PULMONARY REHABILITATION

MODEL OF CARE

National COPD Clinical Care Programme

Document Development and Control

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1 Introduction

Pulmonary Rehabilitation (PRP) is defined as “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 “(1)

To ensure success of the programme, scientific-based published guidelines must be followed.

1.1 Overview

Patients with COPD who are enrolled in PRP have a chronic disease of which the most significant element is breathlessness. The approach of a multidisciplinary team is required, therefore integrated services, both acute and community settings, are beneficial. On the background of a definitive diagnosis of COPD, the primary health care provider should refer the symptomatic patient to PRP.

There is an onus on the individual patient to comply with the self-management component of the programme, to ensure continued improvement.

1.2 The evidence base for Pulmonary Rehabilitation

High levels of scientific evidence (IA, IIA, Cochrane Review) have demonstrated improved exercise capacity and health related quality of life and decreased breathlessness, fatigue and health care utilization following PRP. Ongoing training is required for staff to remain up-to date with latest evidence_(1-6), and pulmonary rehabilitation programmes must meet the current standards for delivery.

Recommendations:

- Program provision by a Multidisciplinary Team, paying attention to the individual needs of patients and carers
- Inclusion of physical training, disease education, self-management, nutritional management, psychological, social and behavioral intervention.
- Reduction in symptoms and disability aiming to improve function and quality of life.
- Education and training of workforce to meet the needs of patients in the pulmonary rehabilitation program.
- Continuous audit of effectiveness of the program.
- Patient centered and easily accessible.
2 Referral Criteria for Pulmonary Rehabilitation

Pulmonary rehabilitation should be available to all patients with chronic respiratory disease who consider themselves to be functionally disabled with dyspnoea (MRC 2-5) (7).

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ confirmed diagnosis of respiratory disease</td>
<td>▪ uncontrolled cardiovascular conditions limiting participation in an exercise programme</td>
</tr>
<tr>
<td>▪ functionally limited by dyspnoea despite optimal therapy</td>
<td>▪ Significant orthopedic, psychological or neurological conditions that reduce mobility or cooperation with physical training.</td>
</tr>
<tr>
<td>▪ able to travel to venue</td>
<td></td>
</tr>
<tr>
<td>▪ motivated to participate and change lifestyle</td>
<td></td>
</tr>
<tr>
<td>▪ ability to exercise independently</td>
<td></td>
</tr>
</tbody>
</table>

In the case of COPD, referral is recommended within two weeks of an acute exacerbation as it aims to reduce the risk of readmission. (7-8) This has been proven to be beneficial.(9)

Programme Referrer

Patients should be referred to a PRP by a Respiratory or General Physician, or in Community settings by the GP. In some instances, particularly in the acute hospital setting, referrals made be made by other HCPs such as physiotherapists, NCHDs and respiratory nurses. The standardized National Referral form should be used. (10)

Recommendations

1. Pulmonary Rehabilitation should be accessible for patients with chronic respiratory disease limited by dyspnoea (MRC 2-5) and follow evidence-based referral criteria.

2. A standard referral (see Appendix 1) should be available to and used by all pulmonary rehabilitation programmes.

3. Pulmonary rehabilitation should be initiated as early as possible after an exacerbation with home rehabilitation if appropriate. This may be facilitated by the COPD Outreach team when available.
3 Pulmonary Rehabilitation Model

“In practice, the details of program construction and setting will vary with different cultures and health care systems.” (1)

3.1 Components of Pulmonary Rehabilitation

3.1.1 Assessment

Performed by MDT when available.

Review of past medical history with special regard for respiratory history and co-morbid conditions such as orthopaedic, neurology and cardiovascular conditions that may affect participation in programme, inhaled medications and pulmonary function tests.

- Subjective assessment to include MRC score (if not previously stated on referral)
- Physiological baseline measures: Heart rate, blood pressure, respiratory rate, Borg score, oxygen saturations, Body Mass Index, Fat free mass.
- Agreed goals (when appropriate)
- Standardised validated and reliable tools for all measured areas must be used.
- For exercise testing, at least one measure is required from measures of exercise capacity such as the Six-minute walk test (x2) or the Incremental shuttle walk test (x2). (11-16). Following this an Endurance Shuttle walk test may be performed to measure exercise endurance.
- For Quality of life (QOL) measures one generic and one disease specific questionnaire should be used from the following list: (16-19)
  - The COPD Assessment Test (CAT)
  - the Chronic Respiratory Disease Questionnaire (four formats) (CRDQ)
  - the Hospital Anxiety and Depression scale (HADs)
  - the EuroQol (EQ-5D).

For minimum clinically important difference figures for the assessment tools see Appendix 2. A measure of symptoms and moods such as HADs is essential. (10,17-20)

Recommendations

1. A standardized assessment sheet (see Appendix 1) with a list of current tools of assessment should be available.
2. An assessment database should be maintained by each facility for audit and to ensure consistency in the delivery between pulmonary rehabilitation programs.

3.1.2 Exercise

“Exercise training is widely regarded as the cornerstone of pulmonary rehabilitation.” (1)

Physical aerobic training is mandatory. (3-4) Upper limb and lower limb strength and endurance training are recommended.

3.1.2.1 Intensity of training

This is predetermined from the assessment and modified through the programme. It can be prescribed from a symptom limited maximal incremental test or from an incremental walking test. (12) A VO$_2$ max of 60-80% is recommended. (3) If no VO$_2$ max figure is available, intensity can be monitored using the Borg score with a target level of dyspnoea. (21)

3.1.2.2 Strength and endurance training of upper and lower limbs

Muscle atrophy is common in chronic respiratory disease. A reduction in peripheral muscle mass compared to normal subjects has been demonstrated. (22) Low intensity peripheral muscle training has been found to improve muscle bulk and strength. (23-25)

3.1.2.3 Flexibility and stretches

Brief period (5-10 minutes) recommended to maintain muscle length and prevent injury and soreness (10)

3.1.2.4 Interval Training

Interval training may be useful in promoting higher levels of exercise training in the more symptomatic patients. This is recommended as it allows smaller bouts of high intensity work rated to be achieved with lower symptoms. (26-28)

3.1.2.5 Frequency

Two supervised exercise sessions of 1 hour duration should be provided. An additional three home exercise sessions of at least 30 minutes should be performed by the patient (1, 3, 4 26, 29).

3.1.2.6 Safety during exercise

During Exercise testing and training sessions measures of heart rate, oxygen saturations and dyspnoea at rest scores should be recorded.(10) Consider stopping or resting if:
- Increased heart rate such that it approaches age predicted maximum
- SaO2 < 85%
- Marked wheeze

Advise patients to bring short-acting bronchodilators, also Glycerol reinitiate spray to every session if prescribed and if diabetic to bring glucose supplement to encourage independent management of any hypoglycemic events.

### 3.1.2.7 Impacts of co-morbidities on exercise training

**Osteoporosis and Osteoarthritis:** Exercise may exacerbate pain in these patients. Modify exercises on initial prescription to address these problems and progress only after 2 supervised sessions if there is no increase in pain.

**Body composition abnormalities:** Special attention during assessment may be necessary for both under- and over-weight patients.

**Intermittent Claudication:** To gain optimal improvement patients should be advised to walk beyond the onset of their pain for as long as tolerated. (10)

### 3.1.3 Education

Patient education remains a core component of comprehensive PRP. Information related to the patient's condition and his or her therapy is necessary but development of self-management skills that emphasize illness control through health behavior modification is mandatory (1). Education should cover relevant topics associated with chronic lung disease. Psychological and social support must be provided in the pulmonary rehabilitation setting to address the issues of anxiety and depression (1,30,31). MDT members with the appropriate expertise to address these issues are essential to the success of pulmonary rehabilitation. Education sessions should be supported by written information and key topics recommended by guidelines are:

- Anatomy, physiology, pathology, nutritional advice, disease education, breathing techniques and psychological and behavioral intervention. Pharmacology, symptom management, chest clearance techniques, energy conservation, anxiety management, goal setting, relaxation exacerbation management, end of life issues.

The Respiratory Passport may be a valuable addition for education.

### Recommendations

1. Education and training to meet the psychological and social needs of patients should be considered for health professionals delivering rehabilitation programs.

2. Screening for anxiety and depression should be part of the patients’ initial assessment.
3. Patients with significant psychiatric disease should be referred for appropriate care.

4. Patients should be taught to recognise symptoms of stress and be capable of stress-management techniques.

5. Relaxation training should be integrated into the patients’ daily routine, for tackling dyspnoea and controlling panic.

### 3.1.4 Self-management support

Healthcare workers should acknowledge the patients’ central role in their care and the sense of responsibility for their own health. There is a need for a collaborative approach, providers and patients working together to define problems, set priorities, establish goals, create treatment plans, and solve problems along the way.

**Recommendation**

1. On completion of program all patients should be provided with information regarding existing voluntary groups/networks to which they can contact for ongoing support and social interaction. Patients also need information on local venues where they can continue to exercise, links with community centers, PCCC and local gyms may be beneficial.

### 3.2 Adjuncts to pulmonary rehabilitation

#### 3.2.1 Inspiratory Muscle Training (IMT)

IMT can be an adjunct to the exercise training component of pulmonary rehabilitation in patients with poor baseline inspiratory muscle strength, defined on PFTs.

#### 3.2.2 Non-invasive Ventilation (NIV)

NIV may be used as an adjunct to exercise training in selected patients with severe chronic respiratory disease and suboptimal response to exercise. It may allow for greater training intensity. Careful consideration should be given to the use of NIV as an adjunct to exercise training as it is a difficult and labour-intensive. (3, 32-34)

#### 3.2.3 Oxygen Therapy

Patients who are receiving long-term oxygen therapy should have this continued during exercise training, but may need increased flow rates (35). For exercise testing supplementary oxygen therapy should be available if a patient desaturates on testing ≤90%. The test should be repeated on 2-4 litres oxygen as necessary to maintain oxygen saturations ≥ 88% . (36) Arterial blood gas analysis is necessary to determine the need for long term oxygen therapy (3).
3.2.4 Neuromuscular electrical stimulation (NMES)

This has been proven to increase exercise tolerance and peripheral muscle strength after 6 weeks of a home programme to the quadriceps muscles and may be beneficial to those severe COPD patients who are unable to leave their homes (37-40).

Delivery of Pulmonary Rehabilitation

3.3 Staffing Resources

The design and implementation of a program requires the following:

- A nominated consultant with an interest in respiratory care should be responsible for the program.
- A co-ordinator who will run the program and is responsible for policies, referrals, assessments patient selection, classes, outcome measures and audit. The co-ordinator should come from a profession allied to medicine with a background in exercise training. A multidisciplinary team with appropriate training and resources which may include:
  - Physiotherapist, Doctor, Respiratory nurse, Dietician, Occupational Therapist, Psychologist, Pharmacist, Speech and language therapist, Smoking cessation officer, Palliative Care professional.

Other MDT role profiles can be found in Appendix 3.

3.4 Location Resources

Pulmonary rehabilitation can have varied settings which each have pros and cons.. (1, 3, 43)

A review of outcomes shows comparable results between the hospital and community based programmes. It is necessary to form partnerships between community and hospital settings to support and develop pulmonary rehabilitation and to maintain benefits achieved. (5, 24, 29, 44)

3.4.1 Facility and Equipment

The PRP venue should have space of either a level corridor or walking track suitable to carry out a field walking test (10).

Table below includes equipment for PRP

<table>
<thead>
<tr>
<th>Minimum required</th>
<th>Optimal</th>
</tr>
</thead>
</table>
### 3.4.2 Emergency Equipment

A first aid kit with a CPR mask, gloves and rescue medications is recommended. (3)

**Recommendations**

1. A database of all pulmonary rehabilitation programs needs to be available nationwide.

2. Assessment clinics and program delivery for pulmonary programs with medical supervision should be ideally based in the community particularly for those with mild to moderate disease. Oxygen therapy would need to be provided at the location in case it is required by the patient.

3. Patients with more complex needs should be referred to a hospital-based assessment clinic and program.

4. In all cases programs should be arranged to maximize patient choice with regard to day, time, accessibility and venue.

### 3.5 Group Size

Class size will depend upon the venue and staff available. Staff to patient ratios recommended are 1:8 (UK) 1:4 (US) for exercise training and 1:16 (UK), 1:8 (US) for the education session. It is recommended that two staff members are always present during the exercise class for safety.
reasons. One senior member of staff must be present at all times. (1, 3, 45). Patient safety and disease severity are the most important factors to consider when determining this ratio.

### 3.6 Duration

The minimum duration of exercise training in pulmonary rehabilitation has been extensively investigated and longer programmes yield larger, more reliable training effects. Guidelines recommend that a minimum of 20 sessions are required overall. These sessions should be given at a minimum of twice and up to five times per week to achieve physiological benefits. Twice weekly supervised sessions plus one unsupervised home session may also be acceptable. Regular supervision of exercise sessions is necessary to achieve optimal physiologic benefits. Each exercise session should last at least 30 minutes. (1, 3, 4, 26, 29).

### 3.7 Maintenance Programmes

At present there is no substantial evidence that prolonged maintenance treatment is beneficial, (3) Following a PRP patients should be advised of their local support group or to consider establishing a group if there is none in their locality. (10)

### 3.8 Measurable Outcomes resulting from Pulmonary Rehabilitation

The collection of data will help to track and plan care, identify additional care, facilitate performance monitoring and quality improvement efforts.

#### 3.8.1 Patient Outcomes

Patient Outcomes may include:

- Exercise improvement - Repeated exercise tests as per initial assessment
- Dyspnoea, anxiety, depression improvements - Repeated QoL questionnaires as per initial assessment
- Improved knowledge of disease and capacity to self manage – Respiratory Passport.
- Reduced exacerbations and hospital admissions benefitting both patient and cost to health service.
- Patient feedback

**Recommendation**

1. On completion of a pulmonary rehabilitation program a summary of results must be provided to the patient and to the referral source.

### 3.9 Data Collection
All PRPs must collect data to facilitate audit and research. Included should be the following:

<table>
<thead>
<tr>
<th>Waiting list and capacity for the site</th>
<th>Number of supervised sessions per week and length of programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referral source</td>
<td>Exercise tests and questionnaires used</td>
</tr>
<tr>
<td>Referral numbers and compliance data</td>
<td>Education provided</td>
</tr>
<tr>
<td>Number GP and ED visits and hospital adm. pre/post/during PRP related to exacerbation</td>
<td>Onward referral to support group and exercise facilities post rehabilitation</td>
</tr>
</tbody>
</table>

**Recommendations**

1. All PRPs should record standardised measurable outcomes.
2. All PRPs should structure and process along with the outcome measures should be audited internally annually.
3. Follow up evaluation of hospital admissions and bed days for year pre and post rehabilitation should be performed to assist in a cost analysis.
4 MDT Roles in Pulmonary Rehabilitation

4.1 Physiotherapist

Role of the Physiotherapist

The Physiotherapist is most often the MDT member responsible for delivery of PRP. Physiotherapists are involved in all processes of the rehabilitation program from recruitment of patients, assessment and identification of problems, delivery of the rehabilitation and liaison with community services to enhance lifelong behavioral change. With their background in exercise prescription and evidence-based practice, physiotherapists are ideally placed to play a major role in the provision of pulmonary rehabilitation programmes. Physiotherapists are often the main providers of the service.

4.1.1 Selection of patient

A clear referral process is required irrespective of which health care professional (HCP) makes the referral. Physiotherapists can advise re selection of patients for pulmonary rehabilitation with reference to the patient’s ability to exercise and compliance with same as demonstrated during previous hospital admissions.

4.1.2 Exercise testing

The health care professional responsible for exercise testing should have a good knowledge of the principles of exercise testing, and the limitations to same, including hypoxaemia and musculo-skeletal problems. Physiotherapists are experts in these areas.

4.1.3 Assessment of supplemental oxygen needs

Patients often desaturate during exercise testing and may need supplemental oxygen in the form of portable or long term oxygen therapy (LTOT). In many institutions physiotherapists are working as advanced scope practitioners in this area, and can be trained to take Arterial Blood Gas samples in order to facilitate the prescription of LTOT.

4.1.4 Quality of life (QoL) assessment

The assessment of QoL may be performed by any member of the MDT including physiotherapists. It is important that the HCP performing this function can establish a good rapport with the patient so that an accurate assessment in this area is made.

4.1.5 Supervision of exercise programme and prescription of home exercise
The supervisor of an exercise programme should be able to make the necessary changes to the individual patient’s exercise prescription, with reference to the FITT principle (Frequency, Intensity, Time, Type). Physiotherapists are ideally placed to adapt the programme to each individual as necessary

4.1.6 Breathing retraining and Airway Clearance

This includes techniques such as pursed lip breathing, positions of ease, Active Cycle of Breathing Technique (ACBT) and the use of adjuncts such as PEP or Flutter devices. These are techniques which are taught by physiotherapists on a daily basis.

Inhaler use – may be physiotherapist or respiratory nurse

Relaxation therapy – may be physiotherapist or occupational therapist

4.1.7 Continence

Patients with COPD should be questioned about their continence status and if problems of leakage are identified, patients should be referred to a physiotherapist specializing in continence.

4.1.8 Re-assessment

If possible the re-assessments should be carried out by the HCP who performed the initial assessment.

4.1.9 Co-ordinator of programme

There is no definitive rule about who should co-ordinate a pulmonary rehabilitation programme, except that the co-ordinator should have an understanding of the medical, physical, and emotional condition of each patient and be prepared to change the programme to suit the individual patient at any specific time. If the co-ordinator is expected to prescribe and supervise the exercise programme, a physiotherapist is most suited for this role.

4.2 Occupational Therapist (OT)

4.2.1 Pre-assessment:

If available, the occupational therapist should be involved in the pre-assessment phase of pulmonary rehabilitation. There have been significant advances in the development of assessment tools in the last decade including:

- Pulmonary Function Status Scale (PFSS)
- London Chest Activity of Daily Living Scale (LCADL)
- Manchester Respiratory Activities of Daily Living Questionnaire
4.2.2 Pulmonary Rehabilitation programme

The role of the OT during the Pulmonary Rehabilitation can include providing sessions in the following areas:

- Instruction in energy conservation techniques
- Facilitating independence in personal and domestic activities of daily living and the use of graded therapy programmes to increase activity tolerance/endurance
- Instruction in Stress Management techniques:
- Instruction in relaxation techniques
- Assessment of the home environment to ensure safe discharge home
- Recommendations regarding vocational abilities:

Occupational therapists can provide vocational assessment and advice regarding workplace adaptations, work routine modification.

4.2.3 Post- programme:

The OT should be present at re-assessment phase to re-administer and compare the ADL scale results and to identify any ongoing areas of difficulty for the patient. Review of the COPM and the goals set at pre-assessment phase is a useful outcome measure.

4.3 Dietician

A qualified Dietitian/Clinical Nutritionist applies knowledge of food, nutrition and other related disciplines such as biochemistry, physiology and social science to promote health, prevent disease and aid in the management of illness including COPD. Nutrition intervention in this patient group can minimise loss of fat-free mass, thereby improving exercise tolerance and respiratory muscle strength, reduce patient morbidity and mortality, reduce susceptibility to infection and optimize quality of life.

The role of the Dietitian in pulmonary rehabilitation includes:

- Education and training of other healthcare professionals on use of nutrition screening tools with onward referral to dietitian as indicated
- Provision of nutrition component of pulmonary rehabilitation programme/ education of other health professions on role of nutrition in pulmonary rehabilitation

Delivery of structured education programme/ individualized nutrition intervention as required

4.3.1 Who should be referred to the dietitian?

Patients who have COPD and are identified as being at risk of malnutrition (NICE, 2006) i.e.:

- BMI of less than 20 kg/m² (NICE, 2010)
- Unintentional weight loss of greater than 5% within the last 3 months or 10% in the last 6 months. (ERS/ATS COPD Guidelines)

- Little or nothing eaten for more than 5 days/or likely to eat little or nothing for the next 5 days or longer.

- Fat free mass index (FFMI) < 16kg/m² in males, < 15kg/m² in females (if equipment is available to assess body composition).

In addition to those at risk of malnutrition, the following patient groups should also be considered:

- Patients who are obese, BMI > 30kg/m² (these patients may be seen in OPD rather than as inpatients)

- Patients who have any other diagnosis that requires dietetic advice e.g. newly diagnosed diabetes or coeliac disease etc.

Patients who require enteral or parenteral feeding

### 4.4 Speech and Language Therapist (SLT)

Speech and Language Therapists (SLTs) assess, diagnose and treat swallowing, voice and communication disorders. SLTs play an important role in the management of COPD due to the prevalence of swallowing, reflux, vocal and oral hygiene issues associated with the disease.

If available and deemed necessary for the patient, the that Speech & Language Therapists provide input into Pulmonary Rehabilitation programmes so as to facilitate health promotion and disease prevention.
**5 Education to facilitate End of Life choices:**

All Pulmonary Rehabilitation programmes should offer an education session aiming at the facilitation of choices at End-of-Life (1). Preferably, this session should be delivered by a Palliative Care professional, but in the absence of such any team member who feels they have the ability and competence to deliver such a session should do so. The aim of this session is to inform the patient of available choices and allow them to be involved in decision making. All too often, these decisions are not made until the patient may be critically ill or in the ITU, a place that is not conducive to such discussions. Acknowledgement of the disease progression, exploration of individual concerns, discussion of the options and re-assurance helps the patient to make an informed autonomous decision, should they and their families wish to do so. This education maybe delivered in a group or individual session.
6 REFERENCES


23. Clarke CJ, Cochrane L, Mackey E. Low intensity peripheral muscle conditioning improves exercise tolerance and breathlessness in COPD. ERJ 1996 9:2590-2596


36 Royal College Physicians, Domiciliary oxygen therapy services: clinical guidelines and advice for prescribers report of a working party. 1999 (RCP London)


38. Seymour JM, Spruit MA, Hopkinson NS, Natarek SA, Man W D-C. The prevalence of quadriceps weakness in COPD and the relationship with disease severity. ERJ 2010;36:81-88


# APPENDIX 1 – Sample Referral and Assessment Forms

## 7.1 Pulmonary Rehab Referral Form

**Health Service LOGO  Pulmonary Rehabilitation Referral**

<table>
<thead>
<tr>
<th>Date of Referral:</th>
<th>Consultant:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
<td><strong>DOB</strong></td>
</tr>
<tr>
<td><strong>Address:</strong></td>
<td><strong>Phone Number:</strong></td>
</tr>
</tbody>
</table>

**Diagnosis:**

<table>
<thead>
<tr>
<th>Lung Function</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEV1 &gt; 80%</td>
<td>GOLD I - Mild</td>
</tr>
<tr>
<td>FEV1 &gt; 50% - &lt;80%</td>
<td>GOLD II - Moderate</td>
</tr>
<tr>
<td>FEV1 &gt; 30% - &lt; 50%</td>
<td>GOLD III - Severe</td>
</tr>
<tr>
<td>FEV1 &lt; 30%</td>
<td>GOLD IV - Very severe</td>
</tr>
</tbody>
</table>

**Inclusion Criteria** *(Please Tick)*

1. Dx chronic respiratory disease (e.g COPD, bronchiectasis, lung transplant candidates)
2. No evidence of unstable asthma, ischaemic heart disease, decompensate/unstable heart failure, severe or uncontrolled systemic arterial hypertension, neuromuscular or musculoskeletal disorders or other disabling diseases that could resist exercise training.
3. No suspected underlying malignancy
4. Motivated to attend a 8 week outpatient exercise and education programme in a group setting.
5. Has the ability to exercise independently with supervision.

**Relevant Investigations.**

<table>
<thead>
<tr>
<th>CXR</th>
<th>ABG</th>
<th>ECG</th>
<th>ECHO EF % PAP’s mmHg</th>
<th>Other</th>
</tr>
</thead>
</table>

**Optimization of respiratory medication per ITS/ICGP guidelines**

- Yes
- No

Please List medications:

Have you discussed pulmonary rehabilitation with patient?  
- Yes
- No

Will transport be required?  
- Yes
- No

Smoking status:
- Current Smoker
- Ex-smoker (≥12mths)
- Never Smoked

If smoker has patient been referred to Smoking Cessation Officer  
- Yes
- No

LTOT:
- Yes  
- No

<table>
<thead>
<tr>
<th>_____L 16 / 24 hr/day</th>
<th>Portable Oxygen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Referring Health Professional**

**Name:** **********  
**Signature:** **********

**Phone:** **********  
**Fax:** **********  
**Email:** **********
## Pulmonary Rehabilitation Assessment Form

<table>
<thead>
<tr>
<th>Name:</th>
<th>Date of Assessment:</th>
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### Respiratory Diagnosis:

### Other/Past Medical History:

### Social History

*Occupation:*

*Mobility:*

*Transportation:*

### Medications:

### Baseline Respiratory Function:

*Mob Distance*

*Stairs*

*Uphill*

*Orthopnoea*

*Cough*

*Sputum*

*Wheeze*

*Stress Incontinence*

*Other*

### Home O2: [ ] Y [ ] N [ ] L/min

### Portable O2 [ ] Y [ ] N [ ] L/min

### BiPAP: [ ] Y [ ] N Make: [ ] IPAP: [ ] EPAP: [ ]

### Home Nebs: [ ] Y [ ] N

### Smoking History: [ ] Y [ ] N [ ] Ex [ ] Pack Years

### BMI: [ ]

### BORG: [ ]

### HEART RATE: [ ]

### SaO2: [ ]

### CXR Report: [ ]
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**Spirometry**

- FEV1
- FVC
- Ratio
- % Predicted
- DLCO
- SNIP
- PlMax
- IC/TLC

The above PFT’s are a guide only and are adapted to requirements at a local level. If tests have been performed within 6months of PRP repeat may not be necessary. A decision should be made at a local level.

**6MWT / ISWT**

- Distance
- Borg
- Heart Rate post
- O2 Sats post

**ESWT / Treadmill**

- Level / Speed
- Minutes
- Borg
- Heart Rate post
- O2 Sats post

**CRDQ**

- Dyspnoea
- Fatigue
- Emotional Function
- Mastery

**SGRQ**

- Symptoms
- Activity
- Impacts
- Total
- CAT (total)

**HADS**

- Anxiety
- Depression

**MRC**

- 1year pre prog
- 1year post prog

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8 APPENDIX 2 - MCID SCORES

8.1 ISWT:

The minimum clinically significant improvement for the ISWT is 47.5 meters. In addition patients were able to distinguish and additional benefit at 78.7 meters

Singh et al thorax 2008

Outcome measure

- Improvement 47.5 meters means “slightly better”
- Improvement 78.7 meters represents “better” (Singh et al 2008)

8.2 6MWT:

An MCID value for 6mwt has been identified as 54 metres

Outcome measure

- Minimal improvement estimated at 35-54 meters (Redelmeier, 1997) (Puhan 2008)


8.3 Hospital anxiety and depression scale

MCID is around 1.5 in COPD patients corresponding to a change in baseline of around 20%


8.4 Chronic respiratory disease questionnaire

- Dyspnoea: 2.5  Fatigue: 2  Emotional Function: 3.5 Mastery: 2.
- Guyatt GH, Berman LB, Townsend M, Pugsley SO, Chambers LW.
8.5 St George’s respiratory questionnaire.

Measures clinical significant changes - 4 u is significant.

References:


8.6 Euroqol /EuroQol

EQ-5D is a standardised instrument for use as a measure of health outcome. Applicable to a wide range of health conditions and treatments, it provides a simple descriptive profile and a single index value for health status.

8.6.1 EQ-5D

Descriptive system of health-related quality of life states consisting of five dimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression) each of which can take one of three responses. The responses record three levels of severity (no problems/some or moderate problems/extreme problems) within a particular EQ-5D dimension.

EQ-5D is designed for self-completion by respondents and is ideally suited for use in postal surveys, in clinics and face-to-face interviews. It is cognitively simple, taking only a few minutes to complete. Instructions to respondents are included in the questionnaire.

If you have already seen EQ-5D and/or decided to go ahead and use it, please register your study first by completing the EQ-5D registration form. The EuroQol Executive Office will then contact you by e-mail and inform you about the terms and conditions which apply to your use of the EQ-5D, including licensing fees (if applicable). Please allow 3 working days to receive this reply.

Licensing fees are determined by the EuroQol Executive Office on the basis of the user information provided on the registration form. The amount is dependent upon the type of study, funding source, sample size and number of requested languages. You are not obligated to purchase by registering.

Please note that without the prior written consent of the EuroQol Executive Office, you are not permitted to i.e. use, reproduce, alter, amend, convert, translate, publish or make available in whatever way (digital, hard-copy etc.) the EQ-5D and related proprietary materials.
8.6.2 How to use EQ-5D

The EQ-5D self-report questionnaire (EQ-5D) essentially consists of two pages comprising the EQ-5D descriptive system (page 2) and the EQ VAS (page 3). There is also an optional page of demographic questions. There is also an extended version of EQ-5D that incorporates the valuation task but this is only used for valuation studies and is not relevant for clinical users.

EuroQoL in assessment of the effect of pulmonary rehabilitation COPD patients

Contact information

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3068 AV Rotterdam
The Netherlands

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www.euroqol.org/

Authors

By: Ringbaek,T., Brondum,E., Martinez,G., Lange,P.

Published

31-10-08

Journal

DA - 200811171S - 1532-3064 (Electronic)IS - 0954-6111 ...

8.7 CATS

2 point change clinically significant

Reference:

### Appendix 3 – Performance Reporting

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<td>mean % improvement between start and finish distance</td>
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<td>Number of patients showing improvement:</td>
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<td>Mean % improvement in HADS score between start and finish of the course</td>
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Anxiety

Depression
10 Appendix 4 - Reviewer Statement

10.1 Policy, Procedure, Protocol or Guidance Reviewer Statement

Reviewer: The purpose of this statement is to ensure that a Policy, Procedure, Protocol or Guideline (PPPG) proposed for implementation in the HSE is circulated to people who have a stake in the PPPG, in advance of approval of the PPPG. You are asked to sign this form to confirm to the committee developing this Policy or Procedure or Protocol or Guideline that you have seen and agree to the following Policy, Procedure, Protocol or Guideline:

**Pulmonary Rehabilitation Model of Care**

I acknowledge the following:

- I have been provided with a copy of the Policy, Procedure, Protocol or Guideline described above.
- I have read the Policy, Procedure, Protocol or Guideline document.
- I agree with the Policy, Procedure, Protocol or Guideline and recommend its approval by the committee developing the PPPG.

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<th>Print Name</th>
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