Community pulmonary rehabilitation: a multidisciplinary approach

Lindsay Welch

Pulmonary rehabilitation is a well-evidenced programme of therapy for patients with chronic obstructive pulmonary disease (COPD) and includes the provision of breathlessness interventions, nutritional support and exercise therapy, all of which can be delivered by community nurses. Pulmonary rehabilitation is also considered a low cost intervention and can be delivered by healthcare professionals of varying disciplines. This article explores the clinical elements of pulmonary rehabilitation, as well as investigating the 'added value' provided by multidisciplinary teams in the community.

KEYWORDS: COPD  Pulmonary rehabilitation  Multidisciplinary team

Chronic obstructive pulmonary disease (COPD) is a progressive, life-limiting respiratory condition that primarily features symptoms of breathlessness, chronic cough, fatigue and reduced mobility (Collins et al, 2012). Currently, the prevalence of COPD in the UK is over one million people (Health and Safety Executive [HSE], 2012), and it is the fourth leading cause of death worldwide (Halbert et al, 2003).

COPD is diagnosed by using lung function tests (i.e. spirometry) to identify airflow obstruction and computer tomography (CT) scans to highlight emphysema, as well as the clinical symptoms at presentation, such as breathlessness, cough and chronic sputum production (Global Initiative for Chronic Obstructive Lung Disease [GOLD], 2016).

One of the main causes of COPD is smoking, although other genetic, environmental and occupational factors can be involved (Decramer et al, 2012). COPD symptoms can vary between individuals, due to factors such as:

- The stage of disease progression according to the GOLD (2016) staging categories (Table 1)
- Coexisting comorbidities
- Coexisting psychological disorders
- Frequent or colonised bacterial or viral infections (Wedzicha and Donaldson, 2003).

The average age of the UK population has been rising recently (The Office for National Statistics, 2014), which has resulted in more people living in the community with a long-term condition (NHS England, 2014a). COPD makes up a large proportion of these long-term conditions and is one of the most common reasons for emergency admission to hospital (National Institute for Health and Care Excellence [NICE], 2011), with 115,000 admissions per year (NHS England, 2014b). Mortality rates are high, with one in 12 patients dying during their hospital stay and one in six dying within 90 days (NHS England, 2014b).

Current strategies for the management of COPD include a combination of:

- Self-management education
- Exacerbation action planning
- Pharmacological management
- Smoking cessation and healthy living advice.

These vary in delivery and effectiveness and many have been rigorously tested in the form of randomised controlled trials (RCTs) (Lacasse et al, 2006). One COPD management strategy that has considerable clinical evidence is pulmonary rehabilitation. For example, a Cochrane systematic review found that pulmonary rehabilitation reduces mortality and readmission rates when delivered after admission for acute exacerbation of COPD (McCarthy et al, 2015). This is reflected in the NICE quality standard (NICE, 2011; Bolton et al, 2013), and the COPD and asthma outcomes strategy recommendations (Department of Health [DH], 2012). There is also emerging evidence that pulmonary rehabilitation in stable COPD improves survival (Puhan, 2011; NHS England 2014b).

Pulmonary rehabilitation is considered a ‘complex intervention’ (Bolton et al, 2013), as many of its individual components — group therapy, socialisation, exercising with peers, group education — work together to form an effective COPD management tool. The exercise component of pulmonary rehabilitation can include walking and incremental strength training.

The 2012 IMPRESS guidelines (IMPRESS is a joint initiative set up in 2007 between the British Thoracic Society and the Primary Care Respiratory Society–UK [PCRS–UK] to promote improvement and
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integration in respiratory services), and the recent national audit (Bolton et al, 2013), currently call for all patients with COPD to have access to pulmonary rehabilitation, due to its noted health improvement benefits and its relative low cost. Pulmonary rehabilitation thus serves as an important component in the management of COPD and is beneficial in improving health-related quality of life and exercise capacity (McCarthy et al, 2015).

Other cost-effective therapies for COPD include smoking cessation and having a winter flu vaccination. Inhaled therapies are costly and may result in issues such as poor patient uptake and adherence to treatment. The cost values of interventions for COPD per quality adjusted life year (QALY), a way of demonstrating disease burden, including the quality and quantity of life lived, are demonstrated in Figure 1 (London Respiratory Team, 2013).

**PRINCIPLES OF PULMONARY REHABILITATION**

The Association of Respiratory Nurse Specialists (ARNS)/European Respiratory Society (ERS) have defined pulmonary rehabilitation as (Spruit et al, 2013):

... a comprehensive intervention based on a thorough patient-assessment followed by patient-tailored therapies that include, but are not limited to, exercise training, education, and behaviour change designed to improve the physical and psychological condition of people with chronic respiratory disease and to promote the long-term adherence to health-enhancing behaviours.

The key element of pulmonary rehabilitation is effective exercise training, although education, nutritional intervention and psychological support also play important roles. Pulmonary rehabilitation is designed to reduce the patient’s symptom burden and optimise their functional status, thus reducing healthcare costs through stabilising or reversing systematic manifestations of the disease (Lacasse et al, 2006).

**COPD clinical benefits and breathlessness monitoring**

Pulmonary rehabilitation relieves dyspnoea (subjective awareness of being short of breath, which can vary in intensity) and fatigue, improves emotional function and enhances the sense of control that individuals have over their condition. These improvements are clinically significant (McCarthy et al, 2015).

Patients participating in pulmonary rehabilitation are monitored throughout using the BORG breathlessness scale (Borg, 1962), a validated tool that assesses patient perception of shortness of breath (dyspnoea) during exercise. Exercise itself as well as the amount of time that a patient can continue exercising is individually tailored using the Borg breathlessness scale.

Current guidelines (BTS, 2016) suggest that patients should exercise to their maximal tolerable capacity, to receive the physiological benefits of exercise. Due to the exercise and mobility components, pulmonary rehabilitation has been traditionally led and delivered by physiotherapists.

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**Table 1: Four stages of COPD according to GOLD categorisation (GOLD, 2016)**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
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<tbody>
<tr>
<td>I: mild COPD</td>
<td>Mild limitation of airflow. Patients may not be aware that their lung function is abnormal</td>
</tr>
<tr>
<td>II: moderately severe COPD</td>
<td>Limitation of airflow causes symptoms such as coughing, coughing up phlegm and shortness of breath on exertion. Patients usually seek medical treatment</td>
</tr>
<tr>
<td>III: severe COPD</td>
<td>Limitation of airflow is greater. Patients complain of worsening shortness of breath, tiredness, limitations to activities of daily living and repeated exacerbations — all of which affect quality of life</td>
</tr>
<tr>
<td>IV: very severe COPD</td>
<td>Very severe reduction of airflow to the extent that it also affects heart and blood vessels. Daily administration of extra oxygen may be needed. Complaints are so severe that temporary worsening can be life-threatening</td>
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</tbody>
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**Figure 1.**

London cost value pyramid developed by the London Respiratory Team (2013).

* Long-acting beta agonist
— physiotherapy being a professional discipline in which detailed anatomy and physiology of muscles and kinetics are fundamental elements. Therefore, physiotherapists have historically provided the exercise programmes, as they have the skills and knowledge to prescribe exercise, monitor and assess functional capacity, and modify exercise due to patients’ potential musculoskeletal comorbidities.

### Shared skill-sets/interchangeable roles

Currently, pulmonary rehabilitation is being increasingly delivered by other healthcare professionals, such as nurses and occupational therapists (Vincent and Sewell, 2014). However, in the author’s clinical experience nurses are often asked to deliver pulmonary rehabilitation despite little previous exposure to exercise therapies as part of their training (although traditional nursing care does offer a patient-centred approach focusing on the ability to perform activities of daily living). Furthermore, the ability to ensure that patients with respiratory conditions remain socially, psychologically and physically healthy is something nurses can deliver and, therefore, with supplementary exercise and pulmonary rehabilitation training, they can have a significant input to pulmonary rehabilitation programmes.

The role of the multidisciplinary team in developing a comprehensive, evidence-based programme of education and patient support in pulmonary rehabilitation should not be overlooked. Components such as nutrition, psychological wellbeing and preventing social isolation are essential to building patient’s confidence and ability to self-care.

Although pulmonary rehabilitation is delivered differently across the country (Bolton et al, 2013), there are clear guidelines on outcome measures, and the muscle groups that require exercise. Walking and incremental strength training have a good clinical evidence base in the treatment of COPD (Bolton et al, 2013).

However the delivery method and exact content of the educational sessions are open to interpretation. Health promotion and knowledge of disease are required parts of the educational programme, which also includes principles of self-management, and key features to ensure patient wellbeing is fully addressed (Table 2).

### Self-efficacy

Self-efficacy is defined as taking responsibility for one’s own actions and behaviour. In COPD, this can mean self-medicating when experiencing increasing COPD symptoms, which might suggest an acute or infective exacerbation. In pulmonary rehabilitation, self-management is delivered in a broader context to try and empower and build patients’ skills in making long-term lifestyle changes. However, teaching self-management alone is not enough to bring about behaviour changes such as taking more exercise and smoking cessation (Bourbeau, 2003). Patients also need to ‘believe’ that they have the skills and capability to change situations and behaviours (Wigal et al, 1999).

### Table 2: Pulmonary rehabilitation components for wellbeing and ability to self-manage

<table>
<thead>
<tr>
<th>Component</th>
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<tbody>
<tr>
<td>Relaxation: anxiety management — psychological</td>
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<tr>
<td>Nutrition: maintaining a healthy body mass index [BMI], fighting infection — physical wellbeing</td>
</tr>
<tr>
<td>Benefits and claiming: social care, access to housing and social support</td>
</tr>
<tr>
<td>Managing breathlessness: physical and psychological techniques</td>
</tr>
<tr>
<td>Energy conservation: managing your day; tips to ensure management of activities of daily living — social/physical</td>
</tr>
<tr>
<td>Disease-specific interventions/teaching, including teaching about medication</td>
</tr>
</tbody>
</table>

In the author’s clinical experience, improving self-efficacy in patients with COPD or respiratory disorders helps them re-engage with society and daily activity by developing coping skills for breathlessness and ‘managing’ the condition. Key components of pulmonary rehabilitation that are aimed at managing breathlessness and improving self-efficacy include:

- Patients understanding their own ‘normal’ function
- Using positioned/pursed lip breathing techniques
- Energy conservation
- Relaxation — fear and anxiety reduction
- Increasing fitness and overall functional capacity.

The COPD self-efficacy scale can be used as an outcomes measure (Wigal, 1991), however, many other tools are now available to measure patients’ success, improvement in wellbeing, and functional capacity during and after pulmonary rehabilitation (Table 3). These tools can be implemented by any member of the multidisciplinary team and can be performed by community nurses without a physiotherapy background. However, specialist outcome measures may require specialist physiotherapy skills, i.e. muscle strength testing.

In the author’s clinical experience, involving the multidisciplinary team in patient care will enable other treatment avenues to be explored, which will benefit the patient and improve outcomes. This could include
physiotherapists, specialist nurses and occupational therapists, specialist support staff, exercise trainers, and healthcare assistants. Ensuring a good skill-mix in each session means that any exercise and health issues can be quickly and accurately addressed.

**PULMONARY REHABILITATION IN PRACTICE**

Southampton integrated COPD team have a mixed-model approach to pulmonary rehabilitation, employing a physiotherapist as the pulmonary rehabilitation lead, with nurses, exercise therapists and healthcare assistants working together to provide complimentary skills in pulmonary rehabilitation. The format varies and there is a rolling session schedule, including 12 different sessions with visiting speakers from psychological services.

The literacy levels of the patients in the group need to be considered and obtaining good evidence-based patient-facing literature is important, including inhaler regimens, medicines management prompts, and clear pictorial action plans for exacerbations (‘flare-ups’). The British Lung Foundation (BLF) website provides examples of this type of literature (http://shop.blf.org.uk/collections/copd).

**FUTURE COMMUNITY-BASED RESPIRATORY CARE**

The fundamentals of pulmonary rehabilitation can be delivered successfully in the community by any member of the multidisciplinary team. However, exercise training and specialist physiotherapy interventions may be necessary in some patients (for example where they are unable to complete a six-minute walk test), and in those with complex comorbidities who require exercise modification, e.g. osteoarthritis.

The ‘added’ value of involving the multidisciplinary team means that patient-focused sessions can include medicines management and activities of daily living guidance, for example. However, nurses require training and supervision if they are to provide exercise as a therapy.

Importantly, increasing the confidence and skills of more healthcare professionals across the UK so that they can deliver pulmonary rehabilitation will enable more patients to gain from this cost-effective and highly beneficial treatment option (Hodson and Sherrington, 2015).

**REFERENCES**


Table 3: Possible pulmonary rehabilitation outcome measures

- COPD assessment tool (CAT) — measures burden of disease (Jones et al, 2009)
- St George’s respiratory questionnaire — measures quality of life
- Six-minute walk test — measures functional capacity
- Sit-to-stand — measures functional capacity
- PHQ-9 — psychological wellbeing score (focuses on mood)
- GAD-7 — psychological wellbeing score (focuses on generalised anxiety disorder) (Spitzer et al, 2002)


KEY POINTS

- Pulmonary rehabilitation is a well-evidenced programme of therapy for patients with chronic obstructive pulmonary disease (COPD).
- It includes the provision of breathlessness interventions, nutritional support, and exercise therapy, all of which can be delivered by community nurses.
- Pulmonary rehabilitation is also considered a low cost intervention and can be delivered by healthcare professionals of varying disciplines.
- This article explores the clinical elements that comprise pulmonary rehabilitation as well as investigating the ‘added value’ provided by multidisciplinary teams in the community.


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