



Case study: Settings for pulmonary rehabilitation

Importance to NHS

In the UK almost 900,000 people have been diagnosed with chronic obstructive pulmonary disease (COPD). The National Institute for Health and Clinical Excellence (NICE) estimates that the condition has an annual cost to the NHS of £491 million. The older you are, the more likely you are to develop COPD with the average age of diagnosis being around 67 years old, usually after many years of less severe symptoms and predominantly caused by smoking. Pulmonary rehabilitation is a well-established treatment programme of supervised exercises and education to improve the function and quality of life of patients with COPD.

Currently, treatment is usually carried out in a hospital setting. Routine rehabilitation treatment involves a programme of therapy to improve respiratory symptoms and sleep, and to increase exercise capacity, mobility and self-confidence. However, the benefits are progressively lost once the course terminates. This has led to a search for new ways to prolong its benefit, including intensive strategies such as repeated courses of rehabilitation and weekly supervised rehabilitation.

Does pulmonary rehabilitation produce better results if offered in a community setting, and can the effects be extended by regular telephone encouragement?

These are key questions regularly posed by clinicians treating people with COPD. A group of researchers from the Royal Hallamshire Hospital in Sheffield were commissioned by the National Institute for Health Research Health Technology Assessment (NIHR HTA) programme to investigate this further by conducting a clinical trial to answer these questions. They have recently published their findings in *Health Technol Assess* 2010, Vol.14:06.

The study sought to establish:

Is pulmonary rehabilitation carried out in a community setting more effective than if carried out in a standard hospital setting, immediately or after 18 months of follow up, as assessed by exercise capacity and indices of health-related quality of life?

Is telephone follow-up useful in prolonging the beneficial effects of a pulmonary rehabilitation programme?

What is the most cost-effective choice for the setting of pulmonary rehabilitation, and is telephone follow-up a cost-effective option?

The research

Dr Lawson, a Consultant Physician in Respiratory Medicine at the Hallamshire Hospital in Sheffield, led the research team, which hypothesised that regular telephone encouragement would be cost-effective in encouraging continued exercise and consequently prolong the benefit of treatment. They believed that a community programme would be seen as more relevant to patients' own lifestyles than a treatment administered in a hospital. However, people may see community treatment as more trivial than treatment administered in a hospital.

This trial set out to test this in the context of routine NHS treatment. In addition to effects on exercise capacity and health-related quality of life, the team also assessed the health economic impact.

Over an 18-month period 240 patients were randomised to receive either community or hospital rehabilitation. The research team measured exercise capacity, quality of life and the use of healthcare resources.





These groups were then split further to assess whether the improvements from rehabilitation could be prolonged. The groups received either routine standard care or additional telephone calls for encouragement and advice.

Adding to the evidence base

This is the first large scale study to confirm that group pulmonary rehabilitation in a community setting is effective. The results suggested that for the treatment of COPD, the provision of group-based pulmonary rehabilitation in a community setting is as clinically and cost-effective as hospital rehabilitation. However, although the team found that there was no significant difference (95% confidence interval (CI) -24.3 to 59.9, $p=0.405$) in improvement between the groups during the acute phase, and telephone follow-up did not significantly alter continuation of exercise, disease-specific quality of life was better maintained after telephone follow up compared with standard care (95% CI 0.8 to 2.0 $p<0.001$). The economic analysis did not favour either hospital or community settings, but did find follow up with telephone encouragement cost-effective.

“The results of our research did show some statistically significant change, but the magnitude was small” says Dr Lawson. *“Although the team had hypothesised that group pulmonary rehabilitation in a community setting might be more beneficial than hospital-delivered programmes, there was no difference in the clinical or cost-effectiveness between the two groups. Therefore, service provision should be determined by local factors.”*

The study also highlighted that enhancing patient compliance has a large potential for improving public health, and may be more important than minor changes in the rehabilitation programme itself.”

The researchers were surprised by the large number of people they thought could benefit from pulmonary rehabilitation who failed to attend the sessions and suggest that further research is needed to look into factors influencing this.

“Service delivery should be planned to focus on this”, Dr Lawson explains. *“For instance, looking at ease of transport to and from classes. Although the improvement in quality of life following telephone intervention was small, there was a suggestion that this could be developed into a cost-effective model. Our intervention was very simple and it is quite possible it could be enhanced to provide greater benefit.”*

Importance for clinical decision-making and quality of patient outcomes

The study's post-hoc analysis suggested that the individual practitioner delivering care may greatly affect the outcome, even when working to the same protocol.

“Differences between groups fell just short of statistical significance, but were potentially very large and of real clinical significance,” says Dr Lawson. *“The size of this effect potentially dwarfs any effect of minor modifications to the rehabilitation programme itself, although these have been subjected to far more scrutiny. This has great implications for recruitment and training of staff in clinical services, emphasising that motivated, enthusiastic and knowledgeable staff are essential. This is difficult to address but I am sure merits further research”*

‘A randomised 2 x 2 trial of community versus hospital pulmonary rehabilitation for chronic obstructive pulmonary disease followed by telephone or conventional follow-up’ published in *Health Technol Assess* 2010; Vol. 14:6 .The full text is available for download at www.hta.ac.uk/1316

A feature on the trial has been published in the *International Journal of Therapy and Rehabilitation*: 2010: 17(11): 569-568

