Cardiovascular Rehabilitation Service Policy

Salford Royal NHS Foundation Trust

University Teaching Trust

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Contents

Who should read this document?

Cardiovascular Rehabilitation team

Heart Failure Team and Acute Coronary Syndrome Team

Cardiology Staff who refer to the cardiovascular rehabilitation service.

Lower limb triage service and vascular consultants who refer to the cardiovascular rehabilitation service.

Key Practice Points

This document explains:

- how to make a referral to the cardiovascular rehabilitation service
- who can be referred to the service
- service provision and delivery

Background/ Scope/ Definitions

This document is required to ensure that there is written information about how the cardiovascular rehabilitation service is delivered and to illustrate how the service meets national standards.

The service delivers the process by which patients with cardiovascular disease, in partnership with a multidisciplinary team of health professionals, are encouraged and supported to achieve and maintain optimal physical and psychosocial health. The involvement of partners, other family members and carers is also important (BACPR 2012). In practical terms, cardiovascular rehabilitation is a service that takes a coordinated multidisciplinary biopsychosocial approach in order to best influence uptake, adherence and long-term healthier living. It covers seven core components:

- Health behaviour change and education
- Lifestyle risk factor management: physical activity and exercise, diet, smoking cessation
- Psychosocial health
- Medical risk factor management
- Cardio-protective therapies
- Long-term management.
- Audit and evaluation (BACPR 2012)

The practitioners who deliver the above components must be qualified and competent practitioners who employ an evidence-based approach to practice. (Standard 1& 2 BACPR 2012).

There is evidence that exercise-based cardiovascular rehabilitation:

- is effective in reducing total and cardiovascular mortality and hospital admissions in people with coronary heart disease
- reduces all-cause and cardiovascular mortality rates in patients after MI when compared with usual care provided when it includes an exercise component
- significantly reduces hospitalisation for chronic heart failure and significantly improves quality of life and exercise tolerance for people with heart failure (DH 2010)

It is useful to consider cardiovascular rehabilitation as a best practice care pathway with core stages (DH Oct 2010).

- Stage 0 Identify and refer patient
- Stage 1 Manage referral and recruit patient to cardiovascular rehabilitation programme
- Stage 2 Assess patient for cardiovascular rehabilitation
- Stage 3 Develop patient care plan
- Stage 4 Deliver comprehensive cardiovascular rehabilitation programme
- Stage 5 Conduct final assessment
- Stage 6 Discharge and transition to long-term management

The incidence of peripheral arterial disease (PAD) increases with age. Population studies have found that about 20% of people aged over 60 years have some degree of PAD. Incidence is also high in people who smoke, people with diabetes and people with coronary artery disease. In most people with intermittent claudication the symptoms remain stable, but approximately 20% will develop increasingly severe symptoms with the development of critical limb ischaemia.
Mild symptoms are generally managed in primary care, with referral to secondary care when symptoms do not resolve or deteriorate. There are several treatment options for people with intermittent claudication. These include advice to exercise, management of cardiovascular risk factors (for example, with Clopidogrel and statins) and vasoactive drug treatment (for example, with naftidrofuryl oxalate).People with a diagnosis of lower limb peripheral arterial disease with intermittent claudication should be offered a supervised exercise programme which involves 2 hours of supervised exercise a week for a 3-month period with encouragement for people to exercise to the point of maximal pain. (NICE 2012)

The policy is applicable to patients who have had the following diagnosed within the last 12 months:

- Myocardial infarction
- Coronary Artery Bypass Grafting (CABG)
- Percutaneous Coronary Intervention (PCI)
- Heart Valve Replacement.

- Stable Angina
- Stable Heart Failure
- Heart Transplant
- Congenital heart disease
- Implantable devices (IDs) - (This includes Implantable Cardioverter Defibrillators (ICDS), Biventricular Pacemakers/ cardiac resynchronisation therapy (CRT) and
- Peripheral arterial disease (PAD) patients who have been referred by the lower limb triage service or the vascular consultants.

  It is also for those patients who have had these diagnoses for more than 12 months who are referred by medical/specialist staff due to a patient need for service support

What is new in this version?

- Inclusion from NICE guidance, Peripheral arterial disease: diagnosis and management (2012) Clopidogrel as antiplatelet of choice for PAD.
- Patients with implantable devices will be seen post discharge as per patient need not to a timescale.
- Removal from use of the out of date Cocaine and the heart leaflet. Illicit drugs included in the booklet: Cardiovascular Rehabilitation- Your health in your hands.
- Service booklet name change to Cardiovascular Rehabilitation – your health in your hands.
- Congenital heart disease (ACHD) – Bethesda classification into simple, moderate and complex to aid exercise risk stratification (Bethesda Conference 32nd)
- Inclusion of reference to aortic aneurysm under exercise cautions and reference to resistance training within conditioning phase.
- AACVPR Risk stratification now in use (AACVPR 2013)

ACTION	RATIONALE
Stage 0 Identifying the need for Cardiovascular rehabilitation The following conditions should be referred for cardiovascular rehabilitation: **Acute Myocardial Infarction** (MI): diagnosis made by: • Troponin I tested at presentation and 6 hours later. • To be diagnostic of acute myocardial infarction there should be an increase or decrease of 33% or more between the first and second samples with at least one value greater than 40 ng/L. To make the diagnosis of acute myocardial infarction a rise in Troponin I must be associated with 2 of the following: • typical symptoms of ischaemia consistent with MI(chest discomfort due to cardiac ischaemia) • ECG changes consistent with an acute MI • New regional wall abnormalities consistent with an acute MI on echo/cardiac MR/myoview/LV gram and must be confirmed by a member of the medical staff. • **Coronary Artery Bypass Grafting (CABG)** • **Percutaneous Coronary Intervention (PCI)** • **Heart Valve Replacement.** • **Stable Angina** • **Stable Heart Failure** • **Heart Transplant** • **Congenital heart disease** • **Peripheral arterial disease (PAD)** • **Implantable devices (IDs).** This includes Implantable Cardioverter Defibrillators (ICDS), Biventricular Pacemakers/ cardiac resynchronisation therapy (CRT), Pacemakers) are recommended and inserted for treating people with previous serious ventricular arrhythmia, that is, people who, without a treatable cause:	Comprehensive and tailored cardiovascular rehabilitation can reduce mortality by 20 to 36% (BACPR 2012) and almost halve reinfarction (Lawler et al 2011). Identification, referral and recruitment of eligible patient populations Standard 3 (BACPR 2012) Department of Health (2010) and BACPR (2012) recommends cardiovascular rehabilitation for the following conditions: • Acute coronary syndrome (ACS) which includes ST elevation myocardial infarction (STEMI), Non ST elevation myocardial infarction (NSTEMI) and unstable angina. This should include all patients undergoing reperfusion (e.g. Coronary Artery Bypass Grafting (CABG), Percutaneous Coronary Intervention (PCI) or Primary Percutaneous Coronary Intervention (PPCI) • Chronic heart failure of new diagnosis or chronic heart failure with a step change in clinical presentation • Patients who have undergone implantable cardioverter defibrillator (ICD) or cardiac resynchronisation therapy (CRT) or heart valve replacement and have a primary diagnosis of ACS or heart failure. • Heart transplant patients and patients with ventricular assist devices (VADs) • Patients that have undergone surgery for ICD

• have survived a cardiac arrest caused by either ventricular tachycardia (VT) or ventricular fibrillation **or** • have spontaneous sustained VT causing syncope or significant haemodynamic compromise **or** • have sustained VT without syncope or • cardiac arrest, and also have an associated reduction in left ventricular ejection fraction (LVEF) of 35% or less but their symptoms are no worse than class III of the New York Heart Association (NYHA) functional classification of heart failure. treating people who: • have a familial cardiac condition with a high risk of sudden death, such as long QT syndrome, hypertrophic cardiomyopathy, Brugada syndrome or arrhythmogenic right ventricular dysplasia **or** • have undergone surgical repair of congenital heart disease.	therapy or CRT for reasons other than ACS or heart failure • Heart valve replacement patients for reasons other than ACS or heart failure • Patients with a confirmed diagnosis of exertional angina. • Other atherosclerotic disease e.g. peripheral arterial disease. Comprehensive cardiovascular rehabilitation appears to be safe for patients with implantable cardioverter defibrillators (ICDs). Improvements in functional capacity and reduction in the levels of psychological distress are comparable with those found with post MI and post CABG patients. There is no increased risk of ventricular arrhythmias or ICD discharges associated with cardiovascular rehabilitation exercise classes (Fitchet et al 2003).
<u>Referral/ Care Pathway : Stage 0</u> Referrals will be accepted from: • acute trusts • tertiary centres including private tertiary cardiac centres • specialist heart centres • SRFT rapid access chest pain clinics • primary care • SRFT heart failure services. • Lower limb triage service • Vascular consultants All wards/ multi-disciplinary teams (MDTs) at Salford Royal NHS Foundation Trust (SRFT) will refer all patients electronically with a definite diagnosis of MI to the cardiovascular rehabilitation team.	Cardiovascular rehabilitation services should actively identify all people potentially eligible for cardiovascular rehabilitation and encourage them to take part in cardiovascular rehabilitation (DH 2010) There should be an agreed local recruitment policy/protocol for all patients to be referred for physical activity advice and the exercise component of cardiovascular rehabilitation (Standard 1 ACPICR 2015)

The Manchester area tertiary centres will refer all patients who choose to attend the Salford Cardiovascular rehabilitation via safe haven fax or NHS net. Out of area referrals will be made via safe haven fax, NHS net or post Referrals with stable angina will be made by letter by the SRFT Acute Coronary Syndrome (ACS)Team/ Consultant Cardiologists Referrals with stable heart failure will be made by letter by the SRFT Heart Failure Team/ Consultant Cardiologists Referrals from SRFT consultant teams will be made by letter Referrals with an ID will be referred to the SRFT Cardiovascular rehabilitation Team by the implantation centre, specialist clinician team or their GP. Referrals with PAD will be made by letter from the Salford lower limb triage service or from the Consultant Vascular teams. All the above conditions (except PAD, stable angina and heart failure) if they have occurred within the last 12 months can be referred by primary care (GP, Practice Nurse) using the referral form available on GP systems and The Active Lifestyles Team.	SRFT Safe haven fax procedure .
<u>Referral Issues :Stage 1</u> If the patient is not receptive to verbal information due to cognitive impairment then consideration should be given to a meeting with the family/carers present. If the patient has a communication barrier such as language then interpreter/ sign interpreter will be used as per SRFT policy, Other auxiliary aids such as hearing loops will be used when required. If the patient has mental health issues, which may affect their ability to receive information/ access group activities then this should be discussed with their main healthcare provider and carer / advocate and a decision made as to the most appropriate menu options to undertake. If the patient is unsuitable for cardiovascular rehabilitation instead they are at the end of life, this	There is a need to tailor services to the individual (BACPR 2012)

should be discussed if appropriate with the patient and/ or patient's representative and the medical and nursing team involved in the patient's care and documented in the patient's electronic/ case notes	

<u>Cardiovascular rehabilitation Choice: Stage 1</u>
 	
Patients can choose, which components of the programme meet their individual needs from the following range of options:
• Inpatient visit at SRFT if admitted to SRFT with an MI.
• Home visit consultation, assessment and support
• Telephone consultation, assessment and support
• Clinic appointment for consultation, assessment and support
• Lifestyle advice, goal setting and motivational interviewing
• Home based cardiovascular rehabilitation:
  • support to use the home exercise programme booklet and pedometers.
  • Heart Manual
  • Angina Plan
  • ICD Plan
• 6, 8 or 12 week structured exercise and health education programme with a choice of a hospital or community venue.
 	
• One to one specialist assessment and sessions with the Occupational therapist using cognitive behavioural methods
 	
• Healthy Minds Group (stress management group – combination of talks, cognitive behavioural methods,
• practical relaxation, mindfulness, diaphragmatic breathing and goal setting sessions)
• Relaxation CD
• Cardiovascular Counsellor
• Weight Management group (combination of talks and exercise)
• One to one specialist assessment and support with the dietitian
• Stand-alone health talks
• Written information available as a booklet or on the SRFT website.
• Fast Track to Active Lifestyles Team. This is dependent on a functional test assessment and individual ability and motivation to exercise independently
If there is a waiting time to access any of the menu options then the patient will be informed of to the waiting
	A patient centred cardiovascular rehabilitation service (menu-driven approach) which meets the personal needs of each patient should be provided (DH 2010) Early provision of a cardiovascular rehabilitation programme with a defined pathway of care, which meets the core components and is aligned with patient preference and choice. Standard 5 (BACPR 2012)
	
	The following core components should be delivered in the programme : health behaviour change and education, lifestyle risk factor management, psychosocial health, medical risk factor management, cardio protective therapies, long term management (BACPR 2012)
	
	Identification, referral and recruitment of in-scope patient populations. (BACPR 2012)

time Patients have the right to refuse input from the Cardiovascular rehabilitation Team People offered stage1 cardiovascular rehabilitation who live out of area and choose to access their local cardiovascular rehabilitation service will be referred to their local cardiovascular rehabilitation coordinator	SRFT Consent for Examination or Treatment Policy (2014)
<u>Contact Targets: Stage 1</u> SRFT inpatients will be seen within 3 working days of referral receipt unless the patient is clinically unstable, is transferred to a hospital outside of Salford and/ or is incapable of receiving verbal information. They will then be assessed as unsuitable at that point of care and a further assessment date will be set. Consideration should be given to providing information to the family/ care providers for the patient when not in hospital. Out patient referrals will be contacted by phone within 3 working days of referral receipt for initial assessment and support The service aims to provide detailed assessment via telephone consultations and/or home visits within 5 to 10 working days of referral receipt for out-patients and 5 to 10 working days post discharge from SRFT unless the patient desires otherwise If the Cardiovascular rehabilitation Team are unable to contact the client by phone then a motivational failure to contact letter will be sent within 8 days of referral asking the patient to make contact with the service for an assessment.	Early cardiovascular rehabilitation should be provided to help reduce unplanned readmissions.(BACPR 2012) Early initial assessment of individual patients needs in each of the core components and reassessment upon programme completion. Standard 4 (BACPR 2012)
<u>Initial in hospital Visit: Stage 2 & 3</u> The following should be taken into account prior to delivering advice and information to the patient and their carers as an in-patient: • Individual's needs, risk factors, misconceptions , level of knowledge and readiness to receive advice and information. • State of readiness to make a behavioural change using the principles of Prochaska and Diclemente (1983) • General health of the patient • Communication difficulties • Family/carers being present. • Family/carers/ advocate being present for patients with cognitive impairment who are not receptive to verbal communication • Cultural diversity The Cardiovascular Nurse, or Assistant Practitioner (AP)	Early initial assessment of individual patient needs in each of the core components and reassessment upon programme completion. (Standard 4 BACPR 2012) Identifying and addressing cardiovascular misconceptions is an important component of cardiovascular rehabilitation. (BACPR 2012)

will visit the in-patient at SRFT and provide the following written information as required: • Cardiovascular Rehabilitation - your health in your hands • Cardiovascular rehabilitation team contact information The following information will be reinforced verbally • Use of GTN • What to do if chest pain occurs • Addressing cardiovascular misconceptions • Driving advice Other issues will be answered according to patient need and request. The following information could be provided • Explanation of diagnosis • Risk factors • Medications • Return to work • Exercise and return to physical activity • Return to sexual activity The following documentation will be completed contemporaneously: • Hospital Anxiety and Depression Score (HADS) • The North West Ambulance Service (NWAS) Rapid Response form will be provided for the patient. (This informs the ambulance service of the patient's contact details and medical history to ensure rapid despatch of a vehicle in an emergency and information provided to the responding crew.) Referrals to other members of the multi-disciplinary team/services should be considered throughout the patient journey.	People taking part in cardiovascular rehabilitation may have many different emotional issues, and a comprehensive, holistic assessment is crucial to achieving the desired outcomes. (BACPR 2012) Allows for accurate record keeping in line with SRFT documentation policy
<u>Specific advice for patients with Implantable Devices (IDs) throughout patient journey : Stages 2, 3 & 4</u> Once a patient requiring an ID (ICD and/ or CRT) is referred they will be seen by a specialist nurse: • pre insertion • post insertion • And then contacted by phone or seen on a home visit according to patient need	

Relevant literature will be provided dependent on patient need

People with an ID should not be exercised for 4 weeks after implantation of the device whilst the wires implant, the soreness subsides and the initial check of the device is completed by the implantation centre. During this period they are able to increase their activity by increasing walking as able.

People with an ID should report:

- Any swelling, redness or drainage from the incision
- Fever which does not go away in two or three days
- If the device starts to beep at specific times in the day then this indicates that the battery is close to requiring replacement. Devices can also produce continuous audible signals, which indicates a possible failing device. Patients should contact their nominated cardiac technician centre.

The person with the ID should always carry an identification card and medications list

If the patient experiences symptoms of a fast heart rate then:

- The patient should remain calm and find a place to sit or lie down
- An ambulance/medical help should be called if the patient becomes unconscious

If the device fires then:

- The patient needs to inform the insertion centre, so that the device can be interrogated. This should take place on the same day or the following day if the device has fired out of hours
- If the device fires more than once then an ambulance should be summoned

IDs are more likely to activate with arm exercise (in particular end range movements), rowing and when swimming (especially front crawl), as this can potentially damage the ID leads. The heart rate also increases faster when exercising arms.

Patients will be provided with advice about common electronic/magnetic devices with which caution is needed. For example:
Cellular phones should be kept at least 15cm away from the device
Patients should not wait near alarms at shop entrances

Electromagnetic Compatibility Device Table for pacemakers and defibrillators available via the Cardiovascular rehabilitation Service

<u>Post discharge telephone consultation/ home visit/ clinic appointment ; Stage 2 & 3</u> The following criteria are used to assess the need for a home visit: • Patient chooses to have a home visit. • Patient wishes for family to be present. • Assessed as an in-patient at SRFT that a home visit is required • People are hard of hearing • Poor language skills • Emotionally distressed on telephone contact • Multiple risk factors • Complicated cardiac event • ID implanted • Patient identifies problems with motivation, behaviour change and goal setting • Professional clinical reasoning and judgement Staff lone visiting must ensure that their whereabouts is available in the Cardiovascular rehabilitation office with contact mobile phone numbers. If the member of staff feels threatened during the visit they should leave immediately and if required use the emergency code to a member of the cardiovascular rehabilitation team, which is <u>"Get The pink file off the shelf".</u> This file asks staff to contact the Police and contains details of staff car makes, models, colour, contact details and those of next of kin. The team member receiving the call should then contact the Police on 999 It may be necessary for two members of staff to provide the home visit All appropriate staff are to carry pocket masks in the event of a patient collapse during a home visit. If the patient is in agreement then it is preferable that the partner/ carer is also present especially for those with cognitive impairment who are not receptive to verbal communication The following should be taken into account prior to delivering advice and information to the patient during the telephone consultation / home visit/ clinic appointment • Individual's needs and risk factors, level of knowledge and ability to receive advice and information. • State of readiness to make a behavioural change using the principles of Prochaska and Diclemente	SRFT Lone worker policy (2016) The following needs should be assessed comprehensively throughout the cardiovascular rehabilitation process: Physical activity status and

(1983) • Motivation and confidence to change behaviour • Motivation and confidence to self-manage their condition • Communication difficulties • Cultural diversity If the patient wishes then the partner/carer can also be spoken to over the phone • Diagnosis- taking cues from the patient regarding knowledge • Differences between angina and a heart attack if CHD patient • Address cardiovascular/ PAD misconceptions Modifiable Lifestyle risk factors: • Smoking • Cholesterol and eating patterns • Blood pressure • Weight • Physical activity • Alcohol • Stress • Cocaine and illicit drug use will be discussed with patients according to patient need. Non modifiable lifestyle risk factors: • Diabetes • Family History • Age, gender, ethnicity Medications: • Benefits/risks • Side effects • Over the counter/ herbal and illicit drugs being used • Check-ups required The following need to be assessed at both telephone consultation / home visit: • Chest pain and the nature of it • Use of GTN • Shortness of breath • Ankle oedema • Wounds • Blood pressure treatment • Palpitations • Leg pain levels on physical activity The following will only be assessed by measurement at home visit/ clinic appointment: • Blood pressure • Pulse • Anthropometric measurements: Weight, height, body mass index (BMI) and waist measurement (using the midpoint between the top of the hip	exercise functional capacity Lifestyle: physical activity and exercise, diet and weight management, smoking cessation changes Education: misconceptions, pathophysiology, symptoms, physical activity, smoking and diet, blood pressure, lipids, glucose Psychological issues Sexual dysfunction Cardiopulmonary resuscitation education Social Cultural Occupational factors Pharmaceutical, surgical interventions and devices Family and carer (BACPR 2012) Early initial assessment of individual patient needs in each of the core components and reassessment upon programme completion. (Standard 4 BACPR 2012) All patients should undergo thorough screening at an initial assessment prior to undertaking physical activity and exercise (Standard 2 ACPICR 2015) The use of cocaine has been recognised as a risk factor for cardiovascular events, including myocardial infarction (Kelly, 2007:384) in those with and without coronary artery disease (Vasica and Tennant: 2002: 260) as a consequence of increased noradrenaline release and coronary artery vaso-spasm (Jones and Parsonage, 2002:121).

bone and base of the rib cage which is usually the navel as the marker and documenting the point of measurement in the patient's notes)

Discussion should also take place according to patient need of

- Return to work/ hobbies/ housework
- Return to driving/ DVLA regulations
- Return to sexual activity
- Insurance
- Holidays
- Benefits and financial worries - signpost to relevant help and advice
- Emotions
- Increasing physical activity and the rating of perceived exertion using the BORG score

Patients will be provided with:

- Service contact information
- Individualised plan of care & treatment

Referrals to other services should be considered:

Cardiovascular rehabilitation Occupational therapist for:

- stress management assessment and support using a cognitive behavioural approach if anxiety 11 or more, or depression 11 or more on HADS (Zigmond & Smith 1983) or the patient has a need for stress management support
- For activities of daily living assessment, equipment, rehabilitation and support.

Cardiovascular Counselling for clients and their partners:

- with difficulties in adjusting to cardiovascular conditions
- Struggling with other issues that may affect recovery
- Exceptions include clients considered at high suicidal risk, who if the counsellor is not immediately available should immediately be referred to the GP by telephone discussion and faxed referral letter
- Clients under the care of another therapist or the Mental Health Services, may need to be referred back to the original therapist

Cardiovascular rehabilitation Dietitian

Patients with cardiovascular disease who are motivated to alter diet and/or have one or more risk factors from the list below:

- Hypercholesterolaemia

People taking part in cardiovascular rehabilitation may have many different emotional issues, and a comprehensive, holistic assessment is crucial to achieving the desired outcomes. (BACPR 2012)

- Overweight/obese BMI >25
- Waist circumference > 94cm (males) > 80cm (females)
- Hypertension
- Raised Triglycerides
- Diabetes
- Family history of CVD
- Total Cholesterol > 5
- Unintentional weight loss

NB newly diagnosed diabetics should be referred to the diabetes team (or community dietitian).

- Drug and alcohol action team (DAAT)

- Patients requiring specialist advice regarding discontinuation of drug/alcohol misuse can be referred or self-refer to the drug and alcohol team.

- Erectile dysfunction services – contact GP for referral to be made

- Smoking Cessation

- Social Worker

- Other services

Following the telephone consultation / home visit/ clinic appointment, tests and investigations, which have been performed or are due to be performed will be requested to support the risk stratification process for exercise. Tests could include the following:

- Angiography
- Exercise Treadmill Test (ETT)
- Echocardiogram
- Electrocardiograph (ECG)
  Cardiac Imaging

Baseline risk stratification, consider:

Previous cardiac history, complicated recovery, heart failure, LV function, arrhythmias (especially ventricular), cardiac arrest secondary to event, positive ETT, ongoing angina and ongoing required investigations.

Baseline supervision level for exercise, consider:

- Mobility (balance), eyesight, hearing, cognition

(BACPR 2013)

It is recognised that not all patients are ready to undertake a

Patients will be provided with:
• Service contact information
• Individualised plan of care & treatment
 	
During the telephone consultation, clinic appointment or home visit the patient is offered the choice of the following
 	
Hospital or Community based
• 6,8 or 12 week (12 session) structured exercise and health education programme
  • One to one specialist assessment and sessions with **Occupational therapist**
  • **Healthy Minds Group** (stress management group – combination of talks, cognitive behavioural methods, practical relaxation, mindfuness, diaphragmatic breathing and goal setting sessions)
  • **Cardiovascular Counsellor**
  • **Weight Management group** (combination of talks and exercise)
 	
Referral criteria: Overweight/obese BMI >25 and/or waist circumference > 94cm (males) > 80cm (females) > 90cm (Asian males)
• One to one specialist assessment and sessions with the dietitian
• Stand-alone health talks
• Written information: booklet and /or website
• **Home based cardiovascular rehabilitation**:
1 : 1 home based exercise support to use the home exercise programme and pedometers. Patients will need to have high levels of self-motivation to participate in this option.
• **Heart Manual**
 	
• **Angina Plan**
 	
• **ICD Plan**
Patients have the right to refuse input from the Cardiovascular rehabilitation Team
Full risk assessment of patients undertaking each option is essential. The risk assessment will vary for each option.
 	
Home based cardiovascular rehabilitation:
• .
The patient requires a functional test and an assessment prior to starting this option, using the same process as for the hospital and community based exercise and health education programmes. The patient must be very highly motivated and receptive to using one or a combination of the following: pedometers, home based
	regular physical activity plan and continue in the long-term. The exercise professional should consider all approaches to assist the patient to maintain current levels of activity or to become more physically active. (Standard 2 & 4 ACPICR 2015)
	
	Home-based programmes are a safe and effective form of physical activity/exercise. Evidence

exercise booklet, exercise DVD. A functional test should be completed at the end of the programme and an assessment made of the lifestyle risk factors and onwards referrals required. • **Heart Manual:** A trained Heart Manual Facilitator is to introduce and assess the patient's suitability for the programme The patient should be contacted in week 1, 3 and 6 as a minimum per patient, but should be provided as per patient need over the six-week period of the programme. The HADS is administered prior to starting and at the end of the programme. At the initial assessment the Manual should be introduced, including the exercise component and relaxation CD/ tape. • **Angina Plan** This is aimed at patients who are newly diagnosed with angina and aims to prevent misconceptions about the disease developing and thereby help prevent the ensuing unhealthy lifestyle patterns such as the rest over activity cycle from developing. The initial assessment of the patient must be face to face and be delivered by someone who is a qualified Angina Plan Facilitator. The assessment will last for approximately half an hour and include the following: Introduction to the Angina Plan Angina Plan questionnaire including the correction of misconceptions Risk quiz and ensuring that medication compliance is occurring Overactivity Rest Cycle Goal setting and pacing Relaxation and the tape/CD Contact Number There should be phone or face-to-face contact with the Plan user at 1,4,8 and 12 weeks. **ICD Plan** This is a 4-booklet, 6-week cognitive behavioural plan for use in Stages 3 and 4 of cardiovascular rehabilitation. It should be commenced with the patient receiving the ICD prior to implantation. It includes information for relatives and patients for when they get home, which includes caring for the scar, what to do if the ICD fires, goal setting, relaxation and walking back to health and a goal setting and diary booklet.	suggests that long-term improvements are maintained in home-based cardiovascular rehabilitation and that self-management of exercise programmes induces a permanent change in lifestyle The patient may choose a home-based option/ independent exercise either alongside or in replacement of structured group sessions. (Standard 8 ACPICR 2015) The Heart Manual, a six-week stand-alone evidence based cognitive behavioural approach to cardiovascular rehabilitation for patients who have had a heart attack, shown to be clinically effective in repeated studies. The Heart Manual can be integrated with existing hospital or primary care based programmes NICE (2013) exercise functional testing is not a requirement prior to administration of the Heart Manual. Administration of the Hospital Anxiety and Depression Score (HADS) at the start and the end of the six week programme is a requirement of the Heart Manual The Angina Plan was tested in a randomised controlled trial compared with a routine secondary prevention clinic and showed an improvement in the psychological, symptomatic and functional status of patients newly diagnosed with angina. (Lewin et al 2002) The ICD-Plan has been shown "to improve health related quality of life, reduce the incidence of clinically significant psychological distress, and significantly reduced unplanned re-admissions. It is a cost effective and easily implemented method for delivering rehabilitation and psychological care to patients undergoing ICD implantation"

	(Lewin et al 2007)
Non medical prescribing The Cardiovascular rehabilitation service provides a specialist nurse non-medical prescribing service for patients following assessment and consultation of the patient in line with the Trust Non-medical prescribing policy and Nursing and Midwifery Council standards (NMC 2015). This service promotes optimisation of patient's medical treatment. The non-medical prescribers will treat blood pressure towards the target of 140/90mmHg in those aged under 80 years and 150/90mmHg in those aged over 80 years	Improvements in patient care, choice and access, patient safety, better use of health professionals' skills and more flexible team working across the NHS (DH July 2000) NICE (2016)
Record Management: The cardiovascular rehabilitation team will complete written and electronic notes contemporaneously. Notes will be kept securely for the time required by SRFT Each referral will have data recorded and submitted to the National Audit of Cardiovascular rehabilitation (NACR) with the patient's consent	To ensure confidentiality and up to date patient records SRFT Health Records Management Policy (2013) Records will be kept in line with the Data Protection Act (1998) Registration and submission of data to the National Audit for Cardiovascular rehabilitation. Standard 6 (BACPR 2012)
Exercise sessions: Stage 4 Assessment prior to recruitment to the exercise component should include: • Medical diagnosis • Co morbidity • Screening • Risk stratification into low, moderate or high using recognized criteria (see appendix 1) • Degree of stable heart failure • Congenital heart disease (ACHD)– classify this group of patients into simple, moderate and complex using the Bethesda classification (ACPICR 2015) Exclusion criteria: • Fever/ acute systemic illness • Unresolved unstable angina • Resting BP systolic > 180mmHg, diastolic> 110mmHg • >Orthostatic 20 mmHg blood pressure drop with symptoms • 10mmHG blood pressure drop with symptoms if heart failure NYHA II,III and	All patients should undergo thorough screening and an assessment prior to undertaking physical activity and exercise. The clinical information gained at assessment should be entered onto the relevant section of the national database, as part of the National Audit for Cardiovascular rehabilitation (NACR) process (Standard 10 ACPICR 2015) Chronic heart failure guidance NICE (2016) There should be an agreed local recruitment policy/protocol for all patients to be referred for physical activity advice and the exercise component of cardiovascular rehabilitation (Standard 1 ACPICR 2015)

IV • Resting heart rate of greater than 100 beats per minute • Severe aortic stenosis (asymptomatic or symptomatic) • Uncontrolled arrhythmias • Acute pericarditis /myocarditis • Acute or unstable heart failure – uncompensated heart failure • 3rd degree AV block without pacemaker • Significant ischaemia at low rates (2 METS, =50W). • Resting ST segment displacement of > 2mm • Recent pulmonary embolism and or thrombophlebitis. • Regurgitant valve disease requiring surgery • Severe rejection – cardiac transplantation patients • Other metabolic conditions such as acute thyroiditis, hypokalaemia/ hyperkalaemia, hypovolaemia etc • Severe orthopaedic problems which inhibit exercise • Uncontrolled diabetes (assess according to local policy and case by case) New or recurrent symptoms of: • Chest pain/ discomfort, increased usage of GTN – angina symptoms • Breathlessness • >1.8kg increase in body mass over previous 1-3 days • Progressive worsening of exercise tolerance or dyspnoea at rest or on exertion over the past seven days. • Palpitations/ arrhythmias • Dizziness • Lethargy • Recently altered ECG, especially ST segment depression • Severe pulmonary, orthopaedic or metabolic conditions hindering exercise capability Discuss any patients of concern with the Consultant Physician /surgeon/ GP responsible for their care. Relative contraindications Consider pre-existing co-morbidities. • Aortic aneurysm – check scans and consult with patient's vascular consultant if concerns pre exercise. Evidence has	Valid consent must be obtained from the patient prior to starting any assessment, functional testing and intervention. and should be continuous process focused on the rights of the individual. (Standard 3 ACPICR 2015)

shown it is safe to exercise with an aneurysm of between 2.5 and 5.5 cm. (Myers et al 2013)

- Intracardiac thrombus – discuss with patient's consultant cardiologist

Risk Stratification

All available information is used in the risk stratification of patients within the stage 4 component of cardiovascular rehabilitation and includes results and information from:

1. ETT – either modified or full Bruce protocol
2. Echocardiogram
3. Cardiac Imaging
4. Referral letter
5. Home visit and/or telephone assessment information
6. One-to-one discussion with patient
7. Clinical observations: blood pressure, manual heart rate and pulse oximetry if required
8. Patients notes

- Patients are classified as high, medium or low risk depending on information gained on risk stratification.
- If it is not possible to complete all the information in the low risk category on the risk stratification form then the patient must be stratified as medium risk.
- If the patient has one or more risks within the high-risk category, that patient will fall into a high-risk category overall.

Risk stratification will determine the amount of monitoring and supervision the patient requires and Target Heart Rate calculations.

Maximal heart rate is calculated using the Inbar formula

Example: 206 x (0.7xage) = Max HR

e.g. 70 year old resting heart rate 60 on Bisoprolol

0.7 x70 = 49

206-49 = 157 MHR

Once MHR is calculated heart rate range is identified using the Karvonen Formula (as below)

157 – 60 (RHR) – 30 for beta blockers = 67 (HEART RATE RESERVE)

This is calculated using the %

The risk stratification category determines the % of maximum heart rate (MHR) or heart rate reserve (HRR) set as an initial target for an individual during exercise:

Low to Moderate Risk

Initially 40% – 60% VO2 max progressing to 70% VO2

Risk stratification and assessment (Standard 2 ACPICR 2015)

ACSM Guidelines for Exercise Testing and Prescription (2012)

AACVPR Guidelines for Cardiac Rehab and Secondary Prevention Programmes (2013)

Inbar et al (1994)

max: Denoted by: • 60 – 75% HR max, progress to 80% HR max • 40 – 60% HRR, progress to 70% HRR Rating of Perceived Exertion (RPE) of: • 12 – 14 RPE, progress to 15 RPE • 3 – 4 CR10 scale, progress to 5 CR10 scale Low functioning or high risk patients should work to the lower end of these intensity targets i.e. 60% HR max, 40% HRR or RPE 12 (BORG RPE scale) and RPE 3 (CR10) PAD Patients: PADs patients without a diagnosis of CHD or heart failure are classed as Low Risk. Target HR will be calculated using the Inbar Method, (which establishes maximal heart rate) and the % HRR will be initially 40 - 70% HRR progressing to 80% HRR: Rating of Perceived Exertion (RPE) of 12 – 15 progressing to 16. A separate 5 point Claudication Pain Scale (AACVPR) is used to monitor patient during exercise: 0 No claudication pain 1 Initial, minimal pain 2 Moderate, bothersome pain 3 Intense pain 4 Maximal pain, cannot continue Patients will be encouraged to exercise to maximal pain, and rest until the pain is gone before restarting exercise.	Inbar et al (1994)
Informed Consent • The patient should read the exercise information sheet or if unable to read then it should be read to them. A member of the Cardiovascular rehabilitation team must confirm understanding and document the giving of the information sheet in the Cardiovascular rehabilitation records. • All patients understand the decision-making process and are aware of the treatment options. The significant risks, benefits and possible side effects are discussed with them prior to undertaking exercise. • The patient is given the opportunity to ask questions prior to giving consent. • If the patient attends the cardiovascular rehabilitation session this is considered to be consent .. Consent is voluntary. The patient is informed of their	All patients should receive safety information prior to commencing a guided programme of physical activity and this needs to be reinforced as part of an ongoing education programme, thereby encouraging a confident and independent exerciser. (Standard 5 ACPICR 20015) Longer exercise programmes produce better results for people with stable heart failure. Patients must also be encouraged to carry out the same level/duration of exercise two-three times a week at home.

right to decline treatment at any stage. If the patient declines exercise therapy, this is documented in the patient's records, together with the reasons if they are known. Assessment needed prior to functional Testing/exercise participation in stage 4 Medical investigation/symptoms • Diagnosis • Review of last ECG • Result of ETT if available • Echocardiogram if available • Angiogram if available • Cardiac Imaging • PAD assessment • Current Medication Symptoms • Angina/ recent episodes • Orthopnoea • SOBOE/ at rest • Palpitations • Ankle swelling/ peripheral oedema • Dizziness • Claudication Physical Measures • Heart rate and rhythm- must be assessed manually on the first session and continued manually if irregular • For patients in atrial fibrillation (AF) work rate and perceived exertion levels should be used to assess exercise response/intensity • Blood pressure • Respiratory rate and pulse oximetry if COPD and/ or clinically indicated in heart failure. If oxygen level below 88% then exercise should cease. • Anthropometric measurements: Weight, height, body mass index (BMI) and waist measurement (using the midpoint between the top of the hip bone and base of the rib cage which is usually the navel as the marker and documenting the point of measurement in the patient's notes) • Blood glucose as appropriate • Waist measurement • Habitual physical activity • Functional capacity Psychosocial • Emotional Status • Occupation • State of behavioural change • Readiness to participate in structured exercise and increased activity in daily living • Health Beliefs	European Society of Cardiology Task Force (2001) EHJ. Vol. 22 p125-135 Functional exercise testing evaluates the global responses of all the body systems to exercise and assesses the sub maximal level of functional capacity. It is a better predictor of the functional level required for daily physical activities than exercise Treadmill Testing because patients can choose their own intensity level Patients should have a formal assessment of functional capacity at the beginning of the formal exercise programme (SIGN 2002) (Standard 2 ACPICR 2015) An individual physical activity plan should be developed by the exercise professional in consultation with the patient, reflecting his/her goals and accurately representing clinical, functional and psychosocial status. To facilitate long-term maintenance of a physically active lifestyle, the exercise professional should be skilled in addressing barriers to exercise, motivational counselling, promoting self-efficacy and empowering change. (Standard 2 ACPICR 2015) Due to chronically irregular ventricular rate, exercise intensity should be prescribed based on work rate and perceived exertion levels (i.e. Borg scale) (ACSM 2009)

- Perceived barriers to exercise participation

Other

- Neuromuscular skeletal system
- Functional goals and limitations including levels of fatigue and sleep patterns.
- Dietary intake and food habits
- Co morbidity

Implantable devices
People with an ID should not be exercised for 4 weeks after implantation of the device whilst the wires implant, the soreness subsides and the initial check of the device is completed by the implantation centre. During this period they are able to increase their activity by increasing walking as able.

IDs are more likely to activate with arm exercise (in particular end range movements), rowing and when swimming (especially front crawl), as this can potentially damage the ID leads. The heart rate also increases faster when exercising arms; particularly if the technique is poor. If the heart rate is approaching the detection threshold then arm activity should be reduced or ceased and leg activity only continued to maintain blood pressure
The patient must be considered as high risk to exercise using the AACVPR Risk Stratification Tool.
Training heart rate should be set at 60% to 65% of MHR. 40% to 50%HRR.
The following settings must be known to cardiovascular rehabilitation exercise staff:
Detection threshold
Beta blockade usage
Be aware that the device can deliver both anti tachycardia pacing (ATP) and shock therapy

The patient should wear a heart rate device for the first exercise sessions until they are competent in pacing and rating their own exertion levels using the Borg Scale. It is important that the patient learns to use the Borg score and not be reliant on heart rate to help normalise their recovery and assess their levels of physical activity following the completion of the cardiovascular rehabilitation exercise programme.

Exercise should be completed in the standing position. If the exercise needs to be completed in a seated position then the intensity of the exercise should be lowered and the emphasis placed on muscular endurance.

The patient must stop exercising if they come to within 10 beats of device activation and proceed immediately to cool down unless unwell.

Diabetes issues

All diabetics should have eaten 1 to 2 hours prior to exercise and blood sugars must be above 5.6mmol prior to exercise. If blood sugar under 5.6 mmol the patient should eat a small carbohydrate snack and rapid acting glucose such as fruit juice 150 ml to 200ml/ glucose tablet Blood sugar must be checked 10 to 15 minutes later. If still low repeat the process until sugars are above 5.6 mmol.

All diabetics should be encouraged to bring a carbohydrate snack to eat following the exercise session and to carry glucose tablets or high sugar drinks in case of hypoglycaemia.

A hypoglycaemia treatment box will be available at the hospital and community cardiovascular rehabilitation exercise venues.

If a diabetic patient experiences a hypoglycaemic event then the SRFT hypoglycaemia protocol must be followed. The person must then be advised not to drive for 45 minutes after recovery, as it takes this length of time for the brain to recover. Type 1 and 2 diabetics need to be made aware that they are at risk of hypoglycaemic events for up to 36 hours after exercise.

Type 1 Diabetes:

People with type 1 diabetes must check blood sugars prior to exercise. If the blood sugar is greater than 13.9 mmols with ketones then they should not exercise. If blood sugars are 13.9-16.7 mmols without ketones present then the individual can exercise, with further close monitoring of blood glucose – to ensure a decrease with exercise. If blood sugars are 16.7mmols or above exercise should be postponed until suitable blood sugar levels occur. This is regardless of ketone absence in urine.

Insulin should not be injected into a limb which is to be exercised in the next 12 hours (increased temperature & blood flow) may result in increased serum insulin concentration.

Type 2 Diabetes:

People with type 2 diabetes can exercise if blood sugars are high and they are not on insulin. Blood sugars should be checked prior to exercise if type 2 diabetics are on insulin (treat as Type 1) or it is clinically indicated (i.e. if patient is on multiple therapy or has unstable/ poor blood sugar control).

Diabetics with poor control of diabetes should be referred to the diabetes team for review.

Exercise prescription planning
Functional Test
Exclusion criteria:

- Clinically unstable cardiac disease in the last month
- Systolic blood pressure above 180 mmHg
- Diastolic blood pressure above 110mmHg

Consider discussion with cardiology medical staff if the patient has the following history:

- Complicated MI with heart failure/ cardiogenic shock/ complex ventricular arrhythmias
- Angina/SOB at low level exercise e.g. unable to complete first four minutes of the walk test.
- Resting heart rate over 100
- Irregular resting heart rate
- ST depression >/= 1mm on resting ECG
- Marked ST depression >/= 2mm or angina at less than 5 METS

The patient must be risk stratified prior to being functionally tested using the risk stratification criteria. (see appendix 1)

Resuscitation equipment required:

- Telephone to summon help
- Airway maintenance equipment
- Automated External Defibrillator
- Suction facilities

All staff must be skilled in Basic Life Support and update on a 12 monthly basis
At least one member of staff present must be skilled in the use of an automated external defibrillator.
Resuscitation skills must be updated on a 12 monthly basis

Patient Preparation
Ensure the patient is wearing comfortable clothing and supportive shoes
The patient can use their walking aid
All medication should be taken as normal
Only a light meal should be consumed prior to testing
No vigorous exercise should be undertaken within two minutes of the test.
Termination Criteria:

- Anginal symptoms
- Intolerable SOB
- Dizzy/faint/ staggering
- Feelings of nausea
- Leg pain limiting the exercise
- Patient becomes pale/ashen
- Borg greater than or equal to 15

- Heart rate greater than or equal to 80% maximum IF no Bruce ETT available to indicate otherwise

Cool down
Treadmill FET: The patient should have a gradual cool down lasting a minimum of 3 minutes. During this the treadmill speed should be gradually reduced. After this the patient should be seated whilst BP and HR are measured.

Six minute walk test: Upon completion of the 6 minutes, the patient needs to be seated, and BP and HR measured as soon as possible.

10 minutes following the end of either test, if the patient has recovered then they can leave.
If the patient has continuing angina and/or, SOB then the following is required:
Patient uses own rapid acting nitrates
ECG if in the hospital setting
Contact medical staff
Transfer to hospital if functional test is in a community setting

Exercise Prescription

- The exercise plan will be individualised and based on assessment findings
- Reassessment of the exercise prescription is an on-going process throughout. It is based on response to exercise; assessed by observation of the patient, BP and heart rate response to exercise and patient reporting using the BORG Scale and any change in clinical need.
- Goals should be set in negotiation with the patient, which are specific, measurable, achievable, realistic and timely
- A diary of exercise will be provided for the patient to maintain at home if they wish

Home exercise plans will be provided in negotiation with the patient
Heart rate and Borg score will be checked at 5 and 15 minutes into the circuit. It may be necessary to do this more if the patient's condition dictates this.
Patients need to be educated as to the recognition of sensations during physical activity. Verbal descriptions should be given prior to Borg numerical scoring. BORG scoring should link to the following heart rate measurements:

- Target heart rates are prescribed for each individual, based on a thorough assessment and risk stratification.
- The target heart rate is documented within patient records along with the date it was

All physical activity and exercise should be continuously monitored and evaluated to ensure that it is safe, effective and relevant to changing circumstances. The level of monitoring should be individualised to the patient's needs with the aim of progressing towards patient self-monitoring (Standard 7 ACPICR 2015)

calculated and who completed the calculation. Exercise intensity is monitored either by pulse monitoring and/or by rating perceived exertion using the BORG scale with greater emphasis towards the end of the exercise programme placed use of BORG. At the first exercise session manual heart rate recordings are taken. Once heart rate is stable then heart rate monitors are used until the patient is competent at assessing exercise intensity using the BORG Score	
Induction All patients receive information relating to the following – 1. Pre and Post exercise eating and drinking 2. Appropriate/normal feelings associated with exercise. The importance of alerting staff to any changes to health, medications or other relevant information such as omitting to take their medication, which could affect exercise capability and safety. 3. Heart Rate and BP monitoring 4. Appropriate exercise intensity 5. Continued information about how to use the BORG scale 6. Contraindications to exercise 7. Risks and benefits of exercise 8. Importance of warm up and cool down 9. Suitable clothing and footwear required for exercise component • Information is provided via written information i.e. exercise information sheet and booklet. • Information is also provided via 'The benefits of physical activity' talk and/or one-to-one discussion. Prior to each exercise session discussion should take place regarding: • Presence of systemic illness • Change in medication and availability of essential medication during exercise for example GTN/ inhalers for COPD/ asthma • Changes in patient's condition from assessment/ previous exercise session including chest pain/discomfort, leg pain, palpitations, dizziness, shortness of breath, sudden weight gain, ankle oedema • Response to last exercise session • Incidence of chest pain • Glucose monitoring • Exercise intensity should be changed according to heart rate and rate of perceived exertion during exercise. • Blood pressure should be recorded at the first	Local protocols for health and safety should be followed at all times. The safety of patients during the exercise component of cardiovascular rehabilitation is paramount. This will be optimised with an accurate risk stratification assessment and appropriate exercise prescription (Standard 2 ACPICR) by appropriately trained members of staff. All patients should be screened prior to each exercise session to ensure they are safe to participate (Standard 7 ACPICR 2015). All staff should be trained and updated regularly in local protocols for life support, moving and handling, infection control and fire (Standard 11 ACPICR 2015)

session before warm up and after the conditioning phase and on all other occasions according to clinical need • This should be rechecked if blood pressure falls on exercise • Blood pressure must be rechecked at rest if the level is above 140/90mm/HG if aged 80 or under, and 150/90 mmHg if aged over 80. Medication changes can be made by the Non-medical nurse prescribers. There is also the option to contact the GP and request a review of medication for control of blood pressure. • The monitoring of the response to exercise should be recorded for each patient, so that an accurate assessment and next session exercise prescription can be made prior to each session. **Health and Safety** Ratio of staff to patients should be 1:5 as a minimum and increased to meet the needs and numbers of patients present; particularly taking into account the number of high risk patients present (ACPICR 2015) Staff present must be proficient in Basic Life Support and there should be access to appropriate resuscitation equipment including an automated external defibrillator. At least one member of staff present must be proficient in the use of the latter. The temperature of the exercise venue must be between 65 –71 degrees Fahrenheit (18-23 degrees centigrade) with records of the temperature recorded kept at each venue. The records must also include the action taken if the temperature is not correct. There must be adequate space for patients to exercise to prevent potential injury Patients who require them should always have a GTN spray available and if required COPD/asthma inhalers Patients should not help to set out equipment as there is a risk of injury Drinking water should be available High sugar drinks and longer acting snacks should be available Fire Exits must be clear and group participants made aware of what to do in case of fire Participants must be made aware of toilet facilities In an emergency One member of staff must take the lead Assess the situation Check for danger Be aware of participants medical history Patient Collapse	NICE (2016)

Check:
Airway
Breathing
If not breathing
Shout for help
Commence CPR
Summon help in hospital by telephoning 2222
Summon help in the community by ringing 999 for an ambulance
Resuscitation Providers must provide immediate defibrillation and airway/ oxygen support if indicated.
(N.B Oxygen is only available in the hospital setting for safety reasons)
If collapse, but breathing consider
Epilepsy
Diabetes
Put patient in recovery position
Summon medical assistance on 2222 in the hospital/ 999 if in the community
Resuscitation Equipment must be checked before each session, unless an event occurs in which case the equipment must be replaced immediately.
Write a summary statement of the event in the patient's notes.
Complete an adverse incident report (Datix) for emergency 999 calls.

Other situations which may occur:
(If patients require regular observations due to becoming unwell complete clinical observation chart)

Angina

Stop exercise
Sit patient down and instruct patient to take
GTN 1 to 2 sprays every 5 minutes
If not resolved after 2 doses of GTN and 10 minutes of chest painsummon an ambulance if in the community/ consider contacting the cardiology registrar and/ or transfer to accident and emergency if in the hospital

Suspected MI

Sit patient down and instruct patient to take
GTN spray1 to 2 sprays every 5 minutes s If not resolved after 2 doses of GTN and 10 minutes of chest pain
Ring 999 in the community to summon an ambulance
In hospital refer to accident and emergency and / or consider contacting the cardiology registrar.
Hypotension

- Lie patient down
- Elevate feet
- Recheck BP
- Reassure

• Ensure recovery before sending patient home • If patient does not recover call 999 in the community or consider contacting the cardiology registrar or refer to accident and emergency. • Send letter to GP Hypertension • If unusually high for patient recheck • If persistently elevated a letter should be sent to the GP for treatment review or cardiovascular rehabilitation team nurse prescriber to alter medication Tachycardia • If pulse rate above 100, ask patient to rest for 10 minutes and then recheck pulse rate. If the patient feels well then allow the patient to exercise, but do not allow pulse to rise by more than 20 beats. Refer patient to GP for rate control • If new, fast or uncontrolled irregular pulse then do not exercise • If tachycardia is new and the patient, feels faint or dizzy- check BP and pulse, obtain ECG and seek medical advice Increase in SOB or episodes of chest pain • Discover severity and frequency • Ensure medication compliance • Refer to GP or Cardiovascular rehabilitation Nurse Specialist Prescriber for assessment of medication <u>Clean environment and control of infection:</u> All exercise equipment, seating and mats used with in the sessions will be cleaned after use at all venues. All patient monitoring equipment will be cleaned after each exercise class with disinfectant wipes Staff will ensure hand hygiene at all times as per SRFT policy	Clean environment maintained to prevent and control infections Cleaning, disinfection and sterilisation policy (SRFT June 2016) Hand hygiene policy (SRFT Sept 2016)
<u>Warm up</u> The warm up will: • The aim of an adequate warm up is to prevent	All patients should participate in an individualised progressive

injury • The duration is a minimum of 15 minutes to allow for coronary vasodilatation, joint mobility, increased muscle temperature and soft tissue flexibility for cardiac patients and 10 minutes for PAD patients with no cardiac involvement. • Warm up comprises of aerobic and stretching components. • The programme allows for alternative intensities of aerobic work and methods of stretching to individualize warm up. • The main muscle groups are stretched for approximately 10 seconds. • Warm up mimics the movement of the exercise to follow. • The warm up should aim to increase exercise effort gradually so that by the end of the warm-up the following should have been reached: o A maximum of 50% of peak capacity o HR within 20 beats per min (bpm) below training/target heart rate (THR) o A maximum of 60% of maximal heart rate (MHR) o A maximum of 40% heart rate reserve (HRR) o A RPE of BORG <11 (RPE scale) or <3 (CR10). <u>Conditioning Period</u> (including resistance training) The circuit includes cardiovascular stations and active recovery stations with one minute spent at each station unless otherwise discussed with a qualified member of staff. • Active recovery stations include upper limb exercises. Weights may be included if discussed and agreed with a qualified physiotherapist. • Aerobic, low to moderate intensity exercise, designed to suit the range of fitness levels is incorporated in the conditioning phase. The Cardiovascular stations use large lower limb muscle groups in the body rhythmically. • The conditioning phase conforms to the FITT principle. This is adapted for patients with limited exercise capacity. • The conditioning period last for 20 - 30 minutes as tolerated. • Specific muscular strength and endurance exercises will also be incorporated into the exercise prescription of selected patients. This form of training will be incorporated based upon the goals of the patient and where it is felt that it would provide greater benefits and/or less risk	exercise training programme. The exercise programme should be designed to produce a training effect; achieved by varying the frequency, duration, intensity, and mode of exercise. This can be undertaken in a hospital, community or home setting. Many structured programmes include both cardiovascular (CV) and resistance exercise stations. It is essential that all programmes include a warm-up, conditioning phase and cool-down component including those patients doing seated exercise and resistance training (Standard 6 ACPICR 2015)

than cardiovascular exercise. Muscular strength and endurance exercises will be carried out according to the • Higher functioning patients that are hoping to return to occupations involving heavy lifting, or those that are keen to return to resistance training post rehabilitation, will be offered a one off assessment, in addition to their standard rehab. This will involve carrying out a functional exercise test with peak rate pressure product being measured. Resistance exercises; selected based upon the patient's goal, will then be carried out with the patient, with rate pressure product being carried out after each exercise. Advice will be given to the patient, based upon resistance exercises not exceeding symptom free peak rate pressure product on functional exercise test. Advice will also be given on proper lifting technique. This appointment will be carried out with two members of staff to one patient. (Rate pressure product = systolic blood pressure x heart rate) Rate pressure product is a reliable indicator of myocardial workload. • Each patient should work towards a target heart rate/ rate of perceived exertion, which is based on risk stratification and functional test results The exercise intensity is monitored and adjusted by perceived exertion using the BORG scale. • Pulse rate and rhythm is taken on each individual at rest, during peak exercise at a cardiovascular station at approximately 5 and 15 minutes, and post cool down. The exercise effort should be adjusted to ensure that the workload prescribed is achieving the appropriate target heart rate and Borg score. The patient must be assessed for competency in the use of the Borg Score by the group exercise lead, so that pulse rate and rhythm monitoring is only stopped once the individual can accurately and consistently use the BORG scale. • Exercise effort should be adjusted to enable the target heart rate and rate of perceived exertion to be achieved • Patients should be taught how perceived exertion relates to exercise intensity • Once the patient can relate the heart rate accurately to rate of perceived exertion then perceived exertion on its own should be used • There is documented evidence of monitoring during each session • Blood pressure is recorded at the first session	ACSM (2010) guidelines and patient selection criteria.

before warm up and after the conditioning phase. • Pre and post exercise blood pressure is re-checked on the next session if BP falls on exercise and the nursing staff are informed. • Pre exercise blood pressure is re-checked if level is above 140/90mmHg or 150/90mmHg in those over 80. • Target heart rate and rate of perceived exertion will be documented for each individual Cautions to observe within the warm up, conditioning and cool down phases • The feet should always be kept moving to maintain venous return • Isometric exercises and breath holding should be avoided as there is risk of raising blood pressure • Exercises when lying down should be avoided in the conditioning phase as there is an increased risk of arrhythmias • The circuit should avoid overuse of a specific muscle group and should use consecutive muscle groups <u>Cool Down</u> The duration is a minimum of 10 minutes Exercise effort is gradually decreased, based on individual's exercise prescription By the end of the cool down period the patient's heart rate should be returning towards resting levels. Patients are supervised for a minimum of 15 minutes from the end of the cool down period. Documentation regarding the exercise session must be completed as soon as possible after the session. The level of exercise the person has been prescribed will be recorded in the 'Exercise Prescription' section Deviations from the normal practice of warm up, conditioning and cool down will be also be logged in this section.	Clear and accurate records must be kept which fully reflect each episode of care. The most appropriate style of record keeping will be determined by the clinical setting. Local security policies and Caldicott guidelines must be followed and records must satisfy legal requirements (Standard 12 ACPICR 2015)
<u>Education Sessions</u> These will take place in accessible venues. Education will be provided on an individual basis if required. The following topics will be covered in different formats. These include verbal presentation, DVDs,	Education should be delivered not only to increase knowledge but importantly to restore

videos and written information/ leaflets The following topics will be included: • What is Cardiovascular disease? • Tests and Investigations for Cardiovascular disease • Risk Factors (including smoking cessation) for cardiovascular disease including the use of cocaine and illicit drugs as a risk factor for a cardiac event. • Healthy Eating/ cholesterol • Medications and cardiovascular disease • The benefits of physical activity • The maintenance of lifelong physical activity • Weight Management • Stress Management using cognitive behavioural methods • Basic Life Support Weight Management will include the following talks: • Mindful eating • Portion sizes • Food labels • Fats talk/ quiz • Cook & taste and eating out • Exercise Healthy Minds (stress management using cognitive behavioural methods) will include the following talks: • What is stress? • Motivating change • Goal setting • Positive thinking • Assertiveness • Communication • Procrastination • Time management • Behaviour types • Relaxation & diaphragmatic breathing • Panic attacks • Mindfulness • Sleep <u>Relaxation session:</u> 2 staff must be present Resuscitation equipment must be available The phone and bleeps must be off and mobiles on silent All clients must have a mat and folded mat pillow to lie on or chair to sit in if preferred Ensure clients have adequate clothing to keep warm Turn Lights out Instruct clients to adopt a comfortable position, back supported, feet hip width apart, relaxed abdomen,	confidence and foster a greater sense of perceived personal control (BACPR 2012) Payne R & Donaghy M (2010)

shoulders, face, throat and pelvis Let body be supported by mat or chair Lie quiet and still and close eyes Focus on breathing. Breathe in and let tummy rise, breathe out and let tummy relax. Instruct patient to make out breath slightly longer than the in breath Do not force air, breathe at own rate and depth Relax muscles further with each breath There is a relaxation script for each session, which includes the options of: guided imagery, progressive muscular relaxation, passive muscular relaxation When the session is due to end: Inform the clients that the session end is approaching. Ask clients to: start to bring awareness back to their body becoming aware of noises in the room Turn head gently from side to side, gently stretch the neck Keep eyes closed move toes and fingers Circle wrists and ankles Clench and unclench hands Gently stretch If lay on floor roll slowly onto side and then gently push up to sitting position Let head come up last and slowly Sit in a comfortable position keeping eyes looking downwards until lights are on Slowly look up and take in surroundings Give feedback about the session <u>Discharge from Cardiovascular rehabilitation: Stage 5 and 6</u> When the patient is ready to be discharged from the Cardiovascular rehabilitation service a reassessment of risk factors, goals and achievement to date together with plans for long term management should be formulated A letter documenting outcomes is then sent to the patient's GP and Practice Nurse and copied to the patient. This letter is available to view for other health care professionals across primary and secondary care on the hospital electronic clinical system Long term maintenance of changed behaviour (stage 6) is encouraged with particular reference to the management of lifestyle risk factors including: Smoking cessation Dietary changes Weight management Management of stress Optimisation of medication for treatment of the patient's condition.	By the end of the patient's clinically supervised rehabilitation, individual long-term physical activity plans are agreed and arrangements are made for transference of care. The aim is to develop the individual's confidence in their ability to exercise independently and to take responsibility for their health. Continued secondary prevention and support by healthcare and exercise professionals is necessary to assist adherence to physical activity recommendations in the long-

The Patient is made aware of the annual CVD check available at the GP practice, which includes. • Symptom enquiry • Smoking status • Level of exercise • Dietary review • Medication review • Clinical examination • Blood pressure • Weight • Height • BMI (body mass index) • Urine sample screen for diabetes • Cholesterol • Kidney function tests • Liver function tests if on cholesterol lowering medication • Identify if any further investigation of your condition is needed Information is provided; if wanted relating to Salford Heart Care (local Support Group) Ensure the patient has the contact number for the cardiovascular rehabilitation team for future queries Maintenance of physical activity - Offer patients the information about the following exercise continuation options (long term maintenance sessions) • Active Lifestyles options • Health Walks • Fit City gyms (Salford Community Leisure Facilities) • Healthy Hips and Hearts If the patient chooses any of the above complete a British Association of Cardiovascular rehabilitation referral form and send to the Referrals Officer employed at Salford Community Leisure where the instructors who assess the clients hold level 3 equivalent exercise Instructor qualifications. Ensure patient consent is documented on the referral form and in the case notes to information being shared. Consider other methods of maintaining physical activity: walking Private gym	term. (Standard 9ACPICR 2015) Early initial assessment of individual patient needs in each of the core components and reassessment upon programme completion. (Standard 4 BACPR 2012) On programme completion there should be a formal assessment of lifestyle risk factors (physical activity, diet and smoking as relevant), psychosocial health status, medical risk factors (blood pressure, lipids and glucose) and use of cardioprotective therapies together with long-term management goals. This should be communicated by discharge letter to the referrer and the patient as well as those directly involved in the continuation of healthcare provision. (BACPR 2012) Patients who have a completed stage 4 exercise programme and wish to undertake supervised long term exercise should: • Be clinically stable • Understand their symptoms and how to use sublingual nitrates • Be able to self monitor and regulate their exercise level and intensity • Be able to exercise at greater than 5 METS The following information should be shared with stage 6 : • Details of the cardiac event and relevant medical history • Progress, Complications and interventions

	• Stage 4 exercise prescription and summary of the functional capacity • Results of ETT if available • Details of the patient's current medications. (SIGN 2002) The maintenance exercise programme instructors should hold a minimum of NVQ level 3 instructor qualification. (SIGN 2002))
Audit and Evaluation. • Patient experience will be recorded via a patient experience survey. The aim is to provide one to as many people as possible who have accessed the menu of options per annum. Pre and post exercise components the following will be completed: • Anthropometric measurements • Clinical observations including blood pressure and heart rate • Functional exercise tests HADS (this is also completed pre and post the Healthy Minds Group) • Goals will be identified and set with patients and then evaluated to identify whether patients have achieved. • SRFT Cardiovascular rehabilitation Service will be audited and benchmarked nationally via the Central Cardiac Audit Database (CCAD). This is the national dataset for cardiovascular rehabilitation and includes a questionnaire given to patients initially and then at 12 weeks and 12 months following the initial questionnaire. (See appendix 2) • The procedure will be audited annually from a random sample of 30 sets of Cardiovascular Rehab case notes.	Every cardiovascular rehabilitation programme should formally audit and evaluate their service (BACPR 2012) Consistent measuring of outcomes is recognised as an essential component in the evaluation of the effectiveness of the CR pathway and is considered vital to quality improvement. In CR, it is the measure of a patient's progress towards a defined goal. Outcomes provide meaningful feedback to patients on their progress encouraging the maintenance of healthy behaviours. Outcomes also provide data to demonstrate the efficacy of a programme and are important to justify the value of services both clinically and financially. Outcome measures are standardised for benchmarking purposes. These performance measures allow programmes over time to compare their specific patient population against standard benchmarks.(Standard 10 ACPICR 2015)

Standards

The policy aims to meet the national standards for cardiovascular rehabilitation as described in:

- Standards and Core Components for Cardiovascular Disease Prevention and Rehabilitation (BACPR 2012)
- Service Specification for Cardiovascular rehabilitation Services. Department of Health (Oct 2010)
- Standards for Physical Activity and Exercise in the Cardiovascular Population. Association of Chartered Society of Physiotherapists in Cardiovascular rehabilitation (ACPICR 2015)
- Lower limb peripheral arterial disease: diagnosis and management (NICE 2012)

Explanation of terms

Coronary Artery Bypass Grafting (CABG)
Central Cardiac Audit Database (CCAD)
Heart rate reserve (HRR)
Maximal heart rate (MHR)
Myocardial Infarction (MI)
Percutaneous Coronary Intervention (PCI)
Peripheral arterial disease (PAD)
Resting heart rate (RHR)

References and Supporting Documents

AACVPR (American Association of Cardiovascular and Pulmonary Rehabilitation) (2013) Guidelines for Cardiac Rehabilitation and Secondary Prevention Programmes. 5th edition.

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ACPICR (2015) Standards for Physical Activity and Exercise in the Cardiovascular Population. Association of Chartered Society of Physiotherapists in Cardiovascular rehabilitation

ACSM (2009) Guidelines for exercise testing and prescription. Lippincott, Williams & Wilkins. 8th Edition

Atwood, JE; Myers, JN; cited in Chapter 9 of Durstine, JL; Moore, GE; Painter, PL; Roberts, SO. (2009). American College of Sports Medicine: Exercise Management for Persons with Chronic Diseases and Disabilities. Human Kinetics

BACPR (2012) Standards and Core Components for Cardiovascular Disease Prevention and Rehabilitation

BACPR (2013) Exercise instructor training module

Bethesda Conference 32nd. Care of the Adult with Congenital Heart Disease. JACC 2001;37:1161-1198

Cardiovascular rehabilitation- an educational resource. British Association of Cardiovascular rehabilitation. (2001)

Coats et al (1995). British Association of Cardiovascular rehabilitation guidelines for Cardiovascular rehabilitation

DH (July 2000) The NHS Plan. Department of Health.

DH (2000) National Service Framework for Coronary Heart Disease. Department of Health

DH (2010) Coronary Heart Disease and the Need for Cardiovascular rehabilitation. Department of Health

DH (Oct 2010) Service Specification for Cardiovascular rehabilitation Services. Department of Health.

Effective Health Care. Cardiovascular rehabilitation. NHS Centre for Reviews and Dissemination, University of York. 1998

Enderby, P. John, A. and Petherman, B.(2006) Therapy Outcomes Measures for Rehabilitation Professionals. (2nd Edition). Chichester: John Wiley & Sons Ltd.

European Society of Cardiology Task Force (2001) EHJ. Vol. 22 p125-135

Fitchet, A; Doherty, P J; Bundy, C; Bell, W; Fitzpatrick, A P; Garratt C J (2003) Comprehensive cardiovascular rehabilitation programme for implantable cardioverter-defibrillator patients: a randomised controlled trial. *Heart* ;**89:**155-160

Fitchet A and Macdonald J (Sept 2011) High Sensitivity Troponin T Assay - Guidance for Clinical Usage. Salford Royal NHS Foundation Trust

Gobel F L, Leonard M.D, Nordstrom M.D, Richard R, Nelson M.D, Charles R. Jorgensen, M.D., and Yang Wang, M.D. The Rate-Pressure Product as an Index of Myocardial Oxygen Consumption during Exercise in Patients with Angina Pectoris

Inbar, O. Oten, A., Scheinowitz, M., Rotstein, A., Dlin, R. and Casaburi, R. Normal cardiopulmonary responses during incremental exercise in 20-70-yr-old men. Med Sci Sport Exerc 1994;26(5):538-546.

Jones, C. and Parsonage, M. (2002) Cocaine related chest pain: are we seeing the tip of an iceberg? Accident and Emergency Medicine, vol. 10, February, pp. 121-126.

Kelly, J. (2007) Caring for patients with cocaine-associated chest pain, British Journal of Cardiac Nursing, vol. 2, no. 6, August, pp. 384-391.

Lawler, P.R., Filion, K.B. and Eisenberg, M.J. (2011). Efficacy of exercise-based cardiovascular rehabilitation post–myocardial infarction: A systematic review and meta-analysis of randomized controlled trials. American Heart Journal, 162:571-584.e2.

Lewin R.J; Coulton S; Frizelle D.J et al. (2007) A brief cognitive behavioural pre-implantation and rehabilitation programme for patients receiving an Implantable Cardioverter Defibrillator improves physical health and reduces psychological morbidity and unplanned re-admissions. British Medical Journal.

Lewin R.J; Furze G; et al (2002) Angina Plan. British Journal of General Practice. 52. Pg 194-201

Myers, McElrath, Jaffe, Smith,Fonda, Hill & Dalman (2013)
A Randomized Trial of Exercise Training in Abdominal Aortic Aneurysm Disease

NICE (2014) Implantable cardioverter defibrillators and cardiac resynchronisation therapy for arrhythmias and heart failure (TA314) London: National Institute for Health and Care Excellence;

NICE (2013) Myocardial infarction: cardiac rehabilitation and prevention of further cardiovascular disease (CG172). London: National Institute for Health and Care Excellence;

NICE (August 2016) Chronic Heart failure in adults. (QS9) London: National Institute for Health and Care Excellence;

NICE (2016) Hypertension in adults: diagnosis and management (CG127) London: National Institute for Health and Care Excellence;

NICE (2012) Lower limb peripheral arterial disease: diagnosis and management (CG 147) London: National Institute for Health and Care Excellence;

NMC (2006) Standards of proficiency for nurse and midwife prescribers. Nursing and Midwifery Council.

Payne R & Donaghy M (2010) Paynes Handbook of Relaxation Techniques. (4th edition) Churchill, Livingstone, Elsener.

Powell. T (2003) The Mental Health Handbook. Speechmark Publishing Ltd

Prochaska J.O; Diclemente C.C (1983) Stages and processes of self change of smoking- toward an integrative model of change. Journal of Consulting and Clinical Psychology 51 390-395

SIGN (2002) Cardiovascular rehabilitation- A national clinical guideline. Scottish Intercollegiate Guidelines Network. Scotland.

SRFT (June 2016) Cleaning, disinfection and sterilisation policy.

SRFT (Sept 2016) Hand hygiene policy

Vasica, G. and Tennant, C. C. (2002) Cocaine use and cardiovascular complications, The Medical Journal of Australia, vol. 177, September, pp. 260-262

Zigmond A.S and Smith R.P (1983) The hospital anxiety and depression scale. Actorpsychiatrica Scandinavia 67, 361-370

Roles and responsibilities

The cardiovascular rehabilitation team is responsible for the delivery of the Salford Royal NHS Foundation Trust cardiovascular rehabilitation service.

Appendices

Appendix 1: Risk stratification Table (AACVPR 2014)

Low	Exercise assess/ class
Left ventricular ejection fraction > 50%	
No resting or exercise-induced complex dysrhythmias	
Uncomplicated MI/CABG/angioplasty, atherectomy, or stent: Absence of CHF or signs/ symptoms including post-event ischaemia	
Normal hemodynamic and ECG responses with exercise and in recovery	
Asymptomatic with exercise or in recovery, including absence of angina	
Maximal functional capacity at least 7.0 METs	
Absence of clinical depression or depressive symptoms	
Medium	
Left ventricular ejection fraction = 40-50%	
Signs/ symptoms including angina at moderate levels of exercise (60 – 75% of maximal functional capacity) or in recovery	
Mild to moderate silent ischaemia (ST depression less than 2mm) with exercise or in recovery	
High	
Left ventricular ejection fraction < 40%	
Survivor of cardiac arrest or sudden death	
Complex ventricular dysrhythmias (ventricular tachycardia, frequent (>6/min multiform PVCs) at rest or with exercise	
MI or cardiac surgery complicated by cardiogenic shock, CHF, and / or signs/ symptoms of post-procedure ischaemia	
Abnormal haemodynamics with exercise, especially flat or decreasing systolic blood pressure or chronotropic incompetence with increasing workload	
Significant silent ischaemia (ST depression 2mm without symptoms) with exercise or in recovery	
Signs/symptoms including angina pectoris, dizziness, light headedness or dyspnea at low levels of exercise (< 5 METS) or in recovery	
Maximal functional capacity less than 5 METs	
Clinically significant depression or depressive symptoms	

Appendix 2: NACR audit

INITIATING EVENT RECORD:

DEMOGRAPHICS

Name:	**Date of Birth***:
Hospital*: Hospital No.:	**NHS Number:**
Patient Sex: Not Known ☐ Male ☐ Female ☐ Unspecified ☐	
Marital Status: Single ☐ Married ☐ Permanent partnership ☐ Divorced ☐ Separated ☐ Widowed ☐ Unknown ☐	
Ethnic Group (ethnic group by patient self-completed questionnaire, as recorded for UK national census)**: Not stated ☐**	
White (British) ☐ White (Irish) ☐ White (other) ☐ Mixed white/black Caribbean ☐	
Mixed white/black African ☐ Mixed white/Asian ☐ Mixed other ☐ Indian ☐ Pakistani ☐ Bangladeshi ☐ Other Asian ☐ Black Caribbean ☐ Black African ☐ Black other ☐ Chinese ☐ Other Ethnic Group ☐	
Address:	
Postcode:	Telephone No.:

CONTACTS

Next of Kin:	GP Name:
HC/Practice Name:	Consultants Name:
Consultants Telephone No.:	Facilitator:
Facilitator's Contact Details:	

INITIAL EVENT AND DATES

Initiating Event: (most recent event leading to referral to rehabilitation, dates, reasons for not attending programme)

Diagnosis* (Select 1 only):

MI (Unknown) ☐ MI (Stemi) ☐ MI (NStemi) ☐ Angina ☐ Unstable Angina ☐ Heart Failure ☐ Mitral Valve Disease ☐ Aortic Valve Disease ☐
ACS ☐ Angiogram ☐ Arrhythmia ☐ Cardiac Arrest ☐ Other ☐ Unknown ☐

Treatment Associated with IE (before rehab). More than one selection allowed:

PCI ☐ PPCI ☐ CABG ☐ Mitral Valve Repair ☐ Mitral Valve Replacement ☐ Aortic Valve Repair ☐ Aortic Valve Replacement ☐ Medical Management ☐ Pacemaker ☐ Transplant ☐ LV Assist Device ☐ ICD ☐ Other Surgery ☐ Other ☐

Acute Events During Rehab:

Myocardial Infarction	☐	ACS	☐	Bypass Surgery	
Angioplasty	☐	Cardiac Arrest	☐	Angina	☐ Other Surgery
Heart failure	☐	Pacemaker	☐	ICD	☐ Congenital Heart
Transplant	☐	LV Assist Device	☐	Other	☐ MI with PCI
MI with Recent PCI	☐	Re-admission CHD	☐	Re-admission Other Cause ☐	
Period Acute Non Card Illness	☐	Unknown	☐		

Date of Initiating Event*:	**Date of Discharge from Hospital:**	
Date Referred:	**Date Invited to Join:**	
Referred by: Consultant ☐ Cardiac Nurse ☐ GP ☐ PC Nurse ☐ Other ☐		Name of Referrer:
Date Rehab Started:	1st Follow-up Due:	1st Follow-up Done: Yes ☐ No ☐
Reason 1st Follow-up Not Done		12 m Follow-up Due:
12 m Follow-up Done: Yes ☐ No ☐	Reason 2nd Follow-up not done	
DateRehab Completed:		

PHASES

Started Phase 1 Yes ☐ No ☐	Date Started Phase	Date Completed Phase

Reason for Not Taking Part (Ph1): Not interested/refused ☐ Ongoing investigation ☐ Too far to travel ☐ Physical incapacity ☐ Ret'd to work ☐ Local exclus. criteria ☐ Language Barrier ☐ Holidaymaker ☐ Mental incapacity ☐ No transport ☐ Died ☐ Not referred ☐ Too ill ☐ Rehab not needed ☐ Rehab not Appropriate ☐ Other ☐ Unknown ☐

Reason for Not Completing (Ph1): DNA – unknown reason ☐ Returned to work ☐ Left this area ☐ Achieved aims ☐ Planned/emergency intervention ☐ Too ill ☐ Died ☐ Other Unknown ☐

Started Phase 2 Yes ☐ No ☐	Date Started Phase:	Date Completed Phase:

Reason for Not Taking Part (Ph2):	**Not interested/refused**	☐	**Ongoing investigation**	☐			
Too far to travel	☐	**Physical incapacity**	☐	**Retd to work**	☐	**Local exclus. Criteria**	☐
Language Barrier	☐	**Holidaymaker**	☐	**Mental incapacity**	☐	**No transport**	☐
Died	☐	**Not referred**	☐	**Too ill**	☐	**Rehab not needed**	☐
Rehab not Appropriate	☐	**Other**	☐	**Unknown**	☐		
Reason for Not Completing (Ph2):							
DNA – unknown reason	☐	**Returned to work**	☐	**Left this area**	☐	**Achieved aims**	☐
Planned/emergency intervention	☐	**Too ill**	☐	**Died**	☐	**Other**	☐
Unknown	☐						

Started Phase 3 Yes ☐ No ☐	Date Started Phase	Date Completed Phase

Reason for Not Taking Part (Ph3):	**Not interested/refused**	☐	**Ongoing investigation**	☐			
Too far to travel	☐	**Physical incapacity**	☐	**Retd to work**	☐	**Local exclus. Criteria**	☐
Language Barrier	☐	**Holidaymaker**	☐	**Mental incapacity**	☐	**No transport**	☐
Died	☐	**Not referred**	☐	**Too ill**	☐	**Rehab not needed**	☐
Rehab not Appropriate	☐	**Other**	☐	**Unknown**	☐		
Reason for Not Completing (Ph3):							
DNA – unknown reason	☐	**Returned to work**	☐	**Left this area**	☐	**Achieved aims**	☐
Planned/emergency intervention	☐	**Too ill**	☐	**Died**	☐	**Other**	☐
Unknown	☐						

Started Phase 4 Yes ☐ No ☐	Date Started Phase	Date Completed Phase

Reason for Not Taking Part (Ph4):	**Not interested/refused**	☐	**Ongoing investigation**	☐			
Too far to travel	☐	**Physical incapacity**	☐	**Retd to work**	☐	**Local exclus. Criteria**	☐
Language Barrier	☐	**Holidaymaker**	☐	**Mental incapacity**	☐	**No transport**	☐
Died	☐	**Not referred**	☐	**Too ill**	☐	**Rehab not needed**	☐
Rehab not Appropriate	☐	**Other**	☐	**Unknown**	☐		
Reason for Not Completing (Ph4):							
DNA – unknown reason	☐	**Returned to work**	☐	**Left this area**	☐	**Achieved aims**	☐
Planned/emergency intervention	☐	**Too ill**	☐	**Died**	☐	**Other**	☐
Unknown	☐						

Menu/Sessions Attended	**Y/N**	**No.**		**Y/N**	**No.**
Group exercise classes	☐	☐	**Individual exercise programme**	☐	☐
Home exercise plan	☐	☐	**Lifestyle education – written**	☐	☐
Lifestyle education – talks/video	☐	☐	**Dietary – group class**	☐	☐
Dietary - individual	☐	☐	**Relaxation training**	☐	☐
Psychological – group talk	☐	☐	**Psychological – individual counsellor**	☐	☐
Individual physiotherapy	☐	☐	**OT groups sessions**	☐	☐
OT individual referral	☐	☐	**Vocational assessment**	☐	☐
Heart manual	☐	☐	**Road to recovery**	☐	☐
Angina plan	☐	☐	**Other home based programme**	☐	☐
Home visits	☐	☐	**Other**	☐	☐

Rehabilitation Type: **Home based ☐** **Hospital based ☐** **Community based ☐** **Other ☐**

Onward Referral					
Phase 4 community exercise	☐	**Primary care CHD clinic nurse**	☐	**GP – medical treatment**	☐
Medical speciality/medical treatment	☐	**Patient support group**	☐	**Smoking clinic**	☐
Social Services	☐	**Sexual problems**	☐	**Community programme**	☐
Voluntary body	☐	**Hospital programme**	☐	**No**	☐

PREVIOUS EVENTS (any other acute events prior to the current reason for attending)

Risk Assessment (BACR): **Low ☐** **Moderate ☐** **High ☐**

Other Previous Events:							
MI	☐	**Cardiac Arrest**	☐	**Pacemaker**	☐	**LV Assist Device**	☐
ACS	☐	**Angina**	☐	**ICD**	☐	**Other**	☐
Bypass Surgery	☐	**Other Surgery**	☐	**Congenital Heart**	☐	**Unknown**	☐
Angioplasty	☐	**Heart Failure**	☐	**Transplant**	☐		

COMORBIDITY (patient completed questionnaire)

Angina	☐	**Arthritis (Osteo)**	☐	**Cancer**	☐	**Diabetes**	☐
Rheumatism (rheum arthritis)	☐	**Stroke**	☐	**Osteoporosis**	☐	**Hypertension**	☐
Chronic bronchitis	☐	**Emphysema**	☐	**Asthma**	☐	**Claudication**	☐
Chronic Back Problems	☐	**Other Comorbid Complaint**	☐	**Describe Other Complaint:**			

LIFE STATUS

Mortality: Alive ☐ Dead ☐ Date of Death (if known)

Cause of Death:

Info Source: Autopsy ☐ Death Cert ☐ ONS ☐ Hospital Records ☐ GP records ☐ Verbal Contact ☐ Other ☐

REHABILITATION (ASSESSMENT) RECORD (Ass No.1 = pre rehab, No.2 = 12 weeks after starting rehab, No.3= 12 months after starting)

ADMIN

Ass. Date:	**Ass. No.**	**Rehab Phase**

EXAMINATIONS & TESTS (as per protocol in your centre)

Weight: kg *or* st lbs	**Height: m *or* ft ins**	**BMI: kg / m ²**
Waist: cm *or* *ins*	**Blood Pressure: / mm Hg**	**Smoked in last 4 wks: Yes ☐ No ☐ Unknown ☐**

Cholesterol: Total: HDL: LDL: Ratio: Triglycerides:

DRUGS (patient self completion questionnaire)

Aspirin/other anti platelet agent ☐	**Name**	**Dosage**	**Frequency**
ACE inhibitor ☐	**Name**	**Dosage**	**Frequency**
Beta Blocker ☐	**Name**	**Dosage**	**Frequency**
Statin ☐	**Name**	**Dosage**	**Frequency**
Omacor ☐	**Name**	**Dosage**	**Frequency**

Other:

Name	**Dosage**	**Frequency**
Name	**Dosage**	**Frequency**
Name	**Dosage**	**Frequency**

PSYCHOLOGICAL (HAD) & PHYSICAL ACTIVITY (Hospital Anxiety & Depression Scale, Modified brief leisure time questionnaire, NSF question)

HAD Anxiety Score: HAD Depression Score:

Physical Activity 1a: Vigorous: 1b. Moderate: 1c: Mild

2a. Often ☐ 2b. Sometimes ☐ 2c. Never/Rarely ☐ 30 min duration 5 times a week: Yes ☐ No ☐

QUALITY OF LIFE (Dartmouth COOP charts and UK national Census data for economic activity)

Physical Fitness:	**Feelings:**	**Daily Activities:**
Social Activities:	**Pain:**	**Change in Health:**
Overall Health:	**Social Support:**	**Quality of Life:**

Current Employment Status:

Employed full-time ☐ Employed part-time ☐ Self-employed full-time ☐ Self-employed part-time ☐
Unemployed looking for work ☐ Gov. training course ☐ Looking after family/home ☐ Retired ☐
Permanently sick/disabled ☐ Temp sick / injured ☐ Student ☐ Other reasons ☐

Appendix 3

Bethesda classification of adult congenital heart disease		
Simple	• Mild pulmonary stenosis	
	• Mild congenital valvular stenosis	
	• Atrial Septal Defects (ASD) closed or not requiring closure/ with sequelae	
	• Repaired Ventricular septal defects (VSDs)	
	• Repaired ASDs and VSDs	
	• Mild pulmonary regurgitation	
	• Congenital aortic stenosis	
	• Repaired total or partial anomalous pulmonary venous drainage	
Moderate	• Unrepaired VSDs unless complicated haemodynamics	
	• Repaired ASDs with good haemodynamic result	
	• Moderate pulmonary stenosis/regurgitation	
	• Repaired tetralogy of Fallot with good haemodynamic result	
	• Aortic stenosis	
	• Repaired coarctation without aortic obstruction or aneurysm formation	
	• Discrete subaortic stenosis	
	• Mild Ebsteins anomaly	
	• Unrepaired ASDs with right heart dilation for consideration of closure	
Complex	• Single ventricle physiology	
	• Fontan physiology	
	• Pulmonary atresia with major aortopulmonary collaterals or conduit	
	• Tetralogy of Fallot with electrical or significant valvar sequelae	
	• Systemic right ventricles: Mustards / Sennings / congenitally corrected transposition of the great arteries (ccTGA)	
	• VSD (repaired or unrepaired) with significant AR or complicated haemodynamics	
	• Unrepaired AVSDs (without Eisenmengers physiology) for consideration of repair	
	• Individuals with conduits (repaired truncus arteriosus, Rastelli operations, Pulmonary atresia)	

	• Complex left ventricular outflow tract obstruction in women of child bearing age	
	• Unrepaired coarctation	
	• Repaired coarctation with significant sequelae	
	• Ebsteins anomaly	
	• Eisenmenger individuals	
	• Double chambered right ventricle	
	• Post Ross operation	
	• Metal valve replacements in women contemplating pregnancy	
	• Individuals for assessment for surgical or percutaneous intervention	

Appendix 4

Audit tool for the Cardiovascular rehabilitation policy

Audit criteria	Yes/ no / Not applicable
Evidence of patients choosing or refusing options is documented in the patient's cardiovascular rehabilitation notes	
Evidence in cardiovascular rehabilitation case notes of patients being contacted within 2 to 5 working days of referral receipt	
Evidence in cardiovascular rehabilitation case notes of patients being provided with a detailed telephone consultation, clinic appointment or home visit within 5 to 10 working days of referral receipt	
Evidence in cardiovascular rehabilitation case notes of patients being provided with a detailed telephone consultation, clinic appointment or home visit within 5 to 10 working days of discharge from SRFT	
Evidence of sending out failure to contact letter if unable to contact the patient by phone documented in patient's cardiovascular rehabilitation notes	
Evidence of the patient being given the "Cardiovascular Rehabilitation- your health in your hands" Booklet when seen as an in patient documented in the patient's cardiovascular rehabilitation case notes	
Evidence of completion of the following documentation at home visit/ phone consultation or initial clinic appointment Secondary Prevention plan	
Evidence of obtaining and using the results of cardiac imaging tests to risk stratify patient	
Written evidence of assessment and risk stratification to enable safe and individualized exercise prescription prior to recruitment to the exercise component of cardiovascular rehabilitation is documented in the patient's cardiovascular rehabilitation notes. (Standard 2 ACPICR 2015)	
Patient consent to the treatment plan is documented in the patient's cardiovascular rehabilitation notes (Standard 3 ACPICR 2015)	
An individualized exercise prescription with goals negotiated with the patient is available in the patient's cardiovascular rehabilitation notes (Standard 4, 5,6 ACPICR 2015)	
There is written evidence of induction and safety information being given to patients prior to commencing the physical activity programme. (Standard 5 ACPICR 2015)	
There is written evidence in the patient's cardiovascular rehabilitation notes of patients physical activity and exercise being continually monitored and evaluated (Standard 7 ACPICR 2015)	
There is written evidence in the patient's cardiovascular rehabilitation notes of patient participation in a warm-up,	

conditioning and cool down component. (Standard 6 ACPICR 2015)	
There is written evidence of a pre and post exercise option functional test (Standard 2 ACPICR 2015)	
There is written evidence of the gym temperature being between 18 to 23 degrees centigrade (65 to 72 degrees Fahrenheit) and measures taken when the gym is too hot or too cold to exercise in the individual cardiovascular rehabilitation venues in the hospital and community. .	
There is evidence of all staff within the Cardiovascular rehabilitation Team receiving training in Basic Life Support and the ability to use an automated external defibrillator within mandatory training	