npj | Primary Care Respiratory Medicine

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ABSTRACTS OPEN

# Meeting abstracts from the 2015 PCRS-UK National Primary Care Conference

Whittlebury Hall, Northampton, 16th–17th October 2015

*npj Primary Care Respiratory Medicine* (2015) **25,** 15060; doi:10.1038/npjpcrm.2015.60; published online 13 October 2015

## 1. Integrated COPD service

Ahmad N, Patterson S, O'Neal S, Davies E

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*Brief outline of context:* Smoking prevalence in Telford and Wrekin area is 22.8% accounting for smoking related lung disease particularly COPD.
*Brief outline of problem*: Lack of proper specialist support in the community meant relying on individual decisions about patient care leading to variability in service delivery hence, delivering sub-optimal outcomes.
*Assessment of problem and analysis of its causes*: A review on behalf of the Telford and Wrekin CCG in January 2013 recommended that the service should be supported by a secondary care consultant.
*Strategy for change*: 1. Running multidisciplinary meetings (MDT) for complicated cases, 2. Include palliative care, mental health and social care for MDT, 3. Consultant led community clinics with support of a trained Health care worker, 4. Integrate technology with primary care, 5. Educational sessions, 6. Working with the BLF supported 'breathe easy group'.
*Measurement of improvement*: A service evaluation showed that between November 2013-July 2014, 40% of a cohort of 80 patients discussed at the MDT did not have hospital admission. Comparing February 2013-October 2013 to February 2014-October 2014, there was net saving of £50,000. At least 3 recurrent re-attenders did not have any further hospital admissions over a 12-month period.
*Effects of changes*: Improved cost efficiency without compromise of quality.
*Lessons learnt*: Service integration has helped with improving the life of patients with COPD and saving costs.
*Message for others*: Service integration will help develop a clinical led and clinically delivered service with no compromise of patient care, but instead improving their quality of life.
*Conflict of interest and funding:* We do not have any conflict of interest and this abstract has not been funded from any source
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## 2. A systematic review of the explanatory factors enhancing the adoption of asthma self-management behaviour in the South Asian and Black populations

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*Aim:* UK South Asians suffer poorer asthma outcomes and have a higher emergency hospital admissions rate than the majority White population. Possible reasons for these ethnic differences may be that self-management strategies either have been insufficient for their needs or have not been implemented in the first place. This review aims to identify key barriers and facilitators to implementing self-management in ethnic groups and define the essential components of culturally tailored asthma interventions.
*Method*: We systematically searched eight electronic databases, research registers and manually searched journals for randomised control trials of asthma self-management in South Asian and Black populations. We extracted data on study characteristics, barriers and facilitators, key components of interventions and process measures (e.g. self-efficacy), asthma control measures (e.g. health service use) and objective/validated behavioural measures (e.g. psychosocial functioning). We assessed quality using the validated EPOC-R Risk of Bias checklist and conducted a narrative synthesis.
*Results*: 18 studies (8 concerning South Asians, 10 concerning African-Americans) were included in the final analysis. Studies were heterogeneous: key strategies included family inclusion, presenting study measurements and educational materials using different formats (e.g. print, audio, verbal) that are culturally and linguistically relevant (e.g. using the community to develop materials and lay leaders for delivering interventions). Early analysis suggests variable benefit on self-management outcomes.
*Conclusion*: Multiple diverse strategies have been used; further analysis will identify those associated with effective outcomes for qualitative exploration to inform a novel intervention.
*Conflict of interest and funding:* No conflict of interest. This work is funded by Asthma UK Centre for Applied Research.
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## 3. Maximising the potential of routine data: development of the Wales Asthma Observatory

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*Aim*: The burden of asthma in Wales is high, although adverse outcomes with associated costs are largely avoidable. Population-based evidence on the disease epidemiology and outcomes is needed in order to reduce its burden. We aim to create and utilise an asthma observatory in Wales using routine data to support health policy, service planning, and clinical research.
*Methods*: A cumulative national asthma e-cohort will be created using linked routine data in the SAIL databank. Asthma patients will be identified and classified based on disease phenotypes and severity. Latent class modelling will be used to evaluate case definitions and uncover unobservable clusters. Important data gaps will be highlighted and recommendations for better capture of asthma data in the primary and secondary care settings will be devised. The regularly-updated e-cohort will provide a platform for both retrospective and prospective epidemiological and clinical studies. Based on this e-cohort, and in line with development of the UK Asthma Observatory, the Wales Asthma Observatory will be established with the aim of generating timely estimates of the disease burden, analysing spatial and temporal variations, forecasting the disease, and investigating care equity.
*Conclusion*: By providing up-to-date monitoring of objective disease outcomes, the Wales Asthma Observatory will allow better understanding of the trends and impact of asthma, and translation of evidence from complex interventions into informed policy and improved service delivery.
This project is funded by the National Institute of Social Care and Health Research (NISCHR) of Wales and the Abertawe Bro Morgannwg University (ABMU) Health Board, and is carried out with the support of the support of the Asthma UK Centre for Applied Research [AUK-AC-2012-01].
*Conflict of interest and funding:* This project is funded by the National Institute for Social Care and Health Research (NISCHR) of Wales and the Abertawe Bro Morgannwg University (ABMU) Health Board, and is carried out with the

support of the support of the Asthma UK Centre for Applied Research [AUK-AC-2012-01].
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### 4. Inflammatory biomarkers as a predictor of exacerbation frequency in COPD: a systematic review of biomarkers applicable to primary care

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*Aim*: Inflammatory biomarkers, including blood eosinophils, C-reactive protein (CRP) and fraction of exhaled nitric oxide (FeNO), are available as near-patient tests. However, their role in COPD in monitoring disease activity, determining prognosis and predicting responsiveness to inhaled corticosteroids (ICS) has not been studied in primary care. This systematic review aims to identify and appraise published evidence for the use of these biomarkers in predicting disease outcomes and steroid responsiveness in COPD, as applicable to a primary care setting.
*Method*: We will include all studies investigating patients with a formal diagnosis of COPD, where baseline blood eosinophils, CRP or FeNO have been measured. We will include data from all studies where outcomes are reported separately by different baseline biomarker levels and a comparison can be made. The primary outcome will be frequency of exacerbations.
*Results*: We are conducting the systematic review and will present preliminary findings.
*Conclusion*: Findings will inform further research to investigate use of near-patient biomarkers in long-term COPD management in primary care, particularly in relation to targeting ICS therapy.
*Conflict of interest and funding:* HFA is funded through an NIHR Doctoral Research Fellowship award. In 2010, HFA undertook an academic placement at Boehringer Ingelheim and had conference attendance provided by them. IDP reports personal fees from GlaxoSmithKline, AstraZeneca, Boehringer Ingelheim, Aerocrine, Boston Scientific, and Novartis. CCB has attended an advisory meeting on point-of-care testing sponsored by Alere, who are providing CRP testing kits for a research project. MB holds an NIHR Post-Doctoral Fellowship and has received grants from the MRC and NIHR and non-financial support from Almirall, AstraZeneca, Boehringer Ingelheim, Chiesi, and GlaxoSmithKline.
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### 5. Finding the 'missing millions': identifying undiagnosed COPD from clinical records

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*Aim*: COPD is under-diagnosed in the UK. This study examines whether Read codes can identify currently undiagnosed COPD patients for case-finding.
*Method*: Retrospective observational study assessing Read codes recorded in 5 years before new COPD diagnoses. 8391 patients in the Hampshire Health Record Analytical database (electronic database accessing over 1 m anonymised routine primary care and hospital records) were identified with a new COPD Read code recorded between 2008–2011 and 5 years preceding data. Possibly relevant Read codes were categorised into symptom codes, lower respiratory tract infection (LRTI) diagnostic codes, and prescribed medications.
*Results*: In the year preceding diagnosis, respiratory-related Read codes were recorded frequently: LRTI in 20.6%; symptoms in 41.2% (cough 24.7%, sputum 17.7%, breathlessness 19.3%, wheeze 3.0%); respiratory-relevant medication in 71.3% (antibiotics 53.3%, beta2-agonists 49.9%, antimuscarinics 7.8%, oral corticosteroids 24.8%). 1 ≥ respiratory-related codes were recorded in 78.1%. In the 5 years preceding diagnosis, LRTIs were recorded in 39.8%, symptoms in 58.3% (cough 42.2%, sputum 32.7%, breathlessness 27.7%, wheeze 6.2%) and respiratory medication prescribed to 83.4% (antibiotics 75.6%, beta2-agonists 56.5%, antimuscarinics 9.8%, oral corticosteroids 34.9%). Year-on-year frequency of all codes increased, particularly in the final year.
*Conclusion*: Aligning with recent reports of missed opportunities for COPD diagnosis, most patients had frequent primary care contacts relating to respiratory symptoms and received respiratory medications in the 5 years and particularly in the year preceding diagnosis. This offers opportunities for targeted case-finding and earlier diagnosis in primary care through educational and informatics approaches.
*Conflict of interest and funding:* This study is funded by NIHR CLAHRC (Wessex) and sponsored by Southampton University. The authors have declared no competing interests.
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### 6. Improving End of Life Care by using PCRS-UK EQUIP worksheets

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*Brief outline of context:* Half of patients discharged after hospital admission for COPD will die within 2 years. People with very severe COPD have numerous disabling symptoms which are often poorly managed.
*Brief outline of problem*: COPD life expectancy is very difficult to predict and doctors often over estimate survival. Respiratory patients are not routinely discussed at GSF meeting and have limited access to palliative services.
*Assessment of problem and analysis of its causes*: Our practice is inner city with high levels of deprivation. National prevalence for COPD is 1.7% practice prevalence is 3.9%. 14.2% of our COPD register have severe to very severe COPD.
*Strategy for change*: We used the EQUIP worksheets to help us identify patients approaching terminal stages of disease,then used the practice improvement worksheets to provide holistic reviews. We focused on symptom management, medicines optimisation and referred to external agencies.
*Measurement of improvement*: We receive a report from the CCG to monitor smoking cessation and hospital admissions for COPD, we currently have the highest stop smoking rates and low hospital admissions. The number of people with respiratory disease discussed at palliative care meetings has increased and also referrals to social services.
*Effects of changes*: Historically resistance to discuss patients at GSF meetings led to patients suffering with symptoms. Now patients are well managed, care is well planned and hospital admissions have been avoided.
*Lessons learnt*: It is hard trying to change practice, but the worksheets have been invaluable at persuading non respiratory interested clinicians to improve care planning.
*Message for others*: The EQUIP tools are simple, clear and easy to use but ensure your patients are receiving the highest standard of evidence based care.
*Conflict of interest and funding*: None.
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### 7. Understanding the need to improve respiratory care with evidence based recommendations

Small I, Jones R, Price, D, Carter V & Ryan D
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*Aim*: Respiratory diseases are one of the most significant public health challenges in the developed world[1]. Recent policy and guidelines have suggested that more needs to be done in primary care to support asthma and COPD patients[2]. The aim of this analysis is to identify common issues in primary respiratory care which need to be targeted for improvement.
*Method*: Data were obtained via the Optimum Patient Care review services. The service is provided free to over 550 general practices in the UK and forms the Optimum Patient Care Service Database (OPCSD). Inclusion criteria

included patients with a current diagnosis of asthma and at least two years of continuous medical records. COPD patients were identified as over the age of 40 with a QoF code for COPD. Individual criteria for each recommendation were then applied.
*Results*: 111,070 COPD patients were included, of which 26,272 (23.7%) had no spirometry recording to confirm diagnosis. A recommendation to discontinue/reduce ICS were provided for 9,238 (8.3%) patients. 268,524 patients had an asthma diagnosis recorded, of which 53,077 (19.8%) had no asthma medication prescribed in the past 24 months. In the past 12 months, 10,758 had been prescribed 12 or more reliever inhalers. Further recommendations included smoking cessation and referral for pulmonary rehabilitation.
*Conclusion*: It is clear there is a need for improvement in primary respiratory care which if addressed, could lead to improved patient care, cost effective practice, and efficient use of clinical time. This analysis highlights those issues which occur most commonly in primary care and the need for improvement tools, as released by bodies such as PCRS-UK.
*Conflict of interest and funding*: Funded by OPC.
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## 8. Characterising asthma patients prescribed off-license LAMA/LABA therapy without ICS

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*Aim*: The use of long acting beta agonists (LABA) and long acting muscarinic antagonists (LAMA) are well established in guidelines for COPD but are not currently licensed for use in asthma as sole maintenance therapy1. The aim is to characterise asthma patients' prescribed unlicensed LABA/LAMA therapy in UK primary care.
*Method*: Data from 402 general practices, collected prior to March 2013 were obtained from the Optimum Patient Care Research Database (OPCRD). Extraction criteria included patients with a current diagnosis of asthma, at least two years of continuous medical records and at least one asthma prescription in the preceding 12 months. Children under the age of 4 and those with a diagnosis of COPD were excluded.
*Results*: Following application of the exclusion criteria, a sample of 94,955 asthma patients remained. Unlicensed prescription of LABA/LAMA therapy with no ICS were identified in 401 patients (0.42%), with a mean age of 54. 339 (84.5%) patients had no spirometry reading recorded in their clinical records. Of the remaining 62 patients, 20 had a FeV1/FVC confirmed as $\leq 0.7$. Overall, 162 (40.3%) patients were over the age of 40 with a history of smoking recorded.
*Conclusion*: In 99.6% of cases, guidelines were well adhered to by general practitioners. Of the 401 patient's prescribed long acting asthma therapies (LABA/LAMA) with no ICS, 40% were over the age of 40, with a history of smoking. These patients may be treated as COPD with no diagnosis yet coded. Further research is needed to address off-licence prescribing, including factors unidentifiable from primary care databases such as: patients refusing to take inhaled steroids despite GP advice.
*Conflict of interest and funding*: Funded by OPC.
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## 9. A clinical audit of asthma patients switched from fluticasone propionate/salmeterol (FP/SAL) to fluticasone propionate/formoterol (FP/FORM) via letter

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*Aim*: The aim of this clinical audit was to evaluate the outcomes of patients switched via letter from FP/SAL to FP/FORM by a healthcare professional.
*Method*: This was a retrospective audit including asthmatic patients (>12 years) from two practices, who had previously been switched from FP/SAL to FP/FORM. Patient records were reviewed for clinical outcomes such as inhaled corticosteroid/long-acting β2-agonist (ICS/LABA) and short–acting β2-agonist (SABA) prescriptions, exacerbations, asthma-related healthcare resource utilisation and retention rate during the 6 months before and after switching.
*Results*: In total, 81% (138/171) of patients remained on FP/FORM 6 months after the switch from FP/SAL. Of these, 92% (127/138) remained on FP/FORM after 1 year. The average number of ICS/LABA inhalers per patient increased after switching to FP/FORM. The number of exacerbations and healthcare professional consultations required due to poor asthma control decreased. There was also a small decrease in the number of severe exacerbations. The number of SABAs collected and patients with an oral steroid prescription were similar between the groups.
*Conclusion*: The results show that there was better adherence with FP/FORM than FP/SAL, and that asthma control was improved, as evident by fewer exacerbations and fewer GP and nurse consultations.
*Conflict of interest and funding:* Scientific support with data analysis and medical writing support was provided by Napp Pharmaceuticals Limited.
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**Table 1 [9]:**

| | *FP/SAL (n = 138)* | *FP/FORM (n = 138)* |
|---|---|---|
| Average no. of ICS/LABA inhalers collected | 3.13 | 4.80 |
| Average no. of SABA inhalers collected | 2.29 | 2.60 |
| Patients with exacerbations (%) | 20 | 15* |
| Patients with an oral steroid prescription (%) | 17 | 16* |
| Patients with severe exacerbations (%) | 18* | 16* |
| HCP appointments due to poor asthma control | 61* | 44* |

*$n = 137$.

## 10. Validation of the 'Control of allergic rhinitis and asthma test' (CARAT) 1-week version and app-a preliminary analysis

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*Aim*: Asthma and allergic rhinitis often occur together. The CARAT is designed on paper and validated to asses control of both covering a 4-week period. This study aims at validating the 1-week version and digital CARATapp.
*Method*: Forty-two asthma patients were included (56.1%women, median 57yrs, median packyears 14, median $FEV_1$ 94%pred). Once a week for 4 weeks the 1-week-CARATpaper and 1-week-CARATapp were completed. At baseline also the Asthma Control Questionnaire (ACQ), Visual Analog Scale (VAS), and Global Initiative for Asthma (GINA) assessment. At final visit the 4-week-CARAT and app-satisfaction questionnaire were completed. Internal consistency was analysed using Cronbach's alfa, test-retest reliability of 1-week-CARATpaper and CARATapp using Spearmans correlation, relation between 4-week-CARATpaper and 1-week-CARATpaper (mean of 4 measurements) via Wilcoxon-Signed-Rank. The construct validity (using ACQ, VAS and GINA) was calculated using spearman correlation. App satisfaction is represented in percentages.
*Results*: No significant differences were found between 1-week-CARATpaper and 4-week-CARATpaper ($P = 0{,}052$). 1-week-CARATpaper featured Cronbach's alpha $>0.7$ for all (sub)scales. Correlations between 1-week-CARATpaper and ACQ/VAS/GINA were significant ($P < 0.01$). Test-retest reliability using spearman correlation between the different measuring moments were all significant ($P < 0.001$) for CARATpaper and CARATapp. No significant differences in score were found between CARATpaper and CARATapp. Ninety-two-point-three% of patients found the app (very) easy to use. Forty-five% prefers the app and 2.5% paper.
*Conclusion*: This preliminary analysis indicates 1-week-CARAT is valid and reliable, both on paper and app.

*Conflict of interest and funding:* CdJ, BFdB and TvdM report no conflicts of interest. The study was funded by unrestricted grant AstraZeneca.
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### 11. Oxygen prescribing audit

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*Brief outline of context*: Oxygen is a drug widely used across many specialites.[1] National Patient Safety Agency recognised poor oxygen prescriptions can cause serious incidents.[2]
*Brief outline of problem*: The British Thoracic Society (BTS) have set guidelines for the prescription and administration of oxygen.[3]
This audit aimed to compare oxygen prescriptions at the RFH according to the BTS guidelines and to identify areas of poor practise.
*Assessment of problem and analysis of its causes*: A prospective audit of drug charts for all adult inpatients on oxygen were compared against the BTS guidelines between 31/01/2015-01/02/2015. The initial cycle of data ($n = 53$) concluded that oxygen was poorly prescribed across the hospital. Only 1.8% ($n = 1$) prescriptions were fully completed and 34% were partially completed.
*Strategy for change*: Findings of the primary audit were presented to junior doctors and educational sessions on oxygen prescribing were delivered.
*Measurement of improvement*: Findings of the primary audit were presented to junior doctors and educational sessions on oxygen prescribing were delivered.
*Effects of changes*: Re audit data ($n = 58$) demonstrated an improvement in oxygen prescribing across all aspects of the oxygen prescription. 14.5% of prescriptions were fully completed and 45% were partially completed. The teaching sessions were effective as 90% of junior doctors responded that this would improve their clinical practice.
*Lessons learnt*: Oxygen prescribing at the RFH does not comply with BTS guidelines. Educational sessions were useful for Junior doctors and resulted in an objective improvement in oxygen prescribing. Further changes need to be made to the drug chart to simplify prescribing.
*Message for others*: Oxygen is a drug that requires a prescription, to clearly communicate to those responsible for its administration to ensure safe and effective use.
*Conflict of interest and funding*: none.
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### 12. What's on the horizon for COPD diagnosis and monitoring?

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*Aim*: Several issues currently face the management of COPD, in particular diagnosis is often delayed until the moderate/severe stages, resulting in patients missing appropriate early care; and empirical treatment of COPD exacerbations exposes some patients to inappropriate antibiotic and corticosteroid therapy. We aimed to determine whether technologies currently in development could address these issues through the identification and evaluation of technologies in development for the diagnosis and monitoring of COPD.
*Method*: A systematic Horizon Scanning Review approach was adopted to identify new and emerging technologies from commercial and non-commercial sources. Resulting technologies were evaluated for innovation, potential impact, user acceptability, and likelihood of adoption, by panels of clinicians and patients with COPD.
*Results*: 80 technologies were identified, of which 25 were evaluated as promising. Biomarker tests, particularly those using sputum/saliva samples and/or acting at the point of care were positively evaluated, and may offer a novel approach to earlier diagnosis and determining exacerbation causes. Several wrist-based and smartphone-based devices offering patients the ability to self-monitor and detect early signs of exacerbations were also considered promising. Telehealth technologies were not considered promising due to the lack of demonstrable improvement in patient outcomes.
*Conclusion*: Promising technologies were recommended as a focus of research, facilitating timely adoption within the NHS. Selected technologies have the potential to meet identified unmet needs in COPD care through supporting earlier diagnosis or allowing timely recognition of exacerbations, while those with the potential to determine exacerbation causes may enable targeted treatment to the underlying pathology, potentially avoiding inappropriate antibiotic and corticosteroid use.
*Conflict of interest and funding:* The NIHR Horizon Scanning Centre is funded by the NIHR. The authors have no conflicts of interest to declare.
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### 13. HCP Behaviour in online education

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*Aim*: UK Primary Care HCPs are central to the delivery of asthma and COPD care. However, research has demonstrated some skills gaps. (1) The use of e-learning to deliver accessible distance HCP education has increased, reducing time out of practice. Education for Health provide six-month blended learning courses (online & study days) in asthma and COPD, accredited by the Open University (300 study hours), with study days in week one and after four months. We analysed student access to e-learning to gain insights into learner activity.
*Method*: Cohort data from our student records database and Google Analytics data from our e-learning domain (elearning.educationforhealth.org) were extracted for 2014. Behaviour through the course was analysed in three asthma and two COPD cohorts assessed by mid-course exams and coursework and in two COPD courses with the exam replaced by coursework. All coursework deadlines are at the course end.
*Results*: Online activity of students enrolled on COPD (604) and asthma (652) courses showed a cyclical weekly pattern: highest on Mondays and lowest on Saturdays. Activity peaks occurred prior to mid-course study days, particularly those including exams, and prior to coursework deadlines. Activity reduced over 50% after examinations, but remained at a steady level in cohorts without exams.
*Conclusion*: Student online activity was highest early in the working week and appeared to be driven by assessment timings. Further analysis is needed to determine variation in individual behaviours. However, our findings suggest that additional coursework maintains motivation and learning better than a mid-course exam. Reference (1) Upton J *et al* (2007) PCRJ 16, 284-290
*Conflict of interest and funding*: Nil.
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### 14. IMPACT- Improving the Management of Patients Assigned COPD Treatment

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*Brief outline of context*: Identifying patients at risk of COPD exacerbations, and those who can be stepped down from high dose ICS.
*Brief outline of problem*: North Norfolk CCG before 2012–2013, had low COPD acute admission rates and there was variation of 300% between the lowest admissions per practice (Standardised data) and the highest. The local CCG prescribing advisers had identified a large mis-match between COPD ICS prescribing and those patients who required them.
*Strategy for change*: The IMPACT study has 2 stagesStage 1, data extraction: OPC ran a risk profiling tool, identifying patients at risk of 2 or more exacerbations, and a list of patients identified as requiring an ICS review. Stage 2, intervention stage: Mentored clinics with local respiratory GPwSW or specialist Primary Care Respiratory nurses, aimed at upskilling the local nurses in how to care for patients at high & low risk of exacerbations.

*Measurement of improvement*: OPC will repeat their data extraction 12 months after the final intervention mentoring clinic, outcome measures will include COPD exacerbation rates and ICS prescribing rates.
*Lessons learnt*: 15(CCG population 18 practices) agreed and took part. Some declined mentoring clinics owing low nurse numbers despite the benefits in terms of nurse education and prescribing savings.
*Message for others*: Engagement of practices is key, I felt that using CCG clinical lead to send emails may have increased engagement. The project was helped by good admission data broken down by practices, used this as 'leverage' to the more reluctant Practice Managers.
*Conflict of interest and funding:* Funded & supported by North Norfolk CCG.
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## 15. Managing complex COPD and asthma: providing integrated, patient-centred care

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*Brief outline of context*: Premature mortality from respiratory disease in the UK is almost twice as high as Europe.
*Brief outline of problem*: In the UK there is significant variation in respiratory care and outcomes.
*Assessment of problem and analysis of its causes*: Some degree of variation could be explained by population deprivation or disease prevalence but much is avoidable. Targeting avoidable variation will improve respiratory care for the whole population.
*Strategy for change*: An innovative, integrated model was piloted in West Hampshire; a multidisciplinary community respiratory team (MDCRT) worked alongside clinical staff in GP practices. 56 patients identified through 'Dose score stratification' (COPD) and NRAD key recommendations (asthma) attended for review including spirometry, inhaler technique, education, management plans, medication review and smoking cessation.
*Measurement of improvement*: 23% had their primary diagnosis changed; reasons identified include inaccurate initial diagnosis/coding and change in condition over time. 71% had their medications changed with the potential to: improve quality of life; reduce waste, risk of admission and cost. 73% patients with asthma/ACOS had recommendations made for alternative treatment. 14% had additional health issues identified. Only 7% of patients were referred to secondary care.
*Effects of changes*: MDCRT expertise supporting primary care can improve patient experience and access to care without the need for extensive, expensive secondary care technologies.
*Lessons learnt*: MDCRT skills must reflect the broad nature of respiratory conditions.
*Message for others*: Accessible respiratory support from a MDCRT is feasible and may enhance primary care skills and management of complex respiratory cases.
*Conflict of interest and funding:* The author declares there are no conflicts of interests. This work has been funded by WHCCG, WAHSN and NIHR CLAHRC Wessex.
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## 16. An audit undertaken to review the effect of a pulmonary rehabilitation programme with a tailored strength training component for COPD patients

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*Brief outline of context*: The current audit aimed to assess if a strength-training based pulmonary rehabilitation (PR) programme was able to benefit its patients' strength without sacrificing the significant effects usually reaped from PR.
*Brief outline of problem*: There has been a proliferation of research in recent years regarding the correlation between muscular atrophy and chronic obstructive pulmonary disease (COPD) related mortality.
*Assessment of problem and analysis of its causes*: Guidance on pulmonary rehabilitation (PR) has made suggestions to increase the amount of strength assessment and intervention that service providers can offer, thus there is a large need for increasing awareness on best practice regarding strength training in PR.
*Strategy for change*: The current audit looked at a service's outcome measures over one year of strength training incorporated in a traditional PR programme.
*Measurement of improvement*: Multiple repetition maximum strength was conducted for a biceps curl, lateral raise, and seated knee extension. The audit also measured scores from the COPD Assessment Test (Cat), Hospital Anxiety and Depression Scale (Hads) and Incremental Shuttle Walk Test (ISWT).
*Effects of changes*: There were statistically significant improvements seen for all outcome measures taken: Cat $P < 0.001$; Hads $P < 0.020$; ISWT $P < 0.001$; Biceps Curl $P < 0.001$; Lateral Raise $P < 0.001$; Seated Knee Extension $P < 0.001$.
*Lessons learnt*: Strength training in traditional PR can pose many benefits.
*Message for others*: Strength assessment and intervention can be easily integrated into traditional PR.
*Conflict of interest and funding*: None.
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## 17. Spirometry leads to thyroid treatment

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*Brief outline of context*: 51 yr Afro-Caribbean male, smoker including cannabis diagnosed with asthma 1987. Seven exacerbations with hospital admission. Nine exacerbations in primary care since 1997. On SABA, LABA/ICS inhalers: poor compliance with latter.
*Brief outline of problem*: Reversible spirometry as exacerbations and smoker. Poor reversibility, but flow/volume curve was scooped out with appearance suggesting extrinsic obstruction. Patient examined and had dullness to percussion in upper sternum. PEF was 480 l/min versus predicted 600 l/min.
*Assessment of problem and analysis of its causes*: Blood tests and CXR showed retrosternal goitre with thyrotoxicosis. He was referred to endocrinology who recommended beta blockers and carbimazole.
*Strategy for change*: He was advised of the hazard of wheezing with using a beta blocker and that SABA may not be effective.
*Measurement of improvement*: He stopped using inhalers and nocturnal cough has gone.
*Effects of changes*: Despite many different doctors seeing this patient the diagnosis of the cause was missed. Always look at the flow/volume curve and not just numbers.
*Lessons learnt*: The patient had stridor as a symptom, but called it cough. There was a postural trigger to the symptoms. He did not need the inhalers as the obstruction was not bronchiolar.
*Message for others*: It is worth training in taking and reading spirometry to pick up these cases. Asthma can change over time and other diagnoses should be considered.
*Conflict of interest and funding*: None.
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## 18. More learning from asthma exacerbations

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*Brief outline of context*: A general practice of 6,500 registered patients in a deprived, multicultural, multilingual urban area. We had been documenting exacerbations of asthma from 2009 onwards.
*Brief outline of problem*: Exacerbations of asthma may be seen as a breakdown of pro-active preventative care. Looking at causes of exacerbations may give

answers about where and how this breakdown occurred and how to prevent future exacerbations.
*Assessment of problem and analysis of its causes*: Asthma exacerbations from 1/1/2010 onwards were analysed. Purposive review and intervention was introduced consistently in 2013. A method for determining cause was developed and there were two causes in some cases. The exacerbations could all be classified as caused by: infection; lack of compliance; environment; allergy or anxiety. Causes of exacerbations have changed in the last five years.
*Strategy for change*: Reclassify as COPD older patients who smoke and have supporting spirometry with infection cause. Promote immunisation in those with infection cause. Address education and attitude for those with poor compliance. Prophylactic treatment for those with allergy.
*Measurement of improvement*: In most cases in the last two years there has only been one exacerbation.
*Effects of changes*: We continue to educate and equip our patients to avoid exacerbations.
*Lessons learnt*: All clinicians need to be committed to recording and intervening. Use of electronic proforma speeds up and increases consistency. Infection is commoner in winter and allergy commoner in summer. Most lack of compliance was not using inhalers available.
*Message for others*: Documenting and studying episodes of exacerbation can yield information about your performance and efficacy in patient care.
*Conflict of interest and funding*: None.
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## 19. The Development of a Community Respiratory Service in Breckland (BCRS)

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*Brief outline of context*: BCRS was commissioned in November 2013 to provide timely high quality specialist respiratory advice and care to minimise the impact of disease.
*Brief outline of problem*: Breckland was identified as an area with high prevalence of COPD and other respiratory conditions with a significant number of hospital admissions and re-admissions.
*Assessment of problem and analysis of its causes*: There is a high smoking prevalence in the area, high levels of depravation and lack of engagement with services and/or understanding of condition.
*Strategy for change*: BCRS runs a Multidisciplinary-led clinic with a GP with a special interest in respiratory medicine. BCRS provides advice on the management of complex respiratory patients. Assessment, support and follow up for all patients with a respiratory condition who are receiving home oxygen therapy is also provided. A supported discharge service and an admission avoidance service is also offered. BCRS offers clinics in various locations with home visits to improve accessibility, and offers a telehealth service to provide additional support to appropriate patients.
*Measurement of improvement*: Identified through Key Performance Indicators (KPIs) and Patient Satisfaction Surveys.
*Effects of changes*: BCRS has demonstrated timely assessments for patients and an increase in referrals. There has been an increase in referrals to the local pulmonary rehabilitation provider. BCRS has expanded its oxygen service and now covers five GP surgeries in the Breckland region. We have seen a very high level of patient satisfaction with all patients reporting they feel more confident at managing their condition.
*Lessons learnt*: The importance of integrated flexible working and accessibility.
*Message for others*: Implementation of a new service can be challenging, but rewarding.
*Conflict of interest and funding*: none.
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## 20. 'Breathless & Co'

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*Brief outline of context*: Singing can help improve health, specifically lung function and health-related quality of life (Clift *et al.*, 2010, 2013). Singing groups are likely to be a cost-effective health promotion strategy for people with COPD.
*Brief outline of problem*: The Pulmonary Rehab Team at DHC identified a need to provide ongoing support for COPD patients after completion of their Pulmonary Rehab programme.
*Assessment of problem and analysis of its causes*: A number of avenues were broached to try to identify a singing trainer/expert to support a new singing group for people with COPD but no support (resources or funding) was available.
*Strategy for change*: A local patient with Asbestosis and COPD, Brian Hemsworth, was approached and set up (voluntarily) a singing for breathing group 'Breathless & Co'. The group combines gentle breathing exercises with singing a diverse repertoire of songs in a fun social setting.
*Measurement of improvement*: All members of the Breathless & Co group report improvements in their quality of life through increased lung function, confidence, independence and enjoyment.
*Effects of changes*: One lady with COPD, previously dependent on her husband for her care, became independent and her husband was able to return to work, due to the confidence and increased lung function that she gained. The group have helped produce a video which promotes the pulmonary rehab programme and 'Breathless & Co', which is shown during respiratory clinics in four GP practices to encourage more patients to take up the rehab programme and singing group.
*Lessons learnt*: People with COPD in Dorset have gained significant health and well-being benefits.
*Message for others*: Singing groups benefit COPD patients.
*Conflict of interest and funding*: The project is run voluntarily.
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## 21. The development of a patient reported experience measure in COPD (PREM-COPD stage 2)

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*Aim*: To develop & validate a patient reported experience measure (PREM) to assess experiences of living with COPD & perceived quality of healthcare provision.
*Method*: Previous work with 83 COPD patients identified 38 items for potential PREM inclusion. These, together with the COPD Assessment Test (CAT) and Hospital Anxiety & Depression Scale (HADS) were administered to patients with COPD. Items demonstrating significant gender/age bias ($P < 0.05$), floor or ceiling effects (at 40%), missing data $>15\%$, or high item-item correlations ($r > 0.8$) were removed. Rasch analysis was applied to the remaining items.
*Results*: 174 patients (Mean age 71, SD 9; 91 female; Mean FEV1% predicted 59, SD 21.9) were studied. 29 items were removed providing a 9-item unidimensional scale (chi-square $P = 0.33$) with a wide scaling range (logits from $-0.1$ to $+0.2$). These cover experiences of living with COPD (I feel that I am in control of my condition) and health care (I am concerned that my GP will not listen to my point of view). Internal consistency was good (PSI = 0.75) and correlations between the PREM-COPD, CAT & HADS were moderate ($r = 42$ and $r = 30$, respectively).
*Conclusion*: The COPD-PREM demonstrated good internal reliability and showed a wide scaling range suggesting regardless of severity people with COPD can have good or bad experiences. There were low to moderate correlations with the CAT & HADS suggesting the PREM-COPD measures a different concept to health status. The COPD-PREM should provide a useful

measure of quality of care that complements measures of health status and mood.
*Conflict of interest and funding:* No conflict of interest related to this study.
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### 22. Bronchiectasis Self-Management Plan in Primary care

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*Brief outline of context*: Bronchiectasis is not part of the Quality and Outcomes Framework therefore management of bronchiectasis is not routinely recognised as being different from other lung diseases. Poor management especially in exacerbations can accelerate the course of the disease.
*Brief outline of problem*: Our PCRS-UK Affiliated local respiratory group acknowledged a significant number of patients were not under secondary care, nor have access to a self-management plan (SMP) or receiving care according to BTS Guidelines. Even many of those under specialist review were unaware of any SMP.
*Assessment of problem and analysis of its causes*: Existing SMPs were not being used by patients. The group agreed a robust patient-centric SMP would improve patient understanding and guide primary care to manage patients according to guidelines.
*Strategy for change*: Wessex AHSN facilitated a multidisciplinary group to review existing SMPs and guidelines. They agreed the key components of an SMP to support patients, carers and health care professionals (HCP) at all stages of the pathway.
*Measurement of improvement*: A draft SMP was distributed Wessex-wide to a broad range of HCPs and expert patients for review. Suggestions were considered and a final SMP was agreed by all participants and shared with local CCGs, acute and community HCPs.
*Effects of changes*: The Isle of Wight has adopted the plan for bronchiectasis patients across primary and secondary care. University Hospital Southampton and Dorset are looking at implementing these.
*Lessons learnt*: By developing a SMP for bronchiectasis with a variety of representatives we hope that we have created a comprehensive and usable tool that everyone will adopt.
*Message for others*.
*Conflict of interest and funding*: Nil.
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### 23. The use of mobile technology to support self-management for people with asthma: a systematic review

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*Aim*: We aimed to systematically review randomised controlled trials (RCTs) of technology-supported self-management in adults/teenagers to assess clinical effectiveness, and identify features associated with improved adoption of, and adherence to the technology.
*Method*: We systematically searched nine databases, scanned reference lists, and undertook manual searches. We assessed all eligible papers for quality, and synthesised data on health outcomes (e.g. asthma control questionnaire (ACQ) and/or exacerbation rate), process or intermediate outcomes (e.g. adherence with monitoring or treatment, self-efficacy), level of adoption of and adherence to the intervention.
*Results*: We included 11 RCTs (published January 2000—January 2015). There is evidence that digital interventions improve asthma control, lung function and quality of life. No interventions reported the adoption of and adherence to the technology system by patients and healthcare professionals. Interventions included 10 common features, which we grouped into seven categories (education, monitoring and electronic diary, action plan, reminders or prompts to promote medication adherence, professional support for patients, raising patient awareness of asthma control, and supporting the healthcare professional) which had variable impact on process and health outcomes. Mobile technology, including an electronic diary and action plan, and incorporating education and professional support improved asthma control.
*Conclusion*: Mobile technology has the potential to support asthma self-management, but further studies evaluating the features associated with improved adoption of and adherence to mobile technology are needed.
*Conflict of interest and funding:* CYH is funded by a PhD studentship from the Chief Scientist Office.
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### 24. The NHS England National Paediatric Asthma Collaborative (NPAC)—1 year on

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*Brief outline of context*: NPAC has brought together professionals from across NHS England, SCNs, Clinical Leads, AHSNs, professional bodies and third sector organisations who all have responsibilities for improving outcomes for children and young people with asthma to implement, share and adopt national improvement.
*Brief outline of problem*: Mortality rates for asthma are higher in the UK than in many other European countries.
*Assessment of problem and analysis of its causes*: Work streams established in the 2014/15 plan have been designed specifically to explore deliverable outcomes in these areas and significant progress has been made.
*Strategy for change*: The collaborative works with professions across boundaries to improve outcomes through sharing of best practice and proven interventions.
*Measurement of improvement*: With a range of interventions, collaborations and interactions the measurement of improvement is complex—as a matter of course each workstream has outcomes developed and end points/ aspirational targets that are explicit.
*Effects of changes*: As the collaborative was established 1 year ago, there is evidence of increased activity in a variety of areas (process) at the current time and production of specifications (structure).
*Lessons learnt*: Creating change across systems can be time consuming and frustrating if there is no clear resource flow—however many groups are familiar working within existing resources to improve quality of care and creating real change.
*Message for others*: NPAC are happy to work with those who have similar aims around working at improving the quality of care and outcomes for children and young people with asthma.
*Conflict of interest and funding*: Nil.
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### 25. Singing for breathing

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*Brief outline of context*: A diverse group including COPD, neuro-muscular conditions, sleep apnoea, lung cancer, pulmonary fibrosis and asthma.
*Brief outline of problem*: Promotes knowledge, strategy and exercise through pulm rehab and BLF Active exercise groups. Building a support network at an early point sustains a positive identity, confidence in self-managing and living well. It enables us to provide high quality information and strategies to manage breathlessness through non-medical management.
*Assessment of problem and analysis of its causes*:
*Strategy for change*: An activity for persons with a long term respiratory condition and aims to:

- Enable self-management through developing breathing techniques
- Remove barriers, offering full access and support
- Address emotional, social, psychological and physical difficulties
- Provide more flexible movement between NHS delivered and community care.

*Measurement of improvement*: Selected pre and post measures on changing perceptions of self-efficacy in managing long term conditions and wellbeing as a result of the group.
Effects of changes: "Enabled me, the next day to have more energy….changed my way of living, more positive…much more confident…would like to come back again."
*Lessons learnt*: The venue needs easy parking, a fall back singing teacher and leave is essential and a system for referrals is required.
*Message for others*: Just do it! It's great fun and it makes you feel better, breathless or not!
*Conflict of interest and funding:* Funding was through a local community action Long Term Conditions Grant.
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## 26. Is micro-spirometry an effective screening tool to detect COPD in primary care?

Longstaff J
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*Brief outline of context*: There's a need for evidence on how a diagnosis of COPD can be suspected and assessed using 'simple tools' (Pinnock *et al*, 2012).
*Brief outline of problem*: G.P.'s recognise the importance of identifying COPD with full spirometry, however it is difficult and time-consuming to perform as a screening tool (Thorn *et al*, 2012). There are issues with access and inadequate confidence in interpreting spirometry data (Salinas *et al*, 2011).
*Assessment of problem and analysis of its causes*: Micro-spirometry requires significant patient effort and is dependent on expiratory time. It's an alternative to full spirometry screening. Micro-spirometry is easier to use, requires shorter exhalation and has an end test criterion (Swanney *et al*, 2000).
*Strategy for change*: Micro-spirometry has been shown to be time-efficient, simple, portable and cost-effective for early COPD detection.
*Measurement of improvement*: Micro-spirometry has a high sensitivity, low specificity and diagnosis varies from 17–64%. Estimated time and cost savings compared with full spirometry is approximately 1:4; micro-spirometer measurement 4.17 min/€2.12 compared with full spirometry 3.31 min/€16.07 (Thorn *et al*, 2012).
*Effects of changes*: Micro-spirometry is an effective screening method but still misses vast numbers of people.
*Lessons learnt*: Combining micro-spirometry with questionnaires and data searches can be a systematic screening tool. Open access clinics in public areas can increase yield while raising awareness of COPD systems with micro-spirometers enabling quick screening.
*Message for others*: Further evidence is required before establishing whether micro-spirometers are reliable, valid and effective in COPD screening. No best practices have been established to deliver COPD screening and multiple approaches are likely to be needed. Wessex AHSN have been evaluating different approaches to using micro-spirometry across public areas and GP surgeries.
*Conflict of interest and funding*: None.
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## 27. Review of evidence for LAMA/LABA fixed dose combination inhalers in management of COPD—confounding by inhaled corticosteroids

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*Aim*: The management of COPD is moving towards more phenotypic based treatment. For those who are breathless but at low risk of exacerbations (GOLD group B, and maybe C/D), maximal bronchodilation with both a long-acting antimuscarinic (LAMA) and long-acting beta-agonist (LABA) are possible treatments. Three new fixed dose combination (FDC) LAMA/LABA inhalers are currently available: glycopyrronium+indacaterol (Ultibro, Novartis), umeclidinium+vilanterol (Anoro, GSK) and aclidinium+formoterol (Duaklir, AZ). This study looked at the evidence to support use of LAMA/LABA FDC alone in treatment pathways.
*Method*: Review of major published papers on safety and efficacy of new LAMA/LABA FDCs in patients with COPD compared with placebo or LAMA or LABA monotherapy, searched through Medline.
*Results*: There were 6 papers using Ultibro, 6 with Anoro and 2 with Duaklir. Examining patient demographics at baseline, a mean of 50% of patients (range 31–68%) across all studies were using inhaled corticosteroids (ICS) at enrolment and continued during the study.
*Conclusion*: In the LAMA/LABA FDC arm of these studies, half the patients were taking triple therapy (LAMA+LABA+ICS) and not LAMA/LABA alone. Half would also be taking LAMA+ICS, LABA+ICS or ICS alone. The continued use of ICS confounds the analysis of whether LAMA/LABA FDC alone is effective. These studies do not provide evidence to support the use of LAMA/LABA alone and the positioning of these products in treatment pathways. Further subgroup analysis of those on LAMA/LABA alone is required.
*Conflict of interest and funding:* I have received honoraria for lectures and funding for conferences from AZ, GSK, Almirall, Chiesi and BI.
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## 28. Reducing inappropriate high dose inhaled corticosteroid (ICS) prescribing in primary care using respiratory integrated care virtual clinics

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*Brief outline of context*: London CCGs.
*Brief outline of problem*: High dose combination ICS/LABA inhalers comprise 2 of the top 4 costliest medication spends in the NHS. There is evidence for overuse of ICS, especially in COPD with high dose ICS/LABA combinations; resulting in suboptimal treatment, potential harm and significant financial waste (White P. PLoS One 2013 8(10):e75221).
*Assessment of problem and analysis of its causes*: Often the diagnosis or severity of COPD is not clear, and primary care practitioners are not always aware of the indications for ICS. Even when ICS are indicated, a lower dose could be equally effective reducing risk of high dose ICS by GPs not always confident to make these changes.
*Strategy for change*: Acroos London, many medicine optimisation schemes have been established to reduce inappropriate ICS prescribing. Our aim was to describe and evaluate the effectiveness of these schemes.
*Measurement of improvement*: Changes in ICS expenditure for period before and after introduction of initiatives.
*Effects of changes*: 17/32 London CCGs replied with their initiatives. Change in high dose ICS costs ranged from +7% to −26% for the same quarter 12 months apart. 5/6 CCGs with the greatest reduction ran GP virtual clinics in conjunction with respiratory integrated care teams.
*Lessons learnt*: The most effective way of reducing inappropriate prescribing of ICS in primary care is through virtual clinics supported by specialist teams
*Message for others*: Commission virtual clinics from your specialist teams to support prescribing initiatives.
*Conflict of interest and funding:* VM, GD, SA have received honoraria for lectures and/or funding to attend conferences from GSK, AZ, BI, Chiesi, Almirall and TEVA.
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## 29. Non-pharmacological management of asthma

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*Brief outline of context*: Pts with asthma, responding to inhaled therapies suffer co-morbidities, require non-pharmacological support.

*Brief outline of problem*: 5 cases referred physiotherapy assessment.
*Assessment of problem and analysis of its causes*:
1: 34 yr F. Non-atopic. Step 4 therapy. Ambition to exercise. Normal spirometry.
2: 26 yr F. Non-atopic. Recurrent pleurisy. 2 admissions in 6/12. BMI > 30. Step 4 therapy.
3: 33 yr M. Non-atopic. Mucus Phenotype. Smoker. Step 4 therapy. Monthly admissions for 12 mths.
4: 44 yr F. Non-atopic.5 admissions Oct 14- Jan 15. Step 4 therapy. BMI > 30.
5: 41 yr F. Non-atopic. Step 4 therapy. Symptoms out of proportion to spirometry, perceived dysfunctional breathing.
*Strategy for change*:
1: 5 sessions. Pilates. Graded treadmill programme. Focus on breathing control/posture.
2: 5 sessions. Pilates, anxiety management. Supplemented by ongoing full pulm rehab programme.
3: 2 sessions. Focus on sputum viscosity/hydration. Partner taught techniques. 1 session Pilates. Combined with inhaled treatment changes.
4: 3 sessions with pulm rehab programme. Focus on breathing control.
5: 4 sessions of 1:1 plus pulm rehab prog. Acupuncture/Pilates plus focus on postural support.
*Measurement of improvement*:
1: Completed 10km run and discharged with proposed reduced treatment.
2: No further admissions. Weight reduction. No changes in treatment.
3: 2 admissions in subsequent 6/12. Full time employment.
4: symptomatic improvement. No admissions. Pt not convinced correct strategy.
5: 70 m improvement in incremental shuttle walk test.
*Effects of changes*: Varied. Combination of reduced hospital admissions, improved exercise capacity, improved self-confidence and reductions in treatment. In one case ambition was achieved.
*Lessons learnt*: Liberate innovative therapy staff to personalise interventions.
*Message for others*: Doesn't matter how you help someone with asthma, consider non-pharmacological interventions < phenotyping.
*Conflict of interest and funding*: None.
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## 30. Is exhaled nitric oxide useful in patients with suspected asthma?

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*Aim*: Guidelines recommend measuring exhaled nitric oxide ($FE_{NO}$) in patients with suspected asthma although the data to support its use are conflicted. We aimed to establish if $FE_{NO}$ is a good diagnostic test for asthma, and if baseline $FE_{NO}$ levels can reliably identify patients with symptoms who do not benefit from ICS treatment.
*Method*: 74 patients with symptoms suggestive of asthma underwent spirometry, methacholine challenge ($PC_{20}$), $FE_{NO}$ and two symptom questionnaires at baseline, 4 and 12 weeks, with ICS treatment started after the baseline visit.
Asthma was defined by $FEV_1$/FVC ratio < 70% or reversibility ≥ 12% or $PC_{20}$ ≤ 8 mg/ml. ICS response was defined as ≥ 2 of: (1) increase in $FEV_1$ by ≥ 12%, (2) $PC_{20}$ by ≥ 1 doubling dose shift or (3) decrease in $FE_{NO}$ by ≥ 20% or one of these criteria plus change in asthma symptom score.
Results were expressed using receiver operator characteristics area under curve (ROC AUC).
*Results*: 32/74 patients had investigations consistent with asthma and 27/67 (18 diagnosed with asthma) responded to 4 weeks of ICS treatment.
ROC AUC for $FE_{NO}$ to diagnose asthma was 0.62 ($P = 0.08$) and for baseline $FE_{NO}$ to predict ICS treatment response after 4 weeks was 0.89 ($P < 0.0001$). The optimal $FE_{NO}$ cutpoint for predicting non-response was < 27ppb (NPV 93%) and response was > 33ppb (PPV 92%). ICS response after 12 weeks was consistent with response at 4 weeks (ROC AUC = 0.86 $P < 0.0001$).
*Conclusion*: In patients presenting to primary care with symptoms suggestive of asthma, $FE_{NO}$ does not appear to be a useful test for asthma diagnosis but is accurate at predicting ICS treatment response and non-response.
*Conflict of interest and funding:* No conflicts of interest. Funding from NIHR Research for Patient Benefit Grant.
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## 31. Improving respiratory care for people in north Manchester CCG by increasing contact between primary and secondary care

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*Pennine Acute Hospitals NHS Trust, Crumpsall, Manchester, UK*

*Brief outline of context*: Lots of variation in respiratory care across the country with North Manchester CCG appearing to be an outlyer.
*Brief outline of problem*: To look at respiratory as a whole and see if what could help reduce variation and standardise care given.
*Assessment of problem and analysis of its causes*: North Manchester has a high incidence of respiratory conditions, high level of smokers, several of the countries worse deprived wards. Across the CCG GP knowledge varies with no GPsI in respiratory but a large number of specialists in the local hospital.
*Strategy for change*: A 12 month pilot to the GPs from the hospital aiming to increase knowledge, standardise care and improve links. 1. Mentorship to each surgery from respiratory consultants, including visits, email and direct telephone line. 2. Regular interactive education sessions covering agreed subjects 3. Provide specialist clinics in community localities for patients who GPs need help with.
*Measurement of improvement*: Patient satisfaction was high and feedback from GPs was good. Mentorship was good by those who engaged but very few of the GPs took up the offer.
*Effects of changes*: Education events to continue on a quarterly basis COPD pathway implemented—with embedded referrals, guides etc.
*Lessons learnt*: Having specialist available to meet CCG colleagues helps improve care and allows changes to be made jointly. Despite asking for it GPs were reluctant to use the direct line/email for help—due to them thinking the consultants were too busy.
*Message for others*: Good to have time together across traditional borders.
*Conflict of interest and funding*: None.
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## 32. Responding to NRAD on identifying bronchodilator overuse: What should a prescribing alert system look like? The views of asthma experts, general practice staff, and people with asthma

McKibben S, Bush A, Thomas M, Griffiths C

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*Aim*: The National Review of Asthma Deaths (NRAD) highlighted the need to identify and review the care of people prescribed excessive SABA inhalers. We set out to identify (a) the views of asthma experts, general practice staff and people with asthma in regards to the design of an electronic flagging alert systems to identify SABA overuse and (b) the key features of an alert system for use in primary care practices.
*Method*: This qualitative work forms the first phase of a programme to develop, implement and evaluate a prescribing alert system. We are in the process of gathering data from three groups of people: (1) Semi-structured telephone interviews with leading asthma experts. (2) Ethnographic observation of, and focus groups with, general practice staff carrying out repeat prescribing activities. (3) Semi-structured interviews with people with asthma.

*Results*: Initial findings will be presented and used to generate further debate and opinion amongst the expert conference audience.
*Conclusion*: These data will be combined with the findings of a systematic review of computerised decision support systems that identify overuse of bronchodilator prescribing, to generate, in collaboration with EMIS computer systems, a prescribing alert system tailored to the needs of general practices and people with asthma.
*Conflict of interest and funding:* The authors declare no conflict of interest. PhD studentship funded by AUKCAR and QMUL.
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### 33. Combination therapy versus separate therapy in real-life primary care asthma patients

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*Aim*: In uncontrolled steroid naïve asthma patients guidelines recommend separate low dose ICS plus SABA(ST) as reliever therapy. Many physicians however prescribe combination therapy (CT) in these patients. We have evaluated the effectiveness of both strategies in a real-life primary care setting and compared longitudinal patient related outcomes.
*Method*: We included 416 at baseline steroid naïve patients. Patients were assessed by an Asthma/COPD (AC) service for primary care (33% men, mean age $48 \pm 17$, mean Asthma Control Questionnaire [ACQ] $1.4 \pm 1$). We examined patient related outcomes ($FEV_1$, exacerbations, ACQ and Clinical COPD Questionnaire [CCQ]) who started using CT ($n = 337$) or ST ($n = 79$) after baseline. All data were of the regular assessment procedure in all patients. We evaluated initial differences between both groups and computed differential scores. The average follow-up time was 9 months. We compared these differential scores between groups with the Mann-Whitney U test.
*Results*: There were no initial differences between both groups in asthma severity. At follow-up both groups have improved in exacerbations (CT $-0.4 \pm 1$, ST $-0.3 \pm 1$), $FEV_1$ (CT $4.0 \pm 10$, ST $0.8 \pm 8$), $ACQ_{total}$ (CT $-0.5 \pm 1$, ST $-0.1 \pm 1$) and $CCQ_{total}$ (CT $-0.5 \pm 1$, ST, $0.2 \pm 1$). However, CT patients improved more than ST patients on $FEV_1$, ACQ and CCQ. Their average improvements in ACQ (−0.5) and CCQ (−0.5) scores were clinically relevant.
*Conclusion*: Moderate severe ICS naïve asthma patients showed more improvement while prescribed with combination therapy compared with separate therapy. Combination therapy might also be beneficial in less severe asthma patients. Reasons for improvement might be better adherence, or better inhalation technique because only one device is needed.
*Conflict of interest and funding*: No conflicts of interests University Medical Center Groningen.
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### 34. Telehealthcare interventions in the management of Obstructive Sleep Apnoea/Hypopnoea Syndrome (OSAHS)—A systematic review

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*Aim*: Telehealthcare potentially offers a convenient option for reviewing people with OSAHS on treatment with Continuous Positive Airway Pressure (CPAP). We aimed to systematically review the evidence for the effectiveness of telehealthcare (THC) for reviewing CPAP use versus face-to-face usual care (UC).
*Method*: We systematically searched nine electronic databases plus snowball/manual searches for clinical trials of telehealthcare for CPAP reviews. Two researchers selected, quality appraised and extracted data. Outcomes of interest were adherence to CPAP, subjective sleep, patient/clinician satisfaction, and cost effectiveness.
*Results*: Five studies (total 224 patients) were included. One trial at moderate risk of bias randomised 114 patients; other studies were small at moderate/high risk of bias. When combing adherence results the three small studies suggested improved CPAP use, but the larger trial showed no significant difference in hours used/night (THC: 4.29 h [SD2.15] vs UC: 4.22 h [SD2.05]) or proportion of nights used (THC: 47% [SD34%] vs UC: 50% [SD34%]). Two small studies reported no difference in the mean Apnoea/Hypopnoea index or Epworth Sleepiness score between groups. 4 of the 5 studies reported similar levels of satisfaction with the two modes of review. Two studies reported cost savings with telehealthcare.
*Conclusion*: Telehealthcare in the clinical review of people with OSAHS shows promise, but the evidence is limited to small, generally poor quality pilot studies. A fully-powered, well designed study is warranted to provide robust evidence of clinical and cost effectiveness of using technology to deliver specialist sleep services.
*Conflict of interest and funding:* ResMed have loaned CPAP equipment for evaluation to the healthcare trust.
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### 35. What Impacts on emergency department (ED) attendances?

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*Brief outline of context*: This is a poster presentation on clinical audit Clinical audit is an important activity, it can identify and promote good practice and can lead to improvements in service delivery and outcomes for users. It can also identify education and training opportunities and can provide information on how effective a service is.
*Brief outline of problem*: Asthma has been reported as one of the main causes of frequent attendance to the emergency department (ED), of which many visits are potentially preventable. The National Review of Asthma Deaths (NRAD) highlights that frequent attenders to ED are at high risk of requiring further medical intervention.
*Assessment of problem and analysis of its causes*: Frequent attendance at ED with asthma related symptoms
*Strategy for change*: The aim of the newly created integrated asthma service at Homerton University Hospital Foundation Trust (HUHFT), was to identify frequent attenders and barriers to asthma concordance, enabling the service to work with primary care services offering individual case management and minimise unnecessary attendances within the target group. The aim of this audit was to identify patterns of attendance
*Measurement of improvement*: Poster presentation service developments in progress.
*Effects of changes*: Poster presentation service developments in progress
*Lessons learnt*: Poster presentation service developments in progress
*Message for others*: How clinical audit can be used to improve service user outcomes through improvements in the quality of service delivered and professional practice.
*Conflict of interest and funding*: None.
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### 36. A primary care survey to assess provision, accreditation and confidence in performing and requesting spirometry

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*Aim*: Spirometry is increasingly requested, performed and interpreted in primary care. The quality of the testing has been shown to be variable. This

study aims to assess provision, accreditation and confidence amongst clinicians who request and perform the test.
*Method*: Two online quantitative questionnaires were devised and sent to all GPs, nurses and HCAs in the South Derbyshire CCG in April 2014. One for any professional that performs spirometry testing and another for those that request the test.
*Results*: Requesting Spirometry Survey: 49 responses (representing 27/52 practices). 94% of requesters were GPs (6% nurse practitioners). 29.8% of practices did not have a named respiratory lead clinician. 85.4% order less than 3 tests/month with 33.3% requesting $<1$/month. 36% interpreted the trace themselves. 28% relied entirely on the machine report. 45.7% had no extra training in spirometry. Confidence was moderate in most aspects the lowest area being identifying invalid traces.
Performing Spirometry Survey: 24 responses received (22/52 practices). 91% were nurses or nurse practitioners (6% HCA). 46% did $>3$ new (diagnostic) traces/month whilst 20% $<1$/month. 83% did $>3$ review traces/month (20% $>10$/month). All performers had training (many with COPD diploma). Only 3 were ARTP certified (12.3%). Confidence was reported as very high across a range of aspects.
*Conclusion*: Doctors order most tests and practice nurses perform $>90\%$. Most spirometry ordered by GPs is done in their own practice. Uptake of the ARCP certification remains very low with many performers doing very few new diagnostic traces/month. Performers feel confident but requesters' confidence is more moderate. A higher uptake of ARTP training and more named respiratory leads may benefit the standard of spirometry.
*Conflict of interest and funding*:
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### 37. Developing an educational intervention on breathlessness in advanced disease for informal carers

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*Aim*: To develop an evidence-based educational intervention for informal carers of patients with breathlessness in advanced disease.
*Method*: Stage 1, qualitative in-depth interviews with a purposive sample of 25 patient-carer dyads from two disease groups (cancer and COPD) to identify educational needs and intervention preferences (content and delivery modes). Stage 2, one-day workshop with clinical experts to identify evidence-based content and the acceptability, accessibility and feasibility of potential delivery modes.
*Results*: Carers wanted to learn about breathlessness and six key topic areas emerged from interviews with patient-carer dyads. These were: understanding breathlessness (both cause and how it feels); responding to breathlessness, anxiety and panic; supporting activity, exercise and rest; living positively with breathlessness; managing infections (for carers of patients with COPD); and, knowing what to expect in the future. There was wide variation in how carers wanted to learn and they wanted an intervention that provided both clinical-practitioner expertise and peer-carer experience. Building on these findings, a multi-disciplinary workshop with 13 clinical-practitioner experts identified content to include under the six topic areas. These experts also discussed a potential web-based platform that would enable multiple ways to access that content, including via clinicians and established support groups as well as by carers independently.
*Conclusion*: Drawing on the expertise of informal carers, patients and clinical-practitioners this study will inform the design (content and delivery mode) of an educational intervention on breathlessness that is relevant and acceptable to informal carers.
*Conflict of interest and funding:* None declared. Dimbleby Cancer Care.
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### 38. Real world respiratory care in Hampshire: the effect of BMI on patient outcome in COPD

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*Aim*: Nutritional status is a key factor in many long term conditions. This study aims to outline the relationship between body mass index (BMI) and patient outcome in Chronic Obstructive Pulmonary Disease (COPD).
*Method*: 12,566 patients with a diagnosis of COPD identified from the Hampshire Health Record Analytical database were followed for 3 years. The main outcomes measured were death and respiratory-cause hospitalisation rate. A multivariate cox regression model was used to calculate survival risk. It produced relative risks (RR) and confidence intervals (CI) adjusted for age, gender, smoking status and $\%FEV_1$.
*Results*: Overall there were 1677 deaths during the follow-up period. Compared with individuals with a normal BMI, underweight subjects had a higher mortality risk (RR = 1.58, 95% CI = 1.31–1.88). The lowest mortality rates were seen in the overweight subjects (RR = 0.72, 95% CI = 0.64–0.81). Very obese subjects had no statistically significant difference in mortality compared to normal weight subjects (RR = 0.83, 95% CI = 0.68–1.02, $P = 0.08$).
The relationship between rate of hospitalisation and BMI was 'U' shaped. The lowest admission rate was seen in overweight and obese subjects, no statistically significant difference was recorded between these two groups ($P = 0.604$). The same relationship was observed between BMI and respiratory-cause emergency department attendance. Underweight subjects had a higher proportion of admissions through an emergency department than any other group.
*Conclusion*: This study demonstrates that underweight COPD patients have the worst outcomes, whilst being overweight or obese appears to have protective effects. This reinforces the importance of nutritional supplementation in underweight COPD patients, whilst further research into the obesity paradox seen in COPD is required.
*Conflict of interest and funding:* The authors have no conflict of interest to declare.
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### 39. Exploring the feasibility of using remote respiratory monitoring to detect exacerbations of COPD

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*Aim*: Telemonitoring, which aims to detect exacerbations and enable timely treatment, has proved ineffective in preventing hospital admissions in part because currently used symptoms and physiological measures are poorly predictive of exacerbations. We aimed to explore the acceptability and performance of daily respiratory rate monitoring in detecting change during recovery from an exacerbation.
*Method*: Following preliminary testing of five novel respiratory rate monitors, we selected the most acceptable and reliable for testing in the clinical context of an acute exacerbation. We recruited 19 people during an exacerbation to wear the monitor for up to six weeks. Data were summarised graphically and mean changes calculated. The association between respiratory rate and markers of recovery (rising oxygen saturation, reduced breathlessness) were assessed using linear mixed models. Qualitative interviews with patients and staff explored acceptability.
*Results*: Recruitment was a challenge as many people felt too ill during the exacerbation to tolerate the monitors for long periods. Over three weeks recovery, the average respiratory rate fell for the whole group (around 2 breaths/m). However, individually this was masked in most patients by substantial background variation. In many patients there was no apparent improvement in respiratory rate during recovery. A fall in respiratory rate was only weakly associated with other markers of recovery. Practical issues of design and wearability were raised by many patients.
*Conclusion*: We conclude that respiratory rate is unlikely to aid detection of exacerbations as background variation is too great. Further research is required

to determine if combining respiratory rate with activity data may yield a more useful measure.
*Conflict of interest and funding*: Chief Scientist Office.
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### 40. Perceptions of healthcare professionals (HCPs) in primary care to stepping down treatment in people with asthma aged 12+ years

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*Aim*: BTS/SIGN guidelines1 for the management of asthma advocate a stepwise approach to abolish symptoms and optimise peak flow as soon as possible, by starting treatment at the step most appropriate to asthma severity. Stepping down therapy once asthma is controlled is recommended, but often not implemented, leaving some patients over treated.
*Method*: A qualitative questionnaire was designed in order to understand how primary care HCPs manage asthma, their attitude to stepping down medication, and the challenges they face. Subjects were asked how they identified patients suitable for step down, in addition to their confidence in, and barriers to, this process.
*Results*: Questionnaires were completed by 70 HCPs attending respiratory educational meetings within Ipswich and East Suffolk CCG. Over 80% of respondents had looked at the BTS/SIGN guidelines in the preceding 6 months; however, only 63% rated their confidence to step down patients as 4 or 5 on a scale where 1 = not very confident, and 5 = very confident. Of those who gave a confidence level of 4 or 5, 75% had access to a practice or locality formulary for asthma management, compared to $<50\%$ for those who rated their confidence 3.
*Conclusion*: HCPs understand asthma management guidelines, however they lack the confidence to implement step down procedures. Access to a formulary for asthma management may help ease concerns.
*Conflict of interest and funding:* Medical writing services were provided by Napp Pharmaceuticals Limited.
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### 41. Developing a toolkit for commissioning and planning obstructive sleep apnoea services

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*Brief outline of context*: Until now, there has been no single UK-wide resource for planning and delivering obstructive sleep apnoea (OSA) services.
*Brief outline of problem*: Undiagnosed OSA is closely associated with hypertension, diabetes, stroke and heart disease, can shorten life expectancy and can lead to road collisions.
*Assessment of problem and analysis of its causes*: OSA is a significant health care burden in the UK. Awareness levels are low and service provision varies. Treatment with continuous positive airway pressure (CPAP) is associated with better outcomes, yet only an estimated 330,000 adults are being treated, out of a population of 1.5 million.
*Strategy for change*: The BLF toolkit is a booklet giving recommendations for service provision with a simple audit tool and an online tool generating a report for any health area, providing details on estimated OSA prevalence, recommended provision, cost avoidance for treatment, prevalence of risk factors and traffic accidents that could be prevented.
*Measurement of improvement*: Improvement will depend on take-up of the toolkit by health areas. The toolkit provides the opportunity for proactive purchasing and planning of services.
*Effects of changes*: Use of the toolkit will lead to reduction in health costs across a range of services, and better quality of life for patients.
*Lessons learnt*: Be direct and succinct.
*Message for others*: Involve all the relevant stakeholders.
*Conflict of interest and funding:* Funding from ResMed, a medical device company.
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### 42. An investigation into the relationship between 'General Practice Competency' and the outcomes for patients with Chronic Obstructive Pulmonary Disease

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*Aim*: The factors driving large variations in COPD outcomes between GP practices are incompletely understood and may include practice competencies and training. We aimed to quantify practice-level COPD competencies using a survey in order to relate this to patient outcomes. General Practice Competency Score (GPCS) was a composite incorporating practice COPD audits, COPD clinics, and the formal COPD training for GPs, Nurses and Healthcare assistants (HCA).
*Method*: An anonymised dataset of 16,106 patients with COPD was collected from routine care linked GP and hospital records using the Hampshire Health Record Analytical database focussing on Hospital Admissions, A&E attendances and Deaths over the 3-year study period. 129 contributing practices were sent a postal questionnaire.
*Results*: 45 practices returned the questionnaire (33%). A correlation of 0.153 ($P = 0.315$) and -0.031 ($P = 0.841$) was found between GPCS and the percentage of deaths per COPD patient and the mean number of A&E attendances using Spearman's rank. A correlation of 0.151 ($P = 0.323$) was found between GPCS and the mean number of hospital admissions using Pearson's rank. Deficiencies in competencies were revealed: only 13% of Respiratory Lead GPs reported training in the last 2 years, with 40% of practice Nurses and 31% of HCAs reporting no training.
*Conclusion*: No significant correlation was observed between GPCS and the patent outcomes in univariate analysis. Further multivariate analyses incorporating potentially confounding factors such as deprivation, list size and rurality are planned. Identification of practices with poor COPD outcomes with focussed professional support and training has the potential to improve patient outcomes.
*Conflict of interest and funding:* The authors have no conflict of interest to declare.
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### 43. Implementation of the Epworth sleepiness scale in primary health care

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*Aim*: To investigate the population through free sleep apnea control program in Primary Health Care (PHC) as a 4–10% of the population suffers from sleep apnea syndrome without knowledge because it is not diagnosed.
*Method*: Pioneeringly the Urban Model Health Center of Peristeri conducted free control sleep apnea program. Proceeded by information and communication of the transaction in cooperation with the municipality, post relevant information on sites on the Internet, a poster and related articles through media. Compiled specific questionnaire based on EPWORTH scale which was answered by participants for evaluation as a statistical analysis with the SPSS 20 program.
*Results*: Analyzed 53 people, 43% were female and 56.60% male all Greek Nationality. The mean age was $52.67 \pm 14.42$years while the average BMI was $31.69 \pm 7.56$ (overweight). Everyone living in the Municipality of Peristeri, and went to the Health Centre for the first time 41.51% were smokers and 18.87% former smokers 92.45% were first qualified in the Health Centre, and the 7.55% reported of perceived sleep apnea syndrome. The mean score of control according to the Epworth Sleepiness Scale was $7.58 \pm 3.80$, as only 28.30% was

introduced to carry out sleep study while 33.96% had perfectly normal sleep. All interested parties who came argued that the program was really efficient.
*Conclusion*: The application of EPWORTH scale plays an important role in primary health care as it is a useful investigative tool of normal sleep, so patient information and guidance in a sleep study (recording sleep disorders) results in the definitive diagnosis of the disease so that we take measures to address it.
*Conflict of interest and funding:* HCDC- Ministry of Health.
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### 44. Investigation of asthmatic patients in primary healthcare

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*Aim*: To investigate the asthmatic patients through the Primary Health Care (PHC).
*Method*: The Urban Model Health Center of Peristeri monitor asthmatic patients from June 2014 until today. A dedicated questionnaire was prepared which was answered by participants visited the pneumonological unit. Statistical analysis program SPSS 20 applied as well and $x^2$ test independence Pearson for comparing dyon discrete variables.
*Results*: From total 100 participants, 68% were female and 32% male all Greek Nationality. The mean age was 51.67 ± 14.61years while the average BMI was 27.98 ± 6.097 according to the World Health Organization (WHO) if BMI > 25-$kg/m^2$ indicates overweight. Recommendation to follow the Greek traditional Mediterranean diet. 48% resided in the municipality of Peristeri, while 28% was first admitted to the Health Centre, 28% were smokers. 28% were smokers as well as was held education to stop smoking and only one woman stopped without medication. 26% former smokers as 43% were diagnosed with asthma for the first time in the Health Center. The mean score of asthma control according to the Asthma Control Test (ACT™) was 17.48 ± 3.73 (poor asthma control) and only 3% had complete controlled asthma, 20% were under partial control while 77% was found having incomplete control. The probability of someone experienced asthma affected by whether they are smokers or former smokers (LR = 8.788 df = 4 $P = 0.067$). 41% felt the breathlessness last four weeks one to two times a week. 99% of asthmatic patients claimed that the program was quite efficient.
*Conclusion*: Needs for stronger and additional services in order to support systematically management of asthma patients in primary health care.
*Conflict of interest and funding*: HCDC- Ministry of Health.
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### 45. Prevalence of impaired gas transfer in patients with normal spirometry in a community based respiratory clinic

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*Brief outline of context*: Spirometry is routinely used to screen for chronic obstructive pulmonary disease (COPD). The diagnosis of COPD is dependent on the presence of obstruction in spirometry (FEV1/FVC $< 0.7$) that is not reversible.
*Brief outline of problem*: This approach can be problematic as some patients with emphysema may not have obstruction. The magnitude of this problem is not known.
*Assessment of problem and analysis of its causes*: This study was a retrospective audit of lung function test results in patients with suspected respiratory disease from a community-based respiratory clinic over a two-year period. In a cohort of 520 patients, 264 had normal spirometry (FEV1/FVC ≥ 0.7, FEV1 > LLN). Of these, 143 (54.2%) also had abnormal gas transfer (TLCO < LLN). Reduced gas transfer has many causes, the most likely in these patients being emphysema.
*Strategy for change*: This data makes a strong case for routine full lung function testing rather than spirometry alone in subjects with suspected COPD.
*Measurement of improvement*: The number of patients identified using diffusion capacity testing as well as spirometry, who would have been missed by spirometry alone.
*Effects of changes*: We hypothesise that more patients with possible emphysema will be identified and benefit from COPD therapy, especially smoking cessation.
*Lessons learnt*: Using spirometry alone to diagnose COPD may miss patients with abnormal gas transfer possibly due to non-obstructive emphysema.
*Message for others*: In screening patients for COPD, full lung function testing may detect more patients with possible emphysema than spirometry alone.
*Conflict of interest and funding*: None.
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### 46. Local initiatives to improve asthma care one year after publication of NRAD

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*Brief outline of context*: The NRAD report 'Why asthma still kills' published 2014 contained a chapter of recommendations for implementation in primary care, including recommendations for primary care.
*Brief outline of problem*: There was little knowledge of what if any action has been taken locally since the report.
*Assessment of problem and analysis of its causes*: Unknown activity.
*Strategy for change*: A PCRS-UK survey of members in 2015, to investigate the extent to which the recommendations had been acted on locally in the 12 months since publication.
*Measurement of improvement*: In total, 106 members responded to the online survey; 92% agreed that NRAD was useful and could drive improvements in asthma care. 54% indicated that some action had been taken in their local area to improve asthma care in response to NRAD. Responders reported that 46, 44, and 42% of initiatives were undertaken by CCGs/Health boards, networks and practices respectively.
*Effects of changes*: The most frequently mentioned initiatives were: training/educational events (21), putting in place/promoting asthma action plans (14), measures to improve safe use of medication (11), improving the quality and coverage of asthma reviews (10), and undertaking audits (9). Also mentioned were collaborations across primary and secondary care, identifying/case management of high risk patients, and making changes to routine practice. Of those who reported no local actions to date, 26% said that there were future plans to undertake improvement initiatives.
*Lessons learnt*: Some excellent local initiatives are taking place.
*Message for others*: It is important to identify successful work so that this can be disseminated more widely and adopted
*Conflict of interest and funding:* The survey was funded by PCRS-UK. Both are contracted to undertake work for PCRS-UK.
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### 47. Ethnic variation and the risk of COPD: the role of smoking intensity

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*Aim*: Black people in London are at lower risk of COPD than whites (OR 0.44; 0.39 to 0.51) when taking age, smoking, sex and deprivation into account. Genetic differences in the metabolism and addictive potential of nicotine have been considered. The role of number of cigarettes smoked per day (CPD) is assessed here.

*Method*: Retrospective cross-sectional study using routinely-collected primary care data. CPD was compared between ethnic groups using linear regression, adjusting for age, sex and deprivation.
*Results*: 358,614 patients were included. 67.3% of current smokers (44,146) and 20.3% of ex-smokers (13,700) had CPD recorded. Mean CPD was 9.6 (SD 7.7), median CPD 10 (IQR 4–15). In whites ($n = 33,385$), adjusted mean CPD was 10.5 (95% CI 10.4–10.6) and median CPD 10 (IQR 5–15). In blacks ($n = 9533$), adjusted mean CPD was 7.3 (95% CI 7.2–7.5) and median CPD 5 (IQR 3–10). In south-Asians ($n = 2254$), adjusted mean CPD was 7.9 (95% CI 7.6–8.2) and median CPD 6 (IQR 3–10). Adjusted mean CPD was significantly lower in the black (B = − 3.2, − 3.3 to − 3.0) and south-Asian (B = -2.6, − 2.9 to − 2.3) groups compared to the white group.
*Conclusion*: Black smokers in London smoke fewer cigarettes than whites. This may explain some of the ethnic differences in the observed prevalences of COPD. Differences in CPD may be due to cultural, social and reporting factors, or may reflect differences in the genetic factors that determine the delivery of nicotine and sensitivity to its addictive potential.
*Conflict of interest and funding:* No conflict of interest. Dr Gilkes and Dr Weston are NIHR In-practice fellows.
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## 48. COPD re-admissions in an urban environment: health service factors

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*Aim*: COPD re-admission rates have been proposed as a marker of care quality. Rates of COPD re-admission vary depending on age, disease severity and the presence of co-morbidities. A national UK audit (2008) suggested a COPD re-admission rate of 34% within 90 days of discharge. This study aimed to describe the rates of re-admission for COPD in patients not admitted in the previous 12 months and to identify patient, general practice and hospital factors.
*Method*: Retrospective longitudinal study of all COPD patients registered with London general practices admitted as an emergency with COPD (2006–2010). The contribution of hospital, general practice, and patient factors, including age, gender and deprivation, to re-admission risk was determined by multiple logistic regression.
*Results*: 27289 patients not admitted within previous 12 months were admitted to 41 hospitals from 1632 general practices. Mean age 72.8 years, 51.7% male. 7772 (34.6%) patients had at least one re-admission over the four years. 2155 (7.9%) patients were re-admitted within 30 days of discharge, 3738 (13.7%) within 182 days. Longer first admission (OR: 1.007, $P < 0.001$) and patient age (OR: 1.003, $P = 0.014$) were weak predictors of re-admission. Rates of re-admission varied between practices and between hospitals, but risk of re-admission was not associated with general practice performance or admitting hospital.
*Conclusion*: COPD re-admissions are uncommon. Patient rather than healthcare factors were influential in COPD readmissions. The rate of COPD re-admission in COPD has limited value as a marker of care quality. Smoking cessation is the main intervention likely to reduce admissions and readmissions for COPD.
*Conflict of interest and funding*: No Conflict of Interest.
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## 49. COPD patient education programme—an initiative between the NHS and British Lung Foundation

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*Brief outline of context*: Patient education and self-care is an essential part of chronic disease management. We aimed to test an approach where a third sector organisation delivered a short course of education for patients with COPD.
Nice, Cochrane and the National Strategy for COPD all recommend self-management strategies to help people with lung conditions maintain their health. Recent studies show that disease-specific self-management improves health status and reduces hospital admissions in COPD patients. Pulmonary Rehabilitation (PR) includes formal education to patients with COPD yet the National COPD Audit (2008) revealed that only 15% of patients attended PR in the previous 12months.
*Brief outline of problem*: The BLF piloted a patient education programme to assess the effect a short course of education can make to someone with COPD. The programme provided self-management education, peer-to-peer learning, goal setting & behaviour change support. It aimed to improve patients' knowledge and understanding of their condition, improve COPD symptoms and psychological wellbeing, patients' self-efficacy and ability to self-manage. The programme will complement PR and local services (psychological therapies, smoking cessation, BreatheEasy).
*Assessment of problem and analysis of its causes*: This small pilot aimed to assess the acceptability and impact to patients with a 6 month follow up.
*Strategy for change*: Getting patient engagement was difficult and requires further evaluation. Patients that attended enjoyed and benefitted from the course.
*Measurement of improvement*: Third sector organisations can be effectively utilised by the NHS for the benefit of patients.
*Conflict of interest and funding*: None.
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**Table 1 [49]:**

| | | | |
|---|---|---|---|
| COPD Understanding | 16.45 | 23.40 | 22.00 |
| CAT | 21.41 | 16.6 | 16.00 |
| Self efficacy | 38.23 | 46.10 | 41.00 |
| Wellbeing (WEMWBS) | 47.05 | 58.40 | 61.00 |

Note: Pre-Course ($n = 21$) Post-course ($n = 10$) 6 months ($n = 7$).

## 50. COPD Patient Passport

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*Brief outline of context*: In 2012, the UK's Northwest respiratory team piloted a Patient Passport describing 7 Steps to COPD care.
The BLF worked with PCRS-UK to relaunch the passport both as printed information and a digital tool that provides a personalised report for patients to discuss with a HCP.
*Brief outline of problem*: COPD patients report variation in the services and support they receive. This has been reflected in the Respiratory Atlas of Variation and the current COPD Audit.
*Assessment of problem and analysis of its causes*: NICE guidance on COPD is clear on optimum care for patients but the levers to implement this are weak. The range of treatment and services may also be confusing for patients
*Strategy for change*: The Passport has three objectives—inform patients of care that they are entitled to; provide a discussion tool to use during consultations; to develop a picture of patient experience. The Passport was re-developed through a review of the evidence, consultation with members of PCRS-UK and consultation with members of BLF Breathe Easy groups.
The printed passport was distributed to every GP practice in the UK and the digital tool was promoted widely online.
*Measurement of improvement*: To date, 7,700 people have completed the digital tool. Initial results include: I understand my COPD Yes = 44%; Copy of self-management plan Yes = 26%; Referral to PR Yes = 38%; Regular Inhaler review Yes = 49%; Annual review Yes = 75%.

*Effects of changes*: We are conducting qualitative research with patients and HCPs on their use of the passport and its impact.
The data from the digital tool provides a benchmark for measuring patient access to services.
*Lessons learnt*: There is enthusiasm and engagement for a tool that informs patients of their entitlement and supports patient and HCP consultations.
*Message for others*: Both printed and digital tools need to be developed to work most effectively in each medium.
*Conflict of interest and funding:* Supported by an educational grant from AstraZeneca.
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## 51. Clinical effectiveness and cost impact in UK patients with asthma switching from fluticasone-propionate/salmeterol pMDI to fluticasone-propionate/formoterol pMDI

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*Aim*: To evaluate the clinical effectiveness in terms of non-inferiority for no exacerbations, and cost impact in patients switching from fluticasone propionate/salmeterol pMDI (FP/SAL) to fluticasone propionate/formoterol pMDI (FP/FOR) at the same inhaled corticosteroid dose.
*Method*: Historic, observational study using data extracted from the Optimum Patient Care Research database. Patients aged 12–80 years old with asthma and receiving ≥1 FP/SAL prescriptions during the baseline year and ≥2 prescriptions for FP/FOR over the outcome year were included. Patient costs were based on individual respiratory-related resource utilisation. The primary outcome was to evaluate the non-inferiority in effectiveness of switching from FP/FOR from FP/SAL with an additional objective to assess the cost impact of medication change.
*Results*: See table 1. 153 patients were eligible. The lower confidence limit of 95% for the mean probability of 'no severe exacerbations' for FP/FOR was 4.5% which is above the 12.5% margin required for non-inferiority against FP/SAL. The total respiratory related healthcare cost per patient was £506.90 compared to £570.89 for FP/FOR and FP/SAL respectively.
*Conclusion*: Switching patients from FP/SAL to FP/FOR results in non-inferior prevention of severe asthma exacerbations at a statistically significant lower cost.
*Conflict of interest and funding:* Napp and RiRL UK. Napp speaker: Gruffydd-Jones, Price.
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**Table 1 [51]:**

| *Patient Outcomes* | | *Patients changing from FP/SAL to FP/FOR (n = 153)* | | *P-value** |
|---|---|---|---|---|
| | | *Outcome (FP/FOR)* | *Baseline (FP/SAL)* | |
| Confidence interval for no severe exacerbations | Proportion of 'no exacerbations' | 0.791 | 0.758 | Non-inferiority met |
| | Lower limit: −0.125 (−12.5%) | −0.045 (−4.5%) | | |
| Prescription cost/patient (£) | Mean(SD) | 474.78 (247.74) | 525.76 (305.15) | 0.011* |
| Resource cost/patient (£) | Mean(SD) | 32.12 (66.60) | 45.13 (91.65) | 0.001* |
| Total cost/patient (£) | Mean(SD) | 506.90 (259.60) | 570.89 (326.58) | < 0.001* |

SD = standard deviation. *Wilcoxon paired test.