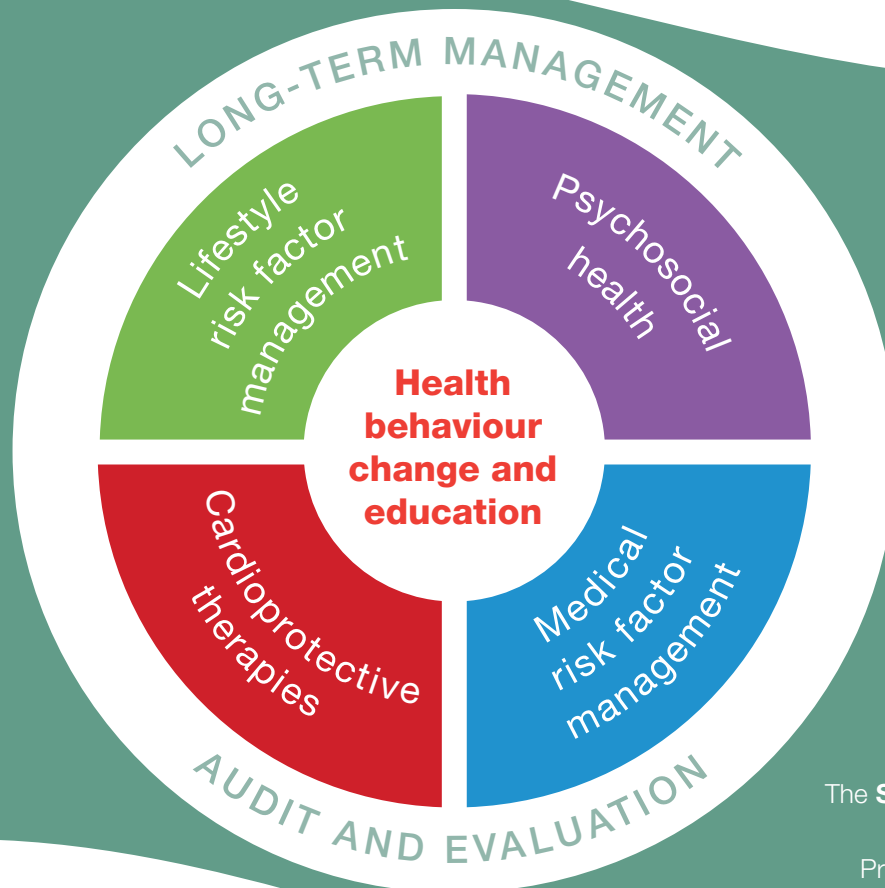


The **BACPR Standards and Core Components** for
**Cardiovascular Disease Prevention
and Rehabilitation 2012**

(2nd Edition)



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

Supported by



Foreword

There are an estimated 2.5 million people living with heart disease in the United Kingdom (UK). Cardiac rehabilitation is one of the best researched examples of long term condition management. It is a clinically and cost effective intervention that results in improved outcomes for the patient with heart disease.

The second edition of the BACPR Standards and Core Components for Cardiovascular Disease Prevention and Rehabilitation sets out the seven core standards that patients, health care professionals and commissioners should expect from a high quality cardiac rehabilitation programme.

Prevention, behaviour change and education are at the heart of these new standards. Approaching cardiovascular disease as a long term condition requires an integrated approach that enables the patient and their family to manage the condition with the support of a proactive and supported health care system. The development of the multidisciplinary team approach adopted by the best of cardiac rehabilitation schemes across the UK is essential to delivering this integrated approach.

The publication of these standards is an achievable and credible consensus statement from the British Association for Cardiovascular Prevention and Rehabilitation (BACPR) of excellence in cardiac rehabilitation. The standards complement a suite of guidelines and reports, which include the NICE commissioning guide on cardiac rehabilitation and the Department of Health in England's commissioning pack on cardiac rehabilitation; as well as relevant guidelines and reports that apply to Scotland, Wales and Northern Ireland.

Audit and evaluation is an important inclusion in the new core standards. The British Heart Foundation (BHF) continues to be committed to support and fund the National Audit of Cardiac Rehabilitation (NACR). The most recent audit suggests that in 2009-10, only 42% of eligible patients across England, Wales and Northern Ireland took part in cardiac rehabilitation. The BACPR's new standards will help ensure that more patients take part, through the provision of excellence in cardiac rehabilitation, across the four nations of the UK.

Cardiac rehabilitation is effective in improving the cost effective use of NHS resources. The NHS is currently facing a considerable financial challenge, and we are grateful to the BACPR for their timely publication of these standards.

Dr Mike Knapton, Associate Medical Director, BHF

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Summary from the Primary Writing Group

This second edition of the *BACPR Standards and Core Components for Cardiovascular Disease Prevention and Rehabilitation* builds on the success of the original 2007 version by incorporating the latest developments in the clinical evidence base for cardiac rehabilitation. A corresponding aim is to align these new Standards with the wider agenda across the UK nations for providing quality programmes that are underpinned by appropriate service contracts or commissioning agreements and other relevant national guidance. There are seven standards together with seven core components, which aim to ensure programmes are clinically effective, cost effective and achieve sustainable health outcomes for patients.

These standards and core components support an integrated approach to the prevention and rehabilitation of cardiovascular disease as the foundation of every cardiac rehabilitation programme. The illustrative model of the seven core components represents health behaviour change and education as central and integral to all of the other components, as well as equal emphasis on the delivery of care in lifestyle risk factor management, psychosocial health, medical risk factor management and cardioprotective therapies. On programme completion it is imperative for effective long-term management that each service has defined pathways for continuity of care that ultimately leads to the best possible levels of self-management and secondary prevention. Audit and evaluation is given major importance; now being included as both a standard and core component.

Cardiac rehabilitation is effective and value for money; nevertheless current service provision and uptake varies considerably across the country. The application of these standards aims to reduce this variation in care whilst effectively increasing both service uptake and programme completion. Early assessment and goal setting together with early programme commencement are emphasised in recognition of the associated benefits in improved service uptake and potential reductions in hospital readmissions. The provision of a menu of best practice approaches run by a skilled multidisciplinary team in strong partnership (integration) between primary and secondary care is essential to improve uptake and completion rates of individualised and patient-centred programmes.

Meeting these standards requires programmes to be properly funded. Delivery of the core components involves investment in an integrated multidisciplinary team of professionally qualified staff with the necessary knowledge, skills and competences. The considerable collective expertise of a specialist cardiac rehabilitation team also provides the potential to evolve existing typical programmes (for people following acute myocardial infarction or revascularisation procedures, and those with heart failure) to serve a far wider population; those presenting with other established forms of cardiovascular disease (e.g. peripheral arterial disease) or people at high multifactorial risk or with diabetes. All these groups can benefit from using the same integrated delivery of care outlined within these standards and core components, and in doing so, can provide opportunities for the growth, development and security for current services to become centres for cardiovascular health and well-being.

These standards and core components are aligned with key documents recently published by the Department of Health (Cardiac Rehabilitation Commissioning Pack) and the National Institute of Health and Clinical Evidence (Service Commissioning Guidelines). The BACPR consider these relevant to designing and managing services across the United Kingdom. Moreover, these standards will be accompanied by defined performance indicators which will subsequently inform future policy of the composition and associated costs of the most effective care.

By adopting these standards and core components, our shared goal of providing high quality care to our patients is realisable and in line with the BACPR's overall mission:

“Promoting excellence in cardiovascular disease prevention and rehabilitation”

1. Introduction

The BACPR has defined seven standards and seven core components in support of promoting high quality care in the provision of structured programmes for cardiovascular disease (CVD) prevention and rehabilitation nationwide. Primarily, these standards and core components aim to ensure that all service providers, health professionals and service users, together with service commissioners where relevant, understand the requirements for providing cardiac rehabilitation that is both clinically and cost effective, leads to appropriate patient satisfaction and results in an improved sense of well-being. These standards and core components also extend to any structured service aimed at improving cardiovascular health.

With respect to the different health services that are in place among the four countries of the UK, these BACPR **Standards and Core Components** also aim to provide guidance that can be adapted to meet local needs and policies. Recognising that individual programmes throughout the UK face a future of various challenges, the aim is to move towards attaining the ultimate goal of having cardiac rehabilitation recognised as an obligatory, and not an optional or notional, element of any cardiovascular health care service.

1.1 Definition

There are many definitions of cardiac rehabilitation ^[1,2,3]. 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 seven core components for cardiovascular disease prevention and rehabilitation constitute the coordinated sum of activities.

In meeting these defined goals, all cardiac rehabilitation programmes should aim to offer a service that takes a multidisciplinary biopsychosocial approach in order to best influence uptake, adherence and long-term healthier living ^[4,5,6]. For each individual patient the involvement of a partner, other family member, carer, close friend (i.e. a significant supporting other) is also important.

1.2 Evidence

There is overwhelming evidence that comprehensive cardiac rehabilitation is associated with a reduction in both cardiac mortality (26-36%) and total mortality (13-26%) ^[7,8,9]. Secondary prevention, including blood pressure and cholesterol management and the prescription of cardioprotective medication also forms an integral part of an effective cardiac rehabilitation programme ^[10]. There is emerging evidence that cardiac rehabilitation is also associated with a reduction in morbidity, namely recurrent myocardial infarction, ^[9,10] and a 28-56% reduction in costly unplanned readmissions ^[11,12]. Cardiac rehabilitation improves functional capacity and perceived quality of life whilst also supporting early return to work and the development of self-management skills ^[13]. This makes cardiac rehabilitation one of the most clinically and cost-effective therapeutic interventions in cardiovascular disease management ^[14-18].

The emphasis now is moving towards early cardiac rehabilitation, commencing within two weeks of either discharge or diagnosis. Starting within this time frame has been shown to be both safe and feasible [19-22] as well as improving patient uptake and adherence [23]. The gains from early cardiac rehabilitation also include the potential to reduce unplanned readmissions early in the discharge period (within 30 days) thus yielding significant cost savings.

1.3 National and local factors for assuring quality

Quality assurance is ensured through an alliance at both local (e.g. commissioners, service providers and service users) and national level [15,18] together with participation in the National Audit for Cardiac Rehabilitation (NACR) [24] (Figure 1). This alliance assures quality by providing a set of nationally recognised standards with appropriate mechanisms for systematic measurement and monitoring of processes to ensure that services are fit for purpose.

Figure 1: Key alliances in assuring quality cardiac rehabilitation service delivery



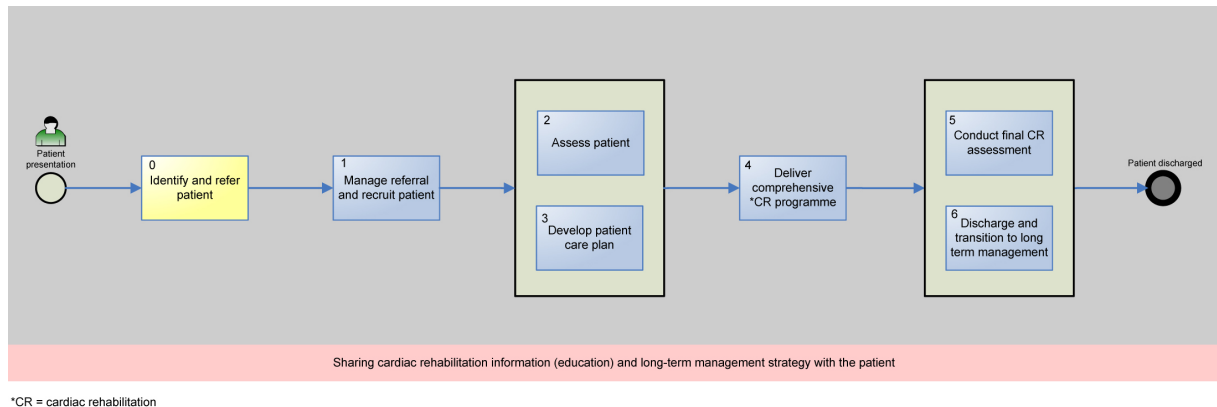
*National Health Associations as they apply to England, Scotland, Wales and Northern Ireland

1.4 Cardiac rehabilitation pathway of care

The Department of Health Commissioning Pack for Cardiac Rehabilitation [15] details a recommended seven stage (0-6) 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 is 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. It is important to recognise that care across this seven stage pathway may involve different healthcare settings and organisations. In the case of tertiary services, the repatriation of patients results in this pathway being more complex. In these instances there is a responsibility of the service provider on the completion of any stage to effectively communicate the patient's clinical status and individual needs prior to their transfer of care.

1. Introduction

Figure 2: Department of Health Commissioning Pack 0-6 Stage Patient Pathway of Care ^[15]



1.5 Cardiac rehabilitation as part of an integrated cardiology service

The position of cardiac rehabilitation as part of an integrated cardiology service, and its national priority is acknowledged ^[25,26]. It is the responsibility of every cardiologist and surgeon to recommend cardiac rehabilitation to all eligible patients as part of their treatment plan. Within programmes, the benefit to patients and cardiac rehabilitation services from having committed cardiologist support is well recognised. Furthermore, embedding cardiac rehabilitation within the work stream of Cardiovascular Networks has also been shown to be worthwhile ^[26].

1.6 Cost of cardiac rehabilitation

The costing of cardiac rehabilitation should include the delivery of all seven core components across the seven stages of the patient care pathway (Figure 2, section 1.4). Published guidance and audit data have provided a recommended cost-per-patient for cardiac rehabilitation ^[15,18,24], but greater detail is required in future modelling to show that all costs across the seven stages (Figure 2) are included. Current cost models that are linked with the previous BACR standards and core components may prove to be insufficient for future service needs. With improved mortality rates and accelerated discharge following acute events, prevention and rehabilitation programmes will need to be more equipped to help patients to better self-manage their condition and well-being; all of which is aimed at preventing subsequent cardiovascular events and unnecessary costly readmissions. Compared to the staffing costs associated with providing the preceding BACR standards and core components, costs per patient are expected to be greater to ensure an increased emphasis is placed on the following components: the need for appropriate psychology expertise to help teams support their patients' goals in both health behaviour change and psychosocial well-being; enhanced provision of diet and smoking cessation specialists; and increased medical risk factor management either through specially trained healthcare prescribers or more dedicated input from cardiologists or specialist physicians. It is also important to recognise costs will vary considerably depending on the complexity of the patient caseload as well as the individual patient needs, requirements and choices. The inclusion of audit and evaluation as both a standard and core component will ensure future intelligence as to the staff composition and associated costs of effective patient care. Guidance on funding to meet these costs is provided in section 2.7, Standard 7.

1.7 Considerations and key goals for the future

To date, there has been strong evidence supporting the contribution of cardiac rehabilitation to reduced mortality. With more than a decade since the implementation of health policies such as the National Service Framework for Coronary Heart Disease (CHD) [27], there have been major advances in cardiology practice. Together with improvements in public health, these advances have contributed to considerably lower mortality rates following acute coronary syndromes. As a consequence, the influence that cardiac rehabilitation post myocardial infarction or revascularisation may have on mortality is likely to reduce. However, the continued important benefits of influencing patient well-being in light of the growing number of surviving individuals living longer with the burden of cardiovascular disease should be emphasised. Improved survival coupled with an ageing population is leading to a growing number of people developing heart failure; a population known to benefit from cardiac rehabilitation. Simultaneously there are also increasing numbers of younger individuals identified at higher risk of developing cardiovascular disease and consequently a growing call for prevention based strategies [28].

Overall, and respecting the well established model of cardiac rehabilitation, there will be a growing need to include prevention and chronic disease management based strategies, to which these standards and core components can be applied, along with their use to facilitate the following key goals for the future:

- Ensuring referral of all eligible patients by cardiologists and/or specialist cardiovascular health care physicians to a prevention and rehabilitation programme as a standard (not optional) policy that is held in the same regard as the prescribing of cardioprotective medications.
- Tighter control of service audit (e.g. through NACR), not only to ensure these standards and core components are being met but to demonstrate that improved practice, clinical effectiveness and health outcomes have been achieved.
- The continuing of a national campaign that raises the profile and need for comprehensive integrated cardiovascular prevention and rehabilitation programmes to be properly funded as a cost-effective means and obligatory element to any modern cardiology or vascular health care service.

1.8 Supporting the implementation of these standards and core components

An immediate aim of the BACPR is to support the implementation of these standards and core components by:

- Providing an accompanying BACPR standards and core components Performance Indicators' Tool, which will be fully aligned to NACR and allow for the identification of programmes that meet these standards and core components. This tool can be used to inform future policy on the composition and costs associated with the most effective care.
- Providing purposeful resources for service development e.g. tool-kits for business case development, exemplary assessment frameworks and mechanisms for effective knowledge transfer and training.
- Developing competency frameworks that are fully supported by high quality education and training programmes and research where required.

2. The Standards

The seven standards for cardiac rehabilitation are:

1. The delivery of the seven core components employing an evidence-based approach.
2. An integrated multidisciplinary team consisting of qualified and competent practitioners, led by a clinical coordinator.
3. Identification, referral and recruitment of eligible patient populations.
4. Early initial assessment of individual patient needs in each of the core components, ongoing assessment and reassessment upon programme completion.
5. Early provision of a cardiac rehabilitation programme, with a defined pathway of care, which meets the core components and is aligned with patient preference and choice.
6. Registration and submission of data to the National Audit for Cardiac Rehabilitation (NACR).
7. Establishment of a business case including a cardiac rehabilitation budget which meets the full service costs.

2.1 Delivery of seven core components

STANDARD 1

The delivery of seven core components employing an evidence-based approach

- Each programme should deliver the seven essential core components to ensure clinically effective care and achieve sustainable health outcomes as presented in Section 3.

2.2 The multidisciplinary team

STANDARD 2

An integrated multidisciplinary team consisting of qualified and competent practitioners, led by a clinical coordinator

- Practitioners who lead each of the core components must be able to demonstrate that they have appropriate training, professional development, qualifications, skills and competency for the component(s) for which they are responsible.
- The team must include a senior clinician who has responsibility for coordinating, managing and evaluating the service.
- The delivery of the core components requires expertise from a range of different professionals, as listed below, working within their scope of practice. The composition of each team may differ but collectively the team must have the necessary knowledge, skills and competences to meet the standards and deliver all the core components. The team may include the following:
 - cardiologist /community cardiologist /physician or general practitioner with special Interest
 - nurse specialist
 - physiotherapist
 - dietitian
 - psychologist
 - exercise specialist
 - occupational therapist
 - clerical administrator.
- The cardiac rehabilitation team should actively engage and link effectively with the wider team (e.g. general practitioners, practice nurses, cardiovascular disease specialist nurses, sports and leisure instructors, pharmacists 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.

2.3 Identification, referral and recruitment

STANDARD 3

Identification, referral and recruitment of eligible patient populations

- Programmes should aim to offer cardiac rehabilitation to the following patient groups irrespective of age, sex, ethnic group and clinical condition. Inclusion and re-inclusion to cardiac rehabilitation also apply following any stepwise alteration in any of the conditions listed below:
 - acute coronary syndrome
 - following revascularisation
 - stable heart failure
 - stable angina
 - following implantation of cardiac defibrillators and resynchronisation devices
 - heart valve repair/replacement
 - heart transplantation and ventricular assist devices
 - grown-up congenital heart disease (GUCH)
 - other atherosclerotic diseases e.g. peripheral arterial disease, transient ischaemic attack.
- 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 cardiac rehabilitation services as to ensure all patient groups ultimately benefit from this life-saving intervention.
- It is recognised that asymptomatic people, including those with diabetes, identified at high cardiovascular risk require the same professional lifestyle intervention, and appropriate risk factor and therapeutic management. Existing cardiac rehabilitation services are in a strong position to evolve to provide care to include a wider spectrum of patient groups.
- An important first step in offering a cardiac rehabilitation service is to ensure that an agreed and coordinated patient referral and/or recruitment process is established so that all eligible patients are identified and invited to participate ^[29].
- In order to maximise service uptake the initial assessment should be from a member of the cardiac rehabilitation team as part of in-patient care for those admitted to hospital ^[29,30].

2.4 Assessment

STANDARD 4

Early initial assessment of individual patient needs in each of the core components, ongoing assessment and reassessment upon programme completion

- Cardiac rehabilitation should include early assessment of individual patient needs in each of the core components, ongoing assessment throughout their programme and reassessment upon programme completion ^[15].
- Patients should be contacted within 3 operational days of receipt of referral to determine whether they are willing and/or clinically ready to attend an assessment (ideally within 2 weeks of discharge or diagnosis in the case of those not admitted to hospital).
- A mechanism of re-offer and re-entry should be put in place where patients initially decline or drop-out.
- Whilst the initial assessment should commence within two weeks it is only deemed complete when a formal assessment of lifestyle risk factors (smoking, diet and physical activity), psychosocial health status, medical risk factors (blood pressure, lipids and glucose) and use of cardioprotective therapies has taken place.
- The initial assessment should include assessment of the patient's needs across all the core components, using validated measures which are culturally sensitive and also take account of associated co-morbidities.
- The assessment should 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 should include formal risk stratification for exercise utilising all relevant patient information (e.g. LVEF, history of arrhythmia, symptoms, functional capacity).
- The assessment should include discussion and agreement of goals to be achieved during cardiac rehabilitation with a written care plan and a copy made available to the patient.
- Patients should receive on-going assessment throughout their cardiac rehabilitation programme and a regular review of goals with adjustments agreed and documented where required.
- Programme completion is defined by completion of formal assessment at the end of programme of lifestyle risk factors as relevant (smoking, diet and physical activity), psychosocial health status, medical risk factors (blood pressure, lipids and glucose) and use of cardioprotective therapies together with patient satisfaction.
- Reassessment should also be carried out upon completion of the cardiac rehabilitation programme to determine achievements of goals during the programme and to also formulate plans for transition into long-term management.

2.5 Programme provision

STANDARD 5

Early provision of a cardiac rehabilitation programme, with a defined pathway of care, which meets the core components and is aligned with patient preference and choice

- Early provision of a cardiac rehabilitation programme can be ensured by early assessment (refer to 2.4) although this may vary depending on the patient's clinical status. After assessment of the patient's needs in terms of the core components, it is important to ensure a defined pathway of care which meets these needs but also aligns with patient preference and choice.
- A programme begins the moment patient goals have been identified and management strategies are underway. Consequently patients should be engaging in relevant aspects of the programme within 2 weeks of discharge or diagnosis in the case of those not admitted to hospital.
- A menu-based approach, delivered in easily accessible venues, provides for the greatest chance of uptake and adherence to the cardiac rehabilitation programme. Choice in terms of venue (including home) and time (e.g. early mornings and evenings) are examples of a menu-based approach on how to best meet a patient's individual needs.

2.6 The National Audit for Cardiac Rehabilitation

STANDARD 6

Registration and submission of data to the National Audit for Cardiac Rehabilitation (NACR)

- Every cardiac rehabilitation service should register their programme with the NACR ^[24] and submit data which will be analysed for the annual report. The main aim of the audit is to demonstrate that cardiac rehabilitation programmes are achieving the desired clinical outcomes and to allow for local evaluation and national comparison.
- Formal audit and evaluation of the cardiac rehabilitation service should include individual data on clinical outcomes and patient experience and satisfaction as well as data on service performance.
- Funded administrative time is required to ensure programmes can contribute to NACR.
- It is acceptable to upload to NACR via compatible third party software.

2.7 Resources and financial management

STANDARD 7

Establishment of a business case including a cardiac rehabilitation budget which meets the full service costs

- Every cardiac rehabilitation service should operate from a robust business case, based on local population need and agreed service outcomes with appropriate contractual arrangements between commissioners or other funding bodies and providers.
- Cardiac rehabilitation services should be appropriately funded and adequately resourced to ensure that they are capable of meeting and delivering these standards and core components.
- The business case should account for professionally qualified staff requiring dedicated time to serve their rehabilitative function.
- Funding, whether from a commissioning-based source, local or nationally-based tariffs or other health-service funding sources (e.g. acute care and hospital service tariffs and primary care resources) needs to be coordinated in order for the cardiac rehabilitation service to utilise funds from different sources.
- Resource and financial management for a cardiac rehabilitation service should be led by a senior member of the team, e.g. the cardiac rehabilitation co-ordinator.
- Coordination is required with NHS data analysts at a local level in order to successfully draw on all available funding, and to identify any savings arising from reduced hospital readmissions.
- Funding of a service should reflect the following:
 - staff costs for the multidisciplinary team, plus additional referral costs (if needed)
 - non-pay costs e.g. venue, IT, equipment, patient education material, team training and professional development
 - any capital development project funds, including those from significant charitable donations
 - other applicable costs – transport, pathology, interpreting services etc.

3. The Core Components

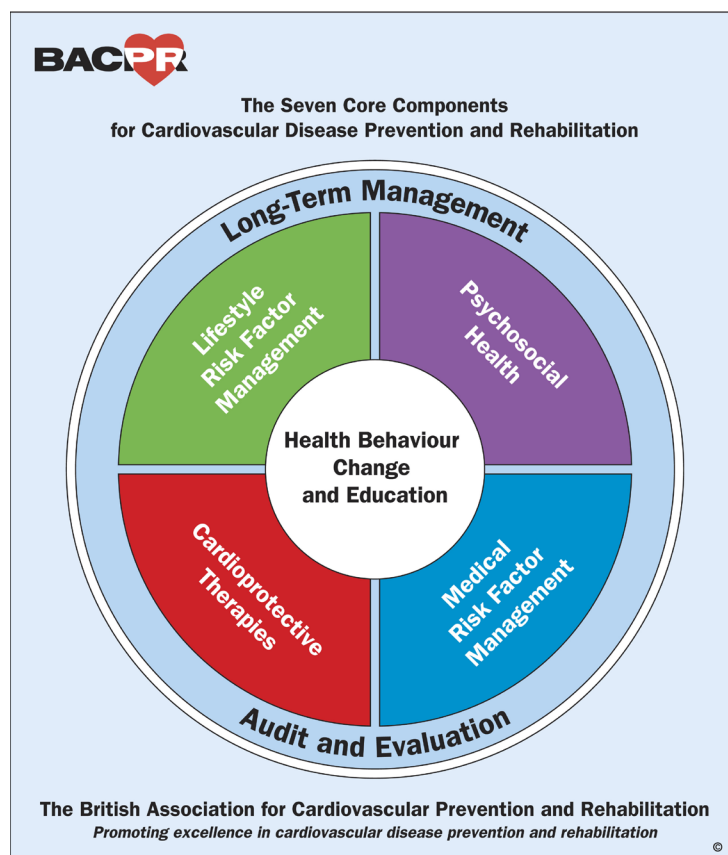
A key aim of cardiac rehabilitation, through the core components, is not only to improve physical health and quality of life but also to equip and support people to develop the necessary skills to successfully self manage. The delivery of cardiac rehabilitation should adopt a biopsychosocial evidence-based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

Figure 3 illustrates the seven core components, which include:

1. Health behaviour change and education
2. Lifestyle risk factor management
 - Physical activity and exercise
 - Diet
 - Smoking cessation
3. Psychosocial health
4. Medical risk factor management
5. Cardioprotective therapies
6. Long-term management
7. Audit and evaluation

Practitioners who lead each of the core components must be able to demonstrate that they 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 cardiac rehabilitation.

3.1.1 Health behaviour change

To facilitate effective behaviour change, cardiac rehabilitation services should ensure:

- The use of health behaviour change interventions 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 cardiac rehabilitation ^[32,33].
- They address any cardiac or other misconceptions (including any about cardiac rehabilitation) and illness perceptions that lead to increased disability and distress ^[34-36].
- 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 progress and advise on further goal setting ^[37].
- 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 cardiac rehabilitation activities whenever possible, to maximise patient recovery and health behaviour change, whilst also addressing their own health behaviours ^[38-40].

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 (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 group dynamics.
- Education should 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 ^[31].

The educational component should be delivered using high quality teaching methods with the best available resources to enable individuals to learn about their condition and management.

3. The Core Components

Cardiac rehabilitation education should be tailored to individuals and their needs and may include:

- pathophysiology and symptoms
- physical activity, diet and smoking
- weight management
- other risk factors: blood pressure, lipids and glucose
- psychological/emotional self-management
- social factors and activities of daily living
- occupational/vocational factors
- sexual dysfunction
- pharmaceutical, surgical interventions and devices
- cardiopulmonary resuscitation
- additional information, as specified in other components.

3.2 Lifestyle risk factor management

Physical activity and exercise coupled with a healthy diet and avoidance of obesity and smoking 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 be achieved through evidence-based health behaviour change approaches led by specialists in collaboration with the multidisciplinary team.

3.2.1 Physical activity and exercise

- Staff leading the exercise component of cardiac rehabilitation should be appropriately qualified, skilled and competent ^[41].
- Best practice standards and guidelines for physical activity and exercise prescription should be used ^[42-44].
- Prior to participating in the exercise/activity component of cardiac rehabilitation all patients should undergo assessment, including baseline assessment of fitness/functional capacity and risk stratification ^[42]. This will determine the appropriate:
 - Exercise prescription, activities of daily living (ADL) guidance and support
 - Staffing levels and skills ^[45]; including indication for level of resuscitation training ^[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. 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 Diet

- Staff leading the dietary component of cardiac rehabilitation should be appropriately qualified, skilled and competent.
- All patients should have a baseline assessment of their dietary habits, including concordance with a cardioprotective diet and measurement of their weight, body mass index and waist circumference.
- The focus should be on making healthy dietary changes, correcting misconceptions about diet, health and avoidance of weight cycling [47]. 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 [16,17,48].
- Weight management may form an important component in cardiac rehabilitation and includes weight gain (e.g. in debilitated patients), weight maintenance (e.g. in those who have recently quit smoking or those with heart failure) or weight loss. Weight loss, where appropriate and in relation to excess fat, is best achieved through a combination of increased physical activity and reduced caloric intake [49].
- It may be appropriate to support weight loss with pharmacotherapy [50].

3.2.3 Smoking cessation and relapse prevention

Staff leading the smoking* cessation and relapse prevention component of cardiac rehabilitation should be appropriately qualified, skilled and competent in keeping with the NHS Centre for Smoking Cessation and Training [51].

- Current smoking status should be established in all patients. History of tobacco use and past quit attempts should be assessed. In current smokers, frequency and quantity of tobacco use, readiness to quit and a measure of nicotine dependence should be assessed, together with identifying any psychological co-morbidities.
- Every effort should be made to help individuals to stop smoking and prevent relapse. Patients should receive personalised advice, counselling and support to stop smoking including access to smoking cessation services and appropriate pharmacological support.
- The aim is to achieve long-term abstinence from tobacco using best practice standards and guidelines [52-54].

* Also includes other tobacco use such as chewing.

3.3 Psychosocial health

People taking part in cardiac rehabilitation may have many different emotional issues, and a comprehensive, holistic assessment is crucial to achieving the desired outcomes. Anxiety and depression, if not treated or managed, can lead to poor cardiac rehabilitation outcomes [55-57].

- Staff leading the psychosocial component should be appropriately qualified, skilled, and competent.
- All patients should undergo a valid assessment, including:
 - assessment of anxiety and depression (using an appropriate tool)
 - assessment of other relevant psychological factors including illness perceptions and self-efficacy for health behaviour change
 - assessment of quality of life (using an appropriate tool).

3. The Core Components

- Individuals with clinical levels of anxiety or depression, or those with signs of severe and enduring mental illness, should have access to appropriately trained psychological practitioners [58,59].
- Services should also help patients to develop awareness of ways in which psychological factors affect physical health, including illness perceptions, stress awareness and development of stress management skills.
- Attention should be paid to social support, as social isolation or lack of social support is associated with increased cardiac mortality [60] whereas overprotection may adversely affect quality of life [61].
- It is also important to consider vocational advice and rehabilitation/financial implications and to establish an agreed referral pathway to appropriate support and advice.

3.4 Medical risk factor management

- Staff leading the medical risk factor component of cardiac rehabilitation 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) should be used [16,48,62-65].
- The initial assessment should include measurement of blood pressure, lipids and glucose.
- During the cardiac rehabilitation programme, these risk factors should be regularly monitored with the aim of helping the individual to reach the targets defined by national guidelines by programme completion [16,48,62-65].
- Cardiac 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 through liaison with an appropriate healthcare professional (e.g. cardiologist, primary care physician).
- Maintaining guideline levels of blood pressure and glucose is also important for safe exercise.

3.5 Cardioprotective therapies

Cardioprotective therapies include medication and implantable devices.

- Staff leading this component of cardiac rehabilitation should be appropriately qualified, skilled and competent.
- Best practice standards and guidelines should be used [42,66,67].
- The initial assessment should include medication use (dose and adherence) and device settings.

3.5.1 Cardioprotective medication

Current use of cardioprotective medication should be assessed (including adherence) with the aim of ensuring uptitration of medication during the programme so that evidence-based dosages are achieved. Patients' beliefs about medication should also be assessed as this affects adherence to drug regimens [68].

Key cardioprotective medications currently include:

- anti-platelet therapy
- lipid-lowering therapies
- beta-blockers (Post myocardial infarction)
- ACE inhibitors/Angiotensin receptor blockers/aldosterone antagonists
- calcium channel blockers
- anticoagulants
- diuretics.

3.5.2 Implantable devices

These devices may include implantable cardiac defibrillators and/or cardiac resynchronisation therapy. The use of devices can have an impact on psychological, physical function and exercise ability which should be considered within the individualised programme and may require additional expertise ^[42,69,70].

Liaison with specialist cardiac services is important (e.g. arrhythmia nurse specialist, electrophysiologist and cardiac physiologist). Cardiac rehabilitation provides an opportunity to identify patients who may benefit from an implantable device ^[66].

3.6 Long-term management

By the end of the cardiac rehabilitation programme the patient should have:

- undergone assessments identified in Sections 2.4 and 3.1 to 3.5 with agreement of goals
- participated in a tailored programme that encompasses the core components
- been reassessed
- identified their long term management goals.

3.6.1 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
 - smoking cessation services.

3. The Core Components

3.6.2 Service responsibilities

- On programme completion there should be a formal assessment of lifestyle risk factors (physical activity, diet and smoking as relevant), 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.
- It is the responsibility of the cardiac rehabilitation team to provide one-year follow-up information for national audit purposes. Ideally this should be achieved by integration and communication with primary care and making every effort to avoid duplication of work through the use of integrated informative technology software. Alternatively the use of postal questionnaire to capture patients at one-year following cardiac rehabilitation should be used.

3.7 Audit and evaluation

Every cardiac rehabilitation programme should formally audit and evaluate their service. This should include information from individual clinical outcome patient data and data on service performance together with patient satisfaction. This data needs to be in a format that can be shared locally, regionally and nationally. Contributing to scientific publications is also strongly encouraged. 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 influencing and informing national policy.

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

- Monitor and manage patient progress.
- Monitor cardiac 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 cardiac rehabilitation services.
- Contribute to the national audit.
- Present and share cardiac rehabilitation outcomes in both clinical and patient formats.

4. Appendices

Appendix 1: Key websites for recommended policy statements and service guidelines

Association or group	Website
American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR)	www.aacvpr.org
American College of Sports Medicine (ACSM)	www.acsm.org
American Heart Association (AHA)	www.americanheart.org
Arrhythmia Alliance	www.arrhythmiaalliance.org.uk
Association of Chartered Physiotherapists in Cardiac Rehabilitation (ACPICR)	www.acpicr.com
British Association of Sport and Exercise Science (BASES)	www.bases.org.uk
British Association for Cardiovascular Prevention and Rehabilitation (BACPR)	www.bacpr.com
British Cardiovascular Society (BCS)	www.bcs.com
British Heart Foundation (BHF)	www.bhf.org.uk
BHF Cardiac Care and Education Research Group	www.cardiacrehabilitation.org.uk
BHF Heart Statistics	www.heartstats.org
Cardiac Rehabilitation Programme Finder	www.cardiacrehabilitation.org.uk
Cochrane Database	www.cochrane.org
Guidelines and Implementation and Audit Network (Northern Ireland)	www.gain-ni.org
Department of Health	www.dh.gov.uk
European Association for Cardiovascular Prevention and Rehabilitation (EACPR)	www.escardio.org/eacpr
Joint British Societies' Guidelines on Prevention of Cardiovascular Disease in Clinical Practice	www.bcs.com
National Audit for Cardiac Rehabilitation	www.cardiacrehabilitation.org.uk
NHS Evidence	www.evidence.nhs.uk
NHS Improvement	www.improvement.nhs.uk
National Institute for Health and Clinical Excellence (NICE)	www.nice.org.uk
Scottish Intercollegiate Guidelines Network (SIGN)	www.sign.ac.uk
Welsh Assembly Government	www.new.wales.gov.uk/topics/health

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Acknowledgements

The BACPR are highly appreciative of the support given by the BHF in endorsing this publication and facilitating its dissemination as part of the national campaign pertaining to what high quality cardiac rehabilitation looks like. The BACPR is also grateful to the BHF for funding the NACR and the support of the BHF Cardiac Care and Education Research Group at the University of York.

We are grateful to our 2007 development group together with affiliated colleagues in cardiovascular care, who have participated in the consultation process and provided important feedback, including members representing: The British Cardiovascular Society; The British Heart Foundation (BHF); NHS Improvement; The BHF Cardiac Care and Education Research Group at University of York in managing the National Audit for Cardiac Rehabilitation; The British Association of Nursing in Cardiovascular Care; The British Society for Heart Failure; Heart Care Partnership (UK); the Primary Care Cardiovascular Society; and UK Heart Health and Thoracic Dietitians Group, as well as health care professionals from our consultation event and BACPR council members past and present.

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The membership of the development groups from 2007 and 2012 embody many professional associations all working within cardiac rehabilitation services or associated professional institutes in the UK. 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.

Anticipated review

These standards replace the previously published standards of 2007. We anticipate a further review of these standards in 2016.



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