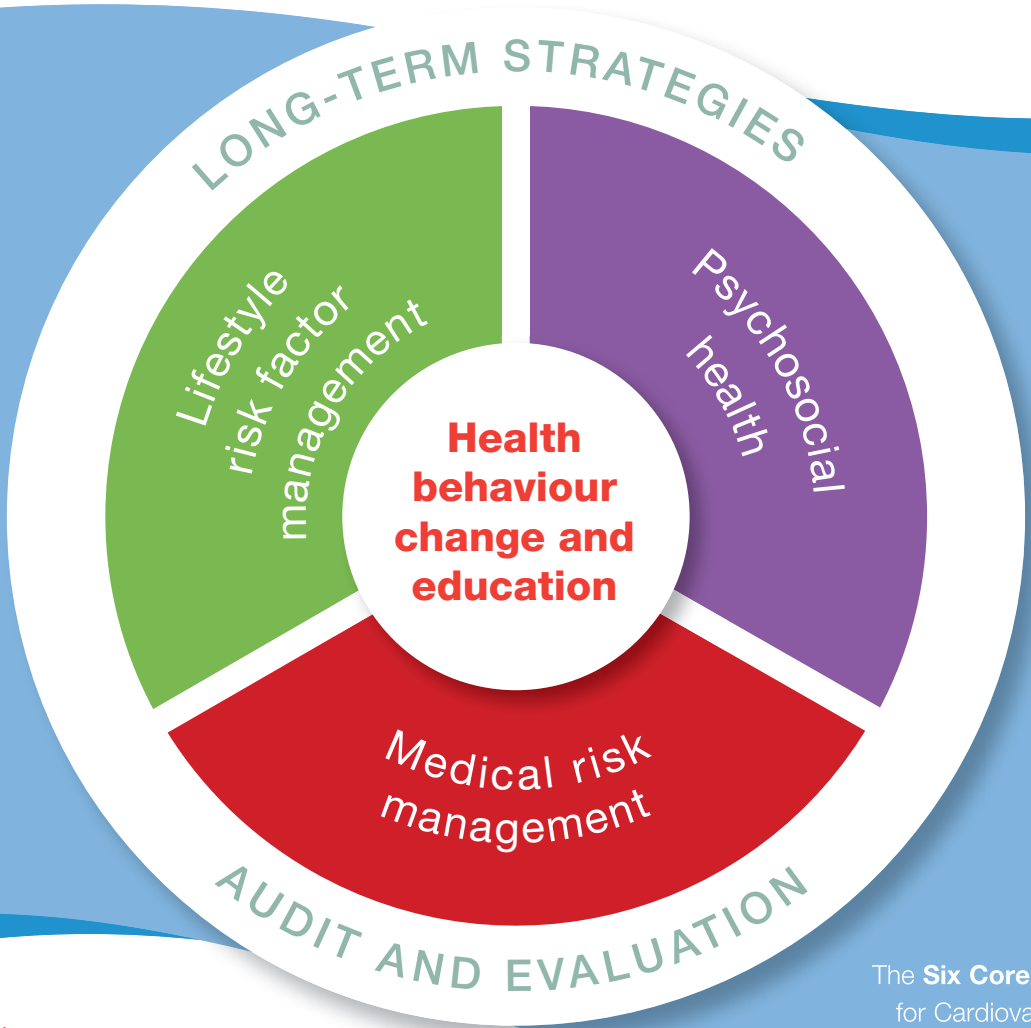
BACPR
BRITISH ASSOCIATION FOR CARDIOVASCULAR PREVENTION AND REHABILITATION

The **BACPR Standards and Core Components** for

Cardiovascular Disease Prevention and Rehabilitation 2017

(3rd Edition)



The **Six Core Components** for Cardiovascular Disease Prevention and Rehabilitation

Supported by

British Heart Foundation

The British Association for Cardiovascular Prevention and Rehabilitation is an affiliated group of the British Cardiovascular Society

Supported by

Foreword

All health care professionals are motivated to provide the best care and achieve the optimal outcomes for their patients. This has been a recurrent ambition I have heard from colleagues working in the front line of the NHS. The 3rd edition of the BACPR Standards & Core Components provide an excellent and essential guide to support cardiac rehabilitation and prevention programmes across the UK.

Taking the findings of research and translating these into day to day practice is the starting point of a chain of events that will achieve this ambition. The evidence-based standards allow us to drive quality improvement and the National Audit of Cardiac Rehabilitation allows us to know how well we are doing. None of this however would be possible without the efforts of the healthcare professionals providing cardiac rehabilitation across the UK.

Cardiovascular disease is a long term condition. Saving someone's life following a heart condition is vital, but giving them a fulfilling life that is worth living is equally important. The aims of cardiac rehabilitation and prevention is to provide the patient and family with the skills and knowledge to self-manage, facilitate recovery both physically and psychologically and educate to reduce the risk of further CVD events, as well as achieving an absolute risk reduction in cardiovascular mortality.

The NHS should provide and fund evidence-based care, but the reduction in hospital admissions for patients who receive comprehensive cardiac rehabilitation, there exists an added financial motive to invest in these essential services.

Leo was 47 when he had a heart attack followed by triple bypass surgery. While he was in hospital he was offered a place on a cardiac rehabilitation programme. Following cardiac rehabilitation, as he says, it is about being in control – "I definitely feel much better in myself. I'm more in control of my own health than I ever was before."

The BHF is delighted to be able to support the publication of these updated Standards and Core Components, but more importantly work with the BACPR team and members, to promote excellence in cardiovascular disease prevention and rehabilitation.

***Dr Mike Knapton**, Associate Medical Director, BHF*

Contents

1. Introduction

This is an update (third edition) of the BACPR Standards & Core Components and represents current evidence-based best practice and a pragmatic overview of the structure and function of Cardiovascular Prevention and Rehabilitation Programmes (CPRPs) in the UK.

The previously described seven standards have now been reduced to six but without sacrificing any of the key elements and with a greater emphasis placed on measurable clinical outcomes, audit and certification. Similarly, the second edition provided an overview of seven core components felt to be essential for the delivery of quality prevention and rehabilitation, and this too has been reduced to six. The interplay between cardio-protective therapies and medical risk factors is almost impossible to disentangle for the vast majority of patients and even if specific drug therapies are deployed exclusively for risk factor modulation, the indirect effect will also be cardio-protective. Thus, these have been combined into a single core component – medical risk management.

This updated and revised third edition is designed to build upon the success of the earlier publications and to refocus the attention of commissioners, health-care professionals, politicians and the public on the critical importance of robust, quality markers of service structure and content. However, the overarching aim of these standards and core components remains unchanged – to provide a blueprint upon which all effective prevention and rehabilitation services are designed and a template through which any variation in quality of service delivery can be assessed.

It is recognised that cardiac rehabilitation (CR) has an established evidence-base and existing services are in a strong position to evolve in order to provide care to include an ever-broadening spectrum of in-scope patients, from those with established atherothrombotic vascular disease right through to those asymptomatic individuals who have been deemed at high risk for the future development of adverse cardiovascular events.[1-3] In addition, there is enormous overlap in terms of profile and potential benefits for patients with other non-communicable diseases, particularly individuals with chronic respiratory disease and certain forms of cancer.[4-5] Therefore, an opportunity exists to further expand the influence of prevention and rehabilitation services which may, in turn, allow financial resources to be released and a more cost-effective deployment of staff and facilities to take place.

All such potential developments will require innovative practice and close working between providers and commissioners whilst also adhering to the principles set out within this BACPR Standards & Core Components document.

1.1 Definition

There are many definitions of cardiac rehabilitation.[6-8] The following definition presents their combined key elements:

> *"**The coordinated sum of activities*** required to influence favourably the underlying cause of cardiovascular disease, as well as to provide the best possible physical, mental and social conditions, so that the patients may, by their own efforts, preserve or resume optimal functioning in their community and through improved health behaviour, slow or reverse progression of disease".*
>
> ***The BACPR's six core components** for cardiovascular disease prevention and rehabilitation constitute the coordinated sum of activities.

In meeting these defined goals, all CPRPs should aim to offer a service that takes a multidisciplinary biopsychosocial approach in order to best influence uptake, adherence and long-term healthier living. The involvement of partners, other family members and carers is also important.[9-11]

1.2 Evidence

The evidence base that supports the merits of comprehensive CR is robust and consistently demonstrates a favourable impact on cardiovascular mortality and hospital re-admissions in patients with coronary heart disease[12] although there remains some uncertainty regarding the effect of CR on all-cause mortality.[13-14] For patients who have experienced myocardial infarction (MI) and/or coronary revascularisation, attending and completing a course of exercise-based CR is associated with an absolute risk reduction in cardiovascular mortality from 10.4% to 7.6% when compared to those who do not receive CR, with a number needed to treat (NNT) of 37. In terms of recurrent MI and repeat revascularisation, the effect of CR would appear to be neutral, however, there is a significant reduction in acute hospital admissions (reduced from 30.7% to 26.1%, NNT 22) which is a key determinant of the intervention's overall cost-efficacy.[13]

For individuals with a diagnosis of heart failure, CR may not reduce total mortality but does impact favourably on hospitalisation, with a 25% relative risk reduction in overall hospital admissions and a 39% reduction (NNT 18) in acute heart failure related episodes.[15] The consequences of relapse and readmission are enormous in terms of quality of life, associated morbidity and financial impact thus the more recent emphasis on the importance of CR for heart failure patients within national and international guidelines. In terms of direct measures of anxiety, depression and quality of life, CR demonstrates consistently favourable outcomes for all patient groups and for those with heart failure, a clinically relevant (and highly statistically significant) change in the Minnesota Living with Heart Failure questionnaire point score of 5.8.[15]

Finally, there is persuasive data supporting the benefits of different modes of CR delivery with no apparent difference in either clinical or quality of life outcomes when comparing supervised centre-based CR with that undertaken in a domestic environment, nor any major variation in healthcare costs.[16] This should allow CPRPs to be more flexible in their CR offer and to be more innovative when attempting to attract either new or hitherto hard to reach "in-scope" groups.

In summary, CR reduces both cardiovascular mortality and episodes of acute hospitalisation whilst also improving functional capacity and perceived quality of life. CPRPs support an early return to work and the development of self-management skills,[17] and can be delivered effectively in a variety of formats, including traditional supervised centres as well as domestic settings. Given that CR remains one of the most clinically and cost-effective therapeutic interventions in cardiovascular disease management,[13 18] it is vital that systems are in place to maximise uptake and adherence. There is continued emphasis (supported by these updated standards) placed upon the importance of early CR, commencing within two weeks of either hospital discharge or confirmed diagnosis in the case of stable angina or heart failure. Starting within this timeframe has been shown to be both safe and feasible, as well as improving patient uptake and adherence.[19-22] In addition, there is evidence to suggest that if a member of the CPRP to which a patient has been referred is able to make contact with the patient during the in-hospital stay and begin the process of personalised goal-setting, then this may lead to greater uptake of prevention/rehabilitation services.[23-24]

1.3 National and local factors for assuring quality

Quality assurance is facilitated through an alliance at both local (e.g. commissioners, service providers and service users) and national level, together with participation in the National Audit for Cardiac Rehabilitation (NACR) and ultimately attainment of national certification (Figure 1).

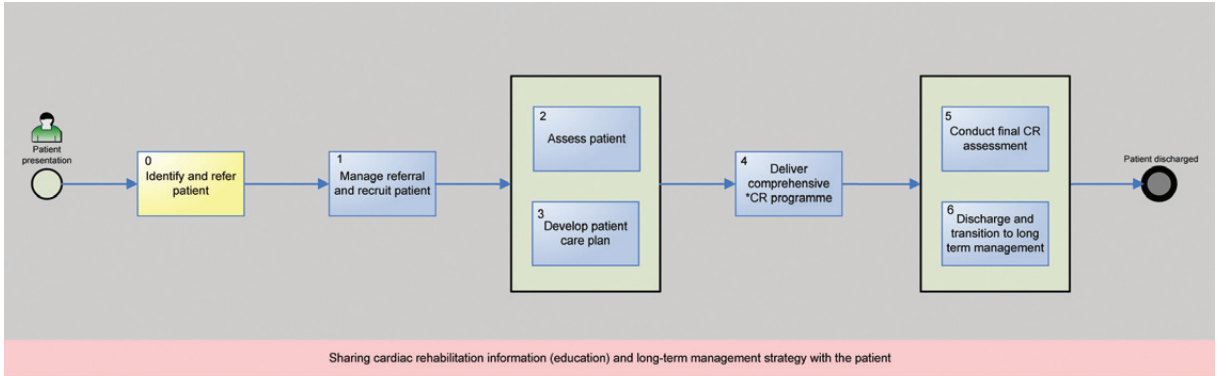
Figure 1: NCP_CR certification logo

The aim of this "alliance" is to deliver evidence-based and consistently high-quality CPRPs across all four nations which can be accessed by all individuals deemed eligible. The National Certification Programme (NCP_CR) has been designed in order to demonstrate that this is indeed the case and that programmes are meeting (or working towards) a set of minimum quality standards adapted from those described within this document, and which are reflective of the aggregated data submitted to the NACR.[25] The NCP_CR is delivered via a BACPR/NACR collaborative and it is envisaged that all CPRPs will submit complete data sets to NACR and register for certification.

1.4 Cardiac rehabilitation pathway of care

The Department of Health Commissioning Guide for Cardiac Rehabilitation[18] summarises a recommended six-stage pathway of care from patient presentation (e.g. diagnosis or cardiac event), identification for eligibility, referral, and assessment through to long-term management (Figure 2). Whilst intended for England, this pathway of care is relevant to all four nations. Each of these stages within this process are vital for programme uptake and adherence, the achievement of meaningful clinical outcomes and ensuring longer-term behaviour change and desired health outcomes. The assessed information must also be managed in a manner to fulfil the need for audit and evaluation.

Figure 2: Department of Health Commissioning Guide Six-Stage Patient Pathway of Care



*CR = cardiac rehabilitation

1.5 Funding of CPRPs

Previously published guidance has suggested a minimum cost per patient for CR.[18 26-28] However, the 2010 Department of Health Commissioning Pack has now been reviewed in 2016 by Monitor (an organisational part of NHS Improvement) which recommends the CR costing tool.[29 30] This tool allows CPRPs to work out the costs as per staff profile required to meet the needs of the population they serve. This model only takes account of staff costs over 16 one-hour sessions which means that individual CPRPs would need to add other capital and services costs and adjust in respect of the number of sessions they run.

These revised standards and core components place equal emphasis on lifestyle risk factor management, psychosocial health and medical risk factor management whilst placing health behaviour change and education at the very centre of this model of care. Therefore, costings developed within business cases and/or funding (commissioning) determined by local clinical commissioning groups or health boards would need to reflect the corresponding mix of expertise and time allocation required for qualified and competent practitioners to employ an evidence-based approach across the six stages of CR (Figure 2).

2. The Standards

The six standards for cardiovascular prevention and rehabilitation are:

Standard One The delivery of six core components by a qualified and competent multidisciplinary team, led by a clinical coordinator.

Standard Two Prompt identification, referral and recruitment of eligible patient populations.

Standard Three Early initial assessment of individual patient needs which informs the agreed personalised goals that are reviewed regularly.

Standard Four Early provision of a structured cardiovascular prevention and rehabilitation programme (CPRP), with a defined pathway of care, which meets the individual's goals and is aligned with patient preference and choice.

Standard Five Upon programme completion, a final assessment of individual patient needs and demonstration of sustainable health outcomes.

Standard Six Registration and submission of data to the National Audit for Cardiac Rehabilitation (NACR) and participation in the National Certification Programme (NCP_CR).

Important notes:

- Within the standards criteria the word ***shall*** is used to express a requirement that all programmes are expected to comply with (Grade A/B recommendations based on the highest quality evidence available and recognised as best practice). The word ***should*** is used to express a recommendation that is recognised as desirable (Grade C/D recommendation).
- In some cases these recommendations may exceed the current minimum standards required for the National Certification Programme, which sets annual targets based on national averages.

Performance indicators associated with meeting the minimum standards required for programme certification can be found at: www.bacpr.com

STANDARD 1

The delivery of six core components by a qualified and competent multidisciplinary team, led by a clinical coordinator

- Each programme shall deliver the six essential core components to ensure clinically effective care and achieve sustainable health outcomes (as presented in Section 3).
- The team shall include a senior clinician who has responsibility for coordinating, managing and evaluating the service. This also includes: resource and financial management for the service; collaboration with NHS data analysts to successfully draw on all available funding and identify any savings arising from reduced hospital admissions; and engagement with funding and commissioning bodies.
- There shall be an appropriately qualified and competent named lead for each of the core components. These practitioners who lead each of the core components should be able to demonstrate that either they or their delivery team have appropriate training, professional development, qualifications, skills and competency for the component(s) for which they are responsible. Practitioners should use the BACPR Competences Frameworks, where available.
- The team shall include a physician who has sustained interest, commitment and knowledge in cardiovascular disease prevention and rehabilitation.
- The delivery of the core components requires expertise from a range of different professionals working within their scope of practice. The composition of each team may differ but collectively the team shall have the necessary knowledge, skills and competencies to meet the standards and deliver all the core components. Patients benefit from access to a wide range of specialists, which most typically may include:
  - Dietitian
  - Exercise specialist
  - Nurse specialist
  - Occupational therapist
  - Pharmacist
  - Physician with special interest in prevention and rehabilitation
  - Physiotherapist
  - Practitioner Psychologist
- There shall be dedicated administrative support.
- The cardiovascular prevention and rehabilitation team shall actively engage and collaborate with the patient's/client's wider care team (e.g. general practitioners, practice nurses, cardiovascular disease specialist nurses, sports and leisure instructors, social workers and educationalists) to create a truly comprehensive approach to long-term management.
- When designing, evaluating and developing programmes, service users should also be included in this process.

STANDARD 2

Prompt identification, referral and recruitment of eligible patient populations

a. Patient Identification:

- The following priority patient groups shall be offered a CPRP irrespective of age, sex, ethnic group and clinical condition:
  - acute coronary syndrome
  - coronary revascularisation
  - heart failure
- Programmes should also aim to offer this service to other patient groups known to benefit:
  - stable angina, peripheral arterial disease, post-cerebrovascular event
  - post-implantation of cardiac defibrillators and resynchronisation devices
  - post-heart valve repair/replacement
  - post-heart transplantation and ventricular assist devices
  - Adult Congenital Heart Disease (ACHD)
- It is recognised that asymptomatic individuals who have been identified as high cardiovascular risk for CVD events are likely to benefit from the same professional lifestyle interventions and risk factor management as those that currently qualify for CPRPs. In addition, risk factors for cardiovascular disease are largely shared with the wider spectrum of non-communicable diseases such as cancer, chronic obstructive pulmonary disease and atrial fibrillation.[4-5] Existing cardiovascular prevention and rehabilitation services, if appropriately resourced, are in a strong position to provide high quality, cost-effective interventions to individuals both with and without established CVD. CPRPs should demonstrate an ambition to broaden their offer and initiate discussions with commissioners locally.
- It is recognised that local policy may be required to address priority groups in the first instance to reduce variation, ensuring consistency and equity of access. These standards however advocate investment in cardiovascular prevention and rehabilitation services as to ensure all patient groups ultimately benefit.

b. Patient Referral:

- An agreed and coordinated patient referral and/or recruitment process shall be in place so that all eligible patients are identified and invited to participate.
- CPRPs shall receive the referral of an eligible patient either during the in-patient stay or within 24 hrs of discharge. Referrals sent within a community setting or following a day case intervention shall be received by the CPRP within 72 hrs of the individual being identified as eligible.
- Prior to discharge, all eligible hospitalised patients should be encouraged by healthcare professionals to attend and complete a CPRP

c. Recruitment:

- Upon receipt of referral, all patients deemed eligible shall be contacted within 3 working days to review their progress and discuss enrolment.
- A mechanism of re-offer and re-entry should be put in place for patients who initially decline.

STANDARD 3

Early initial assessment of individual patient needs, which informs the agreed personalised goals that are reviewed regularly

- The initial assessment shall commence within 10 working days of receipt of referral.
- The initial assessment is deemed complete when documentation of all the following has taken place:
  - Demographic information and social determinants of health;
  - Medical history, current health status and symptoms, together with a review of any relevant investigations;
  - Lifestyle risk factors (exposure to tobacco, adherence to a cardioprotective diet, body composition, physical activity status and exercise capacity);
  - Psychosocial health (anxiety, depression, illness perception, social support, psychological stress, sexual wellbeing and quality of life);
  - Medical risk management (control of blood pressure, lipids and glucose, use of cardioprotective therapies and adherence to pharmacotherapies).
- Additional parameters should be assessed on an individual basis and may include psychosocial factors such as anger, hostility, substance misuse, and occupational distress.
- Even if the initial assessment cannot be completed in its entirety (e.g. exercise capacity assessment temporarily contraindicated) this shall not delay the assessment of the remaining elements or the commencement of a formal CPRP.
- The initial assessment shall identify each individual's needs using validated measures that are culturally sensitive and also take account of associated co-morbidities.
- The assessment shall identify any physical, psychological or behavioural issues that have the potential to impact on the patient's ability to make the desired lifestyle changes.
- The assessment shall include formal risk stratification for exercise utilising all relevant patient information (e.g. left ventricular ejection fraction, history of arrhythmia, symptoms, functional capacity).
- The written care plan should include a defined pathway of care which meets the individual patient needs, participation preferences and choices.
- Patients shall receive on-going assessment throughout their CPRP and a regular review of their goals with adjustments agreed and documented where required.

STANDARD 4

Early provision of a structured Cardiovascular Prevention and Rehabilitation Programme (CPRP) with a defined pathway of care which meets the individual's goals and is aligned with patient preference and choice

- A CPRP shall be deemed underway once patient goal(s) have been identified and appropriate interventions have begun. This should occur immediately following completion of the initial assessment (Standard 3) and shall occur within 10 working days of receipt of referral.
- In instances where commencement of group-based exercise has to be postponed, such as a patient presenting with a contraindication to exercise, this shall not delay initiating management strategies in other relevant core components.
- In order to maximise uptake, completion and outcomes, CPRPs shall deliver a menu-based approach to meet a patient's individual needs. This should include choice in terms of venue (e.g. home, community, hospital) and scheduling of sessions (e.g. early mornings, evening & weekends).
- CPRPs can be delivered using a variety of modes (e.g. centre-based, home-based, manual-based, web-based etc.). Irrespective of mode of programme delivery:
  - Interventions provided are evidence-based and address the individual's needs across all the relevant core components.
  - Patients shall have access to the multidisciplinary team as required.
  - Patients shall be supported to participate in a personalised structured exercise programme at least two to three times a week, designed specifically to increase physical fitness. This requires documented evidence of regular review, goal setting and exercise progression.
  - There shall be documented interaction between the patient and the multidisciplinary team lasting a minimum of 8 weeks.

STANDARD 5

Upon programme completion, a final assessment of individual patient needs and demonstration of sustainable health outcomes

- In order to demonstrate effective health outcomes and ascertain the extent to which a patient's goals have been achieved, a formal assessment shall be performed at programme completion which includes all the initially assessed components:
  - Lifestyle related risk factors (exposure to tobacco, adherence to a cardioprotective diet, body composition, physical activity status and exercise capacity);
  - Psychosocial health (anxiety, depression, illness perception, social support, psychological stress, sexual wellbeing and quality of life);
  - Medical risk management (control of blood pressure, lipids and glucose, use of cardioprotective therapies and adherence to pharmacotherapies).
- Any additional parameters assessed initially should be re-assessed formally upon programme completion. For example, additional psychosocial factors such as anger, hostility, substance misuse, and occupational distress.
- Data from the final assessment shall be formally recorded for evaluation of outcome measures and audit.
- Final assessment shall be used to identify any unmet goals as well as any newly developed or evolving clinical issues. This shall assist the formulation of long-term strategies.
- Within 10 working days of programme completion, the primary care provider (and the referral source where relevant) shall be provided with a pre/post comparison of the patient's risk factor profile together with current medications and a summary of the long-term strategies proposed. A copy shall also be provided to the patient.

STANDARD 6

Registration and submission of data to the National Audit for Cardiac Rehabilitation (NACR) and participation in the National Certification Programme

- Formal audit and evaluation shall include service level and patient level data at baseline and following CR on clinical outcomes, patient experience and satisfaction.
- In order to monitor the quality of service delivery and to clearly demonstrate clinical outcomes every service shall routinely submit the required audit data to NACR each year.
- Every cardiovascular prevention and rehabilitation service should strive to meet requirements for the National Certification Programme and submit their data to the certification panel. Once achieved, CPRPs should maintain their certification status.

3. The Core Components

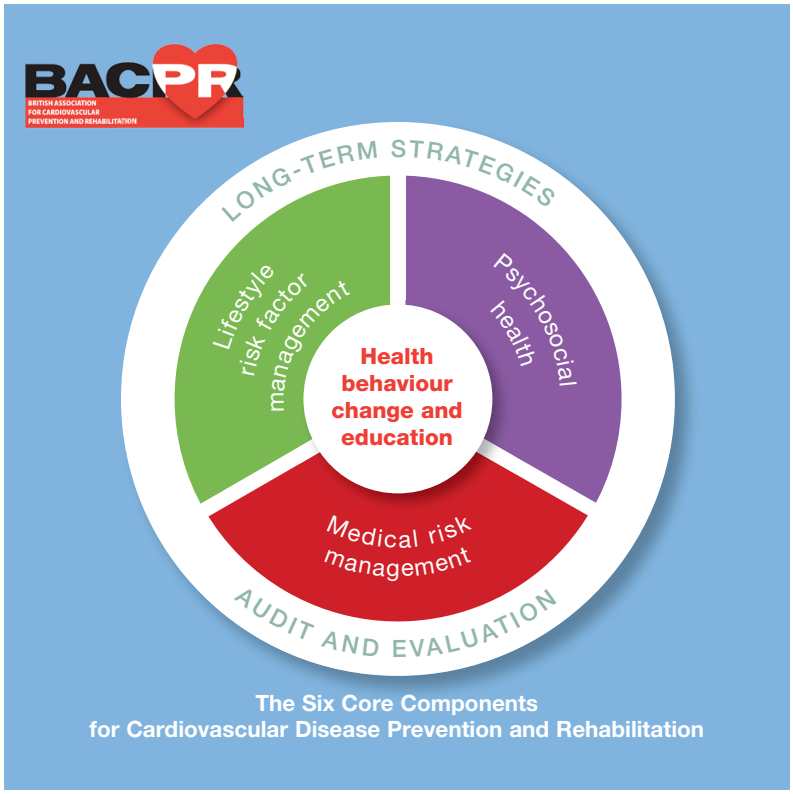
A key aim of a CPRP, through the core components, is not only to improve physical health and quality of life but also to equip and support people to develop the necessary skills to successfully self-manage. Delivery should adopt a biopsychosocial evidence-based approach which is culturally appropriate and sensitive to individual needs and preferences.

Figure 3 illustrates the six core components which include:

- **Health behaviour change and education**
- **Lifestyle risk factor management**
  - **Physical activity and exercise**
  - **Healthy eating and body composition**
  - **Tobacco cessation and relapse prevention**
- **Psychosocial health**
- **Medical risk management**
- **Long-term strategies**
- **Audit and evaluation**

Practitioners who lead each of the core components must be able to demonstrate that they (or their delivery team) have appropriate training, professional development, qualifications, skills and competency for the component(s) for which they are responsible (Standard 1). BACPR aims to be a resource for providing guidance on the knowledge, skills and competences required for each of the components.

Figure 3: The BACPR model for Cardiovascular Disease Prevention and Rehabilitation



3.1. Health behaviour change and education

In meeting individual needs, health behaviour change and education are integral to all the other components of cardiovascular prevention and rehabilitation. Adopting healthy behaviours is the cornerstone of prevention and control of cardiovascular disease.

3.1.1 Health behaviour change

To facilitate effective behaviour change, cardiovascular prevention and rehabilitation services should ensure:

- The use of health behaviour change interventions and key behavior change techniques underpinned by an up-to-date psychological evidence-base.[31]
- The provision of or access to, training in communication skills for all staff which may include motivational interviewing techniques and relapse prevention strategies.
- The provision of information and education to support fully informed choice from a menu of evidence-based locally available programme components. Offering choice may improve uptake and adherence to cardiovascular prevention and rehabilitation.[16-32]
- They address any cardiac or other misconceptions (including any about cardiovascular prevention and rehabilitation) and illness perceptions that lead to increased disability and distress. [33-35]
- Support for patients (and significant supporting others) including goal-setting and pacing skills, and exploring problem-solving skills in order to improve long-term self-management.
- Regular follow up to assess feedback and advise on further goal setting.[36]
- Where possible, the patient identifies someone best placed to support him/her (e.g. a partner, relative, close friend). The accompanying person should be encouraged to actively participate in CPRP activities whenever possible, to maximise patient recovery and health behaviour change whilst also addressing their own health behaviours.[37-39]

3.1.2 Education

Education should be delivered not only to increase knowledge but importantly to restore confidence and foster a greater sense of perceived personal control. As far as possible, education should be delivered in a discursive rather than a didactic fashion. It is not enough to simply deliver information in designated education sessions; health behaviour change needs to be achieved simultaneously and fully integrated into the whole service.

Attention should be paid to establishing existing levels of knowledge and to assessing learning needs (of individuals and groups), and subsequently tailoring information to suit assessed needs.

- Patients (and significant supporting others) should be encouraged to play an active role in the educative process, sharing information in order to maximise uptake of knowledge.
- Education should be culturally sensitive and achieve two key aims:
  - To increase knowledge and understanding of risk factor reduction
  - To utilise evidence-based health behaviour change theory in its delivery. Incorporation of both aspects of education increases the probability of successful long-term maintenance of change.

- The educational component should be delivered using high quality and varied teaching methods which take account of different learning styles and uses the best available resources to enable individuals to learn about their condition and management. Information should be presented in different formats using plain language and clear design, and tailored to the learning needs identified during initial assessment.[40]
- The education component of cardiovascular prevention and rehabilitation should empower individuals to better manage their condition. Topics may include:
  - Pathophysiology and symptoms
  - Physical activity, healthy eating and weight management
  - Tobacco cessation and relapse prevention
  - Self-management and behavioural management of other risk factors including blood pressure, lipids and glucose
  - Medical and pharmaceutical management of blood pressure, lipids and glucose
  - Psychological and emotional self-management
  - Social support and other contextual factors
  - Activities of daily living
  - Occupational/vocational factors
  - Resuming and maintaining sexual relations and dealing with sexual dysfunction
  - Surgical interventions and devices
  - Cardiopulmonary resuscitation
  - Additional information, as specified in other components.

3.2 Lifestyle risk factor management

Physical activity and exercise, together with a healthy diet and avoidance of obesity and exposure to all forms of tobacco, represents a lifestyle that is strongly associated with good cardiovascular health. All patients should have the opportunity to discuss their concerns across all of these lifestyle risk factors as relevant. Achievement of the lifestyle targets, as defined by the most up to date Joint British Societies Guidelines, should utilise evidence-based health behaviour change approaches led by specialists in collaboration with the multidisciplinary team. Supporting individuals in developing self-management skills is the cornerstone of long-term cardiovascular prevention and rehabilitation.

3.2.1 Physical activity and exercise

- Staff leading the exercise component of cardiovascular prevention and rehabilitation should be appropriately qualified, skilled and competent.[41]
- Baseline assessment of physical fitness shall be carried out to inform risk assessment, tailor the exercise prescription and aid goal setting.[42-45]
- Best practice standards and guidelines for physical activity and exercise prescription shall be used.[42-44]

- Risk stratification, based upon clinical features and baseline exercise capacity shall be undertaken.[42] This will then determine the appropriate:
  - Exercise prescription, activities of daily living (ADL) guidance and support
  - Staffing levels and skills[41]
  - Resuscitation support and provision in line with current Resuscitation Council UK / BACPR guidance [46]
  - Choice of venue (home/community/hospital).
- Patients should receive individual guidance and advice on ADLs together with a tailored activity and exercise plan with the collective aim to increase physical fitness as well as overall daily energy expenditure and decrease sedentary behaviour. The activity and exercise plan should be identified with the patient, take account of their co-morbidities and should be sensitive to their physical, psychosocial (cognitive and behavioural) capabilities and needs.

3.2.2 Healthy eating and body composition

- Staff leading the dietary component of cardiovascular prevention and rehabilitation should be appropriately qualified, skilled and competent.
- All patients shall have a baseline assessment of their dietary habits, including adherence with a cardioprotective diet and measurement of their weight, body mass index and waist circumference.
- The focus of advice should be on making healthy dietary choices to reduce total cardiovascular risk and improve body composition.
- Misconceptions about nutrition, dieting and weight cycling should be addressed and corrected.[47-48]
- Patients should receive personalised dietary advice that is sensitive to their culture, needs and capabilities coupled with support to help them achieve and adhere to the components of a cardioprotective diet as defined by the most up to date Joint British Societies and NICE guidelines.[49-51]
- Patients with additional co-morbidities leading to more complex dietary requirements should be assessed and managed individually by a registered dietitian.
- Weight management may form an important component in cardiovascular prevention and rehabilitation and could include:
  - weight gain (e.g. in debilitated patients)
  - weight loss, which where appropriate and in relation to excess fat, is best achieved through a combination of increased physical activity and reduced caloric intake[52]
  - weight maintenance (e.g. in those who have recently quit smoking[53] or those with heart failure).
- It may be appropriate to refer to the appropriate specialists for pharmacotherapy and/or bariatric surgery in order to co-manage weight loss.[54]

3.2.3 Tobacco cessation and relapse prevention

Staff delivering the tobacco cessation and relapse prevention component of cardiovascular prevention and rehabilitation should be appropriately qualified, skilled and competent in keeping with the NHS Centre for Smoking Cessation and Training Standard which is available for download from their website – **www.ncsct.co.uk**.[55]

- Current and past tobacco use should be assessed in all patients including whether they are a current user or recent quitter, their history of tobacco use, past quit attempts and exposure to second hand smoke.
- In patients who are currently using tobacco, frequency and quantity of use should be quantified. In addition, motivation to quit and a measure of nicotine dependence should be assessed, together with identifying psychological co-morbidities like depression and tobacco use by others at home.
- At the first assessment, medical advice to quit should be reinforced and a quit plan discussed which proposes the use of pharmacological support and follow up counselling within the prevention and rehabilitation service. Every effort should be made to assist individuals to achieve complete cessation of all forms of tobacco use, with repeat assessment of progress with cessation at every visit.[56-58]
- Patient preference is a priority regarding the choice of aids to use in tobacco cessation. The use of evidence-based therapies like Varenicline (Champix) and combination long- and short-acting nicotine replacement therapy is considered the gold standard, however non-medical nicotine delivery devices like e-cigarettes should also be considered as evidence is building for their efficacy. Guidance for cessation advisers can be found in the NCSCT e-cigarette briefing.[59]
- Preventing relapse is vital and may include prolonging the use of NRT and Varenicline (Champix) beyond the usual duration, and/or e-cigarettes in cases where cessation has been problematic. Risk of relapse is higher when an individual lives, socialises or works closely with others who use tobacco, therefore encouraging quit attempts in partners/spouses/friends/children may be helpful.

3.3 Psychosocial health

People taking part in cardiovascular prevention and rehabilitation may have many different emotional issues, and a comprehensive, holistic assessment is crucial to achieving the desired outcomes. Every patient should be screened for psychological, psychosocial and sexual health and wellbeing as ineffective management can lead to poor health outcomes.[60-62]

- Staff leading the psychosocial health component should be appropriately qualified, skilled, and competent.
- All patients should undergo a valid assessment of:
  - Psychological distress, for example, anxiety and depression (using an appropriate tool – Hospital Anxiety and Depression Scale (HADS) is available through the NACR)
  - Quality of life (using an appropriate tool - Dartmouth Primary Care Cooperative (COOP) and Minnesota Living With Heart Failure (MLWHF) are available through the NACR)
  - Psychological stressors
  - Illness perceptions and self-efficacy for health behaviour change
  - Adequacy of social support (covered in Dartmouth COOP – available through NACR)
  - Alcohol and substance misuse
- Services should help patients to increase awareness of ways in which psychological development, including illness perceptions, stress awareness and improved stress management skills can affect subsequent physical and emotional health.
- Attention should be paid to social support, as social isolation or lack of perceived social support is associated with increased cardiac mortality.[63] Whereas appropriate social support is helpful, overprotection may adversely affect quality of life.[64]

- Levels of psychological intervention (for psychological distress):
  - Cardiovascular prevention and rehabilitation teams are best placed to deal with the normal range of emotional distress associated with a patient's precipitating cardiac event.
  - Where appropriately trained psychological practitioners exist within the cardiovascular prevention and rehabilitation team, individuals with clinical levels of anxiety or depression related to their cardiac event can be managed within the service.
- In the absence of dedicated psychological practitioners in the team, individuals with clinical signs of anxiety and depression, unrelated to their cardiac event, or with signs of severe and enduring mental health problems, should have access to appropriately trained psychological practitioners and their GP should be informed.[65-67]
- Services should be aware of patients with problems related to alcohol misuse or substance misuse and offer referral to an appropriate resource.
- It is also important to consider vocational advice and rehabilitation/financial implications and to establish an agreed referral pathway to appropriate support and advice.
- Sexual health issues are also common with cardiovascular disease, and can negatively impact quality of life and psychological wellbeing.[68-69]
  - Every patient should be provided with the opportunity to raise any concerns they may have in relation to sexual activity and/or function. Assessment of patients' sexual concerns can be beneficial.[70]
  - Concerns or issues raised on assessment should be addressed through sexual counselling and medical management where indicated.[70-72]
  - Patients dealing with longstanding or complex sexual health issues should be offered referral to an appropriate resource.[70-72]

3.4 Medical risk management

- Staff leading the medical risk management component of cardiovascular prevention and rehabilitation services should be appropriately qualified, skilled and competent. Ideally an independent prescriber should be part of the multidisciplinary team.
- Best practice standards and guidelines for medical risk factor management (blood pressure, lipids and glucose),[49-51 73-75] optimisation of cardioprotective therapies and management of patients with implantable devices[42 76-77] should be used.
- Assessment should include:
  - Measurement of blood pressure, lipids, glucose, heart rate and rhythm.
  - Current medication use (dose and adherence).
  - Patients' beliefs about medication as this affects adherence to drug regimens.[78]
  - A discussion regarding sexual activity / function (pending patient's willingness to discuss).
  - Implantable device settings where applicable.
- During the CPRP, blood pressure and glucose should be regularly monitored with the aim of helping the individual to reach the targets defined in national guidelines by programme completion.[49-51 73-75]

- Key cardioprotective medications are prescribed according to current guidance.
- Cardioprotective medications should be up-titrated during the programme so that evidence-based dosages are achieved.
- Cardiovascular prevention and rehabilitation staff should be involved with initiation and/or titration of appropriate pharmacotherapy either directly through independent prescribing by a member of the multidisciplinary team or agreed protocols / patient group directives or through liaison with an appropriate healthcare professional (e.g. cardiologist, primary care physician).
- Erectile dysfunction in cardiovascular patients is typically multifactorial with vascular disease, psychogenic factors and medication all acting as potential contributors. Individuals with erectile dysfunction should be considered for medication review and appropriate referral made where indicated.
- In people with Implantable devices, such as implantable cardiac defibrillators and/or cardiac resynchronisation therapy:
  - Devices can have an impact on psychological and physical function, exercise ability, which should be considered within the individualised programme and may require additional expertise.[42 79-80]
  - Liaison with specialist cardiac services is important (e.g. arrhythmia nurse specialist, electrophysiologist and cardiac physiologist).
- Cardiovascular prevention and rehabilitation services also provide an opportunity to identify patients who may benefit from an implantable device.[76]

3.5 Long-term strategies

By the end of the CPRP the patient should have:

- undergone assessment and reassessment as identified in Standards 3 and 5
- participated in a tailored programme that encompasses the Core Components
- identified their long-term management goals.

3.5.1 Patient responsibilities

- By the end of the programme patients will have been encouraged to develop full biopsychosocial self-management skills and so be empowered and prepared to take ownership of their own responsibility to pursue a healthy lifestyle. Carers, spouses and family should also be equipped to contribute to long-term adherence by helping and encouraging the individual to achieve their goals.
- Patients and their families should be signposted and encouraged, where appropriate, to join:
  - local heart support groups
  - community exercise and activity groups
  - community dietetic and weight management services
  - tobacco and smoking cessation services.
- Promoting ongoing self-management strategies could also include online applications or tools and self-monitoring resources.

3.5.2 Service responsibilities

- Patients should be supported to plan and implement self-management strategies to help them transition from the CPRP and continue to work towards minimising their risk of cardiovascular disease progression following programme completion.
- Upon programme completion there should be a formal assessment of lifestyle risk factors (physical activity, diet and tobacco use as relevant), psychological and psychosocial health status, medical risk factors (blood pressure, lipids and glucose) and use of cardioprotective therapies together with long-term management goals. This should be communicated by discharge letter to the referrer and the patient as well as those directly involved in the continuation of healthcare provision.
- There should be communication and collaboration between primary and secondary care services to achieve the long-term management plan.
- Patients should be registered onto GP Practice CHD/CVD registers.

3.6 Audit and Evaluation

The NHS and its services are required, through NICE Guidance, to offer CR to all eligible patients and in doing so they are duty bound to audit their performance locally and supply data to ensure equity of service delivery nationally. Although uptake to CR is improving the quality of the services delivered is not unified across the UK.[81]

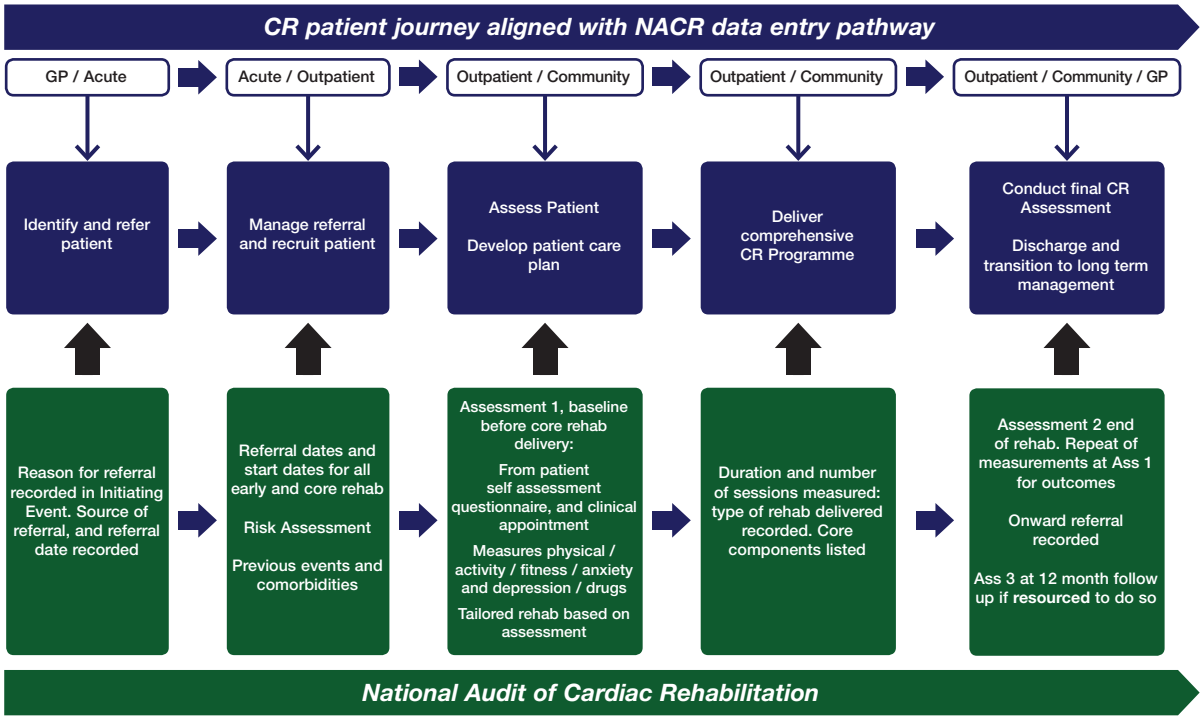
The BACPR recommends that every CPRP should formally audit and evaluate their service which can be achieved through using the NACR directly or through upload of data if collected on local provider software. The BACPR include the contribution of data to the National Audit for Cardiac Rehabilitation (NACR) as a standard as this plays a key role in monitoring the quality of service delivery and influencing and informing national policy. Data entered directly or uploaded to NHS Digital (the organisation that hosts NACR data) should include both individual and service level data based on assessment and including outcomes.

Service level audit should therefore include the collection of data to meet the following aims:

- Monitor and manage patient progress
- Monitor cardiovascular prevention and rehabilitation service resources
- Evaluate programmes in terms of clinical and patient-reported outcomes
- Benchmarking against local, regional and national standards
- Provide measures of performance and quality for commissioners and providers of cardiovascular prevention and rehabilitation services
- Contribute to the national audit functions
- Present and share cardiovascular prevention and rehabilitation outcomes in both clinical and patient formats

Where service resources and service design permits, the BACPR encourages cardiovascular prevention and rehabilitation teams to provide one-year follow-up data as part of audit. NHS Digital-NACR has the capability and capacity to capture this data within their online software. The ability to report at 12 months requires a high level of integration and communication between secondary and primary care which can be achieved without duplication of work if carried out within the NHS Digital-NACR software which is integrated along the patient journey.

Figure 4. CR patient journey aligned with NACR data entry pathway



3.6.1 National Certification Programme for Cardiac Rehabilitation (NCP_CR)

The BACPR and the NACR launched a joint National Certification Programme for Cardiac Rehabilitation (NCP_CR) in 2016 with an aim to ensure that all programmes are working to agreed clinical standards. The new 2017 Standards and Core Components are aligned with data requirements for the NCP_CR.[25]

The BACPR encourages all programmes to submit data and register for the NCP_CR so that patients, wherever they live, can be confident that the services on offer meet agreed minimum standards. The ultimate goal is for all CR programmes to deliver services in line with the Standards and Core Components in this document, however at present most programmes are working towards the minimum standards as outlined in the NCP_CR.[81] Future NACR reports will incorporate the extent by which programmes are meeting NCP_CR criteria.

4. Appendices

Appendix 1: References

1. Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Vascular protection in people with diabetes. *Canadian Journal of Diabetes.* 2013;37(Suppl 1):S100-4.
2. Dasgupta K, Quinn RR, Zarnke KB, et. al. for the Canadian Hypertension Education Program. The 2014 Canadian Hypertension Education Program recommendations for blood pressure measurement, diagnosis, assessment of risk, prevention, and treatment of hypertension. *Canadian Journal of Cardiology.* 2014;30:485-501.
3. Schuler G, Adams V, Goto Y. Role of exercise in the prevention of cardiovascular disease: results, mechanisms, and new perspectives. *European Heart Journal.* 2013;34:1790-9.
4. Koene RJ, Prizment AE, Blaes A, Konety SH. Shared risk factors in cardiovascular disease and cancer. *Circulation.* 2016;133(11):1104-14.
5. Lim SS, Vos T, Flaxman AD, colleagues. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *The Lancet.* 2012;380(9859):2224-60. Available at: http://www.sciencedirect.com/science/article/pii/S0140673612617668
6. The World Health Organisation (WHO). *Cardiac rehabilitation and secondary prevention: long term care for patients with ischaemic heart disease. Briefing letter.* Copenhagen, Denmark: WHO Regional office for Europe, 1993.
7. Feigenbaum E. *Cardiac rehabilitation services [microform] / [E. Feigenbaum, E. Carter].* Rockville, MD U.S. Dept. of Health and Human Services, Public Health Service, National Center for Health Services Research and Health Care Technology Assessment; Available from National Technical Information Service, 1987.
8. Goble AJ, Worcester MU. *Best practice guidelines for cardiac rehabilitation and secondary prevention.* Melbourne, Australia: The Heart Research Centre, on behalf of Department of Human Services Victoria, 1999.
9. DiMatteo MR, Haskard KB, Williams SL. Health beliefs, disease severity, and patient adherence: a meta-analysis. *Medical Care.* 2007;45(6):521-8.
10. Gatchel RJ, Oordt MS. *Clinical health psychology and primary care: Practical advice and clinical guidance for successful collaboration.* Washington, DC: American Psychological Association, 2003.
11. Carlson JJ, Norman GJ, Feltz DL, Franklin BA, Johnson JA, Locke SK. Self-efficacy, psychosocial factors, and exercise behavior in traditional versus modified cardiac rehabilitation. *Journal of Cardiopulmonary Rehabilitation.* 2001;21(6):363-73.
12. Anderson L, Thompson DR, Oldridge N, Zwisler A, Rees K, Martin N, Taylor RS. Exercise-based cardiac rehabilitation of coronary heart disease. *Cochrane Database of Systematic Reviews.* 2016;Issue 1(Art. No.: CD001800.) Available at: http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD001800.pub3/abstract
13. Dalal HM, Doherty P, Taylor RS. Cardiac rehabilitation. *BMJ*. 2015;351 Available at: http://www.bmj.com/content/bmj/351/bmj.h5000.full.pdf
14. Rauch B, Davos CH, Doherty P, Saure D, Metzendorf M-I, Salzwedel A, Voller H, Jensen K, Schmid J-P, on behalf of the Cardiac Section of the European Association of Preventive Cardiology (EAPC). 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 Preventive Cardiology.* 2016;23(18):1914-39. Available at: http://journals.sagepub.com/doi/abs/10.1177/2047487316671181
15. Sagar VA, Davies EJ, Briscoe S, Coats AJS, Dalal HM, Lough F, Rees K, Singh S, Taylor RS. Exercise-based rehabilitation for heart failure: systematic review and meta-analysis. *Open Heart.* 2015;2(1) Available at: http://openheart.bmj.com/content/2/1/e000163
16. Taylor RS, Dalal H, Jolly K, Zawada A, Dean SG, Cowie A, Norton RJ. Home-based versus centre-based cardiac rehabilitation. *Cochrane Database of Systematic Reviews.* 2015(8) Available at: http://dx.doi.org/10.1002/14651858.CD007130.pub3
17. Yohannes AM, Doherty P, Bundy C, Yalfani A. The long-term benefits of cardiac rehabilitation on depression, anxiety, physical activity and quality of life. *Journal of Clinical Nursing.* 2010;19(19-20):2806-13.
18. National Institute for Health and Care Excellence. *Cardiac rehabilitation services: commissioning guide.* London: NICE, 2013. Available at: https://www.nice.org.uk/guidance/qs9/resources/cardiac-rehabilitation-services-commissioning-guide-304110253
19. Eder B, Hofmann P, von Duvillard SP, Brandt D, Schmid J, Pokan R, Wonisch M. Early 4-Week cardiac rehabilitation exercise training in elderly patients after heart surgery. *Journal of Cardiopulmary Rehabilitation and Prevention.* 2010;30(2):85-92.
20. Maachi C, Fattirolli F, Molino Lova R, Conti AA, Luisi MLE, Intini R, Zipoli R, Burgisser C, Guarducci L, Masotti G, Gensini GF. Early and late rehabilitation and physical training in elderly patients after cardiac surgery. *American Journal of Physical and Medical Rehabilitation.* 2007;86:826-34.

21. Aamot I, Moholdt T, Amundsen B, Solberg HS, Mørkved S, Støylen A. Onset of exercise training 14 days after uncomplicated MI: a randomized controlled trial. *European Journal of Cardiovascular Prevention and Rehabilitation.* 2010;17(14):387-92.
22. Haykowsky M, Scott J, Esch B, Schopflocher D, Myers J, Paterson I, Warburton D, Jones L, Clark AM. A meta-analysis of the effects of exercise training on left ventricular remodeling following myocardial infarction: start early and go longer for greatest exercise benefits on remodeling. *Trials.* 2011;12(92): DOI: 10.1186/745-6215-12-92.
23. Davies P, Taylor F, Beswick A, Wise F, Moxham T, Rees K, Ebrahim S. Promoting patient uptake and adherence in cardiac rehabilitation. *Cochrane Database of Systematic Reviews.* 2010; Issue 7.(Art. No.: CD007131.): DOI:10.1002/14651858.CD007131.pub2.
24. Cossette S, Frasure-Smith N, Dupuis J, Juneau M, Guertin M. Randomized controlled trial of tailored nursing interventions to improve cardiac rehabilitation enrolment. *Nursing Research.* 2012;61(2):111-20.
25. Furze G, Doherty P, Grant-Pearce C. Development of a UK National Certification Programme for Cardiac Rehabilitation (NCP_CR). *British Journal of Cardiology.* 2016;23:102-5.
26. National Audit of Cardiac Rehabilitation. *Annual reports 2007 to 2016.* University of York: British Heart Foundation Available at: http://www.cardiacrehabilitation.org.uk/reports.htm
27. National Institute for Health and Care Excellence. *Chronic heart failure: Costing report for CG 108. Implementing NICE Guidance.* London: NICE, 2010. Available at: https://www.nice.org.uk/guidance/cg108/resources
28. Department of Health. *Commissioning pack for cardiac rehabilitation.* London: Department of Health, 2010. Available at: http://webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/Browsable/DH_117504
29. Monitor. 2016/2017 *National tariff payment system.* London: NHS England Publications, 2016. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/509697/2016-17_National_Tariff_Payment_System.pdf
30. Department of Health. *Cardiac rehabilitation: Costing tool guidance.* London: Department of Health, 2010. Available at: http://www.cardiacrehabilitation.org.uk/docs/Cardiac%20Rehabilitation%20Costing%20Tool%20Guidance.pdf
31. National Institute for Health and Care Excellence. *Behaviour change: Individual approaches. PH49.* London: NICE, 2014. Available at: https://www.nice.org.uk/guidance/ph49
32. Dalal HM, Wingham J, Evans P, Taylor R, Campbell J. Home based cardiac rehabilitation could improve outcomes. *BMJ*. 2009;338(12, 1):1921.
33. Stafford L, Berk M, Jackson HJ. Are illness perceptions about coronary artery disease predictive of depression and quality of life outcomes? *Journal of Psychosomatic Research.* 2009;66(3):211-20.
34. French DP, Cooper A, Weinman J. Illness perceptions predict attendance at cardiac rehabilitation following acute myocardial infarction: A systematic review with meta-analysis. *Journal of Psychosomatic Research.* 2006;61:757-67.
35. Furze G, Lewin R, Murberg TA, Bull P, Thompson D. Does it matter what patients think? The relationship between changes in patients' beliefs about angina and their psychological and functional status. *Journal of Psychosomatic Research.* 2005;59:323-9.
36. Institute of Medicine. *Priority areas for national action: Transforming healthcare quality.* Washington, DC: National Academies Press, 2003:52.
37. Moser DK, Dracup K. Role of spousal anxiety and depression in patients' psychosocial recovery after a cardiac event. *Psychosomatic Medicine.* 2004;66:527-32.
38. Franks M, Stephens MAP, Rook KS, Franklin BA, Keteyian SJ, Artinian NT. Spouses' provision of health-related support and control to patients participating in cardiac rehabilitation. *Journal of Family Psychology.* 2006;20(2):311-8.
39. Wood DA, Kotseva K, Connolly S, Jennings C, Mead A, Jones J, Holden A, De Bacquer D, Collier T, De Backer G, Faergeman O, on behalf of EUROACTION Study Group. Nurse-coordinated multidisciplinary, family-based cardiovascular disease prevention programme (EUROACTION) for patients with coronary heart disease and asymptomatic individuals at high risk of cardiovascular disease: a paired, cluster-randomised controlled trial. *Lancet*. 2008;371:1999-2012.
40. Knowles MS, Holton EF, Swanson RA. *The Adult Learner: The definitive classic in adult education and human resource development (8th ed.)*. Burlington, MA: Elsevier, 2015.
41. British Association for Cardiovascular Prevention and Rehabilitation Exercise Professionals Group (BACPR-EPG). *Position statement: Essential competences and minimum qualifications required to lead the exercise component in early cardiac rehabilitation.* 2011. Available at http://www.bacpr.com.
42. Association of Chartered Physiotherapists in Cardiac Rehabilitation (ACPICR). *ACPICR standards for physical activity and exercise in the cardiac population.* 2015. Available at: http://acpicr.com/publications
43. American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR). *Guidelines for Cardiac Rehabilitation and Secondary Prevention Programs. 5th ed.* Champaign, IL: Human Kinetics, 2013.

44. Balady GJ, Williams MA, Ades PA, Bittner V, Comoss P, Foody JM, Franklin B, Sanderson B, Southard D. Core components of cardiac rehabilitation/secondary prevention programs: 2007 update: a scientific statement from the American Heart Association Exercise, Cardiac Rehabilitation, and Prevention Committee, the Council on Clinical Cardiology; the Councils on Cardiovascular Nursing, Epidemiology and Prevention, and Nutrition, Physical Activity, and Metabolism; and the American Association of Cardiovascular and Pulmonary Rehabilitation. *Circulation*. 2007;115(20):2675-82.
45. Piepoli MF, Corrà U, Adamopoulos S, et al., on behalf of the Cardiac Rehabilitation Section of the European Association for Cardiovascular Prevention and Rehabilitation (EACPR). Secondary prevention in the clinical management of patients with cardiovascular diseases. Core components, standards and outcome measures for referral and delivery: A Policy Statement from the Cardiac Rehabilitation Section of the EACPR. Endorsed by the Committee for Practice Guidelines of the European Society of Cardiology. *European Journal of Preventive Cardiology*. 2014;21(6):664-81.
46. Resuscitation Council (UK). *Requirements for resuscitation training and facilities for supervised cardiac rehabilitation programmes.* 2013. Available at: https://www.resus.org.uk/cpr/requirements-for-resuscitation-training/
47. British Nutrition Foundation. Obesity: *The report of the British Nutrition Foundation Task Force.* London: Blackwell Science, 1999.
48. Tylka TL, Annunziato RA, Burgard D, Daníelsdóttir S, Shuman E, Davis C, Caolgero RM. Weight-inclusive versus weight-normative approach to health: evaluation the evidence for prioritizing well-being over weight loss. *Journal of Obesity.* 2014;Article ID 983495. Available at: http://dx.doi.org/10.1155/2014/983495
49. National Institute for Health and Care Excellence. *Myocardial infarction: cardiac rehabilitation and prevention of further cardiovascular disease. CG172.* London: NICE, 2013. Available at: https://www.nice.org.uk/guidance/cg172
50. National Institute for Health and Care Excellence. Unstable Angina and NSTEMI: the early management of unstable angina and non-ST-segment-elevation myocardial infarction. CG94, Updated 2013. London: NICE, 2010. Available at: www.nice.org.uk/CG94
51. JBS3 Board. Joint British Societies' consensus recommendations for the prevention of cardiovascular disease (JBS3). *Heart*. 2014;100(Suppl 2):ii1-ii67. Available at: http://heart.bmj.com/content/100/Suppl_2/ii1.short
52. Shaw K, Gennat H, O'Rourke P, Del Mar C. Exercise for overweight or obesity. *Cochrane Database of Systematic Reviews.* 2006;Oct 18(4):CD003817.
53. Aubin H-J, Farley A, Lycett D, Lahmek P, Aveyard P. Weight gain in smokers after quitting cigarettes: meta-analysis. *BMJ*. 2012;345:e4439. Available from: https://doi.org/10.1136/bmj.e4439
54. National Institute for Health and Care Excellence. *Obesity guidance on the prevention, identification, assessment and management of overweight and obesity in adults and children. CG43.* London: NICE, 2006, updated 2013. Available at: http://www.nice.org.uk/CG43NICE
55. NHS Centre for Smoking Cessation and Training (NCSCT). *NCSCT training.* Available at: http://www.ncsct.co.uk/training
56. Rice VH, Stead LF. Nursing interventions for smoking cessation. *Cochrane Database of Systematic Reviews.* 2008(1):Art. No.: CD001188. DOI: 10.1002/14651858.CD001188.pub3
57. National Institute for Health and Clinical Excellence. *Brief interventions and referral for smoking cessation: guidance. PH1*. London: NICE, 2006. Available at: http://guidance.nice.org.uk/PH1
58. National Institute for Health and Care Excellence. *Smoking cessation services in primary care, pharmacies, local authorities and workplaces, particularly for manual working groups, pregnant women and hard to reach communities. PH10*. London: NICE, 2008, Updated 2013. Available at: http://guidance.nice.org.uk/PH10
59. McEwen A, McRobbie H, on behalf of the National Centre for Smoking Cessation and Training (NCSCT) and Public Health England. *Electronic cigarettes: A briefing for stop smoking services.* Dorchester: NCSCT, 2016. Available at: http://www.ncsct.co.uk/publication_electronic_cigarette_briefing.php
60. Shibeshi WA, Young-Xu Y, Blatt CM. Anxiety worsens prognosis in patients with coronary artery disease. *Journal of the American College of Cardiology.* 2007;49:2021-7.
61. Dickens C, McGowan L, Percival C, Tomenson B, Cotter L, Heagerty A, Creed F. New onset depression following myocardial infarction predicts cardiac mortality. *Psychosomatic Medicine.* 2008;70:450-5.
62. Kronish IM. Persistent depression affects adherence to secondary prevention behaviors after acute coronary syndromes. *Journal of General Internal Medicine.* 2006;21:1178-83.
63. Mookadam F, Arthur H. Systematic overview: social support and its relationship to morbidity and mortality after acute myocardial infarction. *Archives of Internal Medicine.* 2004;164(14):1514-8.
64. Joekes K, Maes S, Warrens M. Predicting quality of life and self-management from dyadic support and overprotection after myocardial infarction. *British Journal of Health Psychology*. 2007;12:473-89.
65. National Institute for Health and Care Excellence. *Depression in adults with a chronic condition. CG 91*. London: NICE, 2009. Available at: https://www.nice.org.uk/guidance/CG91

66. National Institute for Health and Care Excellence. *Common mental health problems: Identification and pathways to care. CG123*. London: NICE, 2011. Available at: https://www.nice.org.uk/guidance/cg123
67. Whalley B, Rees K, Davies P, Bennett P, Ebrahim S, Lui Z, West R, Moxham T, Thompson DR, Taylor RS. Psychological interventions for coronary heart disease. *Cochrane Database of Systematic Reviews.* 2011;10(8):CD002902. Available at: http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD002902.pub3/full
68. Træen B, Olsen S. Sexual dysfunction and sexual well-being in people with heart disease. *Sexual and Relationship Therapy.* 2007;22:193-208.
69. Günzler C, Kriston L, Harms A, Berner MM. Association of sexual functioning and quality of partnership in patients in cardiovascular rehabilitation-a gender perspective. *The Journal of Sexual Medicine.* 2009;6(1):164-74.
70. Steinke EE, Jaarsma T, Barnason SA, Byrne M, Doherty S, Dougherty CM, Bengt F, Kautz DD, Mårtensson J, Mosack V, Moser DK, 2013;128:2075–96 C. Sexual counselling for individuals with cardiovascular disease and their partners: a consensus document from the American Heart Association and the ESC Council on Cardiovascular Nursing and Allied Professions (CCNAP). *Circulation*. 2013;128(18):2075-96. Available at: https://doi.org/10.1161/CIR.0b013e31829c2e53
71. Tra Levine GN, Steinke EE, Bakaeen FG, Bozkurt B, Cheitlin MD, Conti JB, Foster E, Jaarsma T, Kloner RA, Lange RA, Lindau ST, Maron BJ, Moser DK, Ohman EM, Seftel AD, Stewart WJ. Sexual activity and cardiovascular disease: a scientific statement from the American Heart Association. *Circulation*. 2012;125(8):1058-72. Available at: https://doi.org/10.1161/CIR.0b013e3182447787
72. Steinke EE, Swan JH. Effectiveness of a videotape for sexual counseling after myocardial infarction. *Research in Nursing and Health.* 2004;27:269-80.
73. National Institute for Health and Care Excellence. *Hypertension. CG127.* London: NICE, 2011, Updated 2016. Available at: http://guidance.nice.org.uk/CG127
74. National Institute for Health and Care Excellence. *Cardiovascular disease: risk assessment and reduction, including lipid modification: CG181.* London: NICE, 2014, Updated 2016. Available at: https://www.nice.org.uk/guidance/cg181
75. National Institute for Health and Care Excellence. *Type 2 diabetes in adults: management. NG28*. London: NICE, 2015, Updated 2016. Available at: https://www.nice.org.uk/guidance/ng28
76. National Institute for Health and Care Excellence. *Implantable cardioverter defibrillators and cardiac resynchronisation therapy for arrythmias and heart failure: TA314.* London: NICE, 2014. Available at: https://www.nice.org.uk/guidance/ta314
77. National Institute for Health and Care Excellence. *Chronic heart failure: management of chronic heart failure in adults in primary and secondary care. CG108.* London: NICE, 2010. Available at: http://www.nice.org.uk/CG108
78. Byrne M, Walsh J, Murphy AW. Secondary prevention of coronary heart disease: Patient beliefs and health-related behaviour. *Journal of Psychosomatic Research.* 2005;58:403-15.
79. Fitchet A, Doherty PJ, Bundy C, Bell W, Fitzpatrick AP, Garratt CJ. Comprehensive cardiac rehabilitation programme for implantable cardioverter-defibrillator patients: a randomised controlled trial. *Heart*. 2003;89(2):155-60.
80. Lewin RJ, Frizelle DJ, Kaye GC. A rehabilitative approach to patients with internal cardioverter-defibrillators. *Heart*. 2001;85(4):371-2.
81. Doherty P, Salman A, Furze G, Dalal H, Harrison A. Does cardiac rehabilitation meet minimum standards: an observational study using UK national audit? *Open Heart.* 2017;3(e0005) Available at: http://openheart.bmj.com/content/4/1/e000519

Appendix 2: Acknowledgements

The membership of the BACPR Standards & Core Components development groups is representative of many UK professional associations and institutions with all members working within the cardiovascular rehabilitation field. The individual members of the development group, working under the auspices of the BACPR, expressed no conflict of interests regarding the material contained in this document.

We are also grateful to our affiliated colleagues in cardiovascular care, who have participated in the consultation process and provided important feedback.

The BACPR Standards and Core Components (3rd Edition) Primary Writing Group

Prof. John Buckley (Exercise Physiologist; BACPR Past President), Prof. Patrick Doherty (Physiotherapist; BACPR Past President), Prof. Gill Furze (Nurse; BACPR Past President), Dr Jenni Jones (Physiotherapist; BACPR Past President), Sally Hinton (Physiotherapist; BACPR Executive Director), Jo Hayward (Nurse; BACPR Council Member), Dr Joe Mills (Consultant Cardiologist, BACPR President), Dr Linda Speck (Consultant Clinical Health Psychologist).

The BACPR Standards and Core Components (3rd Edition) Development Group

Dr Alison Atrey	Dietitian, England
Dr Molly Byrne	Senior Lecturer, Ireland
Prof John Buckley	Exercise Physiologist, England
Jacqueline Cliff	Nurse, Wales
Dr Aynsley Cowie	Physiotherapist, Scotland
Prof Patrick Doherty	Physiotherapist, England
Prof Gill Furze	Nurse, England
Sally Hinton	Physiotherapist, England
Jo Hayward	Nurse, England
Dr Catriona Jennings	Nurse, England
Dr Jenni Jones	Physiotherapist, England
Louise Jopling	Nurse, England
Dr Joe Mills	Consultant Cardiologist, England
Dr Linda Speck	Consultant Clinical Health Psychologist, Wales

The BACPR Standards and Core Components (2nd Edition) Development Group

Prof John Buckley	Exercise Physiologist, England
Kathryn Carver	Nurse, England
Wendy Churchouse	Nurse, Wales
Dr Susan Connolly	Consultant Cardiologist, England
Prof Patrick Doherty	Physiotherapist, England
Prof Gill Furze	Nurse, England
Sally Hinton	Physiotherapist, England
Dr Jenni Jones	Physiotherapist, England
Prof Bob Lewin	Clinical Psychologist, England
Alison Mead	Dietitian, England
Paul Smith	Nurse, Wales
Dr Linda Speck	Consultant Clinical Health Psychologist, Wales
Dr Iain Todd	Consultant Medical Rehabilitation Physician, Scotland
Charlotte-Anne Wells	Occupational Therapist, Northern Ireland

The original 2007 Development Group

Chetali Agrawal	Dietitian, England
Linda Binder	Nurse, NHS Heart Improvement Programme, England
Prof Patrick Doherty	Physiotherapist, England
Geoffrey Dorrie	BACR Phase IV and service user representative, England
Bernie Downey	Nurse, Northern Ireland
Linda Edmunds	Nurse, Wales
Judith Edwards	Nurse, England
Gillian Fitnum	Nurse, England
Dr Dorothy Frizelle	Clinical Psychologist, England
Shirley Hall	Nurse, British Heart Foundation
Sally Hinton	Physiotherapist, England
Prof Bob Lewin	Clinical Psychologist, England
Carol Over	Occupation Therapist, Wales
Ann Ross	Physiotherapist, Scotland
Dr Malcolm Walker	Consultant Cardiologist, England
Prof David Wood	Consultant Cardiologist, England

Anticipated review

These standards replace the previously published standards of 2012. We anticipate a further review of these standards in 2021.

Notes:

BACPR
BRITISH ASSOCIATION
FOR CARDIOVASCULAR
PREVENTION AND REHABILITATION

"Promoting excellence in cardiovascular disease prevention and rehabilitation"

Our Mission statement is:

To support health professionals in the development, delivery and assessment of evidence-based, individualised programmes of prevention and rehabilitation, which have been appropriately funded and which are accessed both by individuals with established Cardiovascular Disease (CVD) and those with significant CVD risk factors.

The British Association for Cardiovascular Prevention and Rehabilitation

British Cardiovascular Society

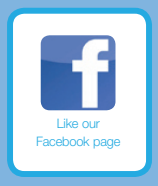
9 Fitzroy Square, London, W1T 5HW

Email: bacpr@bcs.com

Direct Line: +44 (0)20 7380 1919

Fax: +44 (0)20 7388 0903

Website: www.bacpr.com



Registered Charity Number 1135639

Company limited by guarantee. Registered in England 5086964