Abstract P210 Figure 1 Flow diagram showing pathway leading to COPD discharge bundle completion

absence of a bundle, and completion of its 10 individual elements.

Results In 2015, 125 admissions coded as AECOPD were identified; 93 were bundle-appropriate. 80% of these had a COPD discharge bundle in the electronic record; a significant improvement on the 38% bundle completion in bundle-appropriate patients in 2013 ($p < 0.0001$).

Percentage completion was >90% for seven of the ten elements included in the 2015 e-bundle. Direct comparison of the six points included in both the 2013 paper bundle and the 2015 e-bundle, revealed that more patients were assessed for pulmonary rehabilitation in 2013 (100% vs 92%, $p = 0.0417$); all other elements had no significant change in completion rates.

Conclusions Introduction of an e-bundle and e-prescribing alerts to respiratory support team members more than doubled completion of COPD discharge bundles. This clearly shows the benefit conferred by use of an electronic system for prescribing, referrals and bundle proformas. We advocate the increased use of e-bundles as electronic prescribing and information systems are introduced across trusts.

REFERENCE

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Patient Experiences in COPD

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Introduction Traditionally, recruitment for health research involves clinicians identifying and then contacting potentially suitable participants. This can be both time-consuming and labour intensive for clinicians and researchers. Databases of Electronic Healthcare Records (EHRs) can be used as a resource through which potential study participants can be approached but is often underutilised in spite of previously being shown to be effective (Horspool et al, 2013).

For a study investigating the association between air pollution and COPD exacerbations using portable air monitors and

symptom diaries, we employed a relatively novel method of recruitment involving approaching patients to participate via the Clinical Practice Research Datalink (CPRD), an anonymised general practitioner (GP) records database containing ongoing primary care medical data.

Methods Patients registered at general practices within Greater London whose GP practices were part of the CPRD network were identified anonymously by CPRD using a validated codelist and algorithm developed by our team (Quint *et al*, 2014). GPs were able to verify the suitability of the potential participants identified and post information about the study to them. Patients could register their interest in the study directly with the research team to be enrolled in the study.

Results Feasibility screening by CPRD between January and July 2016 indicated 675 potential study participants at 20 practices and from the CPRD-supplied practice screening lists GPs identified and deemed eligible 462 patients. 462 patients were contacted and the response rate was 136/462 of which 43 (32%) were enrolled and 93 (68%) declined. The main reason for declining was related to the demands that the project entailed of looking after the air monitor and diary for 6 months.

Conclusion Patients with COPD from GP practices within Greater London were successfully screened and recruited through CPRD to participate in research over a 6 month period thus providing access to a milder cohort of research naive patients who better represent the majority of the COPD population and this method minimised input needed by the GP. This is a novel method of using EHRs to recruit participants for research that is currently underutilised.

P212

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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Introduction and objectives Pulmonary Rehabilitation (PR) reduces the number and duration of hospital admissions, readmissions and improves health-related quality of life, e.g. breathlessness and fatigue, in patients with COPD. Despite evidence, guidelines and quality standards, PR is significantly underutilised with under-referral (15% of normative need) and limited uptake (<70% of those referred attend initial assessment) contributing to poor treatment access.

We aimed to address the research question: How effective are interventions to improve referral to and uptake of exercise-based pulmonary rehabilitation programmes in patients with COPD when compared to standard care or no intervention?

Methods Systematic review following recognised methods, including all published observational, interventional, qualitative and quantitative studies of interventions specifically intended to increase levels of referral and/or uptake of pulmonary rehabilitation in patients with COPD.

Abstract P212 Table 1 Summary of interventions to increase referral to and uptake of Pulmonary Rehabilitation (PR) programmes for people with Chronic Obstructive Pulmonary Disease (COPD)

Authors, Date, Setting	Design	Participants	Intervention	Outcomes	Results/Effect
Angus *et al*., 2012, UK	Observational/feasibility study covering several aspects of COPD management	293 patients	Computer-guided review by practice nurse	% referred to PR	24% of patients referred
Foster *et al*., 2016, UK	Participatory action research with strategies for increasing referrals for PR	22 clinicians 126 patients	Included in-house education sessions, changes to practice protocols, and 'pop-ups' and memory aids (mugs and coasters) to prompt clinician/patient discussions about PR.	Patient survey	Survey reports expectation of increased access to benefits of PR
Graves *et al*., 2010, UK	Before/After comparison	600 patients (200 control/400 intervention)	Group opt-in session prior to individualised assessment and entry to PR	% taking up baseline assessment,% attending and completion of PR	No effect on initial uptake
Harris *et al*., 2009, Australia	Controlled Before/After study	249 patients	Patient-held manual of recommended COPD management	% enrolment to PR, other indicators of COPD management	Increased enrolment in PR seen only in most socioeconomically disadvantaged participants (outcome change + 12%)
Hull *et al*., 2014, UK	Quality improvement with repeated audit cycles	3391 patients on COPD registers across network	Establishment of networks of GP practices with supported case management, education and financial incentives for clinical performance	% PR referrals, other indicators of COPD management	PR referrals rose 25% from 45% to 70%
Roberts *et al*., 2015, UK	Pragmatic non-randomised controlled study	1235 patients (640 intervention/595 control)	Patients provided with individualised COPD care quality "score cards"	% PR referrals	6.1% increase in referrals in intervention group
Zwar *et al*., 2012, Australia	Cluster randomised controlled trial with blinded outcome assessment	451 patients (257 (57.8%) confirmed to have COPD)	Home visit by nurse with specific COPD training working with GP to implement individualised care plan based on guidelines	% attendance at PR, other indicators of COPD management	21.5% increase in PR attendance (31.1% v 9.6%; OR, 5.16; 95% CI: 2.40–11.10)