

# Interventions to increase referral to and uptake of Pulmonary Rehabilitation programmes for people with Chronic Obstructive Pulmonary Disease (COPD): a systematic review

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## Background

- People diagnosed with COPD experience breathlessness, inability to exercise, frequent infections and hospitalisation. The cost to the NHS in England is over £800m/year.
- NICE recommends Pulmonary Rehabilitation (PR), a course of supervised exercise and education. PR reduces hospital admissions and improves quality of life. In England and Wales in 2013/14 approximately 15% of eligible patients were referred (68,000 out of 446,000) and among referred patients uptake was less than 70%.<sup>1</sup>
- We conducted a systematic review of interventions aimed at improving rates of referral and uptake to PR.

## Key question

- **How effective are interventions to improve referral and uptake to exercise-based pulmonary rehabilitation (PR) programmes in patients with COPD when compared to standard care or no intervention?**

## Method

- We used recognised systematic review methods, registering the protocol on PROSPERO and reporting using PRISMA guidance.
- Databases searched: MEDLINE and EMBASE (via OVID), CINAHL and PsychINFO (via EbscoHost) ASSIA and BNI (via Proquest), Web of Science and Cochrane Library, review of reference lists and citation search.
- Inclusion criteria: Primary, community or secondary care settings; interventions contrasted with standard care, alternative interventions or no comparator/control; quantitative or mixed methods, systematic reviews, meta-analyses. No date or language restrictions.
- Independent quality assessment included Cochrane Collaboration's tool for assessing risk of bias in randomized controlled trials and Cochrane Risk of Bias Assessment Tool for Non-Randomised Studies of Interventions.



Figure 1: Healthcare professionals' conversations with patients are an opportunity for referral (Image: British Lung Foundation)

## Results

- 3,173 references screened. Seven papers (6,345 patients, 22 clinicians) met the inclusion criteria (Table 1).
- Interventions included a range of approaches at different stages of the COPD pathway. Some were part of multifaceted evidence-based management of COPD.
- Most reported improvements in referral or uptake of PR. However, most had methodological and reporting limitations with risk of bias and limited quality. Participant populations were poorly described.
- Designs, interventions and scope of studies were heterogeneous and not combinable in a meta-analysis.

Study	Design	Participants	Intervention	Outcome measures relevant to PR	Results / Effect
Angus et al 2012 UK <sup>2</sup>	Observational feasibility study	293 patients	Computer-guided review by practice nurse covering several aspects of COPD management	% referred to PR	24% of patients referred to PR
Foster et al 2016 UK <sup>3</sup>	Participatory action research with strategies for increasing referrals for PR	126 patients 22 clinicians	In-house education, changes to practice protocols, 'pop-ups' and memory aids (mugs, coasters) to prompt clinician/patient discussions about PR	Number of PR referrals Patient survey: number accepting referral	No change data available for PR referral or acceptance by patients
Graves et al 2010 UK <sup>4</sup>	Before / After comparison	600 patients (200 control / 400 intervention)	Group opt-in session prior to assessment and entry to PR	% taking up PR assessment % attending and completing PR	No effect on number of patients starting PR
Harris et al 2009 Aust <sup>5</sup>	Controlled Before / After study	249 patients	Patient-held manual of recommended COPD management	% enrolment to PR Other indicators of COPD management	Significant increase in enrolment in most socio-economically disadvantaged participants (+12%)
Hull et al 2014 UK <sup>6</sup>	Quality improvement with repeated audit cycles	3,391 patients on COPD registers across GP networks	GP practice networks with supported case management, education and financial incentives for clinical performance	% PR referral Other indicators of COPD management	PR referrals rose 25% from 45% to 70%
Roberts et al 2015 UK <sup>7</sup>	Pragmatic non-randomised controlled study	1,235 patients (640 intervention / 595 control)	Patients provided with individualised COPD care quality "score cards"	% PR referrals	Significant increase (6.1%) in referrals in intervention group
Zwar et al 2012 Aust <sup>8</sup>	Cluster randomised controlled trial, blinded outcome assessment	451 patients (257 confirmed COPD)	Home visit by COPD trained nurse working with GP to implement individualised, guideline-based care plan	% attendance at PR Other COPD management indicators	Significant increase (21.5%) in PR attendance

Table 1: Details and outcomes of reviewed studies

## Conclusions

- Our review using systematic methods showed insufficient evidence of interventions to improve referral and uptake to PR. More studies are required to give guidance and improve access to evidence based PR for patients with COPD.
- A strength of the review is the systematic approach.
- The authors have received funding from NIHR (RfPB) to develop a toolkit to support referral and uptake to PR.

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**Acknowledgements:** Thanks to Lianne Jongepier, Ruth Barlow and the East of England Pulmonary Rehabilitation Network for their support with our work.

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