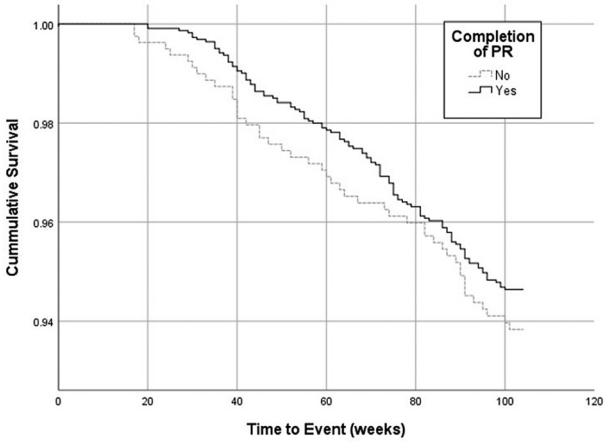
or to confounding due to differences in case-mix severity.

Methods PR services across England and Wales provided data for all consenting patients assessed for PR between Jan and April 2015. Mortality data were extracted from the Office for National Statistics (ONS) from Jan 2015 – Jan 2017. Time to event analysis was performed until Jan 2017 using Cox proportional hazards model adjusted for baseline gender, age [yr], FEV_1 [L], Body Mass Index (BMI) category, MRC dyspnoea grade, smoking status, presence of co-morbidities and Incremental Shuttle Walk distance (ISWT) [m].

Results 1755 patients had complete datasets for all components of the model: 53% male, mean [SD] age 69 [9] yrs, $FEV_1$1.38 [0.59] L, median BMI category 'overweight', MRC 1: 2%, 2: 21%, 3: 38%, 4: 32%, 5: 7%, 7% never smokers, 71% ex-smokers, 22% current smokers, 92% other co-morbidity, ISWT 212 (135) m.

n=67 patients who likely died before completion of PR were removed (date of death Jan – May 2015). The unadjusted mortality rate was 7.2% for those who completed PR vs 7.8% for those who did not, p=0.74 [figure 1]. Completion of PR was not significantly associated with mortality after adjustment, HR (95% CI) 1.03 (0.69 to 1.05, p=0.88) whereas older age 1.03 (1.01 to 1.05, p=0.008), male gender 1.87 (1.30 to 2.70, p=0.001), higher $FEV_1$0.69 (0.48 to 0.98, p=0.04), higher BMI category 0.72 (0.62 to 0.92, p<0.001), higher ISWT distance 0.99 (0.995 to 0.997, p<0.001) were all prognostic indicators in the final model.



Abstract S7 Figure 1 Survival of patients with COPD after assessment for PR. *patients who died Jan–May 2015 (0–20 weeks of the X axis) were excluded as they were unlikely to have completed PR

Conclusion Cumulative mortality following PR is not significantly different between completers and non-completers after adjustment for baseline case-mix severity. However, exercise performance remains a modifiable prognostic indicator.

REFERENCE

1. https://www.rcplondon.ac.uk/projects/outputs/pulmonary-rehabilitation-beyond-breathing-better

S8 EFFECT OF THE VITABREATH DEVICE ON EXERCISE CAPACITY & SYMPTOMS IN COPD

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Introduction Non-Invasive Ventilation (NIV) prolongs exercise tolerance in COPD patients, but its use is limited by practical issues. The VitaBreath device (Philips, Respironics) provides Bi-level Positive Airway Pressure (PAP) support, aiming to unload the respiratory muscles and reduce breathlessness. However it can only be used during the resting periods.

Aim To assess the effect of the VitaBreath device compared to the pursed lip breathing technique (PLB) on exercise tolerance and symptoms of breathlessness and leg discomfort during two different protocols of intermittent exercise in COPD.

Methods Twenty Four patients (mean ±SD, age: 67±8 years; FEV_1: 46%±18% predicted) initially performed an incremental cycling test to the limit of tolerance (Wpeak). They were then randomly allocated to a high intensity intermittent protocol (HI: 2 min work at 80% Wpeak alternated with 2 min rest; n=13), or a moderate intensity intermittent protocol (MOD: 6 min work at 60% Wpeak alternated with 2 min rest; n=11), both sustained to the limit of tolerance. Two exercise tests were then performed, using PLB or the VitaBreath device in balanced order during the first minute of each 2 min rest period.

Results Compared to PLB, use of the VitaBreath device increased exercise tolerance (HI: by 5.2±5.9 min; p=0.008 and MOD: by 5.8±6.6 min; p=0.016). At the limit of exercise tolerance using the VitaBreath device compared to PLB there were reductions in Borg 1–10 breathlessness scores (HI: from 4.8±1.2 to 3.9±1.4; p=0.050 and MOD: from 4.0 ±1.1 to 3.2±1.1; p=0.004), and Borg 1–10 leg discomfort scores (HI: from 4.5±1.5 to 4.0±1.8; p=0.027 and MOD: from 4.1±1.2 to 3.3±1.6; p=0.011). At the limit of tolerance inspiratory capacity with the use of the VitaBreath device was greater compared to PLB only during HI (2.34±0.78 L vs 2.20±0.78 L; p=0.042), indicating less dynamic hyperinflation. Compared to PLB, use of the VitaBreath device was associated with greater mean cardiac output (HI: by 0.3±1.1 litres/min; p=0.035 and MOD: by 0.8±0.9 litres/min; p=0.045) and greater mean systemic O_2 delivery (HI: by 70±40 ml/min; p=0.040 and MOD: by 160±40 ml/min; p=0.040).

Conclusions Use of the VitaBreath device increases exercise tolerance by reducing perceived symptoms and improving central and peripheral haemodynamic responses.

S9 PIECING TOGETHER THE JIGSAW: HEALTHCARE PROFESSIONALS' PERCEPTIONS OF PULMONARY REHABILITATION FOR PATIENTS WITH COPD

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Introduction and objectives There is a sound evidence base which highlights that pulmonary rehabilitation (PR) is an effective management strategy for patients with respiratory

disease, in particular COPD. The National PR audit (2015) highlighted a lack of referrals to the programme suggesting that healthcare professionals may not be 'selling' PR to patients. However, no evidence exists to fully substantiate this claim; a missing piece of the jigsaw. The objectives of the study therefore were:

1. To explore healthcare professionals' perceptions regarding referral of COPD patients to PR in primary and secondary care settings.
2. To establish healthcare professionals' understanding of PR.
3. To explore barriers and facilitators to referral.

Methods Using a phenomenological approach healthcare professionals' perceptions of PR were explored in relation to understanding and referral. In-depth semi-structured interviews were conducted via purposeful recruitment of general practitioners and practice nurses, and doctors and nurses working on general medical wards. In total 27 healthcare professionals participated; interviews were recorded with the participants consent and transcribed verbatim. Interpretive phenomenological analysis was adopted to determine super-ordinate and sub-ordinate themes regarding participants experiences and perceptions.

Results Three super-ordinate themes emerged from the data: COPD Illness Perceptions, Pulmonary Rehabilitation Beliefs, and Organisational and Referral Pathway Perceptions. A lack of knowledge of PR and the referral process was evident amongst the majority of healthcare professionals interviewed; indeed a number of participants in secondary care had never heard of the programme. It was surprising how many held stigmatising beliefs in relation to COPD, which consequently impacted upon referral practice.

Conclusion Referral to PR is as certain as spinning a wheel of fortune. Chance of referral appeared dependent upon individual healthcare professionals, their perceptions of the programme, views of how COPD affects patients, and opinions of the programme and referral process. All of these aspects, pieced together, could act as a predictor of referral practice.

S10 EFFECT OF PULMONARY REHABILITATION IN PATIENTS WITH CO-EXISTING COPD AND HEART FAILURE: DATA FROM THE 2015 NATIONAL COPD AUDIT PROGRAMME

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Introduction and objectives Little is known on the uptake and completion of pulmonary rehabilitation (PR) in adults with COPD and either left or right heart failure (HF) (cor pulmonale [CP]). Furthermore, the responsiveness related to PR is unknown. The objectives were to explore completion rates and outcome measures in patients with COPD and co-existing HF or not, that were assessed for PR, using data from the 2015 National COPD Audit Programme, Royal College of Physicians.

Methods PR services across England and Wales provided data for all consenting patients assessed for PR between Jan and April 2015. Descriptive statistics, t-tests and chi-square were used to explore data from patients with COPD +HF (collected as either left heart failure [LVF] or CP). Mixed 2 × 2 ANOVA's were used to compare data between patients with COPD (with or without HF), before and after PR.

Results 232/7134 (3.3%) patients with COPD+HF (32% females, mean [SD] age 74.5 [10.0] years; males 72.2 [9.2] years) were assessed for PR. Of those, 85% (n=196) enrolled into PR and of these 196, 65% (n=128) completed. In those with co-existing HF, there was no difference in age or gender between PR completers and non-completers (73.1+9.1 vs 72.7 +10.1 years p=0.74, and 66% vs 71% males, respectively).

Exercise capacity (assessed by the ISWT) increased after PR (mean[SD] 41.8 [49.8]m) in patients with COPD+HF (n=66) (t(65)=-6.8, p<0.0005) but a significant group*time interaction (F(1,2253)=5.1, p=0.02) revealed patients with COPD +HF made a smaller improvement after PR than those without HF (n=2189) ([pre PR 153.6 m] vs 64.2 m [pre PR 209.5 m]). Improvements in the 6 MWT occurred after PR (33.0 [61.2]m) in patients with COPD+HF (n=43) (t(42)=-3.5, p<0.001), however, there was no difference in the improvement gained between those with COPD+HF and those without (F(1,1683)=3.5, p=0.06). There were significant mean improvements in each domain of the Chronic Respiratory Questionnaire after PR; these did not differ between groups.

Conclusion Nationally, 3.3% of patients with COPD assessed for PR had documented HF. Over half (55%) of those assessed with COPD +HF completed PR. Those without HF improved their exercise capacity (ISWT) more compared to those with HF. The improvements in HRQOL and functional capacity were similar.

S11 FEASIBILITY OF A WEB-BASED SELF-MANAGEMENT PROGRAMME, AS A 'BRIDGE' TO STARTING PULMONARY REHABILITATION, FOR INDIVIDUALS HOSPITALISED WITH AN ACUTE EXACERBATION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (AECOPD)

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Introduction and objectives Hospital admissions due to AECOPD are costly to the individual and the health service. Pulmonary Rehabilitation (PR) is a package of education and exercise, known to reduce hospital readmissions when delivered after hospitalisation. Despite these benefits, the completion of PR following hospitalisation is <10%[1] and there is a need for strategies which may act as a 'bridge' to PR. A web-based platform of the SPACE for COPD© self-management programme has shown promising results in stable COPD.[2]

The primary aim of this study was to assess the feasibility of the web-based programme for individuals hospitalised with an AECOPD.

Methods Eligible patients had confirmed COPD, were web-literate and had an email address. All patients were consented during their hospitalisation and received access to the website for 12 months following discharge, in addition to usual care. The programme facilitates patients to better understand and