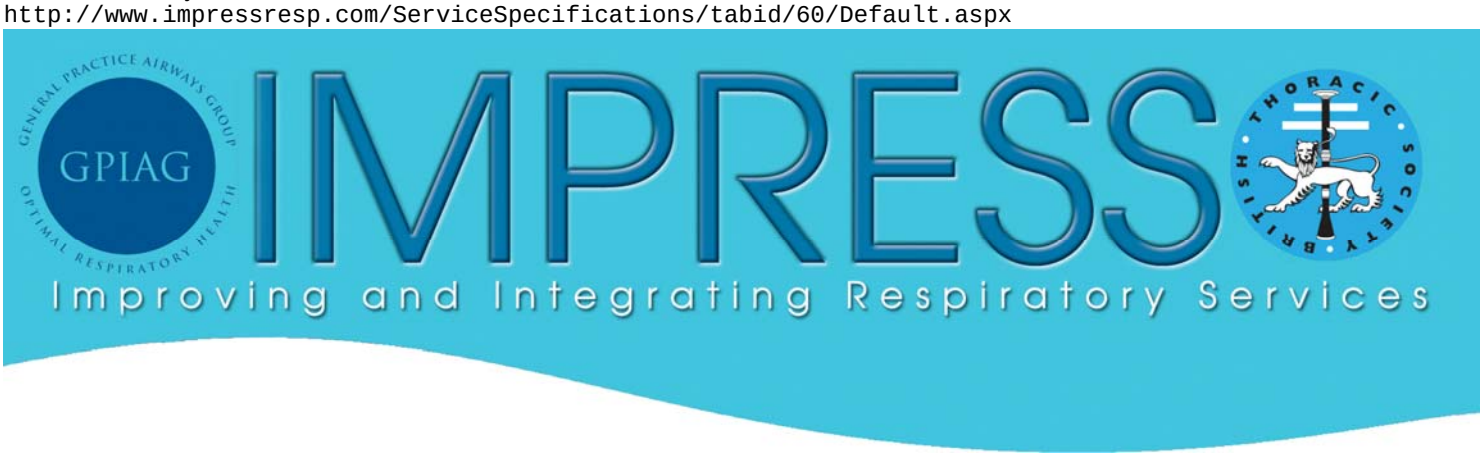

Principles, definitions and standards for pulmonary rehabilitation

Published by IMPRESS following consultation with BAOT, ARNS and ACPRC

February 2008

Background

The profile of COPD as a debilitating condition is increasing in the light of the publication of the recent NICE guidelines and the forthcoming National Service Framework (NSF). Pulmonary rehabilitation is an important non-pharmacological therapy that, when correctly applied, can improve physical performance, health status and reduce some health care costs. Rehabilitation programmes are effective and popular with patients and it is likely that the demand for them will increase after the NSF is published. The outcomes of a rehabilitation programme are more likely than pharmacological treatments to be subject to the vagaries of form and delivery. Knowledge now exists to guide the construction and delivery of a rehabilitation programme that has the best chance of success for the majority of participants. From a population perspective it is important to ensure in future that organisations that offer pulmonary rehabilitation do so with regard to effective structure and ongoing quality control. The purpose of this paper is to define the minimum standards for an effective pulmonary rehabilitation and provide advice about what form of quality control might be appropriate.

Definitions of pulmonary rehabilitation

Pulmonary rehabilitation should be considered as a component of the management of all disabling chronic respiratory diseases. In the broadest definition, rehabilitation seeks to restore the individual to the fullest possible physical, social and mental condition. In the context of chronic lung disease this implies recognition of the partly reversible secondary systemic and psychological impairments of the illness and the

ability to sustain beneficial lifestyle changes. Formal definitions of the process of pulmonary rehabilitation have been published but for the purposes of this paper it is better to describe the founding principles. The features of a successful rehabilitation programme are that it:-

- Is an individually tailored, multi disciplinary intervention for symptomatic patients that is integrated in to their overall care.
- Aims to reduce symptoms, improve functional performance, increase participation and reduce health care costs.
- Contains effective, individually prescribed, physical exercise training together with lifestyle and self-management advice.
- Addresses the social and psychological impacts of the disease on the patients and those close to them
- Monitors progress with appropriate individual outcome measures and programme quality control

Rehabilitation programmes versus activity advice

Maintenance of habitual physical activity in later life has significant general health benefits. In chronic lung disease, physical inactivity is common and is associated with cardiovascular and skeletal muscle de-conditioning, de-motivation and functional decline. The retention of physical activity is related to preserved health status and reduced risk of hospital admission. Individual encouragement to patients with lung disease to remain physically active is therefore desirable. This may even take the form of regular structured exercise classes before or after a pulmonary rehabilitation programme.

A distinction should be drawn between encouragement to the individual to remain active and the deliberate supervised therapeutic process of restoring function through

the process of formal rehabilitation. This distinction is important to ensure that proper emphasis is placed upon the restorative nature of the rehabilitation programme rather than the maintenance health benefits of regular exercise. Pulmonary rehabilitation includes a variety of components which will not be available to those attending exercise programmes. These components are necessary to achieve the maximal health gains which are known to be possible with pulmonary rehabilitation.

Pulmonary versus generic rehabilitation

The educational needs of pulmonary rehabilitation are largely specific to respiratory disorders. There may be some overlap with other disorders including heart failure. For the present there is little evidence to support the practice of more generic rehabilitation for breathless patients.

Standards for pulmonary rehabilitation programmes

Selection and assessment

Most patients with significant disability from respiratory disease are likely to benefit. The benefits appear to be independent of age, lung function, level of disability and even smoking status. Practical limitations of capacity will generally restrict the offer of rehabilitation to those with noticeable disability (MRC 3-5). Some patients will find it difficult to participate. This includes those with significant disqualifying co-morbidities such as stroke, dementia, unstable cardiac disease or severe arthritis. The initial assessment should ensure that the diagnosis is correct, that medical management is optimum and that the outcome measures (health status and functional exercise capacity) are recorded prior to commencement.

Content

Pulmonary rehabilitation is an active process that includes an initial restorative phase followed by a supported or self-sufficient maintenance of the benefit. The content of the programme should reflect these aims through a process of supervised therapy underpinned by training in self-management. The major benefits of rehabilitation come from the reversal of the some of the secondary systemic effects that primarily result in skeletal muscle dysfunction. For this reason, individually prescribed lower limb physical training is a mandatory component. The mechanisms for improvement through training may include muscle re-conditioning and also modulation of dyspnoea, improved self-efficacy and better task efficiency. The main emphasis is on lower limb training using walking or cycling as the method. Training for both strength (resistance) and endurance are recommended. For efficiency, the intensity of exercise training should be prescribed individually. In general, the higher the prescribed intensity then the greater is the gain. The intensity or duration of training should increase with progression so that the relative intensity remains constant. Specific upper limb and respiratory muscle training may result in specific task improvements. However since neither has been shown reliably to augment general exercise training they cannot yet be considered a mandatory component. Attempts have been made to reduce the frequency of supervised training and effective once weekly supervised programmes have been described. To date the current evidence suggests that at least two supervised sessions per week are preferable. Supervised sessions should be augmented by further daily home based sessions.

Although physical training is the central focus of the programme, this needs to be accompanied by disease education and self-management advice. This usually takes the form of delivered talks and group discussions around the topics. Patients indicate that written material is necessary to support the education as well as self-management

plans and home training diaries. Since rehabilitation should be seen as part of the integrated management of COPD the opportunity can be taken to provide specific physiotherapy, dietetic, occupational therapy or psychological advice where required.

Programme duration

The duration of an effective outpatient pulmonary rehabilitation programme is a determined by the balance of individual gain against the capacity to provide for the population. The benefits of rehabilitation can be gained in a relatively short period and can even continue to accrue beyond the formal programme. It is also likely that continued benefit or consolidation could be achieved if the programme is continued indefinitely. In most health communities it is not possible to promise continuous rehabilitation so identification of the optimum duration of a rehabilitation programme remains a challenge. For the present, the guidelines recommend that twice weekly, supervised rehabilitation should be provided for between 6-12 weeks. In future, it is likely that the duration of the programme should be determined by individual's achievement of competency but this has not yet been explored.

Setting

Pulmonary rehabilitation has been successfully conducted in a number of settings. These include hospital inpatient, hospital outpatient, community facilities and even the patient's own home. There does not appear to be any particular best solution. The choice of rehabilitation site is probably a matter for the local health community to decide after consideration of facilities, costs and geography. These decisions are not always straightforward. For example, more expensive hospital inpatient rehabilitation may be an acceptable solution when great distances are involved. Hospital outpatient rehabilitation may be cost effective but inaccessible if the transport links are poor. Home rehabilitation may be effective but lack the group

support that some patients may need. Many communities will require a multiple approach and send complex or severe cases to a hospital based programme and manage the majority in a community setting. The choice of setting for rehabilitation is a less important determinant of success than the application of an individually prescribed and appropriate content.

Programme structure, safety, staffing and quality control

Pulmonary rehabilitation should be delivered by a multidisciplinary team of qualified professionals. The team mix may vary with location but there is usually a medical director and a lead co-ordinator. The staffing ratios that are recommended for the United Kingdom are 1:8 for supervision of exercise classes and 1:16 for education sessions with a minimum of two staff. Patient safety is an important consideration though there have not been any reports of adverse events. Nevertheless it is reasonable to ensure that resuscitation facilities are available and that staff have had recent training. Ambulatory oxygen should be available for patients who de-saturate on exercise.

Quality control and audit are an important part of the process. Patient focussed outcomes such as exercise performance and health status are used to record the individual benefits of rehabilitation. It is also necessary to record some process measures to evaluate the performance of the whole programme. These might include attendance and drop out rates, patient satisfaction questionnaires and adherence to home exercise programmes.

Key Standards

Standard 1

A rehabilitation programme must contain individually prescribed, physical exercise training together with lifestyle and self-management advice.

Marker of good practice

Written prescriptions of endurance and strength exercise training at the highest tolerated intensity and evidence of increments with progress.

Standard 2

The programme should be delivered by a multi-disciplinary team and include two supervised sessions per week for at least four weeks. Further home training should be encouraged.

Marker of good practice

Diversity of team membership, staffing ratios and existence of training diaries

Standard 3

Individual progress should be assessed by the use of appropriate assessment and outcome measures (usually health status and functional exercise capacity)

Marker of good practice

Records of individual patient progress in all cases

Standard 4

There should be evidence of programme quality control and improvement.

Markers of good practice

There should be records of patient attendance and drop out, patient satisfaction questionnaires and audit of effectiveness. The presence of appropriate safety measures, including staff resuscitation training and availability of oxygen.

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