

Reader Information

Title	Community Cardiac Service, Exercise and Physical Activity Operating Procedure V.2
Asset number	832
Rights of access	Public
Type of paper	Operational procedure
Category	Clinical
Subject	Procedure to be followed during Cardiac Rehabilitation/Heart Failure Exercise sessions.
Document purpose/summary	This document exists to provide a comprehensive and clear framework for the operational procedures at the supervised Cardiac Rehabilitation/Heart Failure exercise classes.
Author	Exercise Physiologist – Community Cardiac Service
Ratification date and group	9 th December 2015. Policy Ratification Group
Publication date	18 th December 2015
Review date and frequency (one, two or three years based on risk assessment)	Two years after publication, or earlier if there is a change in evidence.
Disposal date	The PRG will retain an e-signed copy for the database in accordance with the Retention and Disposal Schedule; all previous copies will be destroyed.
Job title	Exercise Physiologist
Target audience	Community Cardiac Service
Circulation	Electronic: LSW intranet and website (if applicable) Written: Upon request to the PRG Secretary on ☎ 01752 435104. Please contact the author if you require this document in an alternative format.
Consultation process	Reviewed by all members of the Cardiac Rehabilitation and Heart Failure teams.
Equality analysis checklist completed	Yes
References/sources of information	ACPICR Standards for the Exercise component of Phase III Cardiac rehabilitation, 2015 (3 rd Edition) American Association of Cardiovascular and Pulmonary Rehabilitation – Guidelines for Cardiac Rehabilitation and Secondary Prevention Programs, 2013 (Fifth Edition). Exercise training in heart failure: from theory to practice. A consensus document of the Heart Failure Association and the European Association for Cardiovascular Prevention and Rehabilitation. European Society of Cardiology, 2011.
Associated documentation	See appendices
Supersedes Document	Exercise and Physical Activity Operating procedure. Cardiac Rehabilitation and Heart Failure Service. Version 1.
Author Contact Details	By post: Local Care Centre Mount Gould Hospital, 200 Mount Gould Road, Plymouth, Devon. PL4 7PY. Tel: 0845

Document review history

Version no.	Type of change	Date	Originator of change	Description of change
0:1	New document	08/05/2013	Exercise Physiologist	Combined document for Cardiac Rehabilitation and Heart Failure Services
1	Ratified	22/5/13	Policy Ratification Group	Minor amends.
2	Updated	15/09/2015	Exercise Physiologist	Change in Service name following amalgamation of Cardiac Rehabilitation and Heart Failure teams to become the Community Cardiac Service. Minor changes made to reflect changes made in new edition of guidance documents. Additional protocol included relating to diabetic considerations relating to exercise.

Contents		Page
1	Introduction	5
2	Purpose	5
3	Definitions	5
4	Duties & Responsibilities	5
5	5.1 Early discharge exercise/activity advice	5
	5.2 Supervised Exercise Programme	6
	5.3 Entry criteria for referral to the supervised exercise programme	6
	5.4 Absolute contraindications to exercise	7
	5.5 Patient safety and assessment	8
	5.6 Patient screening procedure	9
	5.7 Problems encountered during the session	10
	5.8 Post exercise procedures	10
	5.9 Outcome measures	11
	5.10 Staffing and supervision	11
	5.11 Guidelines for exercise prescription	12
	5.12 Graduation Criteria	14
	5.13 Future Exercise/activity opportunities	14
	5.14 Independent/home-based exercise/activity advice	15
	5.15 Documentation/patient follow-up	15
6	Training	15
7	Monitoring Compliance and Effectiveness	15
Appendix A	Exercise referral protocol	17
Appendix B	Risk stratification protocol	18
Appendix C	Conditions of participation	20
Appendix D	Diabetes and Exercise considerations	21
Appendix E	Consent to share health information	23
Appendix F	Patient responsibilities/safety considerations	25
Appendix G	Abbreviations used within Community Cardiac Service	26

Community Cardiac Service, Exercise and Physical Activity Operating Procedure.

1 Introduction

- 1.1 This document exists to provide a comprehensive and clear framework for the operational procedures in relation to the supervised Community Cardiac exercise classes and independent physical activity.

2 Purpose

- 2.1 The purpose of this document is to provide an evidence-based framework to guide the treatment and care given to Community Cardiac Service patients in relation to resuming and maintaining appropriate levels of exercise and physical activity.

3 Definitions

- 3.1 All acronyms are listed in the main body of the document. Please also see abbreviation list in appendix G.

4 Duties and responsibilities

- 4.1 This document is primarily the responsibility of the Community Cardiac Service Clinicians and Exercise Physiologists, under the direction of the Northern Locality management team. The Chief Executive is ultimately responsible for the content of all policies.

5 Main document

5.1 Early discharge exercise/activity advice

Patients are to be given verbal and/or written advice regarding the beneficial effects of exercise and how to safely increase physical activity (including daily walking/activities of daily living) in line with their current cardiac status and symptoms. Physical activity/exercise progress will be reviewed by a Community Cardiac Specialist Nurse, with additional individualised advice available from an Exercise Physiologist where required. Written/verbal guidelines will be provided regarding activities that can be undertaken and those to be avoided, safe and effective ways to maintain/increase activity levels and appropriate targets for patients to achieve (ideally looking to achieve 30 minutes, 5 times per week/150 minutes/week, dependent upon ability, symptoms and diagnosis and co-morbidities).

If patients are interested and suitable to attend supervised classes, patients will then be referred to an Exercise Physiologist (see Exercise referral protocol – Appendix A).

5.2 Supervised Exercise Programme Aims

- To provide supervision / advice regarding suitable exercise and physical activity levels (intensity, duration, type, frequency and progression rates) in a safe and supervised environment.
- To promote self-confidence and independence, and increased awareness of symptoms and management of their condition, with knowledge of the appropriate action that needs to be taken when /if symptoms occur.
- To provide a monitoring service which will enable the detection of any decline in functional capacity / symptoms of cardiac decompensation, with appropriate feedback to GP/referring Consultant.
- Dependent upon clinical status, to aid the patients' return to previous vocational / recreational activities, modify as necessary, or find suitable alternative activities.
- To develop & encourage the patient to implement and maintain safe and effective exercise and recreational activities as part of their lifestyle, following graduation from the supervised classes.

5.3 Entry criteria for referral to the supervised Exercise programme

Patients should have been discharged from hospital and be clinically stable for at least:

Acute HF	4 weeks
Myocardial Infarction (MI)	4 weeks
Outpatient PCI (Post MI)	2 weeks post procedure (but must be >4 weeks post MI)
CABG	6 weeks

HF patients must:

- Be New York Heart Association (NYHA) functional class I & II (suitability of class III patients to be considered).
- Have a confirmed diagnosis of heart failure following an echocardiogram (i.e. with left ventricular failure, both systolic and diastolic dysfunction, and severe right heart failure).
- Have been stable for 4 weeks with no changes in medication (except up titrating of beta-blockers/ACE/angiotensin II receptor blockers).
- Be able to speak without dyspnoea (with a respiratory rate of <30 breaths.min).

Patients are to be assessed for suitability for exercise, and the need for Consultant Cardiologist or Surgeon's permission, based on the following information:

5.4 Absolute Contraindications for Exercise

- Unstable angina
- Resting BP of >180/>110mmHg
- Orthostatic blood pressure drop of >20mmHg with symptoms
- Significant aortic stenosis (aortic valve area <0.1cm²)
- Acute systemic illness or fever
- New/uncontrolled atrial or ventricular arrhythmias
- Uncontrolled sinus tachycardia (HR > 120bpm)
- Active pericarditis or myocarditis
- Uncompensated congestive heart failure (within the last 4 weeks)
- 3° (complete) AV block (without pacemaker)
- Recent embolism
- Acute thrombophlebitis
- Resting ST segment displacement (>2mm)
- Uncontrolled diabetes
- Severe orthopaedic conditions that would prohibit exercise
- Other metabolic conditions, such as acute thyroiditis, hypokalemia or hyperkalemia, hypovolemia, etc.
- Severe grade 3 rejection (cardiac transplantation recipients)
- Severe hypertrophic obstructive cardiomyopathy

(Ref: ACPICR standards for physical activity and exercise in the cardiac population, 2015, 3rd Edition)

5.4.1 Plus additional contraindications to consider:

- Progressive worsening of exercise tolerance or dyspnoea at rest or on exertion over previous 3-5 days
- Significant ischaemia during low intensity exercise (<2METs)
- Physical disability that would preclude safe and adequate exercise performance
- Heart rate (HR) > 100beats per minute (bpm) or <40bpm at rest
- Systolic blood pressure (SBP) < 80mmHg
- Pre-exercise blood pressure <180/<110mmHg combined with high resting HR (in view of rate pressure product implications and elevated myocardial oxygen demands)
- Recent ICD event – ICD interrogation/permission required before returning to class
- New ICD/PPM/new lead within the previous 6 weeks
- Significant obstructive valvular disease
- >2.3kg increase in weight over previous 2/3 days
- NYHA Functional Class IV
- Patient taking antibiotics – reason for course of treatment to be ascertained.

Additional considerations that require MDT discussion and/or permission from an appropriate Clinician:

- Left ventricular thrombus
- Aneurysm
- QRS duration > 120ms (if long QT syndrome – swimming is not advisable).

- Ongoing arrhythmias (especially ventricular) with poor left ventricular function (LVF) and no Implantable cardioverter defibrillator (ICD)
- Significant residual disease with/without symptoms, with no intervention planned
- Newly diagnosed arrhythmias
- Outstanding investigations/procedures/devices
- Patients with HOCM (hypertrophic obstructive cardiomyopathy)
- Patients with a Left Ventricular Assist Device (LVAD)
- Transplant patients
- Patients with complex mental health needs
- Any additional complex cardiac/non-cardiac issues that warrant further consideration/discussion
- Pre-existing co-morbidities

5.4.2 For patients with ICDs, settings are essential information and must be included on referral form.

5.4.3 For all patients, suitability to exercise is to be considered before mentioning classes to patients, and if patients are not suitable alternative activity advice will be provided.

5.4.4 Written Consultant/GP consent may be required for any patients that present with any of the contraindications/additional considerations listed above and therefore does not have global consent to exercise (with relevant discharge/cardiac investigation reports available, where appropriate).

5.5 Safety & Assessment

- All patients should be assessed by the Community Cardiac Specialist Nurse prior to their appointment in order to ensure that their clinical status has not regressed from the time of referral and to confirm that the patient is still suitable to attend the class.
- Prior to commencing the programme all patients will be assessed by both an Exercise Physiologist and Community Cardiac Specialist Nurse.
- During the initial assessment all patients (where appropriate) will undergo a validated functional capacity test (Chester Step Test/6 minute walk test/Incremental shuttle walk test). This will be undertaken for exercise prescription purposes and, where appropriate, to demonstrate changes in functional capacity over time. As such, this test may be repeated at end of the programme.
- Each patient will be assessed on a weekly basis and be given individualised advice regarding their exercise prescription.
- Patients will be risk stratified according to their risk of having a subsequent event during exercise (i.e. ischaemic/arrhythmic potential) and the amount of supervision that they require (see appendix B).

5.6 Patient screening procedure

5.6.1 When patients arrive they will be encouraged to be seated prior to pre-exercise BP/HR measurements being taken.

5.6.2 One at a time, each patient will be checked in by a Community Cardiac Specialist Nurse. Patients will be asked to read the 'conditions of participation' (see appendix C) and must inform the Nurse of any relevant information in relation to this checklist prior to starting the exercise class.

At this time the following information will be obtained and recorded:

- Pre-exercise BP - If systolic BP is elevated above 180mmHg, pre exercise heart rate will be considered, so that rate pressure product can be calculated. This will help to inform the decision regarding that patient's suitability to exercise rather than considering BP in isolation.
- Pre-exercise manual heart rate and rhythm
- Medications:
 - Consider compliance within the last 24 hours.
 - Consider changes in medications since previous session (patient records should be updated, if appropriate).
 - Confirm availability of GTN/inhalers, where applicable.
- For patients with diabetes, consider the need for a pre/post-exercise blood sugar/ketone level (see appendix D - Diabetes and exercise considerations)
- Symptoms – consider any new/usual/worsening symptoms since last session, including:
 - Angina
 - SOB/dyspnoea
 - Palpitations
 - Arrhythmias
 - Dizziness/light-headedness
 - Orthopnoea
 - Ankle swelling
 - Fatigue
 - Weight gain of >2.3kg in 2/3 days
 - Ascites
 - PND
 - Cough
 - Claudication
- Details of hospital admissions, relevant appointments, investigations and procedures, with plans will be made to access results/discharge summary as necessary.
- Presence of systemic illness (cold/flu/GI upset/infections/antibiotics etc.).
- Any musculo-skeletal/ orthopaedic problems, considering individual response to previous exercise session/recent physical activities.
- Changes in co-morbidities which could affect exercise safety/achievements.
- For HF patients, dry weight should be routinely measured at each session and recorded in exercise manual in order to assess fluid retention, along with oxygen saturation levels for all patients with HF and/or respiratory conditions.

5.6.3 Any issues/concerns that patients raise during check-in, that are not directly related to the exercise session should be discussed once the class has started, so as to minimize the length of time that check-in process will take.

5.7 Problems encountered during the session

5.7.1 Patients will be reminded that during the session they must inform a member of staff immediately if they experience any of the following:

- Pain that could be cardiac in origin
- If they have to use their GTN
- If they are more breathless/fatigued than normal
- Any musculo-skeletal/orthopaedic discomfort
- Any dizziness or light-headedness
- Excessive coughing
- Persistent palpitations
- Symptoms of hypoglycaemia
- Use of bronchodilator
- ICD shock therapy/device alarm

5.7.2 Relative criteria indicating the need to modify or terminate the exercise programme:

- Marked dyspnoea or fatigue ≥ 14 on Borg scale
- Oxygen desaturation $< 85\%$
- Respiratory rate of > 40 breaths/min during exercise
- Newly diagnosed arrhythmias
- Increased supraventricular or ventricular ectopy during exercise
- Diaphoresis, pallor or confusion
- Drop in LVAD flow $3L/min$
- Flow rate/power value that is higher/lower than normal value

5.7.3 In the event that a patient experiences any problems and has to stop exercising, he/she will be directed to the nearest seat and should try to keep his/her feet moving as much as possible in order to maintain venous return.

5.7.4 If the patient is unable/unwilling to continue exercising, once the symptoms have subsided a cool down will then be undertaken, if appropriate.

5.8 Post-exercise Procedures

Following the cool down, patients will be checked out by a Community Cardiac Specialist Nurse. If required, the Phase IV Exercise Instructor will assist with checking patients out, using the automated BP machine. Any problems should be immediately referred to the Community Cardiac Specialist nurse.

The following checks will then be undertaken and recorded on the patient record card:

- Post exercise BP (SBP should be no more than 10mmHg above pre-ex SBP). If SBP is $> 20mmHg$ lower than pre-ex levels, the reading should be rechecked after 5 minutes so as to ensure that BP is not continuing to drop, with fluid intake encouraged as appropriate).

- Post exercise HR (should be within 10bpm of their pre exercise HR. If not, the patient should continue walking slowly around the room, and have it rechecked 5 minutes later, with consideration given to reducing the exercise intensity in future sessions).
- Overall RPE for session.
- Repeat blood sugar measurements for patients with diabetes, where required.
- Symptoms (CP/dizziness/GTN use/musculo-skeletal problems with programme adaptations noted, as required).
- Repeat oxygen saturations for patients with HF and/or respiratory conditions.

Patients will be supervised for a minimum of 15 minutes from the end of the cool-down.

5.9 Outcome measures

- 5.9.1 CR patients: Patient data will be made available to NACR (National Audit for Cardiac Rehabilitation) as required.
- 5.9.2 HF patients: Quality of life will be assessed using the Minnesota Living with HF questionnaire. Anxiety and depression levels will be assessed using HAD questionnaire.
- 5.9.3 Sub-maximal exercise test: Where appropriate this may be repeated at the end of the programme, demonstrating any potential change in heart rate response and functional capacity.
- 5.9.4 Patient satisfaction will be measured in line with LSW guidance.

5.10 Staffing and Supervision

- 5.10.1 All members of staff will be competent in BLS combined with the use of AED, in line with the Joint Position Statement by the Resus Council and BACPR (2013) or Immediate Life Support. Immediate access to the appropriate resuscitation equipment must be available. In the event of sickness/annual leave, if insufficient staff are available sessions will have to be cancelled.
- 5.10.2 All patients will have given their consent for appropriate clinical details to be shared with Phase IV staff (see appendix E), and for information to be shared amongst other relevant teams providing patient care, in line with SystemOne 'consent to share information' agreement.
- 5.10.3 Patients will be informed in writing of their responsibilities whilst taking part in the supervised sessions (see appendix F). The Cardiac Rehabilitation staff reserve the right to deny access to the class for any patients who do not abide by these rules.
- 5.10.4 Relevant PGDs will inform practice (Aspirin, Oxygen, GTN - including chest pain flow chart).

5.10.5 Ensure a minimum staff to individual ratio of 1:5, with exact staffing numbers dependent on level of risk stratification, extent of specialist help/supervision for concomitant co-morbidities.

5.11 Guidelines for exercise prescription.

These guidelines should be used in a flexible manner to prescribe an individualised exercise programme, in conjunction with a patient's specific pathology and medical background, including co-morbidities. ACPICR standards for Physical Activity and Exercise in the Cardiovascular population, 2015 (3rd Edition) will be used for reference with specialist populations.

5.11.1 Warm-up: A low intensity graded warm up, which should include pulse-raising, stretching, general mobility and re-warm. The duration should be 5-15 minutes dependant of patients' functional capacity, but ideally lasting 15 minutes. Seated/supported options will be made available where required. RPE <11 (light).

5.11.2 Cool down: 10 minutes with a gradual reduction in intensity, including slow walking and or/chair based movements and stretching.

5.11.3 Exercise Mode:

- Circuit based class, encompassing cardiovascular exercise stations interspersed with active recovery and muscular strength and endurance (MSE) stations, as deemed appropriate by the Exercise Physiologist.
- The class will utilise minimal equipment, thereby facilitating transference to the home environment to supplement the supervised sessions. As such, where appropriate patients will be provided with written information as to how these circuits can be performed outside of the supervised class environment.
- Chairs will be available for rest/chair-based/supported activity as appropriate. Any seated work will be accompanied by leg work in order to aid venous return.

5.11.4 Exercise Intensity:

- Will be monitored using a combination of HR response, RPE achieved and observation.
- The level of monitoring should be individualised to the patient's needs with the aim of progressing towards patient self-monitoring and self-management.
- Patients should be working at 40-70% heart rate reserve, (using Inbar/220-age (<45 years)/Keteyian HRmax calculation, as appropriate) where no ETT peak HR information is available.
- Rate of perceived exertion = 11-14 modified Borg scale (i.e. 'somewhat hard').

If patients are beta-blocked, 30 bpm will be subtracted when using Inbar/220-age calculations. This adjustment is applied regardless of dose of beta-blocker. It must be recognised that in this instance heart rate measurements can function only as a guide to intensity prescription, with appropriate discretion and judgement used. As such, greater reliance should be put on other measures of intensity (RPE, shortness of breath etc.).

It is also recognised that patients may be prescribed other groups of medications which are known to have rate-reducing properties, such as certain calcium channel blockers and Ivabradine. In this instance no formal adjustments will be made to patients' maximal heart rates but the action of these forms of medication should be taken into account when calculating appropriate training zones.

Intensity will be determined according to the patient's risk stratification (see appendix B), with higher risk patients (plus low functioning/more sedentary individuals) being worked at the lower end of the intensity ranges discussed.

Lower functioning patients may require lower intensity exercise involving intermittent bouts of activity (seated, if appropriate).

For heart failure patients, exercising heart rate and rhythm will be monitored via heart rate monitors, where appropriate. However, greater reliance will be put on RPE/breathlessness/fatigue as a measurement of exertion for this group of patients due to the fact that the chronotropic response to exercise is frequently abnormal, combined with the rate-reducing effects of the beta-blocking medication.

Use of low weights and high repetitions will be encouraged, as will the avoidance of straining and breath holding. Attention will also be given to the use of accessory muscles and posture training to try to reduce dyspnoea.

MSE work should be carried out an appropriate intensity so as to result in RPE 12-13 by the end of 10-15 reps.

Once an appropriate HR and BP response has been established, weaning of these objective measurements will be considered, with self-monitoring and management encouraged in order to establish safe, effective and independent exercise in the long term.

5.11.5 Exercise Duration:

24 minutes total circuit time (12 minutes CV exercise + 12 minutes muscular strength/endurance) gradually reducing active recovery periods where appropriate according to symptoms, fatigue, RPE/HR and risk stratification).

5.11.6 Exercise Frequency (supervised classes):

1x per week

In addition to supervised classes, patients are advised to undertake additional independent physical activity, in line with current activity guidelines (>30 minutes of moderate intensity physical/activity on >5 days per week/150 minutes accumulated during the week).

Symptoms of fatigue will serve as guidelines for determining frequency of exercise. Consideration will also be given to how patients felt the day after an exercise class.

Initial bouts of physical activity may be of short duration, repeated several times daily.

Poor FC (i.e. < 3mets) multiples of 5-10 minutes repeated daily.

Moderate FC – 15 minutes 1-2x/day.

Good FC – 20-30 minutes 3-5x/week.

5.11.7 Exercise progression:

- Should consider all aspects of the FITT principle.
- May be achieved by increasing ratios of CV:AR time, work: active rest, and standing: seated exercise.
- Duration will be increased, prior to intensity.

5.12 Graduation Criteria

5.12.1 A flexible approach to graduating patients will be adopted, depending on individual need. Patients will be graduated from the Cardiac Rehabilitation supervised programme after a maximum of 6 sessions have been completed and when the following criteria have been met:

- Haemodynamic response to exercise and recovery are appropriate and satisfactory.
- Cardiac symptoms are absent, or if present are stable, and the patient has knowledge of how to deal effectively with such symptoms.
- Stable and/ or controlled baseline heart rate, blood pressure and blood sugars where appropriate, are demonstrated.
- A plan for continued exercise participation should be discussed between the patient and the Exercise Physiologist, and be mutually agreed.
- Recognition of signs and symptoms of over exertion, metabolic dysfunction or circulatory disorders.
- The patient should be able to demonstrate knowledge of their condition, any abnormal signs and symptoms, medication use and their side effects.

5.12.2 At this time patients will be provided with verbal and/or written information, summarising the key points with regard to safe and effective participation in physical activity for the future. Patients are made aware of their own responsibility in monitoring and progressing their future exercise. Advice regarding how this guidance and information should be applied to more widespread forms of physical activities including occupational/recreational forms of activity, will be reiterated. Advice pertaining to the safety and appropriateness of additional/future activities will also be provided.

5.13 Future Exercise/ Activity Opportunities

Assuming that no contraindications are present, following graduation from Phase III patients will be offered the chance to join a Phase IV programme at a conveniently located venue, under the supervision of a suitably qualified

Exercise Instructor. To enable Exercise Instructors to safely and effectively prescribe Exercise for Phase IV patients, the Exercise Physiologist will complete a BACPR referral sheet with appropriate clinical details and patient signature, thereby agreeing to this transfer of information.

Patients that are not interested/unsuitable to join Phase IV or where this service is not available, will be made aware of other suitable opportunities that exist in the local area (e.g. walking schemes, movement and mobility classes etc).

In the instance that patients are keen to attend a fitness facility which does not offer a Phase IV programme, a BACPR transfer form is not appropriate. Instead a letter will be sent to the patient, giving a basic overview of their cardiac status/current exercise achievements, general activity/exercise advice which can then be given to their Exercise Instructor for reference/guidance, along with contact details for further advice/information if required.

5.14 Independent/home-based Exercise/Activity Advice

Patients unable or unwilling to take part in the supervised exercise classes will be offered written and/or verbal advice, as individualised as possible, about the type and level of activity that would be appropriate for their stage of recovery/current health status.

5.15 Documentation/Patient follow-up

All data will be recorded on SystmOne, in line with LSW protocols/policies.

Patient data will be made available upon request from NACR (National Audit for Cardiac Rehabilitation).

A rehabilitation summary will be produced and made available to the patient's registered GP, with a patient copy being offered in all cases.

If deemed appropriate, a discharge summary will be sent to the patient's registered GP in the instance that the patient is unable or unwilling to complete the supervised exercise programme.

6 Training implications

All staff involved in the classes should hold a relevant resuscitation qualification (see section 5.10). Appropriate CPD opportunities (e.g. BACPR Exercise-related study days) should be attended where possible in order to maintain evidence-based practice.

7 Monitoring compliance and Effectiveness

See section 5.9

All policies are required to be electronically signed by the Lead Director. Proof of the electronic signature is stored in the policies database.

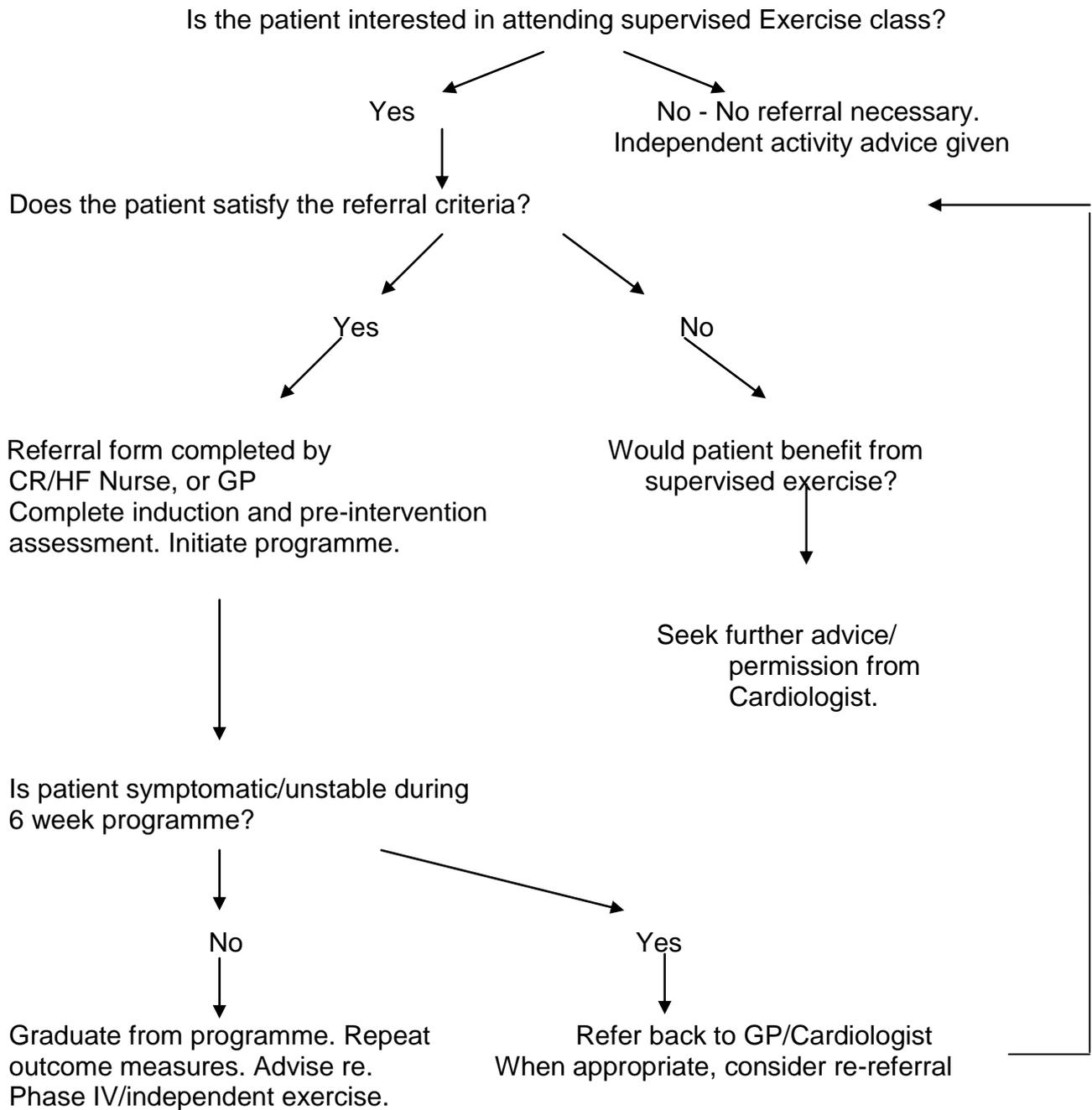
The Lead Director approves this document and any attached appendices. For operational policies this will be the Locality Manager.

The Executive signature is subject to the understanding that the policy owner has followed the organisation process for policy Ratification.

Signed: Director of Operations

Date: 11th December 2015

Appendix A Exercise Referral Protocol



Appendix B: Risk stratification protocol – see next page

(Ref: ACPICR standards for physical activity and exercise in the cardiac population, 2015)

Indicators or severity of event <ul style="list-style-type: none"> <input type="checkbox"/> Anterior MI <input type="checkbox"/> Previous MIs <input type="checkbox"/> Large infarct (enzymes++) <input type="checkbox"/> Complicated recovery 	Indicators or LV function <ul style="list-style-type: none"> <input type="checkbox"/> LV function – moderate (EF = <input type="checkbox"/> 40- 49%) or poor (EF = <40%) <input type="checkbox"/> Heart Failure 	Indicators of ongoing ischaemia <ul style="list-style-type: none"> <input type="checkbox"/> Positive ECG <input type="checkbox"/> Ongoing angina <input type="checkbox"/> Awaiting further investigations 	Other considerations <ul style="list-style-type: none"> <input type="checkbox"/> Arrhythmias (especially ventricular) <input type="checkbox"/> Cardiac arrest secondary to event
---	---	---	---

Lowest Risk: C (all factors must be present to be classified as ‘Lowest’)	Moderate Risk : B (if patient does not meet criteria for lowest or highest)	Highest Risk: A (assumed with the presence of <u>any one</u> of these factors)
<ul style="list-style-type: none"> <input type="checkbox"/> Absence of complex ventricular arrhythmias during exercise testing and recovery <input type="checkbox"/> Absence of angina or other significant symptoms (e.g. unusual SOB, light-headedness or dizziness, during exercise testing and recovery) <input type="checkbox"/> Presence of normal haemodynamic responses during exercise testing and recovery (appropriate increases and decreases in HR and SBP with increasing workloads and recovery) <input type="checkbox"/> Functional capacity >7mets <p>Non-Exercise Testing Findings:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Resting EF >50% <input type="checkbox"/> Uncomplicated MI or revascularisation procedure <input type="checkbox"/> Absence of complicated ventricular arrhythmias at rest <input type="checkbox"/> Absence of CHF <input type="checkbox"/> Absence of signs or symptoms of post-event/post-procedure ischaemia <input type="checkbox"/> Absence of clinical depression 	<ul style="list-style-type: none"> <input type="checkbox"/> Presence of angina or other significant symptoms (e.g. unusual SOB, light-headedness or dizziness, occurring only at high levels of exertion (≥ 7METS)) <input type="checkbox"/> Mild to moderate level of silent ischaemia during exercise testing or recovery (ST segment depression <2mm from baseline) <input type="checkbox"/> Functional capacity < 5METS <p>Non-Exercise Testing Findings:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Resting EF 40-49% 	<ul style="list-style-type: none"> <input type="checkbox"/> Presence of complex ventricular arrhythmias during exercise testing or recovery <input type="checkbox"/> Presence of angina or other significant symptoms (e.g. unusual SOB, light-headedness or dizziness at low levels of exertion [<5 METs] or during recovery) <input type="checkbox"/> High level of silent ischaemia (ST segment depression ≥ 2mm from baseline) during exercise testing or recovery <input type="checkbox"/> Presence of abnormal haemodynamics with exercise testing (i.e. chronotropic incompetence or flat or decreasing SBP with increasing workloads) or recovery (severe post exercise hypotension) <p>Non-Exercise Testing Findings:</p> <ul style="list-style-type: none"> <input type="checkbox"/> History of cardiac arrest or sudden death <input type="checkbox"/> Resting EF < 40% <input type="checkbox"/> Complicated MI or revascularisation procedure <input type="checkbox"/> Complex dysrhythmias at rest <input type="checkbox"/> Presence of CHF <input type="checkbox"/> Presence of signs and symptoms of post-event/post-procedure ischaemia <input type="checkbox"/> Presence of clinical depression

2. OTHER CONSIDERATIONS:

RISK FACTOR	LOWEST RISK A		MODERATE RISK b		HIGHEST RISK c		Additional comments
Smoking	NONE If quit =>6 months at time of event	<input type="checkbox"/>	SMOKER If quit<6 months	<input type="checkbox"/>	SMOKER	<input type="checkbox"/>	
Diabetes	HbA1c <6.5% or FBG <120 (7mmol/L)	<input type="checkbox"/>	HbA1c <6.6 - 7.9% or FBG =120-180 (7-11mmols/L)	<input type="checkbox"/>	HbA1c =>8% or FBG >180 (>11mmols/L)	<input type="checkbox"/>	
Obesity	BMI < 25	<input type="checkbox"/>	BMI =25-29.9	<input type="checkbox"/>	BMI=>30	<input type="checkbox"/>	
Hypertension	<120 <80	<input type="checkbox"/>	120 -139 80 – 89	<input type="checkbox"/>	=>140 =>90	<input type="checkbox"/>	
Sedentary	=>1,500kcal/week	<input type="checkbox"/>	700-1499kcal/week	<input type="checkbox"/>	=<700kcal/week	<input type="checkbox"/>	
Anxiety/Depression	Normal (<8)	<input type="checkbox"/>	Borderline (8-11)	<input type="checkbox"/>	High (>12)	<input type="checkbox"/>	
Dyslipidemia (And dietary fat intake)	LDL<100 Chol/HDL ratio <5 Or Trig <100	<input type="checkbox"/>	LDL100-129 Chol/HDL ratio 5-6 Or Trig 100-149	<input type="checkbox"/>	LDL=>130 Chol/HDL ratio >6 Or Trig =>150	<input type="checkbox"/>	
Summary: Cardiac risk stratification	Lowest = 1 Low/med = 2 Med = 3 Med/high = 4 Highest = 5						
Risk factor level	Lowest = a Moderate = b Highest = c						
Supervision code	Lowest = 1 Moderate = 2 Highest = 3						

Appendix C

Conditions of participation



Before you start to exercise, please make sure that you have told your Cardiac Nurse if you have had:

- Any change in symptoms (i.e. more breathlessness than usual, swollen ankles, chest pain, palpitations, coughing or dizziness?).
- Increased tiredness/lethargy since we last saw you.
- An increase in your weight since we last saw you.
- Any change in your medications (or if you have forgotten take them).
- Any test results, GP/hospital appointments or hospital admissions.
- Any new or worsening joint/muscle problems.
- Any general feelings of being unwell during the last few days e.g. fever, sore throat, upset stomach.
- Any decline in the level of exercise/activity that you can comfortably achieve.
- If you have been given GTN or an inhaler, have you got it with you?
- If you are diabetic, have you brought a snack with you? Have you remembered to bring blood glucose machine with you? (Before you exercise, please let your Cardiac Nurse know the reading).



During your exercise session please tell the person in charge if you experience any of the following:

- Any unusual symptoms (angina, more breathlessness than usual, palpitations, coughing, fatigue or dizziness?).
- Any joint or muscle problems.
- Any general feelings of being unwell (e.g. dizziness, feeling faint etc.)
- If your LVAD alarm sounds, or if your power or flow values differ from normal.
- If your ICD is triggered.
- If you need to use your GTN/inhaler during the class, please let one of the Cardiac Rehab team know **immediately**.

Always exercise at a level which represents exertion without discomfort.

Appendix D

Diabetes and Exercise considerations

For those patients requiring insulin:

- Test blood sugars before and after exercise (do not need to test during exercise).
- If blood glucose before exercise $>14\text{mmol/L}$, test for ketones and do not exercise if >1 .
- If ketones ≤ 1 , patients can exercise as long as blood glucose $<20\text{mmol/L}$
- If blood glucose before exercise is $<5.5\text{mmol/L}$ then advise 10-20g Carbohydrate (e.g. carton of orange juice/cereal bar)

For patients taking sulphonylureas: (Gliclazide, Glibenclamide, Glimepiride, Glipizide or Tolbutamide)

- Test before and after exercise (do not need to test during exercise).
- This group of drugs is associated with a risk of exercise induced hypoglycaemia so if blood glucose before exercise is $<5.5\text{mmol/L}$ then advise 10-20g carbohydrate (e.g. carton of orange juice/cereal bar)

Again do not exercise if blood sugars are $>20\text{mmol/L}$ but there is no need to test for ketones

Diet controlled and all other diabetic medication_ Metformin, Exenatide, liraglutide, nateglinide, sitagliptin.

No need to test blood sugar unless taking any of the above with insulin or a sulphonylurea

For all groups of patients if blood glucose levels are regularly high then advise making contact with GP or Practice Nurse.

What to do if a patient has a 'hypo' during exercise:

- Stop exercise and check blood glucose
- If 4mmols/L or below give 3 glucose tablets or a cereal bar or 50–100mls Lucozade
- After 10 minutes recheck blood glucose to make sure it is above 4mmols/L .
- If still below 4mmol/L repeat above

If patient is going to drive after a 'hypo' ensure they wait 45 minutes, as it takes this time for your brain to recover fully. The patients' blood glucose will need to be above 5mmol/L before they can drive.

Updated May 2013 (based on advice from Diabetes Team, Derriford Hospital)

Ketones

When the body has insufficient insulin, it cannot get glucose from the blood into the body's cells to use as energy, so will begin to burn fat instead. When the body burns too much fat, it may cause ketones (which are an acid) to become present in the bloodstream.

When Ketone levels become too high, the risk of ketoacidosis is raised and this emergency condition can lead to coma and even death in serious cases

Ketone levels

Below 0.6mmol/L – normal range

0.6mmol/L – 1.5mmol/L – If in this range you have the presence of ketones in your blood, which may develop into a problem if not treated. You should be in touch with your GP/Practice nurse for advice.

Above 1.5mmol/L – Readings above 1.5mmol/L indicate greater risk for developing ketoacidosis. You should contact GP for advice. Readings above 3.0mmols/L may warrant a trip to hospital for immediate treatment.

Why we cannot exercise with a high blood sugar

When you exercise muscles need energy and the quickest form of energy is glucose. During exercise muscles will increase their sensitivity to insulin so that it can take more glucose into the muscle cells. However if there is insufficient insulin the muscles will not be able to receive enough glucose, even if there is more than enough glucose in the blood. As a result the muscles will send a signal that they need more energy, so the body will respond by releasing more glucose, thus increasing blood sugar levels even higher. This is why if your blood sugar is high before exercising, exercising can drive you blood sugar up rather than down, the reason is that there is not enough insulin.



Appendix E CARDIAC REHABILITATION EXERCISE SESSIONS

DATA PROTECTION - CONSENT TO SHARE HEALTH INFORMATION

An informed patient under our care can choose to permit or restrict access to the information entered onto their record. As part of this agreement, **please read and amend the following statements:**

I ***do / do not** consent to sharing of data recorded by the Community Cardiac team with any other organisation that may provide care for me.

I ***do / do not** consent to the viewing of the data by the Community Cardiac team that is recorded at other care services that may care for you, where you have agreed to make the data shareable.

You have been invited to take part in the Cardiac Rehabilitation/Heart Failure Exercise programme. In order for us to look after all of our patients suitably at these sessions, we have asked one of the Exercise Instructors from the leisure centre to join us to help supervise the class. Should you choose to, and it is appropriate for you, you may be offered the opportunity to move on to the next phase of the Cardiac Rehabilitation Exercise classes (Phase IV) once you graduate from this programme. We will discuss this with you separately at the appropriate time.

However, it will be necessary for us to share some of your medical history and current condition with the Exercise Instructor involved so that they / we can look after you appropriately. The type of information provided would be the minimum that we consider necessary for gym staff to help look after you or to prescribe your individual programme. For example this could be:-

- The treatment you have had in hospital and how you responded to this
- The type of medications you are taking
- The results of some of your tests or investigations

It is important to us that you fully understand that we need to disclose this type of information to the gym staff both verbally and in writing, and that you have consented to this. All the gym staff that work with us have agreed and signed a confidentiality statement that means they, like us the Cardiac Rehabilitation team, are not allowed to disclose any of the information that they receive or know about you to a third party, and must treat the information

about you with confidence in accordance with the Data Protection Act 1998 and other relevant legislation.

We would therefore ask you to please sign this document to confirm that you have been informed about the need to share relevant information with the Exercise Instructor, have had the opportunity to ask any questions that you may have about it, and that you provide consent to Livewell Southwest (Cardiac Rehabilitation Team) to do this.

Patient name _____ Signature _____ Date _____



Appendix F

PATIENT RESPONSIBILITIES/ SAFETY CONSIDERATIONS

In order to maximise the safety of your exercise session, we ask you to read through the following information carefully.

During the exercise class induction and at each subsequent class it is **your responsibility** to declare any relevant information relating to your health including any illness/symptoms/medication use. Withholding such information will affect our ability to care for you appropriately.

If at any point during your exercise programme you feel unwell, uncomfortable or in any way unhappy to continue with the activity, **stop immediately** and inform a member of staff. If you experience any pain or discomfort whatsoever (including chest pain or muscular pain) you must inform a member of staff **immediately**.

Please strictly adhere to the prescribed programme, as stated in your exercise folder. If in any doubt, please consult a member of staff.

Please liaise with staff and be sensible when choosing an appropriate weight. If you are in any way unsure, please ask for some assistance and we will encourage you to select a lighter weight. Do rest and/or reduce the weight during the exercise period as needed.

Please ensure that you hold the dumbbell weights/ dynabands securely, and carefully place them back on the chair when you have finished with them. You are advised not to use any equipment until a member of staff has first demonstrated the safe use of that equipment to you.

If you feel that you are in any way exceeding the recommended level of exertion (i.e. moderate = feeling warm, slightly out of breath) or your heart rate has exceeded the target heart rate given to you by a member of staff, slow down or stop the activity, and consult with a member of staff immediately.

If you are in any doubt about these instructions, please check with a member of staff prior to commencing any activity.

I have read and understood the information that has been provided to me and have been provided with an opportunity to ask any questions that I may have. I will fully consult with a member of staff **before** commencing any exercise program.

Signature of patient _____

Please print name _____ Date _____

APPENDIX G

ABBREVIATIONS USED WITHIN THE COMMUNITY CARDIAC SERVICE

MI	=	Myocardial Infarction
NSTEMI	=	Non-ST Elevation Myocardial Infarction
INF MI	=	Inferior MI
POST MI	=	Posterior MI
LAT MI	=	Lateral MI
LBBB	=	Left Bundle Branch Block
RBBB	=	Right Bundle Branch Block
LV	=	Left Ventricle
LVF	=	Left Ventricular Failure
EF	=	Ejection Fraction
SK	=	Streptokinase
TNK	=	Tenecteplase
TPA	=	Tissue Plasminogen Activator
ANGIO	=	Angiogram
PCI	=	Percutaneous Coronary Intervention
PTCA	=	Percutaneous Transluminal Coronary Angioplasty
DES	=	Drug Eluting Stent
BMS	=	Bare Metal Stent
LMS	=	Left Main Stem
LAD	=	Left Anterior Descending Coronary Artery
RCA	=	Right Coronary Artery
Cx	=	Circumflex Coronary Artery
PDA	=	Posterior Descending Coronary Artery
OM	=	Obtuse Marginal Coronary Artery
3VD	=	Three Vessel Disease
CABG	=	Coronary Artery Bypass Grafts
AS	=	Aortic Stenosis
MS	=	Mitral Stenosis or Multiple Sclerosis
LIMA	=	Left Internal Mammary Artery
RIMA	=	Right Internal Mammary Artery
AF	=	Atrial Fibrillation
VF	=	Ventricular Fibrillation
VT	=	Ventricular Tachycardia
TropT	=	Troponin T
ETT	=	Exercise Tolerance Test
ECG	=	Electrocardiograph
Echo	=	Echocardiogram
MPS/MIBI	=	Myocardial Perfusion Scan
TPW	=	Temporary Pacing Wire
PPM	=	Permanent Pacemaker
BM	=	Blood Sugar Measurement
NIDDM	=	Non-Insulin Dependant Diabetes Mellitus

IDDM	=	Insulin Dependant Diabetes Mellitus
PVD	=	Peripheral Vascular Disease
AAA	=	Abdominal Aortic Aneurysm
COPD	=	Chronic Obstructive Pulmonary Disease
TKR	=	Total Knee Replacement
BP	=	Blood Pressure
SBP	=	Systolic Blood Pressure
DBP	=	Diastolic Blood Pressure
HR or P	=	Heart Rate or Pulse
BMI	=	Body Mass Index
SOB	=	Short of Breath
NYHA	=	New York Heart Association
PA	=	Physical Activity (Exercise)
LVF	=	LV Function (Exercise)
THR	=	Target Heart Rate (Exercise)/Total Hip Replacement
RPE	=	Rating of Perceived Exertion (Exercise)
CRN	=	Cardiac Rehab Nurse
PN	=	Practice Nurse
DN	=	District Nurse
H/V	=	Home Visit
SB	=	Seen By
SVG	=	Saphenous Vein Graft
DGH	=	District General Hospital
D/C	=	Discharged
OPA	=	Out Patient Appointment
IP	=	Inpatient
REF	=	Referred
P.S.A.S.	=	Plymouth Smoking Advice Service
PII	=	Phase Two
PIII	=	Phase Three
PIV	=	Phase Four
GTN Spray	=	Glyceryl Trinitrate Spray
AB	=	Antibiotics
PK HR	=	Peak Heart Rate
HRM	=	Heart Rate Monitor
REG	=	Regular
IRREG	=	Irregular
Re	=	Regarding
TBC	=	To Be Confirmed
TBD	=	To Be Discussed
1/7	=	1 Day
1/12	=	1 Month
1/52	=	1 Week
CP	=	Chest Pain
+	=	Moderately
++	=	Severely
Ć	=	With
10"	=	10 Minutes
UB	=	Upper Body

LB	=	Lower Body
I.C	=	Intermittent Claudication
OA	=	Osteo-arthritis
RA	=	Rheumatoid Arthritis
#	=	Fracture
?	=	Possible
B-BL	=	Beta Blockers
ACE	=	Ace Inhibitor
CRN	=	Cardiac Rehabilitation Nurse
EP	=	Exercise Physiologist