Cardiac Rehabilitation Standards

For

East Cheshire NHS Trust

Issue 3
April 2011

Signed: Paula Spray
Position: Cardiac Rehabilitation Co-ordinator

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1 Introduction

This document outlines the standard for the service provision of Cardiac Rehabilitation for East Cheshire NHS Trust. The evidence used to support this document is taken from the National Service Framework (NSF) for Coronary Heart Disease (CHD), March 2000, The Scottish Intercollegiate Guidelines Network (SIGN) January 2002, NICE Guidelines May 2007 and The British Association of Cardiac Rehabilitation.

June 2011
2 Cardiac Rehabilitation Personnel

2.1 Roles

ECNHST

Cardiac Rehabilitation Co-ordinator
Cardiac Rehabilitation Sister
Cardiac Rehabilitation Staff Nurse
Cardiac Rehabilitation Staff Nurse
Physical Activity and Healthy Lifestyle Facilitator
2.1 Job Descriptions

Duties/Responsibilities of Cardiac Rehabilitation Co-ordinator

- Effectively manage an allocated budget overseen by the Cardiac Rehabilitation Sub Group
- Identify staffing requirements across all four phases of cardiac rehabilitation
- Manage cardiac rehabilitation phase 1 facilitators in accordance with IPR and other trust policies and procedures (such as managing sickness, absence, discipline etc), taking responsibility for recruitment and selection of personnel and staff development
- Liase with phase 2 and 3 facilitators’ line managers in relation to recruitment and selection of personnel, staff development and training, performance monitoring and support in their cardiac rehabilitation role
- Ensure processes are established to support transition of patients through all four phases of cardiac rehabilitation
- Co-ordinate an equitable cardiac rehabilitation service across all four phases throughout the Trust ensuring a consistent, research-based approach to care and a safe, appropriate and efficient service.
- Receive and allocate all Trust wide referrals to appropriate personnel in line with cardiac rehabilitation protocol guidelines
- Develop and maintain an accurate database
- Implement, facilitate and manage change within the field of cardiac rehabilitation to continuously improve quality and maintain standards outlined by the BACR, NSF for CHD NICE and SIGN Guidelines
• Ensuring effective liaison:
  
  i. Across the Directorate of Medical Specialities
  
  ii. With local GPs and other hospitals
  
  iii. With the Acute and Primary Care Trusts personnel
  
  iv. With exercise/fitness personnel associated with phase 4 processes

• Ensure the provision of all four phases of cardiac rehabilitation across East Cheshire

• Identify staff training needs and implement ongoing education including regular staff updates

• Audit the cardiac rehabilitation service in line with evidence based practice

• Develop, implement, monitor and evaluate the delivery of evidence based patient care in accordance with clinical governance requirements
Duties/Responsibilities of Cardiac Rehabilitation Facilitators

Phase 3 Programme (Leisure Centre Based)

- To provide patients with on going group support and a nurse led education and exercise programme
- To assess patient’s physical, psychological and social needs for cardiac rehabilitation and review throughout Phase 3
- Blood pressure recorded and documented on exercise card
- Exercise/ physical activity discussed and an individual programme given to each patient
- Individual exercise programme provided for each patient
- Medication discussed and concerns explored
- Smoking status reviewed
- Plans to return to work discussed
- Ensure a follow up out-patient appointment and exercise tolerance test have been received
- Re-enforce the invitation to attend Phase 4 programme if appropriate
- Cardiac health record book updated as necessary
- Health beliefs identified and lifestyle advice given
- Return of patient information relating to cardiac rehabilitation returned to cardiac rehabilitation office for audit
- Information detailing patients cardiac rehabilitation status sent to patient’s GP
Duties/Responsibilities of Cardiac Rehabilitation Facilitators

Phase 2 Early post discharge

- Each patient will receive a visit or be contacted at home by telephone within one week
- Assessment of patient’s physical, psychological and social needs for cardiac rehabilitation will be reviewed and support/advice
- Each patient will have blood pressure recorded and documented if indicated
- Each patient will have their exercise/physical activity discussed – advice will be given on appropriate and safe exercise
- Each patient will have advice/information regarding medication compliance and concerns explored
- Each patient’s smoking status will be reviewed and the patient and as appropriate will be given appropriate advice and information about stop smoking service
- Patients plans to return to work will be discussed as appropriate
- Each patient will the invitation to attend one of the Phase 3 programmes
Duties/Responsibilities of Cardiac Rehabilitation Assistant
Phase 3 Programme (Leisure Centre Based)

- Will have an understanding of the cardiac rehabilitation process.
- Will support Phase 3 facilitator with all aspects of the phase 3 programme.
- Record patient blood pressure and record in relevant documentation, reporting any concerns to facilitator.
- Will assist in the support/supervision of the patient during the programme.
- Will have up to date knowledge of basic life support and emergency procedures including fire safety.
- Will have knowledge of the safe use of exercise equipment.
Duties/Responsibilities of Physical Activity and Healthy Lifestyle Facilitator

Phase 3

- To be professionally responsible for a designated caseload of patients and to organise this effectively and efficiently with regard to use of time

- To deliver safe and tailored phase 3 physical activity and lifestyle educational sessions to identified patients in home or community settings

- Where appropriate to promote the use of the "Road to Recovery" cardiac rehabilitation tool, facilitate and monitor patients adherence to this rehabilitation programme

- As part of the patients overall care plan to work with each patient to identify cardiac rehabilitation goals enabling risk factor modification and supporting healthy lifestyle changes and interventions in accordance to the agreed care plans from relevant trained therapists/members of staff/specialist services

- To work within a multidisciplinary team providing advice on or referral to co-operative interventions as necessary, such as smoking cessation, counselling, community based activity schemes, nutritionist referral

- To inform and refer patients to existing phase 4 activity opportunities, upon successful completion of phase 3, promoting and facilitating long term activity adherence and behaviour change
Phase 4

- To signpost the identified inactive patients to appropriate physical activity opportunities, and when appropriate and/or necessary assist in the initiation of physical activity opportunity attendance

- To meet regularly with existing phase 4 exercise instructors employed locally to identify issues, resolve problems, evaluate needs, facilitate and promote the creation of new phase 4 physical activity opportunities where needed

- To initiate, develop and maintain existing links with community, voluntary and statutory agencies to promote the development and accessibility of appropriate physical opportunities
Duties/Responsibilities of Cardiac Rehabilitation Administrator

- Provide secretarial services for the Cardiac Rehabilitation Service
- Provide comprehensive clerical duties to support the Service including the development and maintenance of an effective filing system; development of the Service and British Heart Foundation database; production of reports and letters; photocopying and regular inputting of Service data from standard data-set questionnaires respecting and maintaining confidentiality at all times.
- Provide efficient and appropriate customer service dealing professionally with patient's enquiries, appointments and telephone calls facilitating message service as required.
- Assist Cardiac Rehabilitation Co-ordinator with the organisation of meetings and training sessions including preparation of agenda's and minute taking ensuring that necessary papers are accurately prepared and timely circulated.
- Assist with the monitoring, evaluation and reporting of the Service and provide support for the regular audits required for service planning.
3 Aim of Cardiac Rehabilitation

The aim of cardiac rehabilitation is to facilitate the patient’s return to an optimal level of physical, mental and social well being. The World Health Organisation defines cardiac rehabilitation as follows:

The rehabilitation of cardiac patients is the sum of activities required to influence favourably the underlying cause of the disease, as well as the best possible physical, mental and social conditions, so that they may, by their own efforts preserve, or resume when lost, as normal a place as possible in the community. 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.

The National Service Framework for Coronary Heart Disease (March 2000) specified standards for cardiac rehabilitation. Standard twelve states:

NHS Trusts should put in place agreed protocols/systems of care so that, prior to leaving hospital, people admitted to hospital suffering from coronary heart disease have been invited to participate in a multidisciplinary programme of secondary prevention and cardiac rehabilitation. The aim of the programme will be to reduce their risk of subsequent cardiac problems and to promote their return to a full and normal life.

4 Patient Selection for Cardiac Rehabilitation

Cardiac rehabilitation is available to patients (as detailed in 5.1), irrespective of age, socio-economic status, gender and ethnicity. This includes those patients who are unable to exercise who may have much to gain from the non-exercise components of the programme.
5 The Referral Process

All patients who require cardiac rehabilitation should be referred through the Cardiac Rehabilitation Department based at MDGH. This will ensure that each referral is centrally recorded for audit. (For referral process flow chart – see appendix 1.)

5.1 Patient Referral Criteria:

- Patients admitted to Macclesfield District General Hospital (MDGH) with acute myocardial infarction
- Patients from East Cheshire admitted elsewhere with a diagnosis of acute myocardial infarction
- Patients diagnosed by their GP with myocardial infarction after the event
- Patients following revascularisation and valve replacement
6 Cardiac Rehabilitation Process

Cardiac rehabilitation is organised in four phases:

- **Phase 1** Before discharge from hospital
- **Phase 2** Early post discharge period
- **Phase 3** Intermediate post discharge period
- **Phase 4** Long-term maintenance of changed behaviour
6.1 Phase 1  Before Discharge from hospital

The cardiac rehabilitation process should begin as soon as possible after admission to hospital, following confirmation of the diagnosis.

Aim

To reassure the patient and their family, to help them understand their cardiac condition and treatment and to initiate appropriate lifestyle changes. This will include providing information about:

- Risk factor assessment
- Risk stratification
- Mobilisation
- Education
- Discharge planning

Standard of Care

- At least one visit from a member of the cardiac rehabilitation nurse
- An assessment of each patient’s physical, psychological and social needs for cardiac rehabilitation
- Negotiation of an individual plan of care for meeting the above stated needs (this will be followed through the four phases)
- Advice on lifestyle changes e.g. healthy eating and smoking cessation
- Referral, where appropriate, to the dietician for inpatient or outpatient advice
- Referral, where appropriate, to the Stop Smoking Service, in accordance with trust policy
- Advice regarding appropriate individual physical activity including activities...
of daily living, sexual relationships and exercise (see appendices 2 and 3)

- Advice, where appropriate, regarding return to work and time off work

- Review of cardiac medication, to ensure optimal prescription of secondary prophylaxis; including aspirin or other anti-platelet agent, betablockade, ACE inhibitors, statins and a nitrate spray unless contra-indicated. The patient will receive education about their use, benefits and side effects. This information is provided in collaboration with the ward pharmacist

- Information on the recognition of further cardiac symptoms and advice regarding appropriate course of action

- An assessment of the patient’s partner/family circumstances should be incorporated into the plan of care

- Provision and explanation of relevant written literature i.e. Heart Manual and tapes/CDs (appendix 4)

- A Cardiac Health Record will be given to the patient prior to discharge including information relating to diagnosis, treatment, medication and a copy of latest ECG

- Assessment of each patient's psychological status, including the completion of Hospital Anxiety and Depression Questionnaire, if appropriate

- Information about local cardiac support groups will be provided

- On discharge from hospital written communication about the patient’s rehabilitation in hospital and follow up plan will be sent to the GP
Outcomes

The patient and partner/family should:

- Understand their diagnosis and treatment
- Be able to identify their risk factors and understand how they can be addressed
- Be able to recognise symptoms suggestive of angina/myocardial infarction and to respond promptly
- Have contact telephone number of Cardiac Rehabilitation Department to get help and advice
- Have been involved in discussion about the suitability of a cardiac rehabilitation programme and its content
6.2 Phase 2    Early Post Discharge

This phase normally lasts about 3-6 weeks. Most patients during this period feel vulnerable and isolated from the support and care they received in hospital.

**Aim**

To ensure that the patient has adjusted to their home environment, is comfortable with their medication, is continuing appropriate lifestyle changes and is gradually resuming physical activity (see appendix 3). To re-enforce the information and advice provided in hospital to compensate for the limited retention of information in hospital occasioned by the stressful circumstances.

**Standard of care**

- Each patient will be contacted at home by telephone within one week
- An assessment of the patient’s physical, psychological and social needs to be re-assessed and the appropriate advice and support given
- HAD questionnaire to be repeated if high in hospital or if considered necessary
- Facilitation of the Heart Manual will be continued if given in hospital, or/and re-enforcement of other written literature
- Each phase 2 facilitator will return phase 2 documentation to the cardiac rehabilitation office relating to information regarding patient’s progress and/or circumstances
- A risk stratification proforma (see appendix 5) will be completed, to assess patient for appropriate phase 3 cardiac rehabilitation exercise and health education programme and a copy returned to cardiac rehabilitation office
- Options and details of the available phase 3 programmes will be discussed with the patient and a suitable programme agreed including information relating to commencement of the programme
Outcomes

- Maintenance of patient contact
- Further assessment of patient's physical, psychological and social needs for cardiac rehabilitation
- Reinforce the invitation to attend appropriate exercise and health education programme
6.3 Phase 3 Intermediate Post Discharge Period

Aims

- To support the patient through the psychological adaptation to heart disease
- To motivate and support the behavioural and lifestyle changes required for risk factor modification
- To increase the patient’s functional capacity and to optimise their level of fitness
- To increase the patient’s confidence and to give individual guidelines on activity
- To involve the patient’s partner/family throughout the process

An equal accessible service for all patients requiring cardiac rehabilitation shall be offered by providing a menu of phase 3 options, which provide a degree of flexibility and choice for the patient.

All phase 3 programmes consist of educational input around risk factor management and an individually assessed exercise component.

All programmes provide eight sessions but patients can complete prior to this if their aims/objectives met and with a mutual agreement with patient and Phase 3 Facilitator.
The Phase 3 options available are:

**Leisure Centre Programme**

A group based programme, which runs weekly for eight weeks. The programme maintains a “rolling” scheme thus reducing patient waiting times for commencing the programme and allows for the occasional missing of a session.

The sessions are led by a cardiac rehabilitation trained health visitor/nurse and supported by a cardiac rehabilitation BACR phase 4 trained exercise instructor. Other staff in attendance at the sessions is dependent on number of patients within the group but they will have knowledge of cardiac rehabilitation.

**Home Based Programme**

This programme provides an individual programme of exercise and health education within the patients’ own home. The Home Based programme is offered to patients unable to access or who are otherwise unsuitable candidates for the leisure centre based programmes. The programme is delivered by a Physical Activity and Healthy Lifestyle Facilitator who is a BACR phase 4 trained Instructor. It runs over an eight-week period consisting of approximately 5 one to one visits dependent on the patient’s level of need (see appendix 6).

**Road to Recovery (R2R)**

A home based programme using an exercise video/DVD and is facilitated by the physical activity and healthy lifestyle facilitator. It is used in sites nationwide and was developed by Papworth Hospital and now supported by the British Heart Foundation as a phase 3 programme.

Each patient receives an initial assessment in a clinical environment or in the patient's own home. This involves risk factor identification and an assessment of each patients exercise capabilities using a sub-maximal exercise test (see appendix 7).
The results, along with the patient’s risk stratification assessment, are used to determine at which level of the exercise programme the patient should start.

Each patient is given an educational booklet/diary detailing healthy lifestyle advice. Each patient is also given a heart rate monitor and its use explained. This used in conjunction with a rate of perceived exertion (RPE) score (see appendix 8) to monitor their progress. Further contact with each patient is via six, weekly telephone contacts and each patient is required to recall a record of their exercise activities including their heart rate, RPE and to discuss any other issues relating to their recovery. Exercise progression is achieved by working up the four levels of the exercise programme. Telephone contacts provide the necessary information to determine how the patient progresses through the programme.

A discharge assessment is performed at the same venue as the initial assessment and includes a repeat of the sub-maximal exercise test, a review of the patient’s progress, risk factor monitoring and phase 4 referral or advise on other activities available in the community.
Standard of Care for Exercise Component of All Phase 3 Programmes

- Each patient will have a risk stratification assessment completed and the most appropriate cardiac rehabilitation exercise programme identified. Any issues relating to the patient’s risk stratification and referral to appropriate phase 3 programme is discussed between phase 1 and 2 facilitators to ensure the most appropriate programme is agreed.

- Cardiac rehabilitation nurses who have had training in the provision of exercise for cardiac patients will be responsible for the management of the leisure centre based programmes and will be assisted by a British Association of Cardiac Rehabilitation phase 4 trained exercise instructor.

- Patients will be invited to commence the programme 4 weeks post myocardial infarction, 2 weeks post angioplasty/stent and 6 weeks post coronary artery bypass graft or cardiac valve replacement.

- Each patient identified for the programme will receive written or verbal information regarding a start date and course content.

- Each patient attending the exercise component of the cardiac rehabilitation programme will receive an assessment of their physical capacity and the opportunity to discuss the aims and objectives of the programme.

- Each patient attending the exercise element of the programme will have a programme individually tailored to suit his/her needs.

- An exercise record card detailing the patient’s individualised exercise programme will be given and how to use the card explained.

- Each patient will have his/her blood pressure and heart rate taken pre exercise and post exercise if appropriate, which will be recorded on the patient’s exercise card.
• Each patient should have all exercises explained and demonstrated safely and effectively; this should include the safe use of each piece of exercise equipment to be used.

• Staff to patient ratio will depend upon the composition of the group but ideally will be five patients to one trained professional per exercise session within the leisure centre with the exception of the higher risk group where there will be one trained member of staff to three patients. Home based and Road to Recovery programmes are based on a one to one patient/staff ratio.

• Each patient’s training heart rate will be calculated using Age Adjusted Predicted Maximal Heart Rate =220-age (HR max). The training heart rate is then calculated at 60-75% of HR max, but this may be decreased or increased dependant on the patient’s current medical condition/fitness level. Consideration and necessary adjustment for beta-blockers will be made with a subsequent HR reduction of between 20-40bpm.

• The use of heart rate monitors and Modified Borg Scale will be used in order to assess the level of intensity and the patient's progress (see appendix 8).

• There will be a 15 minute warm up period increasing heart rate within 20bpm of target heart rate; Modified Borg Scale 2-3 (BACR 1995).

• The warm up will involve using the large muscle groups in low impact dynamic movements as well as stretches. The stretch static positions are adopted; therefore, stretches should be interspersed with dynamic movements to avoid a significant drop in blood pressure.

• An aerobic component of up to 30 minutes tailored to the needs of the individual patient will be provided.

• The aerobic component aims to increase the functional capacity and will use the exercise equipment in the gym, such as the treadmill, bike, rower, stepper, sit to stand interspersed with active recovery stations/exercises which target specific muscle groups, such as biceps, triceps, pectorals, trapezius and which will
improve muscular endurance

- Each patient will be encouraged throughout the exercise session to drink water, to prevent dehydration
- There will be a cool down period of 10 minutes which will reduce the risk of post exercise hypotension and arrhythmias (BACR 1995)
- The cool down will incorporate movements of diminishing intensity and passive stretching of the major muscle groups used during the session
- Staff will be trained in Basic Life/Immediate Life Support and training updated annually in accordance with Trust policy
- Resuscitation equipment and someone trained in its use will be available at all times during the programmes
- Equipment will be checked before each session
- On completion of the programme, patients will be provided with relevant information regarding the maintenance of long-term exercise, which includes the phase 4 programmes running in the local Leisure Centres
- The ‘Active Heart Card’ scheme will be offered to each patient. This provides a lifelong discount on all exercise sessions running at the local Leisure Centres (Macclesfield, Wilmslow, Poynton, Knutsford and Congleton)
- Details about local support groups will be re-enforced
Standard of Education Component of All Phase 3 Programmes

- All patients including partner/family member attending cardiac rehabilitation will be provided with information on the following:
  - Risk factors, including smoking, cholesterol and hypertension
  - Pathology of Coronary Heart Disease
  - Stress management
  - Relaxation
  - Healthy eating
  - Medication
  - Benefits of exercise
  - Basic Life Support

- It may be necessary to vary the content of the educational component in order to meet the demands of the group. Although content will remain consistent, the emphasis on each topic may vary from group to group

- Patients’ emotional needs will be catered for and each patient will receive the necessary support and advice throughout their involvement in the cardiac rehabilitation process

- If the patient does not complete the programme, reasons for non-completion will be documented for audit purposes and the GP informed of the reasons

- On completion of the programme, patients will be informed of on-going support available in the community. They will be provided with information on local cardiac support groups and other relevant contacts e.g. British Heart Foundation
Outcomes of phase 3 programmes

- Increased patient’s confidence and enjoyment of exercise
- Increased patient’s functional capacity
- Has reached his/her particular goal for exercise
- Increased awareness of the importance of exercise and FITT principle (frequency, intensity, type and time)
- Each patient will have an understanding of the process of heart disease and be aware of the necessary lifestyle changes needed to reduce the risk of further cardiac events
- Patients will be provided with the necessary support and advice to promote their recovery. If patients need additional support, they will be referred to the relevant personnel
- On completion of the programme the patient’s cardiac health record will be updated
- The Cardiac Rehabilitation Co-ordinator and the patient’s GP will receive information about each patient’s attendance at the phase 3 cardiac rehabilitation programme and details of phase 4 follow up
- Phase 4 facilitator will receive details regarding each patient’s progress at phase 3
6.4 Phase 4 Long Term Maintenance

Aim

- To encourage the patient to adhere to lifestyle changes initiated in the previous phases of the cardiac rehabilitation programme
- To encourage the patient to return to normal activities
- To make available facilities to patients to help them achieve long term commitment to live a healthy lifestyle

We have developed close links with the local Leisure Centres in Eastern Cheshire as venues for phase 3 programmes. This eases the transition from phase 3 to phase 4. Maintenance of the links with the leisure services are ongoing, with the purpose of continuing to develop and support the long term maintenance of the patient’s health. Each of the leisure centres has a BACR phase 4 trained instructor running the sessions.

Wilmslow Leisure Centre runs a phase 4 session twice a week on a Tuesday and Friday morning and Macclesfield Leisure Centre runs a phase 4 session on a Wednesday.

The Macclesfield Cardiac Support Group runs drop-in exercise classes twice a week for patients who have completed the eight week phase 3 programme. The Support Group is affiliated to the BHF and has BHF insurance that provides cover for its members.

Patients will be advised to bear in mind the information they have been given during participation in the cardiac rehabilitation programme. It is emphasised throughout the programme that the lifestyle modifications should be life long.
7 Contacts

Support groups in Eastern Cheshire:

Macclesfield and District Cardiac Support Group
Contact: Arthur Kent Tel. 01625 426343

Wilmslow and Handforth Cardiac Support Group
Contact: Robert Stewart Tel. 01625 535002

Other support groups:

Ticker Club, Wythenshawe Hospital, Manchester
Contact: Tel. 0161 291 2873/ www.smtr.nhs.uk

Stockport Heart Club
Contact: Jim Speakman Tel. 0161 449 0011

Greater Manchester Cardiac Network
Contact Sally Wells Tel.0161232177/www.gmc.cardiacnetwork.nhs.uk
Appendix 1: Referral Process

Referral Centres

ECNHS Trust

Other Hospitals

GPs

Tertiary Centres

START

Phase 1
Before discharge

MI

Phase 2
Early post discharge

MI Revascularisation Cardiac Valve Replacement

RISK STRATIFICATION

Phase 3
Immediate post discharge

Home Based

Gym Based

Road to Recovery

Phase 4
Long term lifestyle change

Referral
Appendix 2: Guidance on exercise prescription

The following recommendations form guidance on the prescription of exercise. Each patient will be individually assessed and an exercise regime adapted, taking into consideration the patient’s physical and psychological status.

In hospital (Phase 1)

First 24 hours on Coronary Care Unit

- Complete rest, may use the commode by the bedside.
- The patient will be offered full assistance with their hygiene needs.
- Deep breathing and passive limb exercises will be encouraged hourly for the patient.

Stage 1 (approx. day 1-2)

- Assistance with hygiene needs and wheeled to the toilet.
- May sit out of bed for short periods.
- Continue with deep breathing and passive limb exercises.

Stage 2 (approx. day 2-3)

- Independent with hygiene needs.
- May sit out of bed for as long as feels comfortable.
- May walk around the bed area and walk one way to the toilet

Stage 3 (approx. day 3-4)

- May have a shower or bath.
- Increased mobility walking gently around the ward.

Stage 4 (approx. day 4-5)

- Increase frequency and distances of walks.
- Climb flight of stairs if required.
Appendix 3: Early weeks at home (Phase 2)

- First few days at home take things easy, gentle walking around the house and climb stair as necessary

- If no problems since discharge 10-minute gentle walk on the level should be encouraged daily, gradually increasing time scale, as patient feels comfortable. Once walking 30 minutes gently should reduce time back down to 10 minutes and increase intensity gradually building up time scale as patient feels comfortable

- Patients will be advised to stop if any chest pain is experienced (and use GTN if it has been prescribed). Wait until the pain goes before continuing at a reduced pace. If chest pain increased in frequency or severity or is provoked at slower walking speeds, the GP should consult their GP

- A rate of Perceived Exertion scale will be encouraged to assess the patient’s progress with activity. If using Borg scale exercise in phase 2 aim for RPE 2-3

- Avoid walking in extremes of temperature, i.e. very hot or humid or very cold and/or windy

- May begin light activities around the house e.g. dusting and preparing light meals

- Sexual activity may be resumed when the patient feels comfortable to do so, usually after about 4 weeks

- Four weeks post myocardial infarction may start driving again

- Air travel 2-3 weeks post MI without complications
• Gradually re-introduce usual activities gradually

• Encourage rest period daily

• Most patients can return to work. Advice should take into account the physical and psychological status of the patient, the nature of the work and the work environment (NICE 2007)
Appendix 4: Criteria for Receiving the Heart Manual

Heart Manual/LPCNHS Trust (Feb. 2003)

These criteria are to be used as a guide and each patient will be assessed individually for their suitability and reasons documented in patients cardiac rehabilitation documentation:

- Confirmed MI
- Age below 80
- No uncontrolled arrhythmias
- Resident catchment area
- No known psychiatric illness
- No evidence of dementia
- Able to speak and read English, or with access to assistance or interpretation
Appendix 5: Risk Stratification and Flow chart

RISK STRATIFICATION/NEEDS ASSESSMENT FORM FOR PHASE 3

*It is necessary that each patient have their cardiac risk, co-morbidity and other considerations identified so that a safe and appropriate phase 3 programme can be prescribed. Please complete this proforma, follow the referral pathway overleaf and identify the most appropriate programme.*

<table>
<thead>
<tr>
<th>NAME</th>
<th>D.O.B</th>
<th>Hosp No.</th>
<th>PATIENT STICKER</th>
</tr>
</thead>
</table>

CLINICAL RISK

<table>
<thead>
<tr>
<th>LOWEST RISK</th>
<th>MODERATE RISK</th>
<th>HIGHEST RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>assumed when each of the factors in this category present</td>
<td>assumed for patients who do not meet either high or low risk</td>
<td>Assumed with the presence of any one of the factors</td>
</tr>
</tbody>
</table>

- **No significant LV dysfunction**
- **Uncomplicated MI, CABG, Angioplasty/stent**
- **No resting or exercise induced complex arrhythmias**
- **Functional capacity, 7METs**
- **Absence of clinical depression**

CO-MORBIDITY INDEX (Charlson) Circle each diagnosis present and total the score.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Myocardial Infarction</td>
<td>2</td>
</tr>
<tr>
<td>2 Hemiplegia</td>
<td></td>
</tr>
<tr>
<td>1 Congestive heart failure</td>
<td>2</td>
</tr>
<tr>
<td>2 Moderate to severe renal disease</td>
<td></td>
</tr>
<tr>
<td>1 Peripheral vascular disease</td>
<td>2</td>
</tr>
<tr>
<td>2 Diabetes with end stage organ damage</td>
<td></td>
</tr>
<tr>
<td>1 Cerebrovascular disease</td>
<td>2</td>
</tr>
<tr>
<td>2 Any tumour</td>
<td></td>
</tr>
<tr>
<td>1 Dementia</td>
<td>2</td>
</tr>
<tr>
<td>2 Leukaemia</td>
<td></td>
</tr>
<tr>
<td>1 COPD</td>
<td>2</td>
</tr>
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<td>2 Lymphoma</td>
<td></td>
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<tr>
<td>1 Connective tissue disease</td>
<td>2</td>
</tr>
<tr>
<td>2 Moderate to severe liver disease</td>
<td></td>
</tr>
<tr>
<td>1 Mild liver disease</td>
<td>2</td>
</tr>
<tr>
<td>2 Diabetes</td>
<td></td>
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BACR contraindications to exercise

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Significant Aortic stenosis</td>
<td>1</td>
</tr>
<tr>
<td>1 Hypertrophic cardiaomyopathy</td>
<td></td>
</tr>
<tr>
<td>1 Angina at rest</td>
<td></td>
</tr>
<tr>
<td>1 Uncontrolled arrhythmias</td>
<td></td>
</tr>
<tr>
<td>1 Heart failure</td>
<td></td>
</tr>
<tr>
<td>1 +ETT without symptoms</td>
<td></td>
</tr>
<tr>
<td>1 Uncontrolled hypertension (resting &gt;190/110)</td>
<td></td>
</tr>
<tr>
<td>1 Symptomatic hypertension</td>
<td></td>
</tr>
</tbody>
</table>
REFERRAL PATHWAY FOR CARDIAC REHABILITATION PHASE 3 PROGRAMMES

Pathway 2

START

Clinical risk assessed

HIGHEST RISK

Is the patient motivated to attend an 8-week group programme of exercise and education?

N

Non-motivational issues resolved through identifying concerns and providing necessary support advice?

N

Advise GP and discharge Option 4

Y

Refer patient to Option 2

Does the patient have any co-morbidity, lack of transport, fear of groups, social/cultural factors?

N

Y

Refer patient to Option 2

LOWEST / MODERATE RISK

Is the patient motivated to attend an 8-week group programme of exercise and education?

N

Non-motivational issues resolved through identifying concerns and providing necessary support advice?

N

Advise GP and discharge Option 4

Y

Refer patient to Option 1

Does the patient have any co-morbidities, lack of transport, fear of groups, social or cultural factors?

N

Y

Refer patient to Option 3

Y

Refer patient to Option 3

N

Advise GP and discharge Option 4
Based on the information from the risk stratification and needs assessment form, please indicate which phase 3 option is suitable/necessary for the patient.

Tick most appropriate referral:

<table>
<thead>
<tr>
<th>Option 1:</th>
<th>HOME- BASED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 2:</td>
<td>HIGHER RISK GROUP</td>
</tr>
<tr>
<td>Option 3:</td>
<td>LEISURE CENTRE</td>
</tr>
<tr>
<td>CONGLETON</td>
<td></td>
</tr>
<tr>
<td>MACCLESFIELD</td>
<td></td>
</tr>
<tr>
<td>POYNTON</td>
<td></td>
</tr>
<tr>
<td>KNUTSFORD</td>
<td></td>
</tr>
<tr>
<td>WILMSLOW</td>
<td></td>
</tr>
<tr>
<td>Option 4:</td>
<td>ADVISE GP AND DISCHARGE</td>
</tr>
</tbody>
</table>

NOTES

Please sign and date

Name------------------------------------------------------- Title------------------------------------------------------------

Signature------------------------------------------------------ Date------------------------------------------------------------
Appendix 6: Home Based Exercise Programme

On initial assessment phase 3 facilitator will assign patient to one or more of the following exercise programmes depending on patients health/risk stratification, co-morbidities and motivation levels.

Home based programmes available:

Cardiovascular Interval Training Programme

Suitable for:-

Most patients including:

Currently inactive patients or patients new to exercise

Achieving <5 METs on ETT (i.e. level 3 - modified Bruce, level 1 - full Bruce)

High risk stratified

Patients who require one to one assistance

Theory: Patients alter between Cardiovascular (CV) and Active rest (AR) exercises at timed intervals depending on ability progressing by increasing CV time and decreasing AR (BACR standard training)

<table>
<thead>
<tr>
<th>Cardiovascular</th>
<th>Active Rest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side Taps/steps</td>
<td>Bicep curl</td>
</tr>
<tr>
<td>Knee lifts</td>
<td>Wall Press</td>
</tr>
<tr>
<td>Hamstring curl</td>
<td>Shoulder raise</td>
</tr>
<tr>
<td>Step ups</td>
<td>Hip Abduction</td>
</tr>
<tr>
<td>Walking at home or on the spot</td>
<td>Quarter squats</td>
</tr>
</tbody>
</table>

NB: CV and AR exercises can and should be altered to fit patient’s needs and
abilities any suitable CV or AR exercise can be assigned in replace of the basic programme.

Timings of exercise:
Patient is first assigned to one of the following groups depending on fitness levels and health status.

Beginners 1min CV 30sec AR
Intermediate 2min CV 1mAR
Advanced 3min CV 1mAR

N.B. Resistance used in AR can be progressed with strength of patient however muscular strength is not a main aim of this type of programme. If patients co-morbidities or goals and aims reflect a Muscular Strength and Endurance (MSE) type of training requirement please refer to MSE programme.

Progression
All patients irrespective of group should follow the progression table by replacing an AR exercise with a CV exercise until the patient is doing 10 consecutive CV exercises. Once the patient has completed level five they can move up to the next group.
## Summary of total exercise

<table>
<thead>
<tr>
<th>Level</th>
<th>Beginners</th>
<th>Intermediate</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level one</td>
<td>5min CV 2.5minAR</td>
<td>10min CV 5min AR</td>
<td>18min CV 5min AR</td>
</tr>
<tr>
<td>5CV 5AR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level two</td>
<td>6min CV 2minAR</td>
<td>12min CV 4min AR</td>
<td>21min CV 4min AR</td>
</tr>
<tr>
<td>6CV 4AR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level three</td>
<td>7min CV 1min30AR</td>
<td>14min CV 3min AR</td>
<td>24min CV 3min AR</td>
</tr>
<tr>
<td>7 CV 3AR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level four</td>
<td>8min CV 1min AR</td>
<td>16min CV 2min AR</td>
<td>27min CV 2min AR</td>
</tr>
<tr>
<td>8CV 2AR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level five</td>
<td>10min CV No AR</td>
<td>18min CV No AR</td>
<td>30min CV No AR</td>
</tr>
<tr>
<td>10CV</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Patients should aim to progress by one level every 1-2 weeks, although this may vary with individuals.

**Continuous Cardiovascular:**

**Pedometer/Walking programme**

**Suitable for:**

For patients achieving >5-6 METs or are currently regularly partaking in exercise (level 4 modified bruce, level 2 full bruce)

Patients who are mobile and safe to exercise outdoors independently
Theory: Patient is assigned a pedometer for 6wks and asked to follow a programme set by phase 3 facilitator progressing in ‘steps’ over the 6wk period. Programme could be easily adapted for another CV exercise i.e. swimming, cycling if more appropriate for the patient.

**Progression**

Progression is achieved following standard FITT principles

- **Frequency** – how often the patient takes walks/CV exercise
- **Intensity** – speed or gradient (not measured in most cases)
- **Time** – time or number of steps patient completes on walk
- **Type** – type of CV exercise undertaken

**Muscular Strength and Endurance (MSE):**

**Suitable for:-**

Patients who are already undertaking either CV interval programme or continuous CV programme who require some strength training. Examples may include other co-morbidities such as arthritis, COPD, osteoporosis etc. or to meet aims and goals to assist in quality of life i.e. specific muscle training for activities of daily living.

Example ‘MSE’ programme:

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Sets</th>
<th>Reps</th>
<th>Resistance</th>
<th>Borg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicep Curl</td>
<td>2</td>
<td>10</td>
<td>2kg dumbbell</td>
<td></td>
</tr>
<tr>
<td>Wall Press</td>
<td>2</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hip Abduction</td>
<td>2</td>
<td>10</td>
<td>1kg band</td>
<td></td>
</tr>
<tr>
<td>Shoulder raise</td>
<td>2</td>
<td>10</td>
<td>1kg dumbbell</td>
<td></td>
</tr>
<tr>
<td>Quarter Squat</td>
<td>2</td>
<td>10</td>
<td>2x2kg dumbbell each hand</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 7: Tests

Sub Maximal Exercise Test

Prior to commencing the R2R programme at home patients will complete a fitness assessment using the Chester Step test, to ensure level prescribed is suitable and check patient's response to exercise whilst in a controlled environment. This also gives an objective measure of patient's progress.

Chester Step Test

This is a multistage, sub-maximal test, which requires the subject to step on and off a low step set by a metronome or music beat. Every two minutes the heart rate (HR) and exertion level are checked and recorded and the stepping rate increased slightly. The test continues until the subject reaches 80% Max HR and or reports moderate vigorous level of exercise intensity on the RPE scale. Maximum time for the test is 10 minutes. The data is then transferred onto a graphical datasheet to calculate aerobic capacity and fitness rating. N.B in Beta-blocked patients an accurate aerobic capacity prediction is unable to be calculated however, the recording of HR and RPE at set exercise intensities can still provide useful measures of progression.

Step height can be altered to suit the patients mobility and current fitness level (6", 8", 10" or 12" ). Patient weight is also considered on step height selection as due to increased intensity of exercising when repeatedly raising a heavy body weight.

If a patient is considered suitable for R2R programme but cannot perform step test for reasons related to other co-pathologies, the patient will be observed by Physical Activity and Healthy Lifestyle Facilitator whilst performing the exercises on the R2R video checking the patients HE and exertion levels throughout.
Appendix 8: Rating of Perceived Exertion (RPE) Gunner Borg 1982

Modified Borg scale/Borg CR 10 scale

<table>
<thead>
<tr>
<th>RPE</th>
<th>HOW DO YOU FEEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NO PROBLEM</td>
</tr>
<tr>
<td>2</td>
<td>VERY EASY</td>
</tr>
<tr>
<td>3</td>
<td>EASY</td>
</tr>
<tr>
<td>4</td>
<td>STARTING TO FEEL PUFFED</td>
</tr>
<tr>
<td>5</td>
<td>FEELING A BIT PUFFED</td>
</tr>
<tr>
<td>6</td>
<td>FEELING PUFFED</td>
</tr>
<tr>
<td>7</td>
<td>TIRING</td>
</tr>
<tr>
<td>8</td>
<td>VERY TIRING</td>
</tr>
<tr>
<td>9</td>
<td>OUT OF BREATH</td>
</tr>
<tr>
<td>10</td>
<td>SHATTERED, EXHAUSTED</td>
</tr>
</tbody>
</table>

Guide for using Modified Borg Scale

1. Is 'very light' like walking slowly at your own pace for several minutes
2. Is not especially hard; it feels fine, and it is no problem to continue
3. Is not especially hard; it feels fine, and it is no problem to continue
4. You are tired, but you don't have any difficulties
5. You can still go on but have to push yourself very much. YOU ARE VERY TIRED
6. This is harder than most people have experienced in their lives
Reference List


National Institute for Health for health and Clinical Excellence (May 2007) MI: Secondary prevention, guideline 48