

Cardiac Rehabilitation



Cardiac Rehabilitation

Definition of Cardiac Rehabilitation

There are a number of definitions of cardiac rehabilitation, but one of the most recent comes from the BACPR (2012) which states that it is;

“The co-ordinated sum of activities required to influence favourably the underlying cause of cardiovascular disease, as well as to provide the best physical, mental and social conditions, so that 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.”

Rehabilitation cannot be regarded as an isolated form of therapy but must be integrated with the whole treatment of which it forms only one facet.

Several issues arise from this definition:

- The multi-factorial nature of rehabilitation
- The need for secondary prevention measures and health behaviour change as aspects within rehabilitation
- The importance of an individual's contribution to their own recovery
- The patient's identity within the larger community

All of these aspects of rehabilitation encapsulate the complexities of the interventions required. Cardiac rehabilitation programmes should aim to offer a comprehensive, holistic approach to patient care, utilising a multi-disciplinary, biopsychosocial model of care (BACPR 2012). Indeed the seven standards for cardiac rehabilitation set out by the BACPR are aligned to the above definition, and these will be addressed later in the chapter.

Research has shown the widespread benefits that cardiac rehabilitation can have. These benefits are associated with both clinical and psychological improvements and include:

- increased exercise tolerance
- reduced anxiety and depression
- improved lipid profile

- improved blood pressure control
- improved stress management

The benefits and efficacy of cardiac rehabilitation in the treatment of coronary artery disease (CAD) and secondary prevention are well documented (Jolliffe et al. 2001; Taylor et al. 2004; Clark et al. 2005; Dalal et al. 2010; Heran et al. 2011). These findings add to the knowledge that cardiac rehabilitation slows the progress of cardiovascular disease, decreasing cardiac and all-cause mortality while enhancing quality of life.

Much has changed since the early days of rehabilitation.

The 1990s and into the new millennium has been an exciting time for rehabilitation. It has seen the publication of a meta-analysis of all of the controlled trials of cardiac rehabilitation which show that it reduces mortality by up to 34% (Dusseldorp et al. 1999). This meta-analysis also shows the positive impact of psychological treatments. Cardiac rehabilitation has started to extend beyond patients considered relatively well post-MI to those considered to have more serious cardiac conditions, such as heart failure, demonstrating that previous restrictions had been conservative. Many authoritative bodies reviewed the evidence for cardiac rehabilitation, its cost-effectiveness and recommendations made for the patients' participation. The provision of rehabilitation programmes doubled and national guidelines were published, endorsing the use of the Heart Manual as the only evidenced home-based cardiac rehabilitation tool. Since 1992, the Heart Manual has continued to provide a robust alternative to hospital-based cardiac rehabilitation (Dalal et al. 2010; Clark et al. 2011).

The Rehabilitation Pathway

The traditional pathway of cardiac rehabilitation is frequently described as having four distinct phases. Each phase represents a different part of the patient's journey of care from inpatient stay (phase 1), to the early post discharge period (phase 2), through a period of exercise based support (phase 3) and on to long-term

management and maintenance of behavioural change (phase 4). All four phases do however have 3 overlapping principles:

- The process of explanation and understanding
- Specific aspects of intervention e.g. exercise, psychological support, secondary prevention
- The long-term process of re-education and adaptation

Although useful, the 4 phases of cardiac rehabilitation may restrict the patients being 'rehabilitated' due to the perception that patients require a period of hospital stay before the process may be initiated. This limits the patients being enrolled within the system due to their individual condition. Those with CAD who experience angina or are diagnosed as having heart failure may therefore miss out on a programme of exercise and the support and lifestyle advice, which is as equally important to them as it is to those who have experienced an MI or coronary artery bypass procedure (CABG). Consideration must also be given to the rapid delivery of interventions such as primary or elective percutaneous coronary intervention (PCI) which limits the need for prolonged hospitalisation. Although highly beneficial to the patient, these short hospital stays reduce the period of direct contact, which in turn may result in patients falling through the referral loop. In addition NICE guidance (NICE CG 172, 2013) and BACPR (2012) advise that patients should commence rehabilitation as early as possible. As a result many cardiac rehabilitation programmes have been prompted to redesign their service and revisit the patient pathway. This will be discussed in more detail in the Service Design section.

As medical knowledge, technological interventions and pharmacological therapies continue to advance and survival rates increase, so does the frequency of repeat cardiovascular events (Redfern and Britta 2011). This increases the need to offer accessible and socially, culturally and ethnically acceptable rehabilitation and preventative services. The exact components which make up the rehabilitation programmes vary quite considerably across the country, however (British Heart foundation 2012), and there continues to be a number of challenges facing cardiac rehabilitation service providers.

Current Issues

Cardiac rehabilitation has come a long way but there remain areas of concern which still require to be addressed. The lack of equity within many services continues to exclude individuals or limits accessibility for some patients. Areas of concern remain around:

- The provision of services to those living in rural areas, women, ethnic minority groups, the elderly, the disabled, the poor, smokers and those with mental health problems, as these individuals are less likely to participate in rehabilitation programmes.
- Those with other cardiovascular disease such as angina, heart failure and individuals with physical disabilities or over a certain age, who continue to be under-represented in many programmes.
- Patients who are admitted for short hospital stays or who are admitted to a non-specialised ward - they may be lost within the system and therefore miss out on further rehabilitation.
- Although some programmes do invite the patient's partner or family to attend, many do not attend.
- Often rehabilitation programmes do not start until several weeks following discharge, which is frequently too late as patients can feel abandoned and return to their previous lifestyles, while those who are employed often return to their employment prior to any rehabilitation being initiated.
- There is often no hand-over of care or system in place to help support patients to maintain the changes that they have made.
- The sharing of care between secondary and primary care services can often be fragile, allowing patients to fall through the referral loop or communication to be poor.

- Outcomes are frequently not correctly audited, with some rehabilitation programmes not seeing it as within their remit to check and review secondary prevention interventions.
- The UK guidelines state that cardiac rehabilitation programmes should be menu based. Some services continue to focus primarily on exercise, with a scheduled programme of lifestyle talks, with limited opportunity for individualised goal-setting.
- Programmes may not address psychological adjustment issues or have the access to psychology services

(Department of Health 2008).

National Cardiac Rehabilitation Audits

In 2000 the National Service Framework (NSF) chapter 7 set a service standard to increase cardiac rehabilitation so that over 85% of those discharged following a diagnosis of acute MI or coronary revascularisation were offered cardiac rehabilitation (Department of Health 2000). Since that time, further recommendations have included the need to offer rehabilitation to all of those diagnosed under the term acute coronary syndrome (ACS) and those with chronic heart failure (The Scottish Government 2009; National Institute for Health and Clinical Excellence 2010a; National Institute for Health and Clinical Excellence 2010b). Achieving these targets is challenging however, as the population continues to age while resources appear depleted due to financial constraints.

Although the NSF target to increase cardiac rehabilitation uptake to 85% has not been achieved, the implementation of this national strategy has seen extensive service improvements for those with CAD. The 2007 progress report noted 3 key achievements:

- The target to achieve a reduction in cardiovascular deaths by 40% in those under the age of 75 years was achieved 5 years earlier than planned

- Those experiencing an acute MI receiving thrombolysis within 60 minutes increased from 24% to 70%
- Those waiting more than 3 months for cardiac surgical intervention dropped from 5,500 to 0

(Department of Health 2008)

The National Audit for Cardiac Rehabilitation (NACR) provides a broad overview of rehabilitation service delivery within England, Wales and Northern Ireland. It is a BHF project which aims to support cardiovascular prevention and rehabilitation services in order to achieve the best possible outcomes for patients, and as such is aligned with BACPR's shared vision of all cardiac rehabilitation programmes performing to minimum standards (NACR 2016). 2016 marks the 10th annual statistical report on cardiac rehabilitation, reporting on programme uptake, waiting times, gender differences, assessment processes, patient outcomes and performance against minimum standards.

For the first time, average uptake to cardiac rehabilitation has reached the 50% mark which is one of the highest figures globally (NACR 2016). The full report can be found on the website: www.cardiacrehabilitation.org.uk. In addition to some of the current issues identified above, NACR (2016) highlight some **key performance areas** for cardiac rehabilitation programmes:

Female patients continue to be under represented in groups although improving slightly. Heart failure patients should be considered a priority group for cardiac rehabilitation. The mode of delivery needs to be broader than just group based to improve uptake and adherence. Rehabilitation should start earlier for all groups of patients. The frequency and quality of patient assessment needs to improve.

Following the release of the Scottish Government's 'Better Heart Disease and Stroke Care Action Plan' in 2009, Scottish services have followed their own system of quality assurance measurement. Scottish rehabilitation programmes have fed their information into their own audit system, guided by NHS Quality Improvement Scotland standard 10.

As might be expected, there has been a 40% decrease in death rates for all types of heart disease in the last decade (Audit Scotland 2012). While this is an advance, heart disease remains the highest cause of death in Scotland after cancer (Audit Scotland 2012).

The most recent figures published by the Information Services Division (ISD) in Scotland (ISD 2012) reveal that between 2011 and 2012 the overall uptake for cardiac rehabilitation was 59.5%. A full report can be sourced from:

www.isdscotland.org

A pilot is underway in NHS Lothian with a view to perhaps sending audit data to NACR as before, so this would indeed be able to offer a national picture of cardiac rehabilitation services.

Increasing Access to Rehabilitation Services

Twelve years after the release of the NSF, the campaign to increase accessibility and uptake of cardiac rehabilitation goes on. In Scotland, the Scottish campaign for cardiac rehabilitation supported by Chest Heart and Stroke Scotland (CHSS), British Heart Foundation (BHF), Cardiac Rehabilitation Interest Group Scotland (CRIGS) and the British Association of Cardiac Prevention and Rehabilitation (BACPR) launched its campaign in March of 2012 (Chest Heart & Stroke Scotland 2012)

The campaign demanded that cardiac rehabilitation be recognised as being central to the treatment and care of those with heart disease.

Key aims included:

- Every suitable individual with heart disease who wishes to participate in cardiac rehabilitation, has access to a programme
- People are offered alternative methods to community or hospital based programmes, such as home-based programmes
- Services meet the needs of carers and under-represented groups

- All programmes meet minimum standards set out by the British Association of Cardiac Prevention and Rehabilitation
- Services are audited as a quality assurance measure

(Chest Heart & Stroke Scotland 2012)

It can be argued that we have not achieved these key objectives, although progress is being made.

The primary objectives of any cardiac rehabilitation service must be to aid recovery, reduce risk and promote quality of life. The way in which services are designed and delivered is however inextricably linked to patient usability. Services and commissioners must therefore bear in mind how accessible the service is, how convenient the service is in geographical terms, as well as the timing of programme sessions (Wachtel 2011). It is also important to be mindful of the beliefs and preferences of the population that they serve. Full consideration must be given to health consumer preferences in order to optimise uptake to ensure the full benefits of rehabilitation are being achieved (Wachtel 2011). (See contemporary models of rehabilitation for more information) Services must be designed to ensure interventions are accessible by actively seeking to minimise barriers.

Simply providing a rehabilitation programme does not guarantee patient participation (Wachtel 2011). Scales can be used to assist practitioners to identify the reasons for non attendance (Fernandez et al 2008) in order to develop and offer alternative strategies to standard rehabilitation delivery. Herber et al (2016) found 3 major influences of participation: personal factors, programme factors and practical factors. It appears from their research that there remain many misconceptions around the purpose and perceived benefits of rehabilitation, physical ability and inconvenience of attending classes. Unless misconceptions are identified and addressed, attendance is unlikely to improve.

The United Kingdom is a diverse nation, with a population of around 62,262,000 (Office for National Statistics 2011). It is made up of rural and urban areas containing people of a variety of social, cultural, ethnic and religious backgrounds. The way in which cardiac rehabilitation is delivered must therefore be equally diverse to ensure equitable care is being delivered to people whether they live in city centres such as

Birmingham or small rural islands such as Mull. Carrying out a local health needs assessment can help target resources more effectively and efficiently. Health needs assessment may focus on a generic or population level, client groups or disease or intervention specific assessments.

Service Design and Delivery

Clearly there are challenges in delivering a service that can tackle inequality and some of the issues raised above. The NHS Scotland Quality Strategy (2010) remains the blueprint for improvements in the quality of care for patients and carers in Scotland. Building on this strategy, and the integration of health and social care services, the Scottish Government introduced their vision of how quality care should be delivered by 2020. (NHS Scotland 2013) The philosophy behind the “route map” is the intention to provide safe, effective and person centred care which supports people to live as long as possible, at home, or in a homely environment. Twelve priority areas should focus on quality of care, the health of the population and financial sustainability. Heart disease management and rehabilitation is one of the priority areas, and **key actions for local services include the need to modernise cardiac rehabilitation services, develop anticipatory care planning and encourage and support self management plans for patients with heart disease.** We know that services are delivered differently across the country for many reasons. Having the guidance of a pathway/template may be helpful, therefore, to services when considering how to rise to the challenge of meeting such actions.

In October 2010 the Department of Health launched its commissioning pack for cardiac rehabilitation services (Department of Health 2010). This describes the rehabilitation process as ‘stages’ which follow a best practice pathway from the identification and referral of patients at stage 0 to discharge and transition of care to long term management services at stage 6. If widely adopted, it may help to standardise rehabilitation processes which can only be beneficial to service users and providers.

- **Stage 0:** Identify and refer patient
- **Stage 1:** Manage referral and recruit patient to cardiac rehabilitation programme
- **Stage 2:** Assess patient for cardiac rehabilitation

- **Stage 3:** Develop patient care plan
- **Stage 4:** Deliver comprehensive cardiac rehabilitation programme
- **Stage 5:** Conduct final assessment
- **Stage 6:** Discharge and transition to long-term management

In many ways this approach may help streamline services by reducing the duplication which may occur through the traditional rehabilitation four phases while promoting a system with improved communication between acute, tertiary and primary care services. The commissioning pack suggests that an estimated 0.3% or 300 per 100,000 population will require rehabilitation services each year. For a GP caseload of around 10,000 this will mean around 30 people. It is however important to consider the current needs of the local population, being mindful that cardiac rehabilitation services need to be able to deliver care to highly diverse populations, with some areas having higher average rates of cardiovascular disease than others. Completing a comprehensive local needs assessment is therefore essential in order to determine local service demands. Service benchmarking should therefore include:

- Hospital episode statistics
- Local practice condition statistics
- Expert opinion for best practice
- Cardiac rehabilitation data
- Guidance on those who require rehabilitation

(National Institute for Health and Clinical Excellence 2011)

By implementing comprehensive cardiac rehabilitation programmes, services can provide evidence to support their aim to meet many of the domains set out in the NHS outcomes framework 2011/12 (Department of Health 2010); these include preventing people dying prematurely, enhancing quality of life for those with long-term conditions, helping people recover from episodes of ill health and ensuring people have a positive experience of health care, while aiming to tackle the issues of equality as set out in the NHS outcomes framework 2012/13 (Department of Health 2011).

This can be achieved by offering comprehensive care which supports recovery, while promoting the adoption of long-term preventative measures, enabling people to identify their own health issues so that they can manage their own condition. This

requires services which are timely, so that they meet the needs of the individual and their family at a time and place that is accessible, culturally and socially sensitive and relevant to the life that they lead. The Department of Health (2013) 'Cardiovascular Disease Outcomes Strategy' action 8 states the need to continue to provide a full assessment of cardiovascular need, while ensuring access to aspects of good practice such as self management, psychological support and rehabilitation.

The essential aspects of quality and equality within practice have been outlined by the commissioning pack website (National Institute for Health and Clinical Excellence 2011). This publication states that the key quality issues within cardiac rehabilitation are associated with the need to:

- Identify all people who may be eligible for the service
- Improve the process of referral, uptake and completion of programmes
- Conduct a comprehensive assessment of the individual's needs
- Deliver an individually tailored care plan
- Offer a choice: hospital, community or home-based programme
- Deliver the core components of rehabilitation as set out by the British Association of Cardiac Prevention and Rehabilitation core standards
- Provide the best outcomes for the individual, their family and the wider community
- Ensure quality assurance measures are a core aspect of the service being delivered

The Cardiac Rehabilitation Commissioning pack can be found at:

<http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/browsable/DH117504>

As highlighted within the NICE commissioning guide, BACPR has set out clear guidance within its Cardiovascular Disease Prevention Standards and Core Components 2nd edition (British Association for Cardiovascular Prevention and Rehabilitation 2012). This document offers guidance to local service commissioners, managers and practitioners in order to work towards providing equitable care for all of those requiring cardiac rehabilitation.

The seven standards 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 cardiac rehabilitation programme (within 2 weeks), 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 of Cardiac Rehabilitation
7. Establishment of a business case including a cardiac rehabilitation budget which meets the full service costs

The BACPR core components can be used not only to improve patient's physical recovery and quality of life but to equip them with the skills required to manage a long-term condition (British Association for Cardiovascular Prevention and Rehabilitation 2012). The core components are visually depicted within the BACPR model for cardiovascular prevention and rehabilitation (Figure 1).

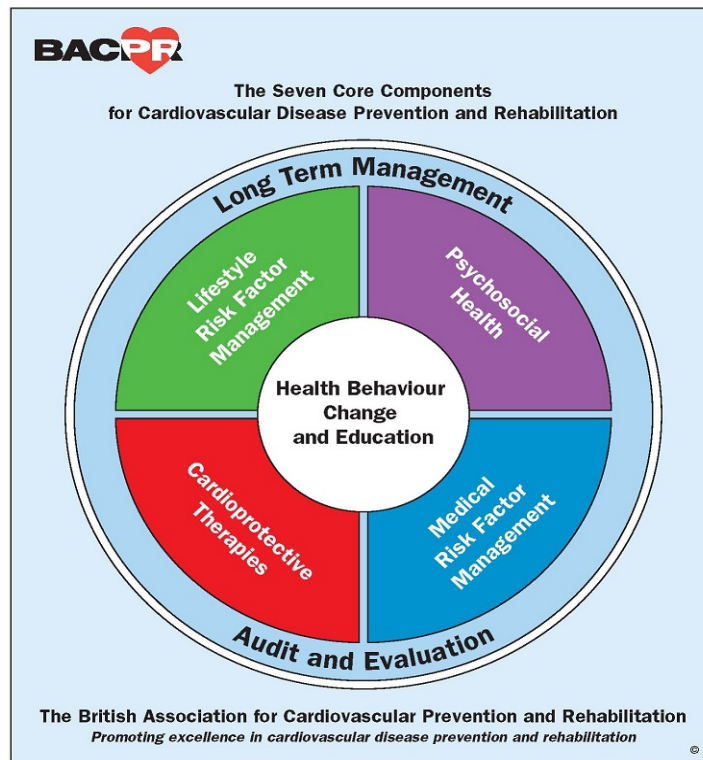


Figure 1. Model of cardiovascular prevention and rehabilitation (British Association for Cardiovascular Prevention and Rehabilitation 2012).

This model demonstrates the diverse knowledge and skills required to support patients during the rehabilitation and self-management process. It also reveals how the Heart Manual can assist practitioners to identify their own level of competency while seeking out multidisciplinary support in order to deliver each of these components within the home setting.

The BACPR standards and core components can be accessed at:

http://www.bacpr.com/pages/page_box_contents.asp?pageid=791

Contemporary Models of Rehabilitation

Traditional models of cardiac rehabilitation have been delivered primarily by secondary care staff within hospital settings. This has gradually changed to offer patients services which are provided within local areas, often based in community or leisure centres. The provision of evidenced home-based programmes does however remain extremely low. The data gathered by NACR between 2010 and 2011 suggests

that only 7% of people within the UK receive the Heart Manual and less than 1% receive an alternative method of home-based rehabilitation (British Heart Foundation 2012). Despite being a possible artefact of under-reporting (as our own statistics of manuals supplied to services would suggest a greater number of patients using the Heart Manual annually), this is disappointing as guidelines suggest that patients should not only be offered a menu of choices to achieve rehabilitation goals, but a choice of venues in which the individual may receive this support (Scottish Intercollegiate Guidelines Network 2002; National Institute for Health and Clinical Excellence 2013; NHS Quality Improvement Scotland 2009; National Institute for Health and Clinical Excellence 2011).

A Cochrane review carried out by Davies et al (2010) has also suggested that offering home-based services and telephone contacts may assist with increasing cardiac rehabilitation uptake and adherence. With the target of 85% uptake set over a decade ago remaining elusive, one could question if the ways in which we currently deliver cardiac rehabilitation really do truly meet the needs of the people we care for. It is however reassuring that the NSF target can be achieved within some areas, such as Cornwall (Dalal et al. 2007). Within these areas all patients were referred to cardiac rehabilitation, and programmes tailored and delivered to address the individual needs through a choice of delivery methods.

Cardiac knowledge, intervention and management have moved on dramatically, particularly over the last decade. Hospital stays are becoming shorter and people are living longer with and without complex conditions. The urgency to promote, educate and harness self-management skills is increasing. In a study conducted by Yohannes et al (2007) assessing early rehabilitation drop-out rates, women were most likely to drop out of the cardiac rehabilitation programme at an early stage. Those also susceptible were younger, had a higher sense of personal control and lower illness perception. While many of these individuals may have the capacity to self-manage with timely support, others may require more specific care - such as those with higher psychological distress or a lower perception of consequences, which was also detected within the Yohannes (2007) study. Perhaps this is the time to fully evaluate the changing needs of our populations and consider alternative delivery models such as the full utilisation of home-based programmes, for example, the Heart Manual and newly developing health technologies.

The Heart Manual Department now offers a **digital version of the MI** and Revascularisation editions and these are available now. (See Heart Manual Development chapter for details of the development of the prototype and evaluation of the resources). Our “testers” found the resources to be quite intuitive and easy to use. The digital versions have exactly the same content as the paper versions which have been substantially studied and therefore have the evidence base that other services do not. We now incorporate the facilitation of the digital resource within our training and offer additional support resources for facilitators and patients “Getting Started with the Digital Manual” which are available within the Facilitator log in section of the website. Facilitators are encouraged to offer patients a choice of paper manual or digital version, and should not consider age per se as a barrier. Many patients in their 70s are comfortable with technology, while some of our younger patients may want a break from computer screens. For those choosing the convenience of home based rehabilitation, this provides an additional choice and adds flexibility for those who may wish to return to work within a few weeks of their cardiac event.

References

Audit Scotland. 2012. *Health Inequalities in Scotland*. Edinburgh: Audit Scotland.

British Association for Cardiovascular Prevention and Rehabilitation. 2012. The BACPR standards and core components for cardiovascular disease prevention and rehabilitation 2012. London: BACPR.

British Heart Foundation. 2012 The national audit of cardiac rehabilitation: annual statistical report 2012. London: British Heart Foundation.

British Heart Foundation. 2016. *The National Audit of Cardiac Rehabilitation. Annual Statistics Report*. London: British Heart Foundation.

Chest Heart & Stroke Scotland. 2012. Scottish campaign for cardiac rehabilitation. [online] Available at: http://www.chss.org.uk/about_us/campaigns/cardiac_rehabilitation.php [Accessed July 9 2012].

Clark, A.M., Hartling, H., Vandermeer, B. and Mcalister, F.A. 2005. Meta-analysis: secondary prevention programs for patients with coronary artery disease. *Annals of Internal Medicine*, 143(9), pp.659-672.

Clark, M., Deighan, C. and Kelly, T. 2011. A systematic review of the Heart Manual literature. *European Journal of Cardiovascular Nursing*, 10, pp.3-13.

Dalal, H.M., Evans, P.H., Campbell, J.L., Taylor, R.S., Watt, A., Read, K.L.Q., Mourant, A.J., Wingham, J., Thompson, D.R. and Gray, D.J.P. 2007. Home-based versus hospital-based rehabilitation after myocardial infarction: a randomised trial with preference arms - Cornwall Heart Attack Rehabilitation Management Study (CHARMS). *International Journal of Cardiology*, 119, pp.202-211.

Dalal, H.M., Zawada, A., Jolly, K., Moxham, T. and Taylor, R.S. 2010. Home-based versus centre-based cardiac rehabilitation: Cochrane systematic review. *BMJ*, 340(b5631).

Davies, P., Taylor, F., Beswick, A., Wise, F., Moxham, T., Rees, K. and Ebrahim, S. 2010. Promoting patient uptake and adherence in cardiac rehabilitation. Cochrane Database of Systematic Reviews, Art No: CD007131. (Issue 7).

Department of Health. 2008. Raising the profile of long-term conditions care: a compendium of information. Ref 8734. Leeds: Department of Health.

Department of Health. 2000. National service framework for coronary heart disease. Ref 16602. London: Department of Health.

Department of Health. 2011. The NHS outcomes framework 2012/13. Ref 16886. London: Department of Health.

Department of Health. 2010. Commissioning a cardiac rehabilitation service: reabling people with coronary heart disease [online]. Available at: <http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/browsable/DH117504> [Accessed July 1 2013].

Department of Health. 2008. The coronary heart disease national service framework: building for the future - progress report for 2007. Ref 9423. London: Department of Health.

Department of Health. 2008. The NHS outcomes framework 2011/2012. Ref 15264. London: Department of Health.

Department of Health. 2013. Cardiovascular Disease Outcomes Strategy – Improving outcomes for people with or at risk of cardiovascular disease. London: Department of Health.

Dusseldorp, E., Van Elderen, T., Maes, S., Meulman, J. and Kraaij, V. 1999. A meta-analysis of psychoeducational programs for coronary heart disease patients. *Health Psychology*, 18(5), pp.506-519.

Fernandez, R.S., Salamonson, Y., Juergens, C., Griffiths, R. and Davidson, P. 2008. Development and preliminary testing of the cardiac rehabilitation enrolment obstacles (CREO) scale: implications for service development. *European Journal of Cardiovascular Nursing*, 7, pp.96-102.

Heran, B.S., Chen, J.M.H., Ebrahim, S., Moxham, T., Oldridge, N., Rees, K., Thompson, D.R. and Taylor, R.S. 2011. Exercise-based cardiac rehabilitation for coronary heart disease. Cochrane Database of Systematic Reviews, Art No: CD001800(7).

Herber, O. R., Smith, K., White, M. and Jones, M. C. 2017. 'Just not for me' – contributing factors to nonattendance/noncompletion at phase III cardiac rehabilitation in acute coronary syndrome patients: a qualitative enquiry. *Journal of Clinical Nursing* [online]. February, pp.1-14. [viewed 20th January 2017]. Available from: doi:10.1111/jocn.13722

Information Services Division. 2012. *Cardiac Rehabilitation in Scotland*. Edinburgh: Information Services Division.

Jolliffe, J.A., Rees, K., Taylor, R.S., Thompson, D., Oldridge, N. and Ebrahim, S. 2001. Exercise-based rehabilitation for coronary heart disease. Cochrane Database of Systematic Reviews, 1(CD001800).

National Institute for Health and Clinical Excellence. 2011. Cardiac Rehabilitation Services. Commissioning Guidelines CMG40 [Homepage of NICE], [Online]. Available at: <http://publications.nice.org.uk/cardiac-rehabilitation-services-cmg40/1-commissioning-cardiac-rehabilitation-services> [Accessed October 29 2012].

National Institute for Health and Clinical Excellence. 2010a. Chest pain of recent onset: assessment and diagnosis of recent onset chest pain or discomfort of suspected cardiac origin. CG95. London: NICE.

National Institute for Health and Clinical Excellence. 2010b. Chronic heart failure: management of chronic heart failure in adults in primary and secondary care. CG108. London: National Institute for Health and Clinical Guidance.

National Institute for Health and Clinical Excellence. 2013. MI: Secondary prevention: secondary prevention in primary and secondary care for patients following a myocardial infarction. CG172. London: NICE.

NHS Quality Improvement Scotland. 2009. Coronary heart disease improvement management programme. Edinburgh: NHS Quality Improvement Scotland.

NHS Scotland. 2013. *A Route Map to the 2020 Vision for Health and Social Care*. Edinburgh: The Scottish Government.

Office for National Statistics. 2011. Annual mid-year population estimates, 2010. Newport: Office for National Statistics.

Redfern, J. and Britta, T. 2011. Cardiac rehabilitation - moving forward with new models of care. *Physical Therapy Reviews*, 16(1), pp.31-38.

Scottish Intercollegiate Guidelines Network. 2002. Cardiac Rehabilitation: A National Clinical Guideline. Guideline 57. Edinburgh: SIGN.

Taylor, R.S., Bown, A., Ebrahim, S., Jolliffe, J., Noorani, H., Rees, K., Skidmore, B., Stone, J.A. and Thompson, D.R. 2004. Exercise-based rehabilitation for patients with coronary heart disease: systematic review and meta-analysis of randomized controlled trials. *American Journal of Medicine*, 116(10), pp.682-692.

The Scottish Government. 2009. Better heart disease and stroke care action plan. Edinburgh: The Scottish Government.

The Scottish Government. 2010. *The Healthcare Quality Strategy for NHS Scotland*. Edinburgh: The Scottish Government.

Wachtel, T.M. 2011. Preferred models of cardiac rehabilitation in rural South Australia from a health consumer's perspective. *Australian Journal of Advanced Nursing*, 28(3), pp.30-36.

Yohannes, A.M., Yalfani, A., Docherty, P. and Bundy, C. 2007. Predictors of drop-out from an outpatient cardiac rehabilitation programme. *Clinical Rehabilitation*, 21, pp.222-229.

