

GUIDELINES

Cardiac rehabilitation in the United Kingdom: guidelines and audit standards

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Summary

This paper summarises a multidisciplinary workshop convened to prepare clinical guidelines and audit standards in cardiac rehabilitation in the United Kingdom. The workshop developed a three element model of the rehabilitation process and identified needs relating to medical and psychosocial care and the potential contributions of exercise, education, secondary prevention, and vocational advice. Draft clinical standards are proposed as a basis for locally developed guidelines and further research.

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Cardiac rehabilitation has been defined by the World Health Organisation as "the sum of activities required to influence favourably the underlying cause of the disease, as well as to ensure the patients the best possible physical, mental and social conditions so that they may, by their own efforts, preserve or resume when lost, as normal a place as possible in the life of the community".¹ An older but essentially similar definition is "a process by which a patient is returned realistically to his greatest physical, mental, social, vocational and economic usefulness, and if employable, to employment in a competitive industrial world".² The necessity for rehabilitation as so defined is unarguable; the process by which rehabilitation is achieved has been the subject of much argument and controversy, particularly with regard to the benefit or otherwise of specific rehabilitation programmes. Many of the crucial issues in cardiac rehabilitation have previously been identified in the report of a British Cardiac Society working party.³

This paper summarises a multidisciplinary workshop on clinical guidelines and audit standards in cardiac rehabilitation held under the joint auspices of the National Institute for Nursing and the Joint Medical Practice and Audit Committee of the British Cardiac Society and the Royal College of Physicians of London. The workshop developed a three

element model of the rehabilitation process, and identified needs relating to medical and psychosocial care and the potential contributions of education, exercise, secondary prevention, and vocational advice. Draft audit standards are proposed as a basis for locally developed guidelines and further research. In accordance with a convention established in previous workshops, issues that are potential audit points are identified by (A), consensus agreement points by (C), and potential topics for future research by (R). Where there is clear evidence of effectiveness a statement is followed by a conventional reference.

The rehabilitation process

The timecourse of cardiac rehabilitation can be divided into four phases: in-hospital, early post discharge, later post discharge, and long term follow up. Spanning these phases are three essential elements, which are interlinked and may be overlapping.

Element 1 is the process of explanation and understanding. It should start simultaneously with the process of medical diagnosis and management, and its aim is to ensure that patients at all times have an accurate and up-to-date understanding of what has happened to them and its implications, conveyed sympathetically and positively in terms they can readily understand. This has traditionally been regarded as an integral part of good medical and nursing practice, but nevertheless falls within the definition of rehabilitation, and is of such importance that it needs to be audited (A).

Element 2 includes specific rehabilitation interventions—including where appropriate secondary prevention, exercise training, and psychological support—tailored to the needs of the individual patient and the setting of the specific medical diagnosis. Usually these interventions are applied for a defined period, corresponding to the immediate and later phases of post-hospital rehabilitation, and the desired outcomes are capable of being specified and measured.

Element 3 encompasses the long-term process of re-adaptation and re-education, and maps to the long-term or open ended final period of rehabilitation.

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The scope of cardiac rehabilitation

Rehabilitation is an intrinsic part of the management of all cardiac disease. Most formal rehabilitation programmes have concentrated on patients recovering from myocardial infarction, or who have had open heart surgery. This concentration is based on the perception that these are groups with the maximum potential for health gain. In some programmes for this type of patient selection criteria have in fact selected patients for rehabilitation who are already in an excellent prognostic category, and the "added value" in these patients will be small. Conversely, patients with heart failure, valvular heart disease, angina, and hypertension may also have a large potential for health gain and they could be helped by targeted rehabilitation programmes (R). Such programmes may need to take account of the special needs of the elderly, of different ethnic groups, and of both sexes (R). All too often, the uptake of rehabilitation is lowest among those who could benefit most.

The components of cardiac rehabilitation

Medical diagnosis and intervention—Risk stratification is important both to define high risk subgroups and as a basis for more intensive diagnostic efforts. High risk subgroups may require specific resources and precautions, but sometimes offer an opportunity for high "health gain". The role of exercise testing, radionuclide studies, and other investigations in risk stratification of patients with angina or following infarction has been discussed in detail elsewhere.³⁻⁵ Exercise testing after myocardial infarction has a high predictive accuracy^{6,7} (that is, patients with a negative exercise test at a good work load have an excellent prognosis) and this information can be of great psychological benefit (C). The specific role of exercise testing as a guide to exercise in rehabilitation will be discussed below.

Detailed discussion of surgical (valve replacement, coronary bypass grafting, angioplasty) or pharmacological (aspirin, β adrenoceptor antagonists, angiotensin converting enzyme inhibitors, cholesterol lowering agents) interventions is outside the scope of this paper. Despite good evidence of the effectiveness⁸⁻¹⁰ of secondary prevention measures in high risk cases, actual implementation of pharmacological secondary prevention is still very weak (R, A). Possible reasons and solutions are discussed below.

Psychosocial care—Psychological consequences may stem from an attempt to adapt to changes brought about by cardiac disease, and are not necessarily related to infarct size, or any other measurable cardiac status.^{11,12} The main psychological goals are to improve quality of life and to aid secondary prevention. This can be achieved through the identification and treatment of psychological distress and psychiatric illness, by restoring confidence, and by helping patients to initiate and maintain lifestyle changes. In most patients, psychological reactions are transient. Persistent depression and anxiety occur in about one in four patients

and partners: these symptoms are easily measured and usually respond well to simple counselling aimed at addressing patients' and partners' main concerns and correcting misconceptions.^{13,14} Conversely, early careful and consistent explanation can reduce these complications. The main purpose of counselling should be to encourage behavioural change rather than simply to provide emotional support.

Specific steps to improve psychological care in the context of hospital inpatients include:

- Psychological assessment within three days of admission using a simple nurse-administered assessment tool¹³(A)

- A clear written statement of health-improvement goals at the time of hospital discharge (A)

Cardiac disease disrupts families and particularly affects partners and carers. Social factors can impinge on recovery: for example patients' and partners' beliefs about the causation of an illness will determine their emotional and practical response.¹⁵

Patients should be encouraged to remain independent, and should have a say in what they are willing to do (autonomy). Relationships in the home, finances, and changes in work and social activity may create problems which are difficult to resolve. Strong partner support is possibly the single most important factor in buffering these effects.¹⁶ Once a patient is discharged from hospital, less general information about disease and more specific advice about activity is appropriate.¹⁷ The family should be offered participation in all aspects of rehabilitation. Group discussions with patients and partners offer opportunities for comparisons and shared experience, and may be more cost effective.

Exercise—Supervised physical exercise has traditionally been a central component of cardiac rehabilitation, for several reasons. First, it is believed that supervised exercise will help restore the patient's confidence, feeling of well-being, and actual level of physical activity more rapidly. Second, it is hoped that increased physical activity will help reverse adverse risk factors and contribute to secondary prevention. Third, exercise may act as a core activity which provides a vehicle for psychological and social support and for other secondary prevention activities.

Most patients experience a spontaneous improvement in functional capacity over the first few months after myocardial infarction that does not seem related to previous activity levels.^{18,19} Patients who do exercise achieve their optimum functional state more rapidly than patients who do not,^{20,21} have fewer visits to their doctors and hospitals,²² and are more likely to return to work.²³ Patients with angina can benefit from exercise training by experiencing fewer symptoms and increased exercise capacity,^{24,25} and patients with impaired left ventricular function have reported symptomatic improvement after exercise training.²⁶ Some patients with congestive heart failure may show improved functional capacity after exercise training, but results are unpredictable

in individual patients.^{27 28} The main contraindications to exercise are susceptibility to exercise induced arrhythmias and unstable angina.

There is extensive epidemiological evidence that increased physical exercise is associated with a lower risk of atherosclerotic heart disease^{29 30} but individual intervention studies have either lacked power to demonstrate a "hard end point" benefit or have been confounded by other interventions besides exercise. A meta-analysis of trials suggests a potential overall mortality reduction of about 20%.³¹ The potential interaction between exercise and other secondary prevention measures, including better control of diabetes and the correction of adverse lipid and prothrombotic profiles needs further research (R).

Types of exercise that improve cardiovascular fitness are now well characterised: moderate rather than high intensity exercise (for example, brisk walking) sustained for periods of about 20 minutes and repeated regularly (C).³² High intensity exercise may have a role in some patients (for example, those returning to strenuous jobs) but requires careful supervision. If increased exercise levels are to carry over from specific rehabilitation programmes into longer term unsupervised daily living, then the resource implications of activities that are heavily facility dependent or require much travelling or special clothing need to be considered. Low risk patients may move rapidly to unsupervised exercise with regular (for example, telephone) support, and education about a healthy exercise pattern.

Pre-exercise assessment is important both in devising appropriate exercise programmes and for detecting potential risks. Formal treadmill exercise testing is useful both for pre-exercise assessment and to monitor progress. Elderly patients or those with arthritis, heart failure, or respiratory disease may find treadmill testing difficult, and bicycle ergometry may be useful. Other possible simple alternatives include timed corridor or shuttle walk tests. Hospital patients can be taught simple ways of self-assessing the level of physical activity achieved, such as pulse rate measurement and the Borg perceived exertion scale before discharge.³³ Exercise prescription needs to be individualised to take into account both the underlying disease and the patient's own requirements and targets. Inability to keep up with an exercise programme may indicate a need for medical reassessment.

Education—In-hospital education programmes for patients and partners improve knowledge,^{34 35} reduce anxiety and depression, and decrease disability.³⁶ With increased trends towards outpatient management and early discharge, similar outpatient facilities are needed (R). Staff should have clear, specific items for discussion, covering the diagnosis and its implications, medication and its effects, and available support when needed (A). Co-ordination is required to avoid conflicting advice. Written and taped information should back-up verbal communication³⁷ and should be available if required in appropriate languages and braille.

Educational impact can be increased by using a variety of formats and media.

Vocational assessment—Return to work is considered a major end point in cardiac rehabilitation. Between 62% and 92% of patients who were working before myocardial infarction will return to work,³⁸ but a high proportion leave work again or change jobs in the year after the first return to work. The patient's attitude towards return to work in the acute phase of the illness is a powerful predictor of subsequent return to work. Except in the case of patients with persisting angina or heart failure, failure to return to work is more often due to psychological or financial considerations than to statutory or physical constraints. Even in the case of occupations where health standards are prescribed by statute, there is an increasing move towards an individual assessment of risk and capacity and away from arbitrary standards.^{39 40} There needs to be collaboration between cardiac rehabilitation and occupational health medicine to ensure optimum and effective return to work.

The cost effectiveness of cardiac rehabilitation

We know of no cost effectiveness studies of the comprehensive cardiac rehabilitation process as defined above (R). Several studies, principally from the United States, have looked at specific outpatient exercise based programmes, but the designs of most are suspect and the results ambiguous. In general these studies have shown that medical costs were marginally lower and patient income greater in patients who participated in rehabilitation programmes⁴¹⁻⁴³ and that quality of life was also improved.⁴³ In a recent review Chua and Lipkin concluded that "cardiac rehabilitation programmes are cost effective and should be made available to all who would benefit".⁴⁴ Several "secondary prevention" interventions are regarded as cost effective, but are not applied to the whole of the population that might benefit. Proper cost effectiveness assessments of integrated rehabilitation programmes are urgently needed.

The setting of cardiac rehabilitation

Cardiac rehabilitation is a multidisciplinary process that crosses traditional boundaries between hospital and general practice, and between hospital specialties. Provision for cardiac rehabilitation under the National Health Service in the United Kingdom is very variable, and there is little consistency about funding, scope of rehabilitation programmes, or audit.³ A perception that "cardiac rehabilitation is not effective" is often advanced as a reason for lack of investment.

The workshop agreed that responsibility for "phase I" rehabilitation rested with everyone who dealt with or treated cardiac patients, whether in a hospital or a primary care setting. There was scope for coordination of approach and for clinical audit at practice, unit, or district level.

Phase II and III rehabilitation requires facilities that are best provided and coordinated at secondary care level. Every hospital that treats cardiac patients should have a policy for cardiac rehabilitation, and an organisation to implement it. Both the policy and the organisation should be open to audit. The rehabilitation team should include a designated clinician, both to provide medical input and to liaise with clinical colleagues. Funding for rehabilitation should be explicitly agreed with purchasers and linked to agreed performance indicators.

Phase IV rehabilitation falls largely within the primary care setting, but there should be continuing support and feedback from secondary care, and ideally standards and audit points should be agreed on a district-wide basis.

Clinical standards

Essential points relating to clinical standards are listed below. Audit proformas are available from the Research Unit of the Royal College of Physicians.

MEDICAL CARE

- Patients, and where appropriate partners and carers, should receive accurate and understandable information about medical findings and proposed management
- Patients should routinely be assessed for risk factors as part of inpatient or outpatient management, and clear advice given on risk-factor correction.
- Evidence-based secondary prevention measures should be instituted and recorded

PSYCHOSOCIAL CARE

Patients admitted to hospital with acute cardiac events should have a simple formal assessment for depression/anxiety before discharge.

Where this indicates a potential problem, patients should have access to appropriate treatment/counselling, and to follow-up assessment. Partners should be invited to counselling sessions.

Patients should have access to expertise as needed—for example, psychiatrist/clinical psychologist, vocational counsellor, smoking counsellor.

EDUCATION

Patients should have access to information relevant to their medical condition and health status. Information may be provided orally, by printed material, education classes, or group discussions. Differing patient requirements should be catered for.

EXERCISE

Patients with diagnoses of myocardial infarction, unstable angina, or heart failure should have a recorded assessment of exercise capacity before hospital discharge. Where appropriate this could be based on clinical assessment or a simple walking assessment rather than a formal treadmill test.

Patients should have access to a personal exercise plan that can be monitored either in a group setting or at home.

Patients should be medically assessed before embarking on exercise-based rehabilitation programmes.

Contracting for cardiac rehabilitation

Purchaser/provider contracts for cardiac rehabilitation need to specify the scope of the contract (all cardiac diagnoses or selected diagnoses, whether access will be open or limited to hospital referrals); the selection criteria (if any) to be used and who will apply them; the type of services to be offered (ideally, a comprehensive service); and whether the commitment to individual patients is to be fixed-term or open ended. The level of clinical involvement needs to be specified. Contractors will need to be satisfied about arrangements for a seamless transition between hospital and community.

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