are supported by NMPs alone. Nurses make up the majority of all NMPs (73%), with 43% of all services having nurses who have trained as NMPs. Other groups with high levels of NMPs are Pharmacists (18%), Physiotherapists (8%) and Psychologists (7%) (Table 5b). In 2024, the average throughput per programme was 350 patients indicating that CR services with a prescriber make a significant contribution to NHS pharmacy services.

A subsequent focus for this area of work will be to explore the prescribing practices of staff who are qualified NMPs. Specifically, it will examine how long they have held their NMP qualification, whether they actively titrate medications as part of patient care, and which specific medications they are involved in titrating.

Table 5a. Level of prescribers

		Count	% of total (n=205)
No Prescriber	**No NMP or Doctor***	85	41
Prescriber within Team	**NMP with no Doctor***	64	31
	Any NMP and Doctor*	36	18
	Doctor* with no NMP	20	10

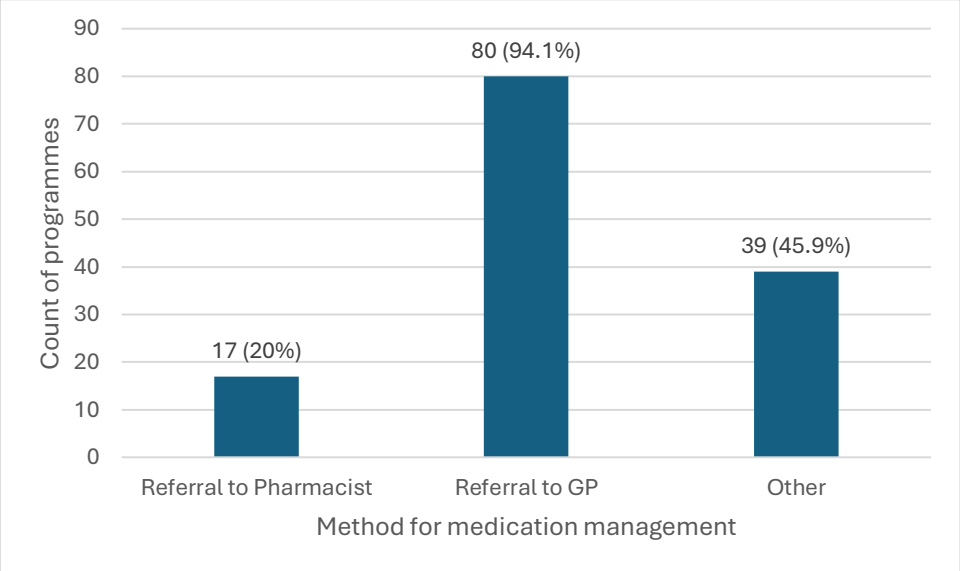
Table 5b. Staff types of prescribers				
		Count	% of programmes with NMP (N=120)*	% of staff type
Of all services with NMP	Nurse	88	73	43
	Assistant Practitioner	2	2	13
	Physiotherapist	10	8	8
	OT	0	0	0
	Pharmacist	22	18	34
	Dietitian	3	3	4
	Psychologist	8	7	17
	Counsellor	2	2	13
	Exercise Physio/specialist	3	3	5
	Other Staff	2	2	7

* Includes Registrar/Consultant

** The presence of NMP per staff is not exclusive, thus percentage of NMP will add up to greater than 100%

Although overall prescriber support appears high, the finding that 85 services lack any internal prescriber warrants further investigation. Where this was the case, services were asked how patients are supported with initiating and titration of current and new medications. The responses in Figure 2 show that within the 85 services without a prescriber, more than one method of initiation/titration was often used - 94.1% of patients are supported through referrals to GP, 20% through pharmacists and 45.9% of services listed Other. The additional choices included cardiologist and specialist nurse involvement. Where services are referring patients elsewhere this may present a significant burden which could be avoided if there were prescribers in the team.

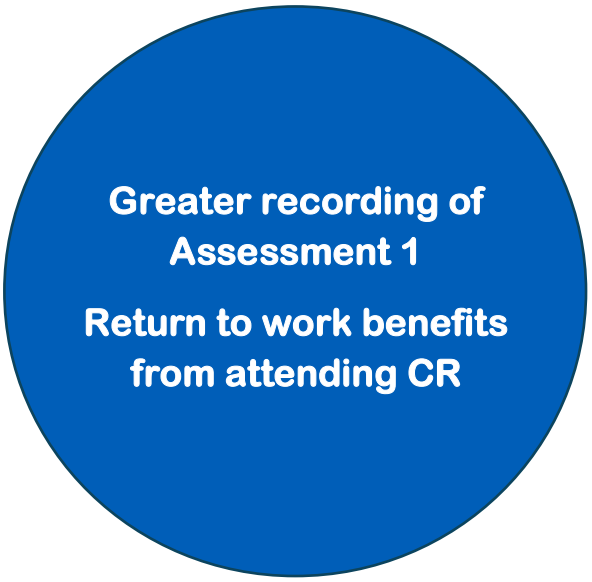
Figure 2: Of the 87 services not supported by Doctor or NMP, method of initiation and/or titration of current medication and dosage



Other = Cardiologist involvement (N=22), Specialist nurse involvement (N=10), GP involvement (N=5) and informal resource (N<3).

SECTION 3

Summary of NACR Quarterly Reports



Quarterly Reports in 2025

This is the third year that NACR has produced a summary of the published quarterly reports in the Quality and Outcomes Report. As per previous years, the individual reports cover a rolling three month period, however, this summary uses data for the 12-month period of Jan-Dec 2024. The quarterly reports focus on specific areas of service provision - this year's reports are detailed below:

- Comprehensive Assessment 1
- Changes in Employment
- Multimorbidity Profile
- Completion by Mode

Comprehensive Assessment 1

As part of the delivery of comprehensive CR that adheres to the BACPR Standards and Core Components 2023, patients should have an initial assessment that leads to a defined pathway of care, setting personalised targets and goals that meet each patient's needs, preferences and choices. NACR has, in recent years, highlighted three broad components comprising a comprehensive assessment, which should cover the measurement of risk factors, psychosocial wellbeing and objective exercise tests. If a patient has data for all three components recorded, then assessment 1 (pre-CR), is deemed comprehensive.

Our quarterly reports are at programme and regional level (ICB, Health Board and Health and Social Care Trust) showing the proportion of patients that commenced CR and then had all three components and thus a comprehensive assessment.

The full 2024 data aligned closely with the quarterly report, showing that over 90% of patients who commenced CR had an assessment 1 and of those virtually all had risk factors recorded. Risk factors comprise a number of measures, many of which are relatively easy to collect and are well understood by staff and patients as being an important part of CR, resulting in very high completion rates. Measures include BMI, blood pressure, cholesterol, smoking status and physical activity (meeting 150 minutes of activity per week).

Psychosocial evaluation and support is a vital aspect of the rehabilitation programme following a cardiac event. However psychosocial wellbeing, using measures such as Hospital Anxiety and Depression Scores (HADS), Dartmouth Coop, Minnesota Heart Failure or PHQ9 and GAD7 questionnaires, is less well completed for patients, with a UK average of 63% for assessment 1. HADS has the highest usage reporting anxiety and depression.

In recent years, the rates of exercise tests have increased, in part due to a return to in-person assessments for many services since 2020. The ability to capture alternative measures of fitness (such as Chester Step or treadmill test) using an open metabolic equivalents (METs) field has helped with this. Despite this, work still needs to be done in order to increase this part of the assessment as 47% of patients are commencing CR without an exercise test recorded on NACR, a situation previously reported in the NACR Quality and Outcomes 2022 report as having an increased risk of adverse events during CR.

The level of comprehensive assessment 1 is increasing and it is hoped that this report, alongside regular NACR and NCP_CR reports that include comprehensive assessments as a ghost measure, will improve measurement and entry of this data further over the coming years.

Table 6. Year summary of the quarterly report on comprehensive assessment 1		
	Count	%
Core/Phase 3 Starters	72093	
Core/Phase 3 Starters with Assessment 1	68006	94
Risk Factor Recorded	67317	93
Psychosocial Factor Recorded	45290	63
Exercise Test Recorded	38155	53
Comprehensive Assessment 1 (all three components recorded)	29110	40

Changes in Employment

For the first time NACR has reported employment status data at a programme level, capturing both pre- and post-CR. This includes the proportion of patients <=70 years old who are not in work or not retired at baseline and post-CR, and the percentage point change in employment status. Not in work/not retired within NACR is a selection of 1) Unemployed - Looking for Work or 2) Looking After Family/Home or 3) Permanently Sick/Disabled or 4) Temporarily Sick or Injured or 5) Student or 6) Other Reasons For Not Working. The age limit of <=70 years is to account for the changing state retirement age (between 65 and 67 years old depending on year of birth).

This report serves to illustrate the extent of patients who are not in work or not retired prior to CR and highlight areas where there is significant return to work on completion.

In the 2024 data period, across all three nations, 57% of patients that had a pre- and post-assessment had employment status recorded. As this is a newer field for NACR to report on, data quality reports and support for teams will continue in 2026 in order to maximise data entry.

The report shows that of the 30,679 patients with employment recorded, 18,450 were of working age (<=70 years old). At the point of commencing CR, 26% of the 18,450 were not in-work or retired, whereas at completion of CR this proportion fell to 17%. This means that there was a movement of 1,739 patients from not in work, such as temporarily or permanently sick/disabled back into work. The positive impact of CR on return to work is promising both for the patients returning to their normal day to day life, but also for the wider economic impact. These findings mirror that of the literature that shows a greater extent of return to work in patients attending CR compared to those that do not (Sadeghi 2022).

Next year NACR aims to further explore these findings, examining differences due to staffing profiles and demographic trends in patients attending CR as well as mode of delivery, which has been shown in the literature to influence return to work rates.

Table 7. Year summary of the quarterly report on changes in employment			
		Count	%
Total Patients with pre- and post-assessments recorded		53700	
Employment Status Recorded pre- and post-CR		30679	57
Employment Status Recorded pre- and post-CR <=70 Years		18450	60
Of Working Age Patients (<=70 years) – Proportion of Patients Not in Work/Not Retired	**Pre-CR**	4867	26
	Post-CR	3128	17
	Change	-1739	-9

Multimorbidity Profile

CR is identified as being an effective secondary prevention intervention for patients with cardiovascular diseases (CVD) and, in addition, addresses many risk factors that are shared with other conditions such as hypertension, diabetes and cancer. For many years CR services have seen patients with a variety of different comorbidities and NACR has previously reported that over half of patients attending CR have two or more conditions in addition to their CVD (NACR 2021). In this report, of the 70,000 starters in 2024, 83.4% had the comorbidity field completed.

The most common comorbidity recorded was hypertension (49.6%) followed by other comorbid conditions (37.6%) and hypercholesterolaemia/ dyslipidaemia (33.2). In more than 10% of patients, diabetes (26%), family history of CVD (23.6%) and arthritis (14.7%) were common. There were six further comorbidities where more than 5% of the population have these in addition to their CVD diagnosis. The original quarterly report covered a three-month period - extending this to a full year a comorbidity that has 5% or more equates to more than 2,800 patients attending CR with that comorbidity.

Table 8. Multimorbidity profile

Comorbidity	Count of Patients Accessing/Starting CR with Each Comorbidity (Total = 60149)	Proportion of Patients Accessing/Starting CR with Each Comorbidity (%)
Angina	6579	10.9
Anxiety	4860	8.1
Arthritis	8860	14.7
Asthma	5772	9.6
Cancer	5179	8.6
Chronic Back Problems	4818	8.0
Chronic bronchitis (COPD)	2042	3.4
Claudication	893	1.5
Depression	5190	8.6
Diabetes	15632	26.0
Emphysema (COPD)	1551	2.6
Erectile Dysfunction	1733	2.9
Family History	14187	23.6
Hypercholesterolaemia/Dyslipidaemia	19976	33.2
Hypertension	29811	49.6
Osteoporosis	1261	2.1
Other Comorbid Complaint	22595	37.6
Rheumatism	1222	2.0
Stroke	3058	5.1
No/None	4133	6.9

Completion by Mode

The delivery of CR since 2020 has been dominated by Home-based/Self-managed modes. This is in part due to the requirement for remote based versions of healthcare during the pandemic but may also be due to the preference of some patients.

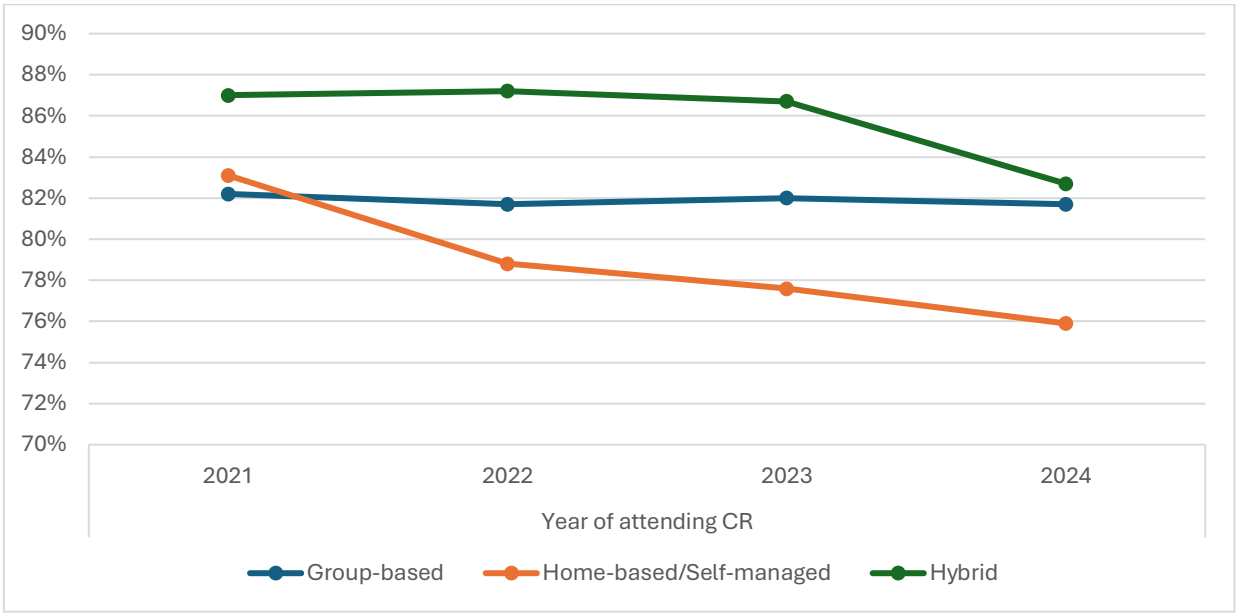
The different modes of delivery are categorised into three groups, Group-based, Home-based/Self-managed and Hybrid (a combination of the former two groups). The quarterly report compared the completion rates of these modes to see if these were comparable across the three categories. Looking at a full year's data, the Hybrid programmes had the best completion rate of

82.7%. This was closely followed by Group-based CR with 81.7%. However, a much lower rate of completion was seen in Home-based/Self-managed CR in 2024, with completion for this mode at 75.9%.

Table 9. Completion rates across three modes of delivery			
		Count	%
Total Starters		70950	
Group-based	**Starters**	23965	
	Completers	19581	81.7
Home-based/Self-managed	**Starters**	19961	
	Completers	15154	75.9
Hybrid	**Starters**	14210	
	Completers	11757	82.7

Furthermore, when looking at previous years, the completion rate for Home-based and Hybrid programmes has been falling (see Figure 3). This may be due to a lack of a clear CR end point that is more apparent in Group-based programmes. Setting a date for assessment 2 or an in-person final session may help to improve completion.

Figure 3: Completion of core CR by mode of delivery since 2021



SECTION 4

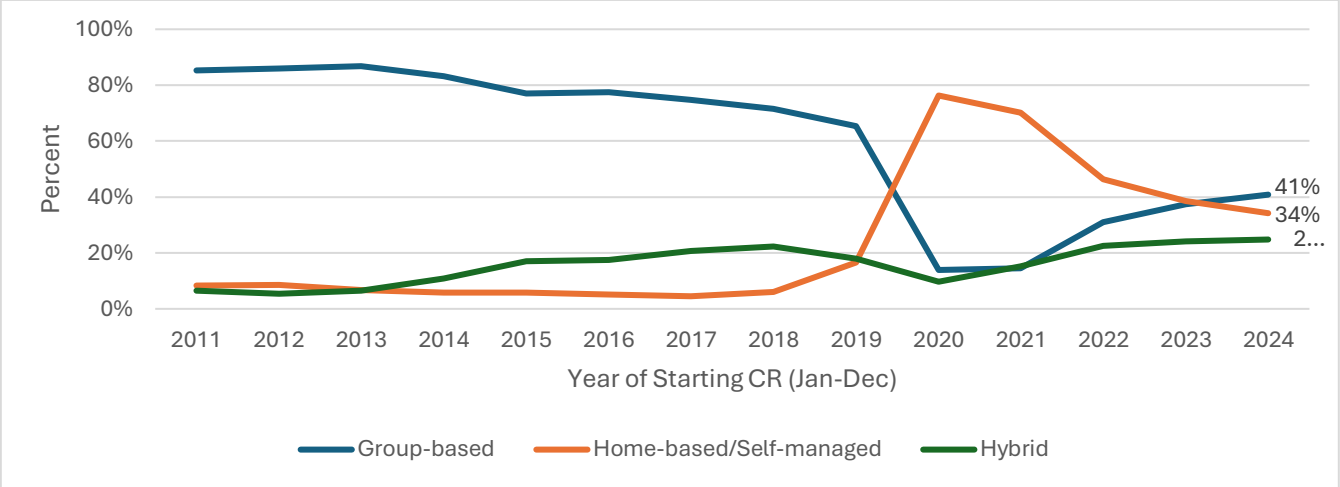
Delivery of CR and Digital Technology

Mode of delivery

In recent years, there has been a focus on the different modes of CR delivery, namely Group-based, Home-based/Self-managed and Hybrid (defined as a combination of both Group- and Home-based delivery). Prior to 2020, the dominant mode was Group-based CR and there was <20% on either Home-based/Self-managed or Hybrid modes. The audit has reported in previous Quality and Outcome reports (since 2021) a consistent shift towards Home-based dominance in the early years following COVID-19 and a proportional levelling out in 2023 to approximately equal percentages of patients on each mode.

In 2024, Group-based CR has reclaimed its dominance (Figure 4) with 41% of patients attending this mode of CR. There was a drop in Home-based/Self-managed to 34% and Hybrid maintained a 25% proportion of patients. The 2024 data continues to highlight a much broader choice, however, at a programme level some services are still offering only one mode of CR which limits patient options.

Figure 4: Mode of delivery over time in core CR



Digital Technology Survey

Alongside the three modes of delivery and the highlighted changes over time, there is the increasing focus on utilising innovative methods of CR delivery via digital communication/content and Web- and App-based modes. The audit has facility to record Web- and App-based modes of delivery on the database however, to better understand the extent of the adoption of digital solutions, NACR ran an additional survey exploring the use of digital based options.

The survey asked four main questions:

1. What are the different digital modes of delivery your service is using or have plans in place to use?
2. What digital content do you provide or refer patients to or have plans in place to use?
3. What methods of communication do you currently or have plans in place to use?
4. Do you have any comments on the use of or historical use of digital within your service?

The survey was run in September-October 2025 and had 182 fully completed responses.

Mode Question

As part of this question, services were provided with a list including; those listed on NACR, those being evaluated by NICE for recommendation and any other digital modes which programmes may be using. Table 10 shows the number of services using, plans in place and not using each mode. Furthermore, services were asked if, when using each mode, were they utilising wearable technology with patients.

Table 10. Modes of delivery and wearables (N=182)

Modes of Delivery	Yes - currently using	Yes - currently using and adopting wearable during use	Plans in place	No - not using
	Count	Count	Count	Count
Group Exercise with Virtual Component e.g. Zoom/Teams or Similar	25	16	9	148
Group Education with Virtual Component e.g. Zoom/Teams or Similar	43	14	19	120
Activate Your Heart	3	1	0	179
D-REACH-HF (Digital Version Only)	18	6	7	157
Digital Heart Manual	30	13	8	144
Gro Health HeartBuddy	1	0	0	181
KiActiv	1	0	7	174
myHeart	16	8	3	163
Beat Better	3	0	0	179
Luscii Vitals	0	0	1	181
Pumping Marvellous	25	6	10	147
Other Web-Based*	64	32	9	109
Other App-Based**	18	9	7	157

Modes with no reported current or planned use - **Datos Health, Get Ready, R Plus Health, Sword Move**

*Other Web-based = BHF: 7, Recap Health: 7, YouTube-based delivery: 5, Locally developed solutions: 7 and Other third-party platforms: 4

**Other App-based = Local or third party apps e.g. wearable app, e.g. Fitbit App: 7 and Locally integrated/clinical systems: 4

Of the modes selected, there was a high level of digital facilitation within Group-based CR (both education and exercise). Of the programmes indicating the digital facilitation of Group-based CR (25 for group exercise and 43 group education) there were 21 services using digital in both session types. These responses also show that CR teams are more likely to support education with a virtual component rather than exercise, which may need further exploration.

Of the named Web- and App-based modes, the largest numbers were for Digital Heart Manual (30), D-REACH-HF (18), myHeart (16), and Pumping Marvellous (25). There were also a small number of services not currently providing any digital modes but have stated plans are in place for future delivery (10 services).

Other Web- and App-based modes were explored in this survey, showing 64 and 18 respectively presently being provided. Table 10 shows that these were predominantly locally derived solutions, Recap Health, nationally produced Apps (primarily in Wales) and other third-party software.

The survey also sought to identify the use of wearable technology (wearables) when delivering these digital modes. The findings show variation across services and different digital modes, for example 13 of the 30 services using Digital Heart Manual incorporated wearables, whereas Pumping Marvellous was six out of 25 services. A lower level is shown in the Group-based education (14) with higher utilisation of wearables in Group-based exercise classes (16).

The second question of the survey was exploring the additional digital content patients were provided with or referred to. It showed that there is extensive use of the “BHF Cardiac Rehab at Home” resource with over 60% (N=111 of 182) of services reporting they use this with patients.

There are 76 services that are using other external videos on platforms such as YouTube and similar numbers are using videos produced by the CR team.

All three of these may offer low cost, relatively easily accessed versions of digital CR content.

Table 11. Digital content

	Yes - currently using	Plans in place	No - not using
	Count	Count	Count
BHF Cardiac Rehab at Home	111	9	62
Videos developed by the CR team covering any aspects of core components	63	22	97
External videos covering any aspects of core components e.g. YouTube	76	13	93

The third question was around the digital communication between the team and the patient.

The use of Zoom/MS Teams and text messages to communicate with patients were reported by 55 and 58 of services, respectively. This may have been as part of the wider adoption of technology during COVID-19. Twenty-two services said they used other methods which included local and named systems of communication. Further analysis of this might look at the rate of completion of the CR programme for those services that use technology for communication.

Table 12. Digital communication

	Yes - currently using	Plans in place	No - not using
	Count	Count	Count
Virtual meetings/sessions e.g. Zoom/MS Teams or similar meeting platform	55	14	113
Use of messaging apps e.g. Text Messages and/or WhatsApp	58	13	111
Other	28	9	146

Additional Comments on the Use of Digital Technology

At the end of the digital survey, services were asked about any additional comments, this included previous use of technology, issues with adopting technology into the service and plans for future use. The question was an open text response which has provided further insight into the incorporation and potential barriers to digital technologies in routine CR. Comments were from 86 of the 182 responses.

Using thematic analysis, three areas were found in the responses around past, current and future use of technology.

Past Use of Digital Technology
Services that specifically reported using digital technology to facilitate CR (N=29) during COVID-19, with a shift from in-person to video-based or telephone-based rehabilitation, showed that the adoption was in part related to necessity rather than the service opting to provide digital options prior to 2020. All these services reported that they no longer use digital technology to provide CR, giving various reasons for digital solutions not being utilised post-COVID-19. These included patient preference/low uptake in general, lack of continued funding or the digital component no longer being available.

This shows that when needed the CR teams can and will adapt to new forms of delivery, but that there are barriers to digital rollout including limitations to patient access to technology, digital literacy issues, lack of staff training and shared digital infrastructure. Furthermore, some services reported insufficient funding or technical support, leading to low sustainability of digital initiatives.

Current Use of Digital Technology
Of the teams that reported currently delivering CR using digital technology, the use of a diverse approach by combining in-person sessions with online reviews, home monitoring, or digital education resources, was highlighted.

Furthermore, these services provided greater detail into the use of wearable technology as part of the delivery of CR. Some services said that they can provide the technology as part of the programme, whereas others reported it was utilised if patients had access to it. What this may mean in practice, is that there is inequity in access which is reliant on either the programme being able to supply or the patient owning the wearable themselves.

Services provided greater insight into the use of communication with the patient through email, messaging Apps, the use of social media support groups and MS Teams (the preferred platform within the NHS). They also used the opportunity to provide detail on the use of digital content such as online educational videos, relaxation sessions and exercise resources.

Current challenges were highlighted. Despite progress and existing use, many services noted limited funding and IT support to enable utilisation of the technology. Services also reported that the digital systems are often not integrated with local hospital/trust records, creating an additional administrative burden on the CR team to record their use and results.

Showing a similar narrative to responses about previous use of technology above, services commented on the impact on staff workload and the training gaps regarding digital adoption. It was also noted by a number of services that patients often still have a preference for the face-to-face person-focussed care provided by the CR teams.

Planned and Future Use of Digital Technology

The responses indicated a strong commitment amongst staff to integrate and make effective use of digital technology within their programmes. Many services plan to continue or expand diverse delivery, offering patients a choice between in-person, virtual, or mixed models.

There were comments about specific services working with existing technology to develop and work in a more integrated manner. For example, to increase the link between digital tools with electronic health records or to refine existing tools for the monitoring and education components of CR in a hybrid approach.

Some responses were again noting patient preference for face-to-face CR and highlighted ambitions to co-develop digital content with patients to ensure accessibility and engagement.

A large number of responses raised a common theme about the varied digital literacy of patients and the need for familiarising and supporting staff with different technologies. Staff who are well trained on new CR solutions will be more likely to engage patients, particularly those who are perhaps wary of technology, which may increase both the offer and take up of these new resources.

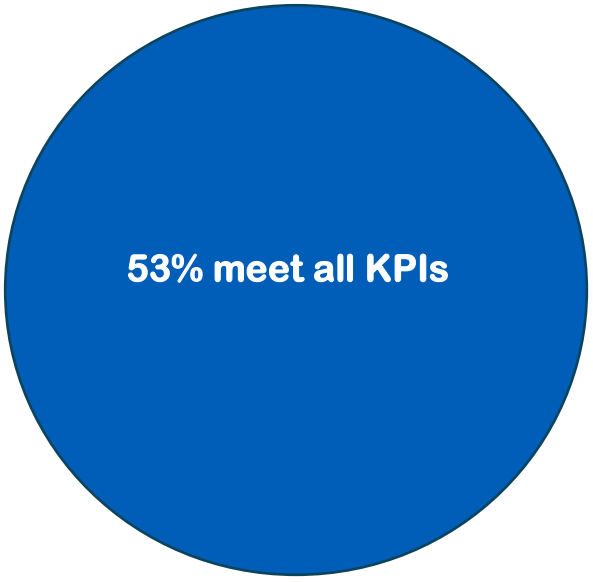
Finally, many services referenced the existing evidence of many of the technologies and mentioned their involvement in the evaluation of effectiveness and uptake. Outside of the survey, NACR is supporting the NICE Early Value Assessment of seven digital technologies for CR and will work alongside other services and innovators to provider greater analysis and understanding of how digital technology can successfully be part of modern CR while maintaining a focus on meeting patient needs and improving outcomes and service quality.

Summary

1. The survey has shown mixed results for adoption of digital technology within CR, however, there is an appetite in developing and sustaining digital and hybrid models.
2. Innovation is often from locally driven projects, with many teams building their own digital systems.
3. The responses show evidence of resource inequality, technical barriers, and inconsistent integration which continues to limit scalability. This needs to be addressed to encourage further progress in the adoption of digital technology.
4. Respondents consistently express the need for ongoing support, funding, and shared digital infrastructure across services.

SECTION 5

National Certification Programme for Cardiac Rehabilitation



NCP_CR Summary

This year has been the most successful year of the NCP_CR in terms of both Green certified (53%) programmes and the percentage of programmes achieving at least four standards (>80%). Table 13 shows the NCP_CR split by country and the UK total.

Table 13. NCP_CR certification status for CR programmes across England, Northern Ireland and Wales

	England Total programmes =184	Northern Ireland Total programmes =7	Wales Total programmes =12	UK Total programmes =203
Green certified	99 (54%)	1 (14%)	8 (67%)	108 (53%)
Amber	58 (32%)	5 (71%)	4 (33%)	67 (33%)
Red	23 (13%)	1 (14%)	0 (0%)	24 (12%)
Fail	4 (2%)	0 (0%)	0 (0%)	4 (2%)

Green certified (7 standards met), Amber (4 to 6 standards met and Amber with seven), Red (1 to 3 standards met) and Fail (0 standards met).
Due to rounding, percentages may not add up to 100%

The NCP_CR report showed a high level of positive change and maintenance of services within statuses. However, the report also showed 13% of services had a reduction in status either moving from Amber to Red or losing Green certified accreditation. This was largely down to wait times increasing and/or incomplete entry of data, including assessments. As such two of the recommendations this year are:

1. Submission of complete and full data across the entire pathway with specific focus on assessment 2 (post-CR)
2. Meeting wait time (Referral to start of Core) is the least met at a UK level and is an area for improvement in all three nations

Ghost Measures

For a number of years, NACR have been reporting on ghost measures which are additional indicators of service quality including completion rate, assessment 2 by completion and mode of delivery.

Table 14 shows the average completion rate of services alongside the patient level national average for 2024. This shows that on average patients complete at a rate of 75%, which in the previous section (Figure 4) has been reported to be decreasing over recent years. The percentage of programmes currently meeting this is 55%.

Table 14. Ghost measure on completion

Ghost Measure		Count	%
Completion Rate	**National Average (Jan-Dec 2024)**		75
	Meeting National Average	100	55
	Not Meeting National Average	83	45
Assessment 2 of Completers	**National Average (Jan-Dec)**		87
	Meeting National Average	134	73
	Not Meeting National Average	49	27

The current KPI for assessment 2 is based on the number of starters as the denominator. This was to simplify the local checking of figures; however, it means that the threshold for assessment 2 is less clear in a minimum standard context. Using the assessment 2 of completers metric is clearer as it uses patients completing core CR as the denominator - ideally 100% of completers would have an assessment 2. Using similar methodology of national average for 2024, this threshold would be 87%, which in 2024 is met by 73% of services.

The final ghost measure is the offer and recording of multi-mode of delivery across programmes. Table 15 shows the % of programmes with mode of delivery recorded, single mode of delivery and multi-mode (either both Group-based and Home-based offered or a Hybrid delivery). There is a high level of multi-mode (92%), but a concerning level of 2% and 6% either not recording or providing a diverse mode respectively in the certification period.

Table 15. Ghost measure on mode of delivery

	Count	%
Multi-Mode	168	92
Single Mode	11	6
No Mode	4	2

SECTION 6

Recommendations and Actions

Based on the data from this year's report the NACR Steering Committee proposes the following recommendations and actions for CR services:

Key recommendations	Possible actions
Where required increase pharmacology related support as part of the CR service.	Enable appropriate CR staff to upskill to become non-medical prescribers
Ensure that assessment 1 (pre-CR) is inclusive of all three core areas of risk factors, exercise test and psychosocial wellbeing.	Work alongside NACR to identify missing components within assessment 1 (pre-CR) in order to target measurement and recording
Increase CR completion rates across all modes with a primary focus on Home-based/Self-managed CR.	Planned "Definition of Completion" due to be published in late 2025 in collaboration with the BACPR and the NCP_CR Steering Group. Pre-book assessment 2
Review service provision in light of incorporating more digital components into the CR pathway.	Using the findings from this report to highlight barriers in utilisation of digital modes/content and support solutions e.g. staff training, patient literacy and funding. Where new technologies are being introduced refer to NICE Early Value Assessment

Acknowledgements

Thank you to NHS England for their ongoing commitment to CR and NACR. Specifically, our thanks go to Diane Saunders and Kasia Pisarska.

Thanks also to BACPR particularly Sally Hinton and Maria Glover for their support as well as the wider NCP_CR Steering Group.

The optimal functionality of NACR relies on good quality data which is only possible through the willingness of clinical teams to audit their service and to work with us to improve CR quality. A major aspect of their work involves entering comprehensive patient data which is done alongside completing clinical assessments and questionnaires specific to our audit reporting. We would like to thank all clinical teams and staff for their continued support.

As the patient voice for CR in the UK, the Cardiovascular Care Partnership UK (CCP UK) continues to support NACR enabling the audit and its findings to become more meaningful for patients and carers. Thanks to Roland Malkin.

Thank you also to the NACR Steering Group for their continued support, expertise and critical friend role which is one of the main reasons NACR is fit for purpose.

Alison Allen (All Wales Group Representative)
Dr Hayes Dalal (NCP_CR Co-chair)
Claire Dobson (Health and Care Lead, BHF)
Sara Drew (All Wales Group Representative)
Denise Duggan (Northern Ireland Representative)
Jennifer Hannay (England Cardiac Network Representative)
Sally Hinton (Executive Director, BACPR)
Sarah Howard (All Wales Group Representative)
Dr Mike Lawless (Cardiologist Registrar, Newcastle Hospital/Newcastle University)
Roland Malkin (CCPUK President)
Gillian Moore (Northern Ireland Representative)
Dominic Povey (NHS England)
Maria Glover (BACPR President)
Janine O'Rourke (England Cardiac Network Representative)
Kelly Read (North London Cardiac Delivery Network)
Dr Lars Tang (International NACR Representative)

Writing group:
Professor Patrick Doherty, Clinical Lead of NACR
Dr Alex Harrison, NACR Lead Analyst
Corinna Petre, NACR Project Manager
Nerina Onion, NACR Programme Manager
Dr Lars Tang, International NACR Representative

List of Tables and Figures

Tables

Figures

List of Supplements

In addition to the data and figures within this report, NACR provides local and regional reports online. These supplements can be used to inform services and drive improvement. The full list of available supplements is below and they can be accessed from the following web link. Annual Report Supplements.

Inclusion
Staffing
Mode
Early
Digital Technology

Further information on the programme level data within Quarterly reports can be accessed from the following - Quarterly Reports.

References

• American College of Sports Medicine. *ACSM's Guidelines for Exercise Testing and Prescription*. 11th Edition (2021) Philadelphia Lippincott, Williams & Wilkins.

• Anderson L, Oldridge N, Thompson DR, et al. Exercise based cardiac rehabilitation for coronary heart disease: Cochrane systematic review and meta- analysis. *Journal of the American College of Cardiology* 2016; 67 (1): 1-12. https://doi.org/10.1016/j.jacc.2015.10.044.

• British Association for Cardiovascular Prevention and Rehabilitation. *BACPR Standards and Core Components 2023 Edition*. https://www.bacpr.org/news/bacpr-standards-and-core-components-2023-edition.

•Brown TM, Pack QR, Aberegg, E, et al. Core components of cardiac rehabilitation programs: 2024 update: A scientific statement from the American Heart Association and the American Association of Cardiovascular and Pulmonary Rehabilitation. *Circulation* 2024;, 150, (18). https://doi.org/10.1161/CIR.0000000000001289.

• Cowie A, Buckley J, Doherty P on behalf of the British Association for Cardiovascular Prevention and Rehabilitation (BACPR), et al. Standards and core components for cardiovascular disease prevention and rehabilitation. *Heart* 2019; 105: 510-515. https://doi.org/10.1136/heartjnl-2018-314206.

• Dalal H, Doherty P, Taylor R. Clinical review: Cardiac rehabilitation. *British Medical Journal* 2015; 351: h5000. https://doi.org/10.1136/bmj.h5000.

• Dalal HM, Evans PH, Campbell JL, Taylor RS, Watt A, Read KL, Mourant AJ, Wingham J, Thompson DR, Pereira Gray DJ. Home-based versus hospital-based rehabilitation after myocardial infarction: A randomized trial with preference arms--Cornwall Heart Attack Rehabilitation Management Study (CHARMS). *International Journal of Cardiology* 2007 Jul 10; 119(2): 202-11. https://doi.org/10.1016/j.ijcard.2006.11.018 Epub 2006 Dec 28. PMID: 17196274.

• Doherty P and Lewin B. The RAMIT trial, a pragmatic RCT of cardiac rehabilitation versus usual care: what does it tell us? *BMJ Heart* 2012; 98: 605-6. https://doi.org/10.1136/heartjnl-2012-301728.

• ESC 2024 – https://www.escardio.org/Congresses-Events/ESC-Congress/Congress-news/2024-esc-clinical-practice-guidelines-for-the-management-of-elevated-blood-press#:~:text=After20320months20of20lifestyle,mmHg20to20reduce20CVD20risk.

• Fell J, Dale V, Doherty P. Does the timing of cardiac rehabilitation impact fitness outcomes? An observational analysis. *Open Heart* 2016 Feb 8; 3 (1): e000369. https://openheart.bmj.com/content/3/1/e000369.

• Furze G, Doherty P, Grant-Pearce C. Development of a UK National Certification Programme for Cardiac Rehabilitation (NCP_CR). *British Journal of Cardiology* 2016; 23 (2). https://doi.org/10.5837/bjc.2016.024.

• Hinde S, Harrison A, Bojke L, et al. Quantifying the impact of delayed delivery of cardiac rehabilitation on patients' health. *European Journal of Preventive Cardiology* 2020. https://doi.org/10.1177/2047487320912625.

• Jallow H, Chacin-Suarez A, Medina-Inojosa J, et al. Major adverse cardiovascular events in heart failure patients with multimorbidity undergoing cardiac rehabilitation: a community cohort. *Journal of the American College of Cardiology* 2022 Mar, 79 (9_Supplement): 1590. https://doi.org/10.1016/S0735-1097(22)02581-5.

• Mafham MM, Spata E, Goldacre R, et al COVID-19 pandemic and admission rates for and management of acute coronary syndromes in England. *Lancet* 2020; 396 (10248), 381-9. https://doi.org/10.1016/S0140-6736(20)31356-8.

• Molloy CD, Lon, L, Mordi IR, Bridges C, Sagar VA, Davie, EJ, Coats AJS, Dalal H, Rees K, Singh SJ and Taylor RS Exercise-based cardiac rehabilitation for adults with heart failure – 2023 Cochrane systematic review and meta-analysis. *European Journal of Heart Failure*
2023. https://onlinelibrary.wiley.com/doi/10.1002/ejhf.3046

• NHS *NHS Long Term Plan*. 2019. https://www.longtermplan.nhs.uk/publication/nhs-long-term-plan/

• NHS England 2022 https://www.nhs.uk/conditions/high-cholesterol/cholesterol-levels/.

• NICE *Unstable Angina and NSTEMI: Early Management. NICE Clinical Guideline 94*. 2010. https://www.nice.org.uk/guidance/CG94.

• NICE *MI-Secondary Prevention in Primary and Secondary Care for Patients Following a Myocardial Infarction. NICE Clinical Guideline 172*. 2013. https://www.nice.org.uk/Guidance/CG172.

• NICE *Chronic Heart Failure in Adults: Diagnosis and Management. NICE Guideline 106*. 2018. https://www.nice.org.uk/guidance/ng106.

• NICE *Hypertension in Adults: Diagnosis and Management. NICE Guideline 136*. 2023. https://www.nice.org.uk/guidance/ng136.

• NHS England *Cholesterol Levels*. 2022.
https://www.nhs.uk/conditions/high-cholesterol/cholesterol-levels/.

• NICE *Cardiovascular Disease: Risk Assessment and Reduction, Including Lipid Modification. NICE Guideline 238*. 2023. https://www.nice.org.uk/guidance/ng238/.

• Pelliccia A, Sharma S, Gati S, et al. ESC Scientific Document Group, 2020 ESC Guidelines on sports cardiology and exercise in patients with cardiovascular disease: The Task Force on sports cardiology and exercise in patients with cardiovascular disease of the European Society of Cardiology (ESC), *European Heart Journal*. 2021; 42 (1): 17–96. https://doi.org/10.1093/eurheartj/ehaa605.

• Rauch B, Davos C H, Doherty, P, et al. The prognostic effect of cardiac rehabilitation in the era of acute revascularisation and statin therapy: A systematic review and meta-analysis of randomized and non-randomized studies – The Cardiac Rehabilitation Outcome Study (CROS). *European Journal of Preventative Cardiology*. 2016; 23 (18): 1914-39. https://dx.doi.org/10.11772F2047487316671181.

• Salzwedel A, Jensen K, Rauch B, et al. Effectiveness of comprehensive cardiac rehabilitation in coronary artery disease patients treated according to contemporary evidence based medicine: Update of the Cardiac Rehabilitation Outcome Study (CROS-II). *European Journal of Preventive Cardiology*. February 2020. https://doi.org/10.1177/2047487320905719.

• Saito M, Ueshima K, Saito M et al. Japanese Cardiac Rehabilitation Survey Investigators. Safety of exercise-based cardiac rehabilitation and exercise testing for cardiac patients in Japan: a nationwide survey. *Circulation Journal*. 2014; 78 (7): 1646-53. https://doi.org/10.1253/circj.cj-13-1590. PMID: 24837707.

• Sadeghi, M, Rahiminam H, Amerizadeh A et al.
Prevalence of return to work in cardiovascular patients after cardiac rehabilitation: A systematic review and meta-analysis, *Current Problems in Cardiology*. 2022. https://doi.org/10.1016/j.cpcardiol.2021.100876.

• Scottish Intercollegiate Guidelines Network SIGN. *Cardiac Rehabilitation: A National Clinical Guideline No. 150. Scottish Intercollegiate Guidelines Network*. 2017. https://www.sign.ac.uk/media/1047/sign150.pdf.

• Shields GE, Wells A, Doherty P, et al. Cost-effectiveness of cardiac rehabilitation: a systematic review. *Heart* 2018; 104: 1403-1410. https://doi.org/10.1136/heartjnl-2017-312809.

• Sumner J, Böhnke JR, Doherty P. Does service timing matter for psychological outcomes in cardiac rehabilitation? Insights from the National Audit of Cardiac Rehabilitation. *European Journal of Preventative Cardiology* 2017; November 9. https://doi.org/10.11772F2047487317740951.

• Taylor R, Sagar V, Davies E, Briscoe S, et al. Exercise-based rehabilitation for heart failure. *The Cochrane Library* 2014, Issue 4. Art.No.:CD003331. http://doi.org/10.1002/14651858.CD003331.pub4.

• Visseren FLJ, Mach F, Smulders YM, et al. 2021 ESC guidelines on cardiovascular disease prevention in clinical practice: Developed by the Task Force for cardiovascular disease prevention in clinical practice with representatives of the European Society of Cardiology and 12 medical societies with the special contribution of the European Association of Preventive Cardiology (EAPC). *European Heart Journal* 2021; 42 (34): 3227–3337. https://doi.org/10.1093/eurheartj/ehab484.

• West RR, Jones DA, Henderson AH. Rehabilitation After Myocardial Infarction Trial (RAMIT): multi-centre randomised controlled trial of comprehensive cardiac rehabilitation in patients following acute myocardial infarction. *Heart* 2011; 98: 637–44. http://dx.doi.org/10.1136/heartjnl-2011-300302.

• Wood D. Is cardiac rehabilitation fit for purpose in the NHS: maybe not. *Heart* 2012; 98: 607-8. http://dx.doi.org/10.1136/heartjnl-2012-301811.