Pulmonary rehabilitation in chronic respiratory insufficiency

Series editors: J-F Muir and DJ Pierson

Introduction

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In 1974 a special committee of the American College of Chest Physicians proposed the following definition for the application of rehabilitation to patients with respiratory disorders, primarily individuals with chronic obstructive pulmonary disease (COPD):

> "Pulmonary rehabilitation may be defined as an art of medical practice wherein an individually tailored, multidisciplinary program is formulated through accurate diagnosis, therapy, emotional support, and education, stabilizes or reverses both the physio- and psychopathology of pulmonary diseases, and attempts to return the patient to the highest possible functional capacity allowed by his pulmonary handicap and overall life situation." [1]

Initial enthusiasm during the federally funded studies in the USA in the 1960s and early 1970s was followed by a decade in which pulmonary rehabilitation enjoyed less favour. This was in part because few means were at hand to study much of its multidisciplinary content in an objective manner. Research focused mainly on physiological outcomes such as exercise capacity, which tended to show little improvement in most patients, rather than using quality of life as an evaluation tool.

In 1986 a provocative paper by Make[2] pointed out that it was in fact possible, after everything had been done to maximise lung function with pharmaceutical agents and other conventional medical techniques, to further improve the functional level of patients with severe COPD by pulmonary rehabilitation. In his paper Make emphasised the importance of both diagnostic and therapeutic modalities in improving quality in life, including both psychological and educational aspects. During the last 20 years a considerable amount of work has been done in three important areas of pulmonary rehabilitation in COPD: improvement in the degree of airflow obstruction; prevention and treatment of complications; and improvement in the quality of life. The myth of the 1970s is truly becoming the reality of the 1990s, as the reader will see in the series of reviews that begins in this issue of *Thorax*.

The first paper by Petty traces the development of the large USA pulmonary rehabilitation programmes and discusses the practical application of what was learned in those programmes in the contemporary community hospital and private practice settings. Exercise reconditioning is at the heart of pulmonary rehabilitation, and two reviews cover aspects of this important component. Firstly, Belman discusses the overall concept of exercise reconditioning and reviews the technique and efficacy of the various available approaches, including upper body exercise. Goldstein then reviews the more specialised area of techniques aimed specifically at training the ventilatory muscles, placing the rationale for such training in the context of available experimental data.

For many patients effective pulmonary rehabilitation involves the use of technology as well as techniques. Foremost in this respect is long term oxygen therapy, the rationale, efficacy, and practical application of which are reviewed by Howard in the fourth paper in the series. Next, Muir addresses the rapidly expanding field of mechanical ventilatory assistance using less invasive techniques for long term support and also for short term care during acute exacerbations, in the latter instance including the use of nasal mask ventilation in intermediate respiratory care units and other innovative approaches. The subject of travel for patients with chronic pulmonary disease, which also relies heavily on the appropriate use of technological support, is reviewed by Smeets in the sixth article.

Finally, because the results of all these interventions must focus not only on physiological improvement and prolongation of life but also on improvement of the wellbeing of the patient, the series concludes with a review of quality of life assessment in those with chronic pulmonary insufficiency. In this paper Curtis, Deyo and Hudson discuss the techniques that are available for quantitating the components making up "quality of life" and review how these indispensable aspects of successful pulmonary rehabilitation can be used most effectively, both in future investigations and by clinicians managing individual patients with disabling pulmonary disease.

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1 O'Donohue WJ, Giovannoni RM, Goeberg AI, Keens TG, Make BJ, Plummer AL. Long term mechanical ventilation. Guidelines for management in the home and at alternative community sites. *Chest* 1986;**90** (Suppl): 1–37.
2 Make BJ. Pulmonary rehabilitation: myth or reality? *Clin Chest Med* 1986;7:519–40.