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ABSTRACTS

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Abstracts accepted for publication in the *Primary Care Respiratory Journal*

106: Simple spirometry as a first line test for asthma diagnosis in primary care

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Aim: Spirometry is recommended as a first line test for asthma diagnosis in a number of guidelines. The present study was undertaken to determine whether there is sufficient evidence to promote spirometry as a first line test for asthma diagnosis in primary care as compared to methacholine challenge test (MCT).
Method: Medline/Embase were used (search words, spirometry, bronchodilator responsiveness (BDR), asthma diagnosis, methacholine challenge testing, comparison, sensitivity, specificity) to identify articles comparing BDR using simple spirometry to MCT in the primary care setting from 1960-2011.
Results: There were insufficient randomized-controlled studies with comparable design, patient populations and outcomes to carry out a systemic review or meta-analysis. A critical analysis of relevant publications was carried out. The available publications reviewed suggest that MCT has far greater sensitivity for asthma diagnosis; some studies showing that MCT can include/exclude a diagnosis of asthma at a rate of 60% or greater among primary care patients compared to BDR using simple spirometry. In fact, most asthma patients in primary care present with normal baseline spirometry on initial testing with less than 20% demonstrating BDR with simple spirometry; few studies describe practical strategies for spirometric asthma diagnosis and management when initial spirometric testing is normal.
Conclusion: This study suggests that asthma diagnosis can be confirmed in only a small minority of patients using simple spirometry and BDR compared to MCT. The current evidence does not support simple spirometry as a first line test for asthma diagnosis in primary care. Further studies comparing simple spirometry to MCT for asthma diagnosis confirmation and de-novo asthma diagnosis in primary care are required. Such studies should address considerations related to how test selection may influence costs and outcomes related to asthma care. Current International asthma guidelines should highlight the low sensitivity of simple spirometry for asthma diagnosis compared to MCT, including practical strategies designed to promote management of patients in the interim between suspected and confirmed asthma diagnosis.
Conflict of interest and funding: No conflicts or funding.
For admin only: Dr Anthony D'Urzo, tonydurzo@sympatico.ca

108: Patients' compliance and experience with video-based home exercise programme concurrently with outpatient pulmonary rehabilitation (PR)

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University of Hertfordshire, UK

Aim: To evaluate patients' compliance and experience with video based home exercise programme concurrently with outpatient PR.
Method: EOn day 1 of an 8 week outpatient PR programme, 23 randomly selected COPD patients completed outcome measures of endurance shuttle walk test (ESWT, Revill *et al*, 1999), St Georges respiratory questionnaire (SGRQ, Jones *et al*, 1991), brief assessment depression card (BASDEC, Adshead *et al*, 1992), Duke social support index (DSSI, Koenig *et al*, 1993), multidimensional health locus of control (MHLC, Wallston & Wallston, 1981), mini mental state examination (MMSE, Jacobs *et al*, 1977) and MRC COPD severity score (Fletcher, 1960). All participants commenced a video based home exercise programme from day 1 and completed modified Follick's activity diary (Pitta *et al*, 2005) in the week 6 of the outpatient PR programme. Between 12 and 18 months post outpatient PR, 7 of the initial 23 participants participated in 3 focus group sessions.
Results: Spearman Rho analysis showed a significant correlation between compliance and patients' baseline ESWT, DSSI, MHLC, BASDEC, MMSE and MRC scores (Correlation 0.453, 0.539, 0.506, -0.563, 0.609 and -0.737 respectively, $p<0.05$). Focus group participants expressed good compliance and satisfaction with the video based programme.
Conclusion: Compliance with video based home exercise programme is associated with patients' baseline exercise tolerance, psychosocial factors and COPD severity. Twenty months after its use commenced, patients were still using the video. Post outpatient PR, compliance was slowly diminishing over time.
Conflict of interest and funding: This study was funded by the University of Hertfordshire and no conflict of interest existed.
For admin only: Mr Ademola Adekunle, a.adekunle@herts.ac.uk

109: Adrenal suppression in asthmatics treated with ICS: a tool for your practice

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Brief outline of context: Adrenal suppression (AS) presents subtly, is often unrecognized, and is poorly understood. This potentially catastrophic condition needs to be considered in children treated with inhaled corticosteroids (ICS) for asthma.
Brief outline of what change you planned to make: Creation of a one page tool on AS
Assessment of existing situation and analysis of its causes: We hope to bridge a distinct knowledge gap re AS, as assessed from the needs assessment from an accredited CME on this topic
Strategy for change: It will be available on the FPAGC website at www.fpagc.com
Measurement of improvement: Improved knowledge about AS after CME and review of tool at upcoming events in the next year.
Effects of changes: Family Physicians should learn the signs and symptoms of adrenal suppression and the ways to screen, diagnose and prevent it.
Lessons learnt: A useful single page tool on this complicated subject can be created for primary care.
Message for others: Adrenal suppression symptoms (from glucocorticoid deficiency: malaise, nausea, headache, poor growth, poor weight gain or adrenal crisis of hypotension and hypoglycaemia) are not as well known as those of mineralocorticoid defiency associated with primary adrenal insufficiency. Consider screening those on high dose ICS such as > 500 ug fluticasone daily or >800 ug budesonide daily, or those on > 2 weeks of systemic steroids with a serum cortisol test done prior to 8 am. Diagnosis may require confirmation with an ACTH stimulation test. Prevention of AS by using the lowest effective dose, considering cumulative dose of other forms of steroids used by our patients and using ICS with minimal systemic effects should be considered.
Conflict of interest and funding: Unrestricted grant from Nycomed Canada
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110: Improving COPD diagnoses: the NHS North East Essex experience

Dr Farman Ali, Dr Jo Broadbent, Dr James Hickling and Lianne Jongepier

NHS North East Essex

Brief outline of context: An estimated 2 million people in England have undiagnosed COPD. To address this issue locally, North East Essex PCT developed a local strategy

Brief outline of what change you planned to make: 1. identify and implement a cost-effective method for screening at-risk patients to close the gap between estimated (8,832, 2.7% of population) and existing COPD prevalence (5,012, 1.5% of population) among smokers and ex-smokers

2. improve the quality of spirometry and COPD management through training and support

Assessment of existing situation and analysis of its causes::

Strategy for change: A screening questionnaire was identified (Price *et al*). GP practices were commissioned to screen all current and ex smokers aged 50-plus. Appropriate individuals were invited for diagnostic spirometry.

To support its implementation, a Local Enhanced Service was commissioned, supported clinically by our local COPD Specialist Team who offered support & training to GP practice staff on spirometry and management of COPD patients

Measurement of improvement: Number of new COPD Diagnoses

Effects of changes: Over 1000 new patients were diagnosed. QOF register at end of March 2011 was 6,013 patients, compared to the baseline of 5,012 in 2009. This is an increase of 11%, increasing overall COPD diagnosis rate to 68% of expected. Additionally, an increase of 25% referrals to Pulmonary Rehabilitation was observed. 52 staff were trained over 77% of participating surgeries.

Lessons learnt: This project demonstrated the successful implementation of this new COPD-screening tool to improve COPD diagnoses used as part of a LES. Success was achieved by supporting practices clinically, which additionally demonstrated improved patient care.

Message for others: Ensure commissioner-provider collaboration in service design

Conflict of interest and funding: None

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112: The prevalence of undiagnosed COPD in a primary care population with respiratory tract infections: a case finding study

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Center for Family and Community Medicine, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Huddinge, Sweden

Aim: To describe the prevalence and severity of undiagnosed COPD in a group of patients with respiratory infections attending urgent primary care, and to identify those variables in patients' history that could be used to detect the disease.

Method: Patients of 40-75 years (n=138) attending urgent primary care center with acute respiratory infection, positive smoking history and no previously known pulmonary disease underwent pre- and post bronchodilator spirometry four to five weeks after the acute infection. Prevalence and severity of COPD were estimated following the Global Initiative for COPD (GOLD) criteria. Variables such as sex, age, current smoking status, smoking intensity (pack years) and type of infection diagnosis were assessed for possible associations with COPD.

Results: The prevalence of previously undiagnosed COPD in our study group was 27%, of which 45% were in stage 1 ($FEV_1 \geq 80\%$ of predicted), 53% in stage 2 ($50 \leq FEV_1 < 80\%$ of predicted), 3% in stage 3 ($30 \leq \leq FEV_1 < 50\%$ of predicted) and 0% in stage 4 ($FEV_1 < 30\%$ of predicted). We found a significant association between COPD and age ≥ 55 (OR = 10.9 [95% CI 3.8-30.1]) and between COPD and smoking intensity (pack years > 20) (OR = 3.2 [95% CI 1.2-8.5]). Sex, current smoking status and type of infection diagnosis were not shown to be significantly associated with COPD.

Conclusion: A middle-aged or older patient with any type of common respiratory tract infection, positive smoking history and no previously known pulmonary disease has an increased likelihood of having underlying COPD. These patients should be offered spirometry for diagnosis of COPD.

Conflict of interest and funding: The authors report no conflicts of interest. Funding was through Karolinska Institutet and Stockholm County Council.

For admin only: Dr Hanna Sandelowsky, hanna.sandelowsky@sll.se

114: Screening for the "missing millions" with COPD ….it's more than just the lungs

Dr Kevin Gruffydd-Jones

Box Surgery, Box, UK

Aim: 1. To identify patients with COPD, diabetes and high risk of cardiovascular disease (CVD) in smokers over 40 in a UK GP Practice. 2. To examine the utility of the COPD Assessment Tool (CAT) in screening.

Method: Smokers >40 without a diagnosis of COPD/asthma in a single UK General Practice were invited to attend for screening with diagnostic post - bronchodilator spirometry , CAT[1] blood pressure, fasting lipids ,glucose. and the cardiovascular measured by QRISK[2] 1. www.catestonline.org 2. www.qrisk.org

Results: 120 out of 418 patients invited were screened. 3 had known CVD. 31/117 (26%) were found to have high risk of CVD QRISK>20%) 13 (11%) were diagnosed as COPD 60% had CAT score 5-10 (mild impairment) and 40% CAT score 10-19 (Moderate impairment). There was no correlation of CAT score with a diagnosis of COPD or not, but CAT helped identify symptomatic patients. 61% newly diagnosed COPD patients had high risk CVD 2 patients were found to have diabetes.

Conclusion: 1. Screening for COPD should include identification of cardiovascular risk factors. 2. The CAT can help identify symptomatic patients when screening.

Conflict of interest and funding: Self-funded KGJ has previously accepted research funding for CAT

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115: Change in lung function over time in male metropolitan fire-fighters and general population controls

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Aim: To compare changes in lung function over time between male metropolitan firefighters and general population controls, and to investigate associations between fire-fighters' use of respiratory protection devices and accelerated lung function decline.

Method: 3-year longitudinal comparison of FEV_1 (forced expiratory volume in 1 second) and forced vital capacity (FVC) between 281 fire-fighters and 933 population controls from the North West Adelaide Health Study. Repeated measures and logistic regression models were used to compare course of FEV_1 and FVC and risk of accelerated (>0.050 L/yer) FEV_1 decline between the cohorts. Within the fire-fighter cohort, risk of accelerated FEV_1 decline was compared between subgroups based on use of respiratory protection devices.

Results: Population controls showed very similar mean annual declines for FEV_1 and FVC across age categories, whereas fire-fighters aged <45 years showed increasing values over time (p=0.005). Fire-fighters had a lower odds of accelerated FEV_1 decline compared to controls (OR=0.60, 95%CI 0.44; 0.83), but fire-fighters who never or rarely used respiratory protection during fire knockdown had a higher odds of accelerated FEV_1 decline compared to those who used it often or frequently (OR=2.20, 95%CI 1.02; 4.74).

Conclusion: Younger generations of fire-fighters showed an increase in lung function relative to their older colleagues, while population controls consistently showed decline of lung function across all ages. Fire-fighters who reported to never or rarely use their respiratory protection had an increased risk of accelerated FEV_1 decline. This study further highlights the importance of consistent use of respiratory protection devices by fire-fighters and monitoring of their (respiratory) health.

Conflict of interest and funding: Conflict of interest: none. Funding: South

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Australian Metropolitan Fire Service and University of Adelaide
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118: Written asthma action plan: its effects on caregivers' management of children with asthma

Tan NC, Chen ZJ, Soo WF, Ngoh SHA, Tai BC
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Aim: Written asthma action plan (WAAP) is a written guide on self-management, which leads to favourable health outcomes in adult asthma patients. How WAAP impacts on the processes that lead to these outcomes in paediatric asthma is unknown. This study determined the effects of WAAP on caregivers' understanding of asthma symptoms, their use of asthma medications for their asthmatic children and acute physician visit.
Method: A questionnaire survey was carried out on caregivers of children who were managed at local public primary care centres. Chi-square test was used to determine the differences in outcomes between caregivers with (CW) and without WAAP (CNW), followed by logistic regression to adjust for potential covariates.
Results: 169 caregivers (75 CNW and 94 CW) were surveyed. CW were more likely to understand bronchoconstriction (AOR=4.51), felt capable (AOR=2.42), safe (AOR=2.3), with increased confidence (AOR=2.37) to change doses of inhaled medications during asthma exacerbation. CW perceived inhaled asthma medication to be safe (AOR=3.64), understood the use of controller medication (AOR=3.02) and were less likely to stop inhaled medication without first consulting their physician when their children were well (AOR=0.5). No statistical difference was noted between caregivers seeking acute medical consultation and confidence in managing their asthmatic children at home.
Conclusion: WAAP improved caregivers' understanding and utilization of key processes in managing their asthmatic children but did not affect their decision for acute physician visit.
Conflict of interest and funding: I declare that I have no conflict of interest in executing the study and publishing its results.
For admin only: Dr Ngiap Chuan Tan, Tan.Ngiap.Chuan@singhealth.com.sg

125: Psychosocial factors in the morbidity of severe asthma

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Aim: To examine if psychosocial variables; i.e. personality, ways of coping, locus of control, levels of anxiety and depression and levels of social deprivation, could predict levels of lung function and numbers of exacerbations in severe asthma.
Method: Participants all had severe asthma. Data on numbers of exacerbations was collected retrospectively over an 8 year period and levels of lung function assessed (FEV_1% predicted and FEV_1/FVC% predicted). Predictor variables measured using EPQ (personality), HADS (anxiety and depression), MHLOC (locus of control), WCC (ways of coping) and an individual social deprivation score. Correlation and multiple regression analysed the relationship between the predictor variables and the criterion variables of levels of lung function and numbers of exacerbations.
Results: n=102 from a severe asthma clinic in the Midlands. High levels of depression and moderate levels of social deprivation showed significant relationships to high numbers of exacerbations (R2=0.458, Beta value-0.636, p=0.009 and R2=0.581, Beta value=0.280, p=0.009 respectively). No relationship was found between the predictor variables and levels of lung function
Conclusion: There are predictor variables which have a significant influence on the morbidity of severe asthma, which cannot be treated by conventional management techniques. Further work needs to be done to explore these variables and to develop management strategies for them in people with severe asthma
Conflict of interest and funding: none
For admin only: Dr Alison Pooler, a.pooler@nur.keele.ac.uk

126: The impact of a nurse-led clinic on exacerbations of severe asthma

Pooler A
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Aim: To explore the association between a nurse led clinic for severe asthma and the numbers of exacerbations of severe asthma.
Method: Data on numbers of exacerbations was collected for an eight year period from primary and secondary care notes. Four years was data prior to attendance at the clinic and four years following attendance. Mixed methods approach was used with quantitative analysis being in the form of paired sample t-tests to compare the data pre and post the clinic attendance. Qualitative methods included an open ended semi structured questionnaire about support mechanisms for the patients. This data was transcribed and analysed thematically.
Results: n=102. Total number of exacerbations fell significantly following attendance at the clinic (t=6.919, p=0.000, Eta2=0.33). Factors that patients saw important for beneficial support with their condition were supportive family members, consistency in the clinic with staff and advice given, positive relationships formed with the clinic staff and feeling listened to and being part of the decisions made about their condition and future care.
Conclusion: The study findings have implications on service delivery and staff training. Further work is needed to clarify the benefits of such specialist clinics and the support mechanisms for patients with severe asthma.
Conflict of interest and funding: none, the study was part of my PhD
For admin only: Dr Alison Pooler, a.pooler@nur.keele.ac.uk

127: Influence of different spirometry interpretation algorithms (SIA) on decision-making among primary care physicians: a pilot study

D'Urzo AD, Jugovic P, Jhirad R
University of Toronto

Aim: Spirometry is recommended for the diagnosis of asthma and chronic obstructive pulmonary disease (COPD) in international guidelines. Limitations of SIA promoted for adoption in primary care have been described (Can Fam Physician October 2011 57: 1148-1152, 1153-1156). This study examines how different SIA may influence decision making among primary care physicians.
Method: Thirty seven primary care physicians participating in a spirometry interpretation session were invited to interpret nine spirograms presented twice in random sequence using two different SIA (as stand-alone aids) and touch pad technology (remote audience response devices) for anonymous data capture and recording.
Results: We observed important differences in the interpretation of the same spirograms using two different SIA. When the pre-bronchodilator FEV_1/FVC (Forced Expiratory Volume in one second/Forced Vital Capacity) ratio was greater than 0.70 one algorithm lead to a "Normal" interpretation; the second SIA prompted a bronchodilator challenge revealing changes in FEV_1 that were consistent with asthma. The reliance of changes in FEV_1 after bronchodilator challenge to distinguish asthma from COPD in one SIA led to consideration of asthma despite the presence of data that was also consistent with COPD; the latter SIA did not include a logic string leading to a post-bronchodilator FEV_1/FVC so a definitive consideration of COPD could not be made. The absence of a post-bronchodilator FEV_1/FVC decision node in one algorithm did not permit consideration of possible COPD and prompted referral for evaluation of low FVC.
Conclusion: This pilot study suggests that different SIA may influence decision making and lead clinicians to interpret the same spirometry data differently. Further studies are needed to better understand the clinical implications of our findings.
Conflict of interest and funding: None
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128: An outcome evaluation of a local respiratory support service

Dale L, Brocklebank D
Worcester University

Aim: Domiciliary nocturnal non-invasive ventilation (NIV) for the management of chronic hypercapnic respiratory failure remains inconsistent and limited. This study tested the hypothesis that a local domiciliary nocturnal NIV for chronic hypercapnic respiratory failure patients was a worthwhile intervention, by reducing hospital admissions and changing daytime blood gases. The physiological impact on the patients and reduction in hospital admissions were audited before and after initiation of domiciliary nocturnal non-invasive ventilation.

Method: This was a retrospective service evaluation of 20 patients who had commenced domiciliary nocturnal NIV for longer than 4 weeks and continued for up to 3 years. Case note analysis of daytime capillary blood gases (CBGs) pre and post-commencement of domiciliary nocturnal NIV were included. Using the hospital Oasis system, in addition to exploration of hospital case notes, to determine reasons for and numbers of hospital admissions one year pre and post-commencement of domiciliary nocturnal NIV. An Encore Pro database was utilised to download the smartcard taken from the patients NIV machine.

Results: Domiciliary nocturnal NIV with mean inspiratory/expiratory pressures (IPAP/EPAP) of 21±2/9±2 cmH_2O and mean pressure support (PS) of 12±2 cmH_2O led to statistically significant improvements in daytime blood gases and hospitalisation rates. A statistically significant increase in daytime PaO_2 values $p<0.001$ and a decrease in daytime $PaCO_2$ values $p<0.001$ was observed following domiciliary nocturnal NIV. A significant reduction in hospital admissions for cardio respiratory conditions in the year following domiciliary nocturnal NIV $p<0.005$ was detected.

Conclusion: High intensity domiciliary nocturnal NIV (HI-NIV) improves daytime CBGs and reduces hospital admissions for a group of patients with chronic hypoventilation secondary to COPD, OHS ± OSA, OL and kyphoscoliosis. A small general hospital can provide a worthwhile long term domiciliary NIV service for local patients.

Conflict of interest and funding: no funding

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131: Next of kin's experience of living with a patient suffering from COPD: two years after a nurse-led multidisciplinary programme of pulmonary rehabilitation in primary care

Ann-Britt Zakrisson, Kersti Theander, Agneta Anderzén-Carlsson
Family Medicine Research Centre, Örebro University, Sweden

Aim: To describe next of kin's experience of living with a patient suffering from COPD, two years after the latter's participation in a primary care nurse-led multidisciplinary rehabilitation programme.

Method: Descriptive, qualitative design as part of a longitudinal study comprising a nurse-led multidisciplinary programme for patients with COPD where next of kin were invited to one session. Semi-structured interviews were conducted with twenty next of kin and analysed by means of qualitative content analysis.

Results: One theme emerged: Life remains overshadowed by illness; and two sub-themes: Life has its positive sides and Living with a sense of vulnerability. Fluctuations between feelings of togetherness, one significant aspect of the positive side, and heavy burden which was related to the experienced vulnerability were caused by the patient's current condition. Next of kin have a heavy burden of responsibility; life was experienced as still overshadowed by illness, despite the nurse-led multidisciplinary programme.

Conclusion: Next of kin have a heavy burden of responsibility; life was experienced as still overshadowed by illness, despite the nurse-led multidisciplinary programme. However, there were positive outcomes even two years after the programme, including better communication with a closer relationship and planning life together, although next of kin need more support.

Conflict of interest and funding: This research was funded by the Foundation of Maja Johansson and Maria Brantefors scholarship fund in Örebro University for developmental work in health- and medical service and the Research Committé of Örebro County Council.
There is no conflict of interest to declare.

For admin only: Dr Ann-Britt Zakrisson, ann-britt.zakrisson@orebroll.se

133: NVA237 once daily offers rapid and clinically meaningful bronchodilation in COPD patients that is maintained for 24-hours: the GLOW1 trial

D'Urzo A, Ferguson G, Martin C, Alagappan VKT, Banerji D, Lu Y, Horton R, Overend T
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Aim: NVA237 (glycopyrronium bromide) is an inhaled long-acting muscarinic antagonist (LAMA) in development for the once-daily (q.d.) treatment of COPD. The GLOW1 study evaluated the efficacy and safety of NVA237 in patients with moderate-to-severe COPD.

Method: Patients were randomised (2:1) to 26 weeks double-blind treatment with NVA237 50µg q.d. or placebo (PBO). Study drugs were administered via a single-dose dry powder inhaler (Breezhaler®). Primary efficacy endpoint: trough FEV_1 (mean of 23h 15min and 23h 45min post-dose values) vs PBO after 12 weeks.

Results: 822 patients were randomised; mean age was 63.9 years, mean post-bronchodilator FEV_1 was 55% predicted. 80.5% completed the study. At Week 12 there was a statistically significant and clinically relevant difference between NVA237 vs PBO in mean trough FEV_1 (108mL; $p<0.001$). Trough FEV_1 was also significantly higher at Day 1 and Week 26 (treatment difference: 105mL and 113mL, respectively; $p<0.001$). Serial spirometry demonstrated statistically superior ($p<0.001$) and clinically meaningful improvements in FEV_1 with NVA237 vs PBO at all timepoints on Day 1, Week 12 and Week 26. NVA237 had a rapid onset of action with an increased FEV_1 of 93mL at 5 min and 144mL at 15 min vs PBO after the first dose on Day 1 ($p<0.001$). Overall, the incidence of adverse events (AEs) was similar between treatment groups (NVA237: 57.5%; PBO: 65.2%).

Conclusion: NVA237 50µg once daily was generally safe and well tolerated. Improvements in bronchodilation were rapid, clinically meaningful and maintained for 24 hours throughout the study.

Conflict of interest and funding: The study was sponsored by Novartis Pharma AG, Basel, Switzerland. AD has received research, consulting and lecturing fees from GlaxoSmithkline, Sepracor, Schering Plough, Altana, Methapharma, AstraZeneca, ONO pharma, Merck Canada, Forest Laboratories, Novartis Canada/USA, Boehringer Ingelheim (Canada) Ltd, Pfizer Canada, SkyePharma, and KOS Pharmaceuticals. GF has performed research funded by Novartis and received honoraria for participation in advisory panels pertaining to various COPD medications for Novartis Pharma AG. TO, CM, VKTA and RH are employees of Novartis.

For admin only: Dr Anthony D'Urzo, tonydurzo@sympatico.ca

134: Once-daily NVA237 improves symptoms, and reduces COPD exacerbations and associated hospitalisations: the GLOW1 trial

D'Urzo A, van Noord JA, Martin C, Horton R, Banerji D, Lu Y, Alagappan VKT, Overend T
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Aim: Symptoms profoundly impact daily life of COPD patients. We assessed the influence of the once-daily (q.d.) long-acting muscarinic antagonist (LAMA) NVA237 (glycopyrronium bromide) on symptoms and exacerbations in patients with moderate-to-severe COPD.

Method: Patients were randomised (2:1) to 26 weeks double-blind treatment with NVA237 50µg q.d. or placebo (PBO) via a single-dose dry-powder inhaler (Breezhaler®). Efficacy was assessed by breathlessness on the transition dyspnoea index (TDI), HRQoL via the St. George's Respiratory Questionnaire

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(SGRQ), and rescue medication use. The effect on COPD exacerbations and related hospitalisations was also assessed.

Results: 822 patients were randomised; 80.5% completed. NVA237 significantly increased total TDI focal score vs PBO at Week 26 (difference 1.04, 95% confidence interval [CI]:0.583–1.504; p<0.0001); exceeding the minimum clinically important difference ([MCID] ≥1 point). Significantly more patients achieved MCID in TDI score with NVA237 (61.3% vs 48.3%; odds ratio [OR] 1.74, 95% CI:1.249–2.415; p=0.001). NVA237 significantly reduced SGRQ total score (–2.81; p=0.004); significantly higher % of patients achieved clinically meaningful improvement in SGRQ (≥4point reduction) (56.8% vs 46.3%; p=0.006). NVA237 significantly reduced rescue medication use at Week 26 (–0.46 puffs/day, p=0.005). NVA237 significantly prolonged time to first moderate/severe COPD exacerbation by 31% (hazard ratio [HR] 0.69, 95% CI:0.50–0.949; p=0.023) and time to first severe COPD exacerbation necessitating hospitalisation (HR 0.35, 95% CI:0.141–0.857; p=0.022). NVA237 significantly reduced hospitalisations due to COPD exacerbation (OR 0.34; p=0.024).

Conclusion: Once-daily NVA237 provided significant improvements in dyspnoea and SGRQ total score, with lower rescue medication use, and reduced the risk of exacerbations and associated hospitalisations versus PBO.

Conflict of interest and funding: The study was sponsored by Novartis Pharma AG, Basel, Switzerland. The study was sponsored by Novartis Pharma AG, Basel, Switzerland. AD has received research, consulting and lecturing fees from GlaxoSmithkline, Sepracor, Schering Plough, Altana, Methapharma, AstraZeneca, ONO pharma, Merck Canada, Forest Laboratories, Novartis Canada/USA, Boehringer Ingelheim (Canada) Ltd, Pfizer Canada, SkyePharma, and KOS Pharmaceuticals. JvN has received research support from Boehringer Ingelheim, Chiesi, Novartis and GlaxoSmithKline. CM, RH, DB, YL, VKTA and TO are employees of Novartis.

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136: Predicting COPD by symptoms and risk factors: creation and validation of the [SRF-COPD] scale

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[1] Lebanese University - Faculties of Pharmacy & of Public Health; [2] Hôtel Dieu de France Hospital & Saint Joseph University, Beirut, Lebanon Faculty of Medicine; [3] Saint George Hospital & University of Balamand, Beirut, Lebanon Faculty of Medicine

Aim: Our aim is to create and validate a tool for COPD diagnosis without spirometry, in both epidemiological and clinical settings

Method: Data from two studies were taken, one epidemiological for development and the other clinical for validation. A reduction of chronic respiratory symptoms was done, leading to the creation of a COPD symptoms index. A logistic regression served to select the risk factors that were associated to COPD, in addition to symptoms. Its rounded coefficients were used to generate the SRF-COPD scale. The latter was then dichotomized by ROC curves and validated in both settings. Further distribution was generated to differentiate between COPD and respiratory diseases other than COPD in symptomatic individuals.

Results: We were able to create and validate a tool for COPD screening with excellent properties, comprising twelve items from sociodemographic characteristics, previous and actual toxics exposure and smoking history, in addition to chronic respiratory symptoms. In the clinical setting (COPD versus healthy individuals), the Area Under Curve was 0.945 at threshold 10, while the sensitivity was 84.9% and specificity was 90.2%; the Positive Predictive Value (PPV) was 82% and the Negative Predictive Value (NPV) was 92.8%. In the sample of symptomatic individuals (COPD individuals versus others with respiratory symptoms but no COPD), the PPV=78% and NPV=71.4%. The score was also inversely and linearly correlated to FEV_1/FVC.

Conclusion: We were able to create and validate a tool for COPD screening with excellent properties in both epidemiological and clinical settings, mainly on symptomatic individuals. Prospective studies would be necessary to further validate this scale.

Conflict of interest and funding: None

For admin only: Professor Mirna Waked, mirnawaked@hotmail.com

138: Asthma and anxiety and depression: walking together?

Lamarca L, Flor X, Fraga MM, Poblet R, Méndez J, Feijoo MV, Álvarez S

Unitat Docent Medicina Familiar i Comunitaria. EAP Chafarinas

Aim: To determine the proportion of mental disorders (anxiety and/or depression) in our asthmatic patients compared to the non-asthmatic population, and to assess the relationship between the severity and control level of asthma and the presence of psychiatric comorbidity.

Method: A transversal descriptive study was developed with 317 asthmatic and 306 non asthmatic patients, from 17 to 70 years old in an urban primary care centre. The Goldberg test for screening of anxiety and depression was performed. Other analyzed items were: age, gender, previous anxiety and /or depression, chronic diseases, severity of asthma and level of control.

Results: 70.3% of the asthmatic patients were women versus 51.3% on the non-asthmatic group, the average age was 42 (SD 16.89) and 47 (SD 14.09) years old respectively. 57.1% had intermittent asthma, 16.7% mild persistent and 26.2% moderate persistent. 62.7% presented controlled asthma, 23.4% partially controlled and 13.9% uncontrolled asthma. The Goldberg test score of the asthmatic group showed anxiety in 51.1% compared to 34.6% on the non-asthmatic group (p<0.0001) and depression in 57.4% compared to 38.9% on the other group (p<0.0001). Better asthma control was associated with lower anxiety (p=0.002) and depression (p=0.004). The association between the severity of asthma and the presence of mental disorders was not proven.

Conclusion: The asthmatic group showed greater proportion of anxiety and depression compared to the non-asthmatic group. Better asthma control was associated with lower anxiety and depression. No other associations were significant.

Conflict of interest and funding: No conflict of interest.

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140: Adolescent hay fever and the impact of healthcare professional training: cluster randomised controlled trial in primary care

Hammersley VS, Elton R, Walker S, Sheikh A

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Aim: We sought to establish the effectiveness of standardised allergy training for primary healthcare professionals in increasing disease-specific quality of life of adolescents with hayfever.

Method: This cluster randomised controlled trial took place during the summers of 2009-10 in UK general practices. General practice staff were centrally randomised to an intensive one-day training workshop on the evidence-based management of hay fever or distribution of guidelines (control). The primary outcome measure was the change in the validated Rhinoconjunctivitis Quality of Life Questionnaire with Standardised Activities (RQLQ(S)) score between baseline and 6-8 weeks post-intervention (minimal clinically important difference=0.5). Secondary outcomes of interest were whether attending the workshop enhanced competence and confidence of practitioners, changed clinical practice and/or prescribing and reduced adolescents' rhinitis symptoms. We undertook a complete case analysis using multi-level modelling.

Results: Thirty-eight general practices were randomised (20 in the intervention arm) and 246 patients (50.2% male, mean age 15 years) were included in the primary outcome analysis. Healthcare professionals' self-assessed competence and confidence significantly improved, but this did not translate into clinically or statistically significant improvements in RQLQ(S): -0.15, 95%CI -0.52 to +0.21. There were no differences in consultation frequency, treatments issued for hay fever or symptom scores.

Conclusion: Although associated with professionals' increased self-assessed competence and confidence, this intensive hay fever training workshop did not translate into improvements in disease-specific quality of life or reduction in rhinitis symptoms. Health professional educational interventions need to be evaluated using robust designs.

Conflict of interest and funding: Funding: Chief Scientist's Office of the Scottish Government. There were no conflicts of interest.

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141: Early detection of COPD in primary care: the Copenhagen COPD Screening Project

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Department of Integrated Healthcare, Bispebjerg University Hospital, Copenhagen, Denmark

Aim: To evaluate the effectiveness of a two-stage-screening programme in primary care.

Method: Subjects aged 65 years or older registered with a general practitioner (GP) in eastern Copenhagen received a simple questionnaire concerning smoking status and symptoms of COPD and an invitation to undergo spirometry at their GP or at a local health care centre if they were smokers, former smokers or if any of the following signs were present: morning cough with sputum and/or dyspnoea.

Results: A total of 7103 subjects participated in the study. Of these 5767 subjects returned the questionnaire (81.2%), with 58.5% of the responders being at risk of COPD. Of the 45 general practices in the study area, 10 did not perform spirometry. Subjects listed with one of these practices were told to contact a local health care centre for spirometry. The participation rate among subjects at risk of COPD was 60% at the local health care centre and only 35% in general practice. In total 1352 subjects underwent spirometry. Of these 44% were diagnosed with COPD according to the GOLD classification. The disease was classified as mild in 252 (42.3%), moderate in 258 (43.3%) and severe to very severe in 86 subjects (14.4%).

Conclusion: The study shows that a short, mailed questionnaire based on patient-reported information can serve as a first-level screening tool for the identification of subjects at risk of COPD. Regarding the organisation of spirometry, the setting seems important for the participation rate.

Conflict of interest and funding: No conflicts of interest. The study is supported by grants from the Ministry of Health and Prevention, the Commitée for Quality and CME for General Practitioners, Department of Primary Health Care Administration, Capital Region of Denmark

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144: Very low rate and light smokers: smoking patterns and cessation-related behaviour in England, 2006-2011

Kotz D, Fidler J, West R

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Aim: To examine changes in prevalence over the past 5 years, cessation patterns, and smoking and demographic characteristics of very low rate (<1cpd), light (1-9cpd) and moderate-to-heavy (10+cpd) smokers in England.

Method: We used data from a representative sample of 23,245 English smokers interviewed between November 2006 and May 2011 of whom 4,147 (18%) provided data at 6-month follow-up.

Results: Very low rate smoking remained extremely rare (1.9% of smokers in 2006 to 2.8% in 2011) but light smoking became increasingly common (23.9% to 32.8%). Compared with moderate-to-heavy smokers, very low rate and light smokers were younger, more often female, and from a higher socioeconomic background. They were more motivated to quit and enjoyed smoking less. During the 6-month follow-up period, light smokers, but not very low rate smokers, were more likely to attempt to quit than moderate-to-heavy smokers. When they tried to quit, very low rate and light smokers used aids to cessation less than moderate-to-heavy smokers but still used them to a substantial degree: 18%, 31% and 44% used nicotine replacement therapy over the counter in their most recent quit attempt for the three types of smoker respectively. Even very low rate smokers had a substantial failure rate: 65% failed in their most recent quit attempt within 6 months.

Conclusion: Very low rate (<1cpd) and light (1-9cpd) smokers in England are at least as motivated to quit as heavier smokers. Although they use cessation medication less than heavier smokers and are more likely to succeed, they still use such medication and fail in quit attempts to a substantial degree.

Conflict of interest and funding: Robert West undertakes research and consultancy for, and has received travel expenses and hospitality from, companies that develop and market smoking cessation medications. He has a share on a patent for a novel nicotine delivery device. Daniel Kotz and Jennifer Fidler do not have a conflict of interest.

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146: Prognosis in relation to diagnostic criteria for airflow obstruction in middle-aged smokers

Akkermans RP, Biermans MC, Robberts B, Ter Riet G, Jacobs JE, van Weel C, Wensing MJP, Schermer TR

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Aim: To establish which cut-off point for the FEV_1/FVC (i.e., the fixed 0.70 or a gender and age-specific cut-off point) best predicts accelerated lung function decline and exacerbations in middle-aged smokers.

Method: We performed secondary analyses on the Lung Health Study dataset. 4,045 smokers aged 35 to 60 years with mild to moderate obstructive pulmonary disease were subdivided into categories based on presence or absence of obstruction according to the fixed and/or gender and age-specific (i.e., lower limit of normal, or LLN) FEV_1/FVC cut-off points. Post-bronchodilator FEV_1 decline served as primary outcome to compare subjects between the respective categories, exacerbation risk as secondary outcome.

Results: 583 subjects (14.4%) were non-obstructed and 3,230 subjects (79.8%) were obstructed according to both FEV_1/FVC cut-off points. 173 (4.3%) subjects were obstructive according to the fixed but not according to the LLN cut-off point('discordant' subjects). Mean post-bronchodilator FEV_1 decline was 41.8 (SE 2.0) ml/year in non-obstructive subjects, 43.8 (3.8) ml/year in discordant subjects, and 53.5 (0.9) ml/year in obstructive subjects ($p<0.001$). The obstructed category showed the highest proportion of subjects with one or more exacerbations (26.8%) compared to the other two categories (15.0% and 17.7%).

Conclusion: Our study showed that subjects in the discordant category showed a less accelerated FEV_1 decline than those in the obstructed category. Gender and age should be taken into account when assessing airflow obstruction in middle-aged smokers.

Conflict of interest and funding: R. Akkermans, M. Biermans, B. Robberts, G. ter Riet, J. Jacobs and M. Wensing have no declared competing interests. T. Schermer has received reimbursement for attending symposia and funding for research from GlaxoSmithKline. C. van Weel's department has received unrestricted research funding from various pharmacy industries for research in asthma and COPD.

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149: Educational interventions to improve antibiotic use in primary care: a systematic review

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Centre for Cell Biology (CBC/UA), UDI/IPG, UBI - Portugal

Aim: To carry out a critical review about the effectiveness of educational interventions on changing habits of antibiotic prescription by physician and/or habits of antibiotic dispensing by pharmacists, in primary care.

Method: Review all studies published, from January 2001 to December 2010, about educational interventions in physicians and/or pharmacists to improve antibiotic use in primary care, by searching the scientific MEDLINE database, using PubMed. Data extraction included study design, type of interventions, population targeted and outcomes measured.

Results: Forty-two studies were included in this review. Educational interventions, to improve antibiotic use in primary care, occurred mainly in physicians. In seven studies, interventions were made in pharmacists and in 15 studies the interventions were extended to patients and their caregivers. In 31 articles, the authors studied the use of antibiotics in respiratory infections, and the remaining (26%) did not identify the pathology. Mostly studies include active interventions (associated or not with passive interventions) on health professionals. In 3 studies interventions include improvement of communication skills with patients. In 25 studies, authors reported positive results for all measured outcomes, in 11 studies (28%) some outcomes have

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positive results and others were not statistically influenced by intervention. When educational interventions include improvement of diagnostic procedures, it leads to very positive results.

Conclusion: Respiratory diseases were pathology targeted in most studies, and educational interventions revealed to be effective to improve antibiotic use in these patients. We concluded that it is important to perform educational interventions in heath professional, to improve antibiotic use, and, interventions should be active, multiple and tailored taking into account the attitudes and knowledge of professionals.

Conflict of interest and funding: Supported by Fundação para a Ciência e Tecnologia (FCT). Funding references: PTDC/SAU-ESA/105530/2008.

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151: Community acquired pneumonia and vaccination against pneumococcal infection: preliminary results

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Clinic of Social and Family Medicine, University of Crete

Aim: Community acquired pneumonia is a key issue in the medical literature and the role of general practice has been assessed as significant in the context of its treatment and prevention. In this study it has been examined the immunization coverage with the anti-pneumococcal vaccination for patients aged 50 years and above who were diagnosed with community-acquired pneumonia.

Method: Patients aged 50 years and above and who were residents of areas within the responsibility of all health centres of the province of Heraklion with signs and/or symptoms of lower respiratory tract infection and with a chest x-ray confirmed pneumonia, were recorded on an electronic database. An adapted questionnaire with information related to demographic data, underlying diseases, immunization status and the clinical symptoms were completed.

Results: Overall, in the period from March to November 2011, there were 55 recorded cases of community acquired pneumonia of which 26 were men and 29 were women. The mean age of women was 74.5 [51-89] and 75.5 for men [53-95]. Of these, 25 were hospitalized with an average duration of hospitalization of 7 days [2-16]. Only 4(16.7%) hospitalized patients were vaccinated with the anti-pneumococcal vaccination. Patients who were not hospitalized had a relatively higher percentage of vaccination coverage against the pneumococcal infection (31%).

Conclusion: The coverage of the population with the anti-pneumococcal vaccination still remains low in the vulnerable population and secondly the severity of community acquired pneumonia remains higher in those who are non-vaccinated.

Conflict of interest and funding: This project received a grant by the Pfizer pharmaceutical company

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152: Effect of obesity on health-related quality of life of children with asthma

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Aim: This study aimed to determine the health-related quality of life (HRQOL) of pediatric asthmatic patients with and without obesity.

Method: Asthmatic patients aged 6-10 years (boy 64% and girls 36%) were recruited from the pediatric outpatient department of Thammasat hospital, Pathum Thani Thailand. The HRQOL was evaluated using the Pediatric Health-related Quality of Life Inventory 4.0 Generic Core Scales (PedsQL) in four aspects: physical, emotional, social and school functioning. Each domain has a maximum score of 100. Body mass index (BMI) was calculated based on body weight in kilograms and height in meters. Obesity was defined as children who had more than 95 percentile of BMI according to age and gender.

Results: Of the total of 78 asthmatic patients (15% were obese), the mean total score of the HRQOL was 74.1 (SD=16.3). The mean total scores of the asthmatics with obesity were higher than those without obesity of 4.8 (95% confidence interval: -2.4, 8.9). Comparing to the asthmatics without obesity, those with obesity had lower mean scores in physical, emotional, social functioning, and school functioning of 3.0 (SE=6.3), 10.8 (SE=6.5), 5.6 (SE=6.8) and 3.3 (SE=6.2) respectively.

Conclusion: Obesity seems to have a negative effect on the HRQOL among pediatric asthmatic patients. A more powerful study with larger sample size of the study is needed to confirm this phenomenon.

Conflict of interest and funding: This study was funded by the faculty of medicine, Thammasat University.

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153: A comparison of multi-component indices of COPD severity in primary care: an UNLOCK study from the IPCRG

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Aim: To evaluate the performance of the BODE, DOSE and ADO indices in primary care datasets as predictors of current and future COPD severity and impact.

Method: Data routinely collected from primary care from the OPC COPD service provided prospective data from 131 practices. There was 12 month follow up data on 4414. Data from a pulmonary rehabilitation project in Holland provided 154 records over a 2 year period. The Devon COPD audit project had 370 records of primary care patients with confirmed COPD in a cross-sectional dataset.

Results: Correlations with current health status in the Devon and Holland datasets showed that the DOSE index was more closely correlated to CCQ and SGRQ total scores than ADO. In the domain scores there only 1 recorded item where was ADO more closely correlated than DOSE, the CCQ domain of function. DOSE but not ADO was significantly correlated to six minute walking test, BMI, BODE and pack years. In the OPC dataset, DOSE was a better predictor of exacerbations and admissions in the next 12 months. Using logistic regression the odds (95% CI) were for exacerbations: DOSE 1.60 (1.53-1.68) for ADO 1.14 (1.10-1.19); for hospital admissions: DOSE 1.45 (1.27-1.65) and ADO 1.22 (1.07-1.39).

Conclusion: In real life primary care data and in pulmonary rehabilitation patients, DOSE is more closely correlated than ADO with health status and exercise testing and is a better predictor of future exacerbations and admissions.

Conflict of interest and funding: The UNLOCK group is supported by IPCRG.

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154: Occupational asthma in primary health care

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Institut català de salut, Spain

Aim: To determine the prevalence of occupational asthma and non-occupational asthma aggravated by work conditions in patients attending primary health care centres. To determine the proportion of patients diagnosed with occupational asthma treated by work insurance.

Method: Descriptive, cross-sectional and multi-centre study. Asthmatic patients aged between 16 to 64 years who work or have worked. Appointment with patients to sign the informed consent and fill a questionnaire. Review of questionnaires and classification as common asthma (CA), occupational asthma (OA) or common asthma aggravated by work (WA).

Results: 482 asthmatic patients were recruited, 23.6% did not attend; final sample of 368 patients. The prevalence of OA was 18.2% and WA was 14.7%. Therefore, the prevalence of asthma-related work (ARW) is 32.9%. Of the patients with OA only 16.4% (11 out of 67) had been treated for asthma by their work insurance and, of those, only 5 patients had been fully monitored by it, while the rest have been attended by the public health system. Thus only 7.5% of patients with OA are followed up through their work insurance.

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Conclusion: There is a considerable prevalence of asthmatic patients whose illness is caused or aggravated by the labour activity (32.9%). Work insurance schemes, which should attend to all these patients, only have a minimal role. If they had to assume all the real costs related to the diseases caused by work, fewer public resources would be spent. It is likely that they would undertake much stronger programs in security and health in work environment and labour activity.

Conflict of interest and funding: There is no conflict of interest in this study. The project was funded by the first price from the "Institut d'Investigació en Atenció Primària" (IDIAP), summing 12.000€

For admin only: Dr Enric Hernandez-Huet, 16902ehh@comb.cat

158: Study on knowledge of asthma and assessment of air way condition by peak flow meter in rural community in Bangladesh

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Aim: To determine the knowledge of asthma and assessment of airway condition by peak flow meter.

Method: A cross sectional study was conducted in the rural areas under s 04 Unions of Palashbari Up-Zilla of Guibandha District. Total respondents were 940, male & female of 18 years and above were selected purposively. Data were collected by pre tested questionnaire and carried out from 7th march to 7th April, 2011.

Results: Partial knowledge about asthma was 64%, while 36% had no knowledge at all. 34.5% said heredity has an impact in occurrence of asthma and 26% said germs are the possible cause, 40% said asthma is a infectious disease, 68.5% gave opinion it is controllable & 31.5% stated that it is curable. 68% had no idea about inhaler medication. Regarding triggering factors 31% blamed damp weather & common cold and 23% said dust, smoker was 43%. PEF (Peak Expiratory Flow) revealed that 69% had above 80% of predicted value.

Conclusion: Rural people of Bangladesh lack knowledge about asthma. We hope that these findings would be helpful for planning measures for community awareness and also training and involvement of health care personnel.

Conflict of interest and funding: No conflicts of interest to report. Supported by Department of Community Medicine, Rangpur Medical College of Bangladesh.

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159: The UK Primary Care Respiratory Quality Award

Small IR, Gruffydd-Jones K, Bryant T, Fletcher M

Primary Care Respiratory Society UK

Brief outline of context: UK Primary Care delivers a minimum standard of quality through its national outcomes framework.

Brief outline of what change you planned to make: Develop and implement a quality primary respiratory care award

Assessment of existing situation and analysis of its causes: A multi-agency Quality Award Development Group formulated the standards, set down the framework for submission and assessment and tested the award in practice

Strategy for change: Award content is as follows Module 1; Clinical • 1.1 The Practice demonstrates a Health Promotion policy to prevent respiratory disease. • 1.2 The practice has a system for early and accurate diagnosis of respiratory disease. • 1.3 COPD and asthma patients are offered regular structured review. • 1.4 Practices have an effective system for the recognition, assessment and immediate management of patients with acute respiratory problems. Module 2; Organisational • 2.1 Practices have access to, and can use effectively, equipment necessary to assess, diagnose, review and treat patients with respiratory conditions. Module 3; Practice Team • 3.1 The Practice works in an effective, comprehensive multi-disciplinary way to meet the needs of respiratory patients, supporting staff to fulfill their role, working across organisational boundaries to benefit patients and staff • 3.2 People with respiratory disease should have access to an effective, coordinated service provided by appropriately skilled health care professionals.

Measurement of improvement: The award has now been tested successfully.

Effects of changes: Achieving award status has significantly benefitted practices and patients.

Lessons learnt: The three components of the system (development, submission and assessment) are robust, achievable and reproducible.

Message for others: Practices achieving this standard provide a quality service, that is likely to provide care consistent with national and international objectives.

Conflict of interest and funding: The award was developed in association with PCRS UK, Education for Health, Respiratory Education UK, Asthma UK, British Lung Foundation, British Thoracic Society, Royal College of General Practitioners, Association of Respiratory Nurse Specialists The Award is supported by project grants from Allen & Hanburys, the specialist respiratory division of GlaxoSmithKline UK Ltd, AstraZeneca UK Ltd, Boehringer Ingelheim Ltd / Pfizer Ltd, Chiesi Ltd, MSD UK Ltd, Napp Pharmaceuticals and Teva UK Limited

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163: Study on antibiotic prescription in children in primary care in the Balearic Islands (Spain), 2005-2011: can the management of respiratory infections be improved?

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Aim: Respiratory infections are the most frequent type of infection in pediatric patients. In primary care a great number of them are treated with antibiotics. Unjustified use of antibiotics represents a serious health problem due to the induction of antimicrobial resistance. The study of antibiotic prescriptions in this age group can help professionals to improve their pharmacological management

Method: Quantitative study of five most prescribed antibiotics in pediatric patients in the Balearic Island from 2005-2011. Data on yearly DDD prescribed for amoxicillin, amoxicillin/clavulanic acid, clarithromycin, azithromycin and cefuroxime were obtained from the Ibsalut (Public Health Service) pharmacological prescription database: GAIA-IB. Pediatric population changes have been considered. The data source was the INE (Instituto Nacional de Estadística).

Results: An important increase on DDD of amoxicillin, amoxicillin/clavulanic acid is confirmed. The maximum increase was in amoxicillin/clavulanic acid between 2007 and 2008. During this time a higher dosage of amoxicillin was recommended for empirical treatment of community adquired lower respiratory tract infections and OMA to overcome possible Streptococcus pneumoniae resistance, pneumococci being the most common cause of pneumonia. In the following 3 years, amoxicillin DDD increased even further but amoxicillin/clavulanic acid DDD decreased. DDD of clarithromycin, azithromycin and cefuroxime show a steady decrease from 2005 to 2011.

Conclusion: This study of prescriptions of antibiotics used for pediatric population from 2005 to 2011 can help prescribers to adhere to evidence-based guidelines and improve the quality of prescription.

Conflict of interest and funding: None

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165: Rhinosinusitis in primary care: improving management of rhinosinusitis and understanding research needs

Thomas M, Kaplan A, Price D

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Brief outline of context: Acute and chronic rhinosinusitis (with and without polyps) are common respiratory tract conditions that are frequently encountered by primary care clinicians. Rhinosinusitis is a common co-

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morbidity of other respiratory conditions such as asthma and allergic rhinitis. Despite the publication and dissemination of national (e.g. Canadian) and international (e.g. EP3OS) guidelines with explicit advice for primary care clinicians, understanding and confidence in management are often lacking in community practice. Significant evidence gaps remain for best practice in the community.

Brief outline of what change you planned to make: 1. Better dissemination of current guidelines relevant to primary care 2. Describe the evidence gaps and the research needs for primary care.

Assessment of existing situation and analysis of its causes: The IPCRG research committee has agreed that the current research needs in primary care document does not address rhinosinusitis, and has formed a working party to assess the primary care research needs.

Strategy for change: IPCRG research committee 'Rhinosinusitis' sub-committee in conjunction with the EP3OS guideline group and other experts will assess research needs and present preliminary suggestions at this meeting Measurement of improvement: 1. Statement of research needs 2. Improved research 3. Improved care.

Effects of changes: Focussed research, more appropriate management.

Lessons learnt: IPCRG research needs document needs constant updating and expansion.

Message for others: Improved research in rhinosinusitis is needed for best evidence-based practice.

Conflict of interest and funding: None.

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167: COPD in a Spanish area

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Aim: The objective of this study was to know the prevalence and characteristics of COPD in the population of Aragón (Spain). Based on a population of 1,300,000 persons, a sample of 1185 individuals between 40 and 75 years was chosen.

Method: This was a cross-sectional population-based epidemiological study. The selection of the subjects was done randomly and proportionally in accordance with the health card records from the Heath Service. A spirometry with bronchodilator test was performed in all subjects and they answered several questionnaires: IPCRG diagnosis of asthma, IPAG for diagnosis of COPD, respiratory symptoms CECA, demographic variables and clinical history. Quality of life was measured in the COPD patients with the St. George Respiratory Questionnaire. The diagnosis of COPD was considered in accordance with the GOLD criteria (postbronchodilator FEV_1/FVC ratio of <0.7).

Results: The prevalence was 10.4% (95% CI 9.8% to 11.0%), males 16.9% and 5.7% in women and progressively higher with increased age. 14.5% were smokers, the 14.6% former smokers and 4.6% non-smoking. The 39% were mild, 49.6% moderate, 9.8% were severe and 0,6% were very severe COPD. The distribution was similar between men and women. Only 21.1% of COPD subjects had a previous diagnosis, 23% of these were mild, 65.4% moderate, 7.7% severe, and 3.8% very severe. Logistic regression analysis of factors associated with previous diagnosis of COPD, demonstrated that being older than 70 years and having a smoking history of >30 packs/year, was associated with more severe COPD and an impairment in quality of life.

Conclusion: The high prevalence of COPD and the large proportion of underdiagnosis, leads us to believe that early detection of COPD is still an unsolved problem. New strategies for this should be developed.

Conflict of interest and funding: This study has been funded by a grant from Boehringer Ingelheim

For admin only: Dr Maria Jose Bruscas, jomimajo@ono.com

169: Lung age: an update

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Aim: To determine if the Morris lung age equations from data gathered in the 1960s are relevant for current-day populations.

Method: Study 1: Paired t-tests compared newly-developed Australian Lung Age (LA) equations (Newbury) with Morris LA equations using an independent workplace dataset (males only) Study 2: The 2 equations from Study 1(Newbury, Morris) and a further 4 developed from published predictive equations for FEV_1 from the USA, England, Europe and Australia were compared by regression analysis using a large independent dataset of randomly-selected community dwelling adults. (North West Adelaide Health Study (NWAHS)). Study 3: Further comparisons of 3 lung age equations from Study 2 (Morris, NHANES III and Newbury) with FEV_1/FVC lung age equations ('Harbor lung age equations'), used the same independent dataset.

Results: Study 1: Differences between mean Morris LA and mean Newbury LA were approximately 20 years, with Morris under predicting LA in both healthy never smokers and current smokers compared with actual age. Study 2: Regression analysis confirmed significant differences between the 2 oldest and the 4 newest equations. Study 3: Preliminary analysis shows the FEV_1/FVC LA equation results in greater variance in all subgroups (smokers/healthy never smokers) than the equations based on FEV_1 alone.

Conclusion: LA estimates differ with each equation used, apparently due to date of raw data collection, reflecting both cohort and period effects. International guidelines recommend updating predictive equations every 10 years. Our results support the use of recently-developed equations that are relevant to the population being studied. We hypothesise that more recently developed LA equations might have greater clinical utility for smoking cessation quit attempts.

Conflict of interest and funding: No conflict of interest. Australian government PhD scholarship and travel grant.

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170: Design and baseline characteristics of ICE COLD ERIC

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Aim: ICE COLD ERIC (International Collaborative Effort on Chronic Obstructive Pulmonary Disease, Exacerbation Risk Index Cohorts) is a prospective cohort study designed to develop and validate practical COPD disease risk indices that predict the clinical course of COPD patients in primary care.

Method: 2 cohorts with primary care COPD patients from Switzerland and the Netherlands are linked. The study started in 2008 and the follow-up time will be 5 years. Primary outcome is health-related quality of life. Secondary outcomes are exacerbation frequency and mortality. Using multivariable regression analysis, we will identify the best combination of variables predicting these outcomes. Lung function, patient history, self-administered questionnaires, exercise capacity and a venous blood sample were performed several times.

Results: 260 Dutch and 151 Swiss patients were included. Median age 66 years, 57% male, 38% current and 55% former smokers. 76% had at least one and 40% had $\geq$2 comorbidities with cardiovascular disease being the most prevalent one. Although lung function results (median FEV_1 was 59% of predicted) were similar, Swiss patients reported better COPD-specific health-related quality of life (Chronic Respiratory Questionnaire) and had higher exercise capacity (sit-to-stand-test and hand grip test).

Conclusion: The ICE COLD ERIC cohorts represent a wide range of disease severities and the prevalence of multimorbidity is high. After completion of this study, we will have a practical COPD-disease risk index that predicts the clinical course of COPD in primary care patients with GOLD stages 2-4. In a second step we will incorporate evidence-based treatment effects into this model, such that the instrument may guide physicians in selecting treatment based on the individual patients' prognosis.

Conflict of interest and funding: Conflict of interest: None declared. Funding: Dutch Asthma Foundation, Swiss National Science Foundation and Zurich Lung League.

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175: Finding the "Missing Millions": a pragmatic approach

Small IR, Allan S, Bruce A
Peterhead Health Centre

Brief outline of context: Patients with COPD are often diagnosed late in their disease. Population screening is costly. There is a need to easily identify high risk groups to improve diagnostic efficiency.
Brief outline of what change you planned to make: Identify smokers and ex-smokers at risk of COPD, by winter use of antibiotics and steroids
Assessment of existing situation and analysis of its causes: The practice COPD prevalence is 1.6%, lower than its demographics and socio-economics suggest. Other than on a case by case basis, there is no existing mechanism for early identification of patients
Strategy for change: We performed a practice search using the VISION system, identifying all smokers and ex-smokers over 45yrs (3029). We identified those who had received steroid (79) and concomitant antibiotic (52) treatment over the winter of 2010-11. After excluding those with existing asthma/COPD, the remainder (39) were filtered by their GP for extenuating factors. 36 patients were then invited for spirometry.
Measurement of improvement: 8 (22%) new COPD patients were identified (7 with mild or moderate obstruction), 9 (25%) normal spirometry, 14(39%) failed to attend, 5 (14%) had other issues.
Effects of changes: A simple labour light series of searches identified a group of patients, with a positive yield of 44% of actual spirometry performed
Lessons learnt: General Practitioners treat acute respiratory symptoms with antibiotics and steroids without referring for lung function testing. Filtering patients is an efficient way of improving spirometric return. Many patients do not wish to have lung function measured even when directly invited.
Message for others: This is a quick and effective way of finding COPD patients with mild and moderate disease
Conflict of interest and funding: None
For admin only: Dr Iain Small, iain.small@nhs.net

176: Practical problems in the use of inhalers: a call for patient education?

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Aim: To recognize the specific practical problems which need to be addressed to improve inhaler technique. Then to assess the improvement after addressing the practical problems.
Method: Cross sectional intervention study based on consecutive asthmatic patients attending general practice clinics. Patients asked to demonstrate the inhaler technique and Objective semi-structured questionnaire developed, using the GINA guidelines filled. Investigators were provided a Dummy MDI and a spacer for patients to demonstrate the use of inhaler. Frequency distribution analyzed. Chi square test, T score and P value calculated.
Results: 102 pMDI uses,mean age 31.3 years. Female to Male ratio 52/48. 88% use a inhaler daily as a preventer. 58% were on the inhaler for more than 3 months.

Errors in MDI use	Frequency %
1. Inadequate shaking	17
2. Cap left	0
3. Wrong way of holding the inhaler/Spacer	12
4. Do not exhale	21
5. Secure mouth piece and lips tightly	08
6. Hand breath inco-ordination	09
7. Do not hold the breath	15
8. Abrupt stop inhalation	13

A numerical score of 2 given to each question. This will give a range from 0-16. Statistically analyzed using the 'T score". A mean was 14.14 with SD 2.84, indicating a good knowledge of inhaler technique. There was no significant difference in the mean of MDI uses with or without spacers. The Chi square (errors) in relation to the duration (p 0.574) and frequency (P 0.374) in MDI uses too did not show any statistical significance. No statistical significance in the P value to each error.
Conclusion: The knowledge of MDI uses is good. Needs improvement on identified specific areas.
Conflict of interest and funding: There is no conflict of interest. IPCRG bursary confirmed
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177: Association between general practice prescribing and COPD admissions

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Aim: The effect of inhaled long-acting anti-muscarinics (tiotropium) and combination beta-agonist and corticosteroids (LABA+ICS) in reducing the frequency of exacerbations and admissions of Chronic Obstructive Pulmonary Disease (COPD) has prompted large increases in their prescribing within UK general practice (GP). This study assessed the association between GP prescribing of these drugs and admissions for COPD exacerbations.
Method: Retrospective analysis of data from the Prescription Pricing Authority, Hospital Episode Statistics and the Quality and Outcomes Framework GP performance dataset, on all practices in 15 randomly selected English primary care trusts.
Results: Data were obtained for 682 practices, population served 4,700,000. 80,000 patients had a COPD diagnosis. Between 2006-2010 the mean quarterly spend on tiotropium per registered COPD patient increased from £24.17 to £46.56 (+93%), and that of LABA+ICS per patient registered increased from £1.82 to £2.65 (+46%), annual rates of increase of 13.8% [CI 6.9-7.4] and 7.4% [12.9-14.7] respectively. There was wide variation in drug prescribing between practices, with a fifty-fold difference between the highest and lowest prescribers. From 2002-2010 the mean annual rates of COPD admissions per patient ≥45 years per practice was 0.0068, and of patients admitted per patient ≥45 years per practice was 0.0045, with no significant variation over time in either rate. There was no association between the rates of prescribing of tiotropium or of LABA+ICS and the rate of COPD admissions.
Conclusion: Rates of COPD admissions in English general practices have not changed in nine years despite large increases in prescribing of tiotropium and LABA+ICS. High prescribing practices did not have lower admission rates than low prescribers, raising questions about the cost-effectiveness of these drugs in everyday practice.
Conflict of interest and funding: No conflicts of interest. TH is supported by an NIHR in-practice fellowship
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179: The QVA149 IGNITE programme: dual bronchodilation as the future of COPD management

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Aim: COPD symptoms are often inadequately controlled by bronchodilator monotherapy; GOLD guidelines recommend adding a second bronchodilator in such patients. Combining bronchodilators of different pharmacological classes improves lung function versus individual components, thereby improving symptoms, breathlessness, and QoL. Here we provide an overview of the QVA149 (fixed-dose combination of indacaterol and NVA237 [glycopyrronium bromide]) IGNITE programme and demonstrate the potential for the LABA/LAMA fixed-dose combination in COPD management.
Method: Review published LABA/LAMA combination data and provide an overview of the IGNITE programme.
Results: Several studies showed that lung function, breathlessness and QoL are improved with tiotropium once-daily plus formoterol/salmeterol twice-daily free combinations versus component monotherapies. The INTRUST study demonstrated that concurrent once-daily indacaterol and tiotropium use significantly improved bronchodilation (trough FEV_1: 70–80mL improvement; $p<0.001$) and lung deflation (trough inspiratory capacity: 100–130mL improvement; $p<0.01$) versus tiotropium monotherapy. QVA149, a novel once-daily dual bronchodilator is the most advanced fixed-dose LABA/LAMA combination in development. The efficacy and safety of QVA149 were

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demonstrated in two Phase II studies (NCT00570778 and NCT00558285), which showed QVA149 optimises bronchodilation (trough FEV1: 226mL improvement versus placebo; p<0.001), is well tolerated and demonstrates rapid and sustained bronchodilation. Phase III IGNITE trials, involving more than 5680 patients, will complete throughout 2012 (Table).

Conclusion: Dual bronchodilators, such as QVA149, offer superior bronchodilation versus increasing the dose of a single bronchodilator. By combining two long-acting bronchodilators in a single inhaler, once-daily QVA149 may simplify COPD management for patients requiring additional bronchodilation. As the QVA149 IGNITE studies report throughout 2012/2013, we will see whether optimising bronchodilation translates into better outcomes for COPD patients.

Conflict of interest and funding: DB, HC and FP are employees of Novartis.

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181: Network meta-analysis of asthma therapy recommended for 5 to 18 year olds in GINA steps 3 and 4

van der Mark LB, Lyklema PhE, Geskus RB, Mohrs J, Bindels PJE, van Aalderen WMC, ter Riet G

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Aim: The recommendations for the treatment of moderate persistent asthma in the Global Initiative for Asthma (GINA) guidelines for paediatric asthma are mainly based on scientific evidence extrapolated from studies in adults or on consensus. Furthermore, clinical decision-making would benefit from formal ranking of treatments in terms of effectiveness. Our objective was to assess all randomized trial-based evidence specifically pertaining to 5-18 year olds with moderate persistent asthma, and to rank the different drug treatments of GINA guideline steps 3&4 in terms of effectiveness.

Method: Systematic review with network meta-analysis. After a comprehensive search in Central, Medline, Embase, CINAHL and the WHO search portal two reviewers selected RCTs performed in 4,129 children from 5-18 year old, with moderate persistent asthma comparing any GINA step 3&4 medication options. Further quality was assessed according the Cochrane Collaboration's tool and data-extracted included papers and built a network of the trials. Attempt at ranking treatments with formal statistical methods employing direct and indirect (e.g. through placebo) connections between all treatments.

Results: 8,175 references were screened; 23 randomized trials (RCT), comparing head-to-head (n=17) or against placebo (n=10), met the inclusion criteria. Except for theophylline as add-on therapy in step 4, a closed network allowed all comparisons to be made, either directly or indirectly. There was huge variation in, and incomplete reporting of, outcome measurements across RCTs precluding assessment of relative efficacies.

Conclusion: Evidence-based ranking of effectiveness of drug treatments in GINA steps 3&4 is not possible yet. Existing initiatives for harmonization of outcome measurements in asthma trials need urgent implementation.

Conflict of interest and funding: No conflicts of interest. This study was financially supported by the Netherlands Asthma Foundation (3.4.06.078) and Stichting Astma Bestrijding (2008/027).

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186: REFRESH: Reducing children's exposure to second-hand smoke in the home: an innovative intervention in the community

Turner SW, Wilson I, Mills, L, Shaw A, O'Donnell R, Ritchie D, Amos A, Semple S

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Aim: To determine whether an intervention based on indoor air quality feedback would reduce young children's exposure to SHS.

Method: Mothers who smoked and who had a child aged 1-5 years were identified through primary care records. Participants were randomised to standard intervention (motivational interview) or enhanced intervention (motivational interview plus feedback of indoor air quality). There were 4 home visits over a one month period which involved two 24 hr. measurements of home air quality ($PM_{2.5}$) and a motivational interview. The enhanced group received their air quality data as part of their motivational interview at visit 2; the standard (control) group received that information at visit 4. The child's salivary cotinine was measured before and one month after the intervention

Results: Of the 1693 mothers invited to participate, 54 were recruited and 48 completed the study. Both groups experienced reductions in $PM_{2.5}$ concentrations. The maximum $PM_{2.5}$ fell from 135 to 67 $\mu g/m^3$ in the enhanced intervention and from 190 to 148$\mu g/m^3$ in the control group (p=0.006 for between group difference). The proportion of time above the recommended $PM_{2.5}$ concentration fell from 3 to 0% in the enhanced intervention and from 7 to 4% in the control group (p=0.017). There were non-significant trends for greater reductions in mean $PM_{2.5}$ concentration and salivary cotinine for the enhanced intervention group compared to the control group.

Conclusion: In the primary care setting, providing mothers who smoke with personalised results about the indoor air quality of their homes along with a motivational interview is feasible and has an effect on improving household air quality.

Conflict of interest and funding: No conflicts to declare. Funding was provided by the Big Lottery Foundation.

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187: Inhaled corticosteroid use in COPD and the risk of pneumonia

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Aim: To investigate the association of pneumonia with inhaled corticosteroid (ICS) use among newly diagnosed COPD patients; an association has been shown in previously diagnosed COPD patients.

Method: Marketscan® datasets were used. Newly diagnosed COPD patients (no diagnosis of COPD in previous 12 months) with at least two COPD diagnoses at different days and no history of pneumonia/ICS use in the past 12 months were included. Patients with a diagnosis of asthma, cystic fibrosis or lung cancer or <45 years old in the 12-month baseline period or oral corticosteroid use in the 5-year follow-up period were excluded. Daily ICS use for each patient was converted into fluticasone equivalents, classified into low-dose (1–499 µg/daily), medium-dose (500–999 µg/daily) and high-dose (≥1000 µg/daily), and was constructed as a time-dependent variable. Cox regression modeling was employed to compare the risk of pneumonia onset among ICS non-users versus low-dose, medium-dose and high-dose ICS users. Models were adjusted for baseline characteristics, including age, gender, region, insurance type, COPD diagnosis year, utilization of COPD medications, comorbidity, hospitalizations and emergency room visits.

Results: 135,445 qualified patients were identified; average age 67 (SD 13) years; 51.9% were male. Among them, 28,750 (21.2%) patients had pneumonia in the follow-up period. ICS use was associated with pneumonia (hazard ratio [HR] = 1.38, 95% CI 1.27–1.49 for low-dose users; HR = 1.69, 95% CI 1.52–1.88 for medium-dose users; and HR =2.57, 95% CI 1.98–3.33 for high-dose users). All differences were statistically significant (p=0.001).

Conclusion: The use of ICS in newly diagnosed COPD patients is associated with an increased risk of pneumonia.

Conflict of interest and funding: Dr B Yawn has received COPD research funding from Novartis, BI, Pfizer and GSK within the past 36 months. Drs Tian, Li, Zhang, Arcona and Kahler are employees of Novartis. This research was funded by Novartis Pharmaceuticals Corporation.

For admin only: Professor Barbara Yawn, BYawn@olmmed.org

188: How do patients with COPD appraise the experience of their condition? Age versus disease

Apps LD, Harrison S, Williams JEA, Bonas S, Singh S

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Aim: To explore how patients describe the impact of Chronic Obstructive Pulmonary Disease (COPD) and their understanding of self-management.

Method: Semi-structured interviews were carried out with 15 participants

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recruited from GP COPD registers (6 male, mean (SD) age 69.40 [9.25], FEV_1 1.39 [0.58]). Two researchers (LA, SH) carried out interviews. Topics discussed including the experience of living with COPD and understanding of self-management strategies. Interviews were transcribed verbatim and thematic analysis was performed by LA and SH, supported by NVivo software (Version 8). A third researcher analysed a sub-group of interviews to ensure agreement over themes.

Results: Five main themes summarise how patients described living with COPD – living around the illness, the role of prior experiences, the challenge of COPD, normal aging versus disease and getting on with life. Participants described many ways of living around COPD but differed in how they appraised the limitations of the condition and efforts made to overcome them. Some participants attributed some of their disability to normal aging and were satisfied to play an active role in adapting activities but others felt less able to accept the limitations imposed on them. The role of prior experiences was also important and highlighted the importance of a positive relationship with their primary care team.

Conclusion: Playing an active role in the management of COPD or having higher levels of perceived control had been mastered by some but not all. This has implications for satisfaction with disease management and highlights the need for increased awareness of the perceptions patients hold prior to starting any self-management strategy.

Conflict of interest and funding: The authors have no conflict of interest to disclose.

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189: A self-management programme of activity, coping and education for COPD (SPACE for COPD): development and initial findings

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Aim: To develop and assess the effectiveness of a stand-alone self-management manual for patients with Chronic Obstructive Pulmonary Disease (COPD).

Method: SPACE for COPD was developed with a multi-disciplinary team of healthcare professionals, patients with COPD and their carers. It is an A4 workbook that patients can use independently at home. All content was evaluated by individual patients and healthcare professionals as well as patient focus groups and carries the Crystal Mark awarded by the Plain English Campaign. Major themes identified were barriers and facilitators to exercise and self-management, disease experience and understanding of self-management as well as feedback about how self-management should be delivered and supported. The intervention was piloted in primary care, recruiting patients from GP COPD registers. Patients were eligible to take part if they had a diagnosis of COPD confirmed by spirometry with FEV_1/FVC ratio of <70% and a score of 2-5 on the Medical Research Council Dyspnoea Breathlessness Scale.

Results: Thirty-seven participants were consented and received SPACE for COPD. Participants attended baseline and 6 week follow-up appointments and completed the Self- Report Chronic Respiratory Questionnaire (CRQ-SR), Incremental Shuttle Walk Test (ISWT), Endurance Shuttle Walking Test (ESWT). Statistically significant improvements were observed for CRQ-SR Dyspnoea and ESWT. Dyspnoea showed a mean change of 0.67 (95% CI 0.23 to 1.11, p=0.005). ESWT score increased by 302.25 seconds (95% CI 161.47 to 443.03, p<0.001).

Conclusion: A 'manual' based self-management approach delivered in primary care to patients with COPD improved exercise performance and quality of life.

Conflict of interest and funding: Development of SPACE for COPD and initial piloting was funded by the British Lung Foundation and AstraZeneca. The authors have no conflict of interest to disclose.

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191: Behaviour change in ethnic minority groups: a systematic review of adapted interventions for smoking cessation

Wabnitz C, Liu JJ, Davidson E, Bhopal RS, White M, Johnson MRD, Netto G, Sheikh A

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Aim: Some ethnic minority groups experience disproportionate levels of morbidity and mortality. Smoking is often the main preventable risk factor, and as some ethnic minority groups exhibit higher smoking rates, a health promotion priority is smoking cessation within these groups. We sought to identify smoking cessation interventions that have been adapted to meet the needs of the main UK ethnic minority groups (African-, Chinese- and South Asian-origin populations) and to assess their effectiveness in altering smoking behaviour.

Method: This formed part of a greater project involving a summary of high-level evidence, systematic review, qualitative interviews, and a realist synthesis. Two reviewers independently extracted data from studies identified from eleven databases (Medline, Embase, Cochrane, Cinahl, Assia, PsycInfo, Biosis, IsiWos, Lilacs, Campbell, Sceh). Study quality was assessed, behaviour change techniques and adaptations were coded, and findings descriptively summarised and thematically synthesised.

Results: 25 studies were found, including 21 on African-Americans and four on Chinese-origin populations. Overall, the smoking cessation interventions had equivocal evidence of effectiveness, but appeared to increase acceptability. Only four studies directly compared a culturally adapted versus a standard health promotion intervention.

Conclusion: Possibilities to explain the lack of effectiveness of adapted interventions include that they were offered too much information, that extra support was insufficient to attract or retain attention, and that heterogeneity among ethnic groups rendered them appropriate for certain subgroups only. Despite equivocal evidence of effectiveness, the adaptation of smoking cessation interventions for specific minority ethnic groups increases their acceptability, and they may thus be ethically preferable. The evolution of studies over time shows a shift to reflect this.

Conflict of interest and funding: Conflict of interest- None. MRC funded.

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192: Use of medical resources in smokers

Suarez-Bonel MP, Córdoba-García R, Villaverde-Royo MV, Sánchez-Galán P, Marco-Gracia M, Fernández-Revuelta A, Quintana-Velasco C

Delicias Sur Healthcare Center

Aim: To verify if smokers use more healthcare resources than non-smokers.

Method: Based on a retrospective case-control study (January-December 2009). We selected 410 patients from 45 to 75 years old from our healthcare centre in Zaragoza (Spain); the patients were grouped by age, sex and smoke habits. Ex-smokers were excluded. We extracted the data from two different databases: our Primary Healthcare Centre database (OMI-AP) and our reference hospital Intranet. We analyzed the data to determine the usage of primary care and hospital services, presence of chronic diseases, drugs for long-term use, days of work incapacity (WI), and other factors.

Results: Chronic disease was found in 33.6% of patients that smoke and 13.5% of patients that did not smoke. Smoking was determined to increase the possibility to suffer chronic diseases (OR= 3,64) (CI 95%=2,11-6,25). Average number of visits per year to primary healthcare centre for non-smokers was 10,03 and for smokers 11,64 (OR=1,08) (CI 95%:1,02-1,14). The average number of days admitted at a hospital were 1.32 in smokers and 0.39 in non-smokers (OR: 3,55) (CI 95%: 1,82-6,90).

The average number of drugs for long-term use in smokers was 3,41 and in non-smokers it was 2.09 (OR =3,02) (CI 95%: 1,93-4,75). Average of days off due to WI in smokers was 28,06 and in non-smokers it was 11.26 (OR = 1.73) (CI 95%: 1.06-2,81).

Conclusion: Smokers have more chronic diseases, more visits to primary care services, an increased number of days admitted at hospital per visit, more

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usage of drugs and more days off due to WI per year. It is therefore important to invest more resources into programs that encourage and facilitate people to quit smoking.

Conflict of interest and funding: The authors declare no conflict of interest or funding.

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193: Identifying barriers to the provision of smoking cessation assistance among Romanian family physicians

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Aim: Smoking Cessation (SC) is the most effective intervention to prevent, to slow the progress of and to improve outcomes in a number of respiratory diseases and other health diseases. Romania has the appropriate legislation and a national programme against tobacco consumption. Previous local studies suggested however that only a small number of smokers are advised to quit by their family physicians. This study aims to describe the barriers to attempt smoking cessation assistance among Romanian family doctors.

Method: A qualitative evaluation was carried out 41 family physicians (FPs); 10 participated in a focus group and 31 took part in semi-structured interviews. The participants were recruited from urban and rural areas (purposive sampling). Participation was voluntary. The results are presented descriptively.

Results: Five main barriers were identified: minimization of the family physician's role in the SC, FPs'lack of time within the consultation, FPs' lack of motivation, patients' inability to support the drug therapy expenses and defective SC skills. Within this framework, a number of barriers were identified as having a special importance. Examples include: the absence of the habit or of a proper method to flag the smokers' files, the lack of information regarding the possibilities to refer the smoker, inadequate cessation clinical skills exposing to failure and frustration.

Conclusion: Some of the barriers that the Romanian family physicians encounter to providing SC assistance are similar to those faced by other specialists, but there are also barriers that apply most particularly to this activity within Romanian primary care.

Conflict of interest and funding: No conflict of interest. The focus group was organised with the support of the Servier pharmaceutical company.

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194: Clinical implications of using the Royal College of Physicians three questions (RCP3Q) in routine asthma care

Burton C, Price D, Lester H, Campbell S, Keeley D, Gruffydd-Jones K, Hoskins G, Pinnock H

The University of Edinburgh

Aim: Annual recording of the RCP3Q is rewarded under the terms of the UK general medical services contract. We aimed to investigate its performance as an instrument for assessing control in real-life practice when compared to the gold standard of the validated Asthma Control Questionnaire (ACQ).

Method: We compared the RCP3Q score extracted from the patients' computerised medical record with the ACQ self-completed after the consultation. The anonymous data were paired by practice, age, sex and dates of completion. We calculated the sensitivity and specificity of the RCP3Q scale compared to the ACQ≥1 (the threshold for good/poor control).

Results: Of the 291 ACQ questionnaires returned from 12 participating practices, 129 could be paired with complete RCP3Q data. 25/27 patients who scored zero on the RCP3Q were well controlled (ACQ<1). An RCP3Q score ≥1 predicted inadequate control (ACQ≥1) with sensitivity of 0.96 of patients and specificity of 0.34. Comparable values for RCP3Q≥2 were sensitivity 50% and specificity 94%. An intra-class correlation of 0.13 indicates substantial heterogeneity between practices. Exacerbations and use of reliever inhalers were moderately correlated with the ACQ and may reflect different aspects of control.

Conclusion: In routine practice an RCP3Q score of zero indicates good asthma control and a score of two or three indicates poor control. An RCP3Q score of one has good sensitivity but poor specificity for sub-optimal control and should be interpreted in conjunction with other factors such as exacerbations and use of reliever inhalers.

Conflict of interest and funding: None

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195: Changing trends of asthma in Bangladesh: 1999 to 2009

GM Monsur Habib

IPCRG-Bangladesh

Aim: Two asthma prevalence studies in 1999 and 2009 were compared to find out the trends of asthma in Bangladesh

Method: Both NAPS I & II was conducted from January to August 1999 on 5642 and November, 2009 to April 2010 on 5256 subjects respectively. Data were collected from primary sampling units of eight municipality blocks of six district towns and twelve villages of six districts chosen by stratified random sampling from all 64 districts of country. Face-to-face interviews were taken in the randomly selected houses using a validated structured questionnaire.

Results: In 1999 the prevalence of asthma was 6.9% (95% CI: 6.2-7.6) whereas in 2010 it is 7.7.67% (95% CI: 7.59-7.75). In 1999 prevalence of other asthma definitions were: ever wheeze 8.0% (95% CI: 7.3-8.7); perceived asthma 7.6% (95%n CI: 6.9-8.3); doctor diagnosed asthma 4.4 (95% CI: 3.9-4.9). In 2010 results are – ever wheeze 8.6% (95% CI: 8.52 – 8.69); perceived asthma 8.31% (95% CI: 8.23 – 8.4); doctor diagnosed asthma 6.26% (95% CI: 6.2 -6.3). In 1999 the prevalence of asthma in children (5- 14 years) was higher than in adults (15 – 44 years) (7.3% versus 5.3%; odds ratio [OR] = 1.41, 95% CI: 1.09 – 1.82). At present prevalence is found to be higher in adults than children. Asthma is significantly higher in house-holds with 3 people than in large house-hold (OR = 2.20, 95% CI: 1.24 -3.20). The low-income group (OR=1.41, 95% CI: 1.04 – 1.92) and illiterate group (OR=1.51, 95% CI: 1.01 -2.24) were more vulnerable to asthma attacks than the high-income group and more educated people, respectively.

Conclusion: Trends of asthma in Bangladesh have remained almost static over the last ten years.

Conflict of interest and funding: None

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197: Co-morbidities in COPD: A pilot study on the prevalence of osteoporosis/osteopenia in COPD patients in primary care practice

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Aim: Prevalence of co-morbidities like osteoporosis in mild COPD in primary care (PC) patients is unknown. In a specialist population the prevalence is 24 %, in a general population about 11 %. Is the bone status of patients treated in primary care known and what is the prevalence of osteoporosis/osteopenia in primary care?

Method: A pilot study was performed in a primary care population of COPD patients. Data were collected concerning the known prevalence of osteoporosis. All patients without osteoporosis/Dexa where invited for a Dexa/VFA scan.

Results: COPD prevalence in the population (n=2428) was 2.4 % and 1.3 % (n= 31) where treated in primary care. Post FEV_1 was 71.7 %, mean 69 yrs, known osteoporosis 6 % (n=2). The response for DEXA/VFA was 72 % (n=21), 14 % (n=4) refused, another 14 % (n=4) planned a DEXA/VFA. Of the respondents (including known patients), in 13 % (n=3) fracture risk was slightly elevated (T-score 1-2.5) and in 17 % (n=4) it was elevated (T-score< -2.5/above 70 age Z-score) warranting medical treatment. Patients with elevated risk didn't have more exacerbations, higher age, or lower FEV_1.

Conclusion: In a PC practice, in most patients the bone-mineral status was unknown. The prevalence in the respondents was slightly higher than in the general population (> 55 yrs) (OR 1.7 CI 0.57-5.03) but lower than in a specialist population (OR 0.67 CI 0.22-2.04) A larger study in more practices is warranted to confirm these findings and to assess relationship with patient variables. Case-finding on osteoporosis in selected patients with COPD treated in PC should be discussed.

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Conflict of interest and funding: None
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198: Implementing integrated care (ic) for asthma/COPD in primary care (pc) by bundled payment; results after 3 years

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Brief outline of context: The DOH Caregroup implements IC for COPD and asthma in PC by bundled payment.
Brief outline of what change you planned to make: Implementation of structured multidisciplinary care.
Assessment of existing situation and analysis of its causes: Baseline measurements showed deficiencies in care.
Strategy for change: In care group DOH (100.000 patients) 50 GP's and 23 practice-nurses are working in group practices (Dutch College certified). Implementation of the IC programme was done by educational sessions (10), protocol books on care and registration, additional support through website/newsletter, annual feedback meetings and two times a year benchmark data feedback.
Measurement of improvement: Measurements (4) were done in 2008-2009-2010-2011 using the Dutch National set of quality indicators. Patients were treated in PC only. The practice registration system was primary source of data.
Effects of changes: The prevalence of COPD in the care program was on average 1%, asthma 1.9%. Specialist treatment in COPD was 0.9% and in asthma 0.7%. Baseline measurement showed much room for improvement both on registration and care provided. On average 25% of patients used no medication. After 2 years clear improvements from baseline were seen (37% in asthma and 34% in COPD). Results after 3 years will be presented including MRC-score, CCQ, exacerbations and physical activity. Referrals for physical activity were too low.
Lessons learnt: The diagnostic process is complex. Collecting indicators of care is possible. Changes in patients outcomes can only be seen after several years. Focus should be on smoking cessation and PC rehabilitation interventions.
Message for others: Implementing IC for asthma and COPD by bundled payment is possible and shows demonstrable improvements.
Conflict of interest and funding: None
For admin only: Dr Ivo Smeele, i.smeele@upcmail.nl

199: Obstructive sleep apnoea and the Epworth Sleepiness Scale

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Aim: Breathing disorders, such as Obstructive Sleep Apnea (OSA) are currently a major public health problem. We aimed to assess a population that underwent a cardio-respiratory polysomnography home study with posterior response to therapeutics, analyzing multiple parameters such as sex, age and cardiovascular risk. The main goal was to relate Epworth Sleepiness Scale (ESS) assessment before and after treatment as an instrument of diagnosis and treatment evaluation in Primary Care.
Method: One hundred and twenty clinical files of patients that underwent a cardio-respiratory polysomnography home study were randomly selected for diagnosis of OSA, between the years 2008 – 2010.
Results: Out of the 120 files included in the study, 11 were excluded due to insufficient data. Statistical correlation between the apnea/hypopnea index (AHI) and ESS was found. OSA was diagnosed in 96 patients who remained in the study, mostly males (77.1%) with an average age of 59.26 years. The medium BMI was 32.37 kg/m^2. In 38.5% of the patients, short and broad neck was an objective finding. Considering hypertension (60.4%) and dyslipidemia (47.9%) a statistical relationship with the AHI was established. Drinking and smoking habits were found in 59.4% and 19.8% respectively Most patients referred loud snoring (91.7%) and excessive daytime sleepiness (75%). This was subjectively measured by ESS before and after treatment, with a reduction of 5, 36 points with statistical significance.
Conclusion: Most results in this study were consistent with what was expected and with other studies reported in the literature. As a subjective measure of daytime sleepiness, the ESS can be easily implemented and used in Primary Care as a tool to screen potential OSA patients in which a cardio-respiratory polysomnography can be justified. It was also very useful in gauging the response to treatment.
Conflict of interest and funding: None
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203: Development of medical record keeping software in Bangladesh

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President IPCG-Bangladesh

Brief outline of context: Medical record keeping is poorly developed in primary care setting of Bangladesh. Software is developed by the IPCG-Bangladesh for the same. Patients with the loss or unavailable previous records (which are common) can be reviewed from the medical records instantly, even in over the telephone consultation. Analysis of data within seconds will help to audit the practice, identify the causes of non-achievements and adopt appropriate practice strategy.
Brief outline of what change you planned to make: We planned to
- Keep electronic patient data
- Provided printed prescription to patients
- Analyse data periodically for clinical audit
- Develop follow up and referral strategy
- Develop a data base of patients for research

*Assessment of existing situation and analysis of its cause*s: Primary Care Physicians (PCPs) prescribe with only few data noted on a sheet including name of drugs with incomplete information. Those handwriting prescriptions are not always well read by the pharmacist and wrong drugs are dispensed at times, the prescriptions are lost frequently. PCPs do not keep a copy of the prescription which is the only medical record of the patient. Most of PCPs do not maintain a patient register as well.
Strategy for change: A team of quality assurance will assess every six
Measurement of improvement: as above
Effects of changes: Structured care
Lessons learnt: Software care can change a practice with huge positive impact
Message for others: Good medical recording with digital method is a part of good practice
Conflict of interest and funding: None
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205: The role of two easy-to-use exercise tests in predicting the course of COPD

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Aim: To assess if a simple exercise capacity test (one-minute sit-to-stand (StS) or handgrip test (HGT)) can replace the six-minute walk distance (6MWD), which is impractical in most primary care settings, in clinical prediction models for quality of life, exacerbation risk and mortality in primary care COPD patients.
Method: In an ongoing prospective cohort study, we collected 2-year follow-up data on 411 primary care COPD patients. Using multivariable regression analyses, we assessed to which extent the information from the StS and the HGT test could replace the 6MWD.
Results: The StS test proved to be very informative in predicting mortality. It added importantly to prediction using age, sex, BMI, FEV_1, dyspnea and use of inhaled drugs: odds ratio StS 0.88 (95%CI from 0.81 to 0.95) for each additional sit-to-stand movement. Patients who had died did around 12 (range 4 to 30) sits-to-stand against 19 (4 to 42) for patients still alive. Discrimination for the BODE index omitting the E (which stands for "exercise") yielded an area under the curve (AUC) of 0.68. AUC increased to 0.78 when

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StS was added. The AUC for the ADO index was 0.80. StS nor HGT improved this much (AUCs 0.83 and 0.81, respectively).
Conclusion: The 6MWD, although informative, is seldom practical for primary care. Prediction of mortality as good as the BODE index may be achieved when the 6MWD is replaced by the one-minute StS. The ADO index's performance is slightly improved by adding exercise capacity via the StS.
Conflict of interest and funding: The ICECOLD ERIC study is funded by the Dutch Asthma Foundation, the Swiss National Science Foundation, and the Zurich Lung League.
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206: Smokers with chronic illness: a qualitative analysis of barriers, motivation to quit and tailored interventions for smoking cessation in smokers with and without COPD

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Aim: Smoking cessation is recommended as one of the most important measures in the management of COPD. Although smokers with COPD are less likely to quit than those without impaired lung function, few studies have investigated the effectiveness of smoking cessation interventions with this population, and none have used a tailored approach to smoking cessation. Therefore this study aimed to understand the barriers and motivation to quit in smokers with and without COPD and to obtain participants' perception of computer-tailored reports developed for smoking cessation.
Method: Twenty-six smokers from six GP surgeries in North London took part in a qualitative study. Personalised tailored reports based on participants' responses to a postal questionnaire were sent to each participant. They were then interviewed and a thematic analysis was undertaken.
Results: Interviews were conducted with 12 women and 14 men. Nine were diagnosed with COPD, although 16 indicated a score of Grade 2 or higher on the MRC Dyspnoea Scale. Those with COPD were on average older, single, unemployed, less educated, smoked more cigarettes per day and smoked within 30 minutes of waking. There were commonalities in those with and without COPD in three of the themes identified: 'Use of Cigarettes', 'Cessation Strategies'; and 'Tailored Feedback – A New Experience'. However, differences were found in one main theme: 'Barriers and Motivation to Quit'.
Conclusion: Findings suggest a role for tailored interventions in smokers with a chronic illness. The data also highlights the difficulties that smokers experience when quitting and point to strategies that could be implemented in GP practices to support smokers with chronic illness to quit.
Conflict of interest and funding: No conflict of interest. The study was funded by the UKRRF, IPCRG.
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208: The COPD Breathlessness Manual: a self-management intervention to reduce hospital admissions and improve psychological well-being

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Aim: To evaluate the effectiveness of a 5 week home-based cognitive-behavioural COPD breathlessness intervention (The COPD breathlessness manual) on health service use, health status and psychological well-being in COPD patients.
Method: Individuals identified through GP COPD registers in the London Borough of Hillingdon were invited to participate in the COPD breathlessness study. Those that opted in and rated themselves as 3,4 or 5 on the MRC dyspnoea scale were randomly assigned to an intervention group (COPD Breathlessness Manual) or control group (BLF educational booklets). Both programmes were undertaken at home over 5 weeks, facilitated by a health care professional. All participants received disease education, with those in the intervention group receiving additional psychological management techniques for anxiety, panic and depression. Retrospective data on Accident & Emergency (A&E) attendances and length of hospital stay was collected six months before and six months after the study. Participants also completed the Chronic Respiratory Questionnaire (self-reported) and the Hospital Anxiety and Depression Scale at the start and end of the study and at six weeks follow up.
Results: The intervention has resulted in substantial cost savings through a reduction in health care use (amounting to approximately £300 per patient per year). Positive feedback was received from participants in the intervention group who felt better able to manage their condition. Improvements were observed in mood and health status.
Conclusion: The cognitive-behavioural self-help COPD breathlessness intervention is a cost-efficient programme that improves self-management of COPD. The manual is amenable to use in the community (e.g. via community matrons, IAPT services). A 2 day training package is offered for health care professionals to become manual facilitators.
Conflict of interest and funding: No conflict of interest. 2 years funding obtained from the Innovations Department, Central & North West London NHS Foundation Trust.
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209: Perspectives of patients and healthcare professionals on the impact of telemedicine on hospital admissions for COPD: a nested qualitative study

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Aim: Background: Early identification of exacerbations in COPD reduces hospital admission and may slow disease progression. There is increasing interest in telemedicine to support timely self-management of exacerbations. The TELESCOT randomised control trial based in Lothian, Scotland, is investigating the impact of a telemonitoring service for COPD. Aim: To explore the views of patients and professionals participating in the trial about the impact of telemonitoring on hospital admissions.
Method: We undertook semi-structured interviews with patient and professional participants at different time points in the TELESCOT COPD trial. Transcribed, coded data were analysed thematically. Interpretation was supported by multidisciplinary discussion.
Results: 38 patients (47% male, mean age 67.5 years) and 32 professionals provided 70 interviews. Both patients and professionals considered that home telemonitoring reduced the risk of hospital admission. Patients used telemonitoring data to determine their state of health and to validate their decision to adjust treatment or contact healthcare professionals earlier in order to prevent admission. Professionals emphasised the role of telemonitoring in encouraging compliance and facilitating patient self-management as a means of reducing admissions, though they also expressed concern that telemonitoring may increase patient dependence on services. The impact on the cost of services was a concern.
Conclusion: Enthusiasm for telemonitoring as a means of reducing admissions is tempered by concerns about increased demand on support services. However, patients are willing to embrace greater responsibility for their health when supported and permitted to do so by healthcare professionals.
Conflict of interest and funding: Conflict of interest: none. Funding: Chief Scientist Office, Scottish Government.
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210: Sleep does not affect health status in a primary care COPD population

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Aim: To evaluate the effect of sleep on health status as measured by the Clinical COPD Questionnaire (CCQ) in a primary care COPD population
Method: 38 COPD patients were enrolled in the study, which was part of a lager study evaluating health status based treatment versus standard GOLD guideline based treatment. The participants completed the CCQ (symptoms, mental, functional and total scale) and the Pittsburgh Sleep Quality Index (PSQI; duration, disturbances, latency, daytime dysfunction, efficiency, quality, medication need and total score).

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Results: Mean participant age was 66 years; mean number of pack-years 41; 72% male; GOLD I 36%, GOLD II 56%, GOLD III 8%. In the univariate analyses relations were found between the CCQ total scale and FEV_1 (spearman -0.416, p=0.009), CCQ total and daytime dysfunction (spearman 0.404, p=0.012) and CCQ total and GOLD stage (spearman 0.369, p=0.023). No relations were found with group allocation, age, social economic status, medication, BMI or pack-years. Multivariate analyses confirmed health status to be related to FEV_1 and daytime dysfunction. The relation with GOLD stage was not confirmed.

Conclusion: Health status by means of CCQ is related to FEV_1 and daytime dysfunction. None of the other sleep quality scales showed to have an influence on health status. The current study gives an insight into the possible relation between health status and sleep in a primary care COPD population and shows that the PSQI is a relevant instrument. However, the number of participants is too low for definitive conclusions.

Conflict of interest and funding: CdJ, JWK, SdJ and TvdM declare no Conflicts of interest. Funding by AstraZeneca

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214: Measuring initial FEV_1 using a hand held spirometer helps improve pick-up rate for previously undiagnosed COPD in selected patients

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Dudley Respiratory Group

Aim: One of the targets in the new NHS strategy for COPD is to find patients with undiagnosed COPD with the expectation that early diagnosis helps improve quality of life and long-term outcomes. Dudley Respiratory Group undertook an audit between November 2010-July 2011 to identify such patients and initiate early intervention.

Method: The audit involved screening symptomatic or asymptomatic patients aged 35-75 with a smoking history of 20 pack years (current or ex-smokers) over a 6-month period. All participating GP practices assessed patients initially and measured FEV_1 using a hand held spirometer provided by Pfizer. Pfizer also helped to formulate a project plan and support the team. Patients were referred to Dudley General Hospital (DGH) for full spirometry and reversibility testing if they had an FEV_1.

Results: Thirty GP practices participated in the audit. In total, 286 patients were screened. Of these, 181/286 (63%) met the criteria for referral and 130/286 (72%) patients attended Open Access spirometry at DGH. Of these 181 patients, 4/181 (1%) were diagnosed with severe COPD, 30/181 (10%) with moderate COPD, 24/181 (8%) with mild COPD and 71/181 (25%) with no COPD.

Conclusion: Of the patients initially selected and screened, 32% (58/286) were diagnosed with COPD by subsequent full spirometry and reversibility testing. This confirms the value of screening symptomatic or asymptomatic patients aged 35-75 with a smoking history of 20 pack years and performing initial FEV_1 with a hand held spirometer to improve the pick-up rate for previously undiagnosed COPD.

Conflict of interest and funding: Pfizer Rharmaceuticals funded hand held spirometers to practices.

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216: Multidimensional index BOD predicts ten year mortality for COPD in primary care

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Aim: To assess BOD, a simple multidimensional prognostic index for COPD, in primary care.

Method: From 1999-2002 we identified patients with COPD in primary care clinics in Sunderland. BOD scores (range 0-7) were calculated from BMI, FEV_1% predicted and MRC Dyspnoea Scale.

Results: We enrolled 455 (51% female) subjects with mainly mild/moderate COPD. Results (mean ± s.d.) for men and women respectively were: age 66±10 & 64±10 years; pack/years 34±19 & 34±18; BMI 27±5 & 25±6 kg/m^2; FEV_1% predicted 55±15 & 57±16; and MRC Dyspnoea score 2.6±1.0 & 2.6±1.0; with BOD scores of 1.9±1.5 & 2.0±1.6. Because of the comparability of these variables further analysis of mortality was of the whole cohort. In October 2010, 154 deaths (33.8%) had been reported to the Registrar General. Mortality increased with higher BOD scores; for a BOD score of zero the 10 year survival was 77% but for a score of 6 it was reduced to 29%. Cox regression analysis showed that BOD quartiles, age and smoking pack/years had a significant influence on mortality (p<0.0001). ROC analysis showed that AUC for BOD (0.629) outperformed GOLD staging (0.572). The addition of age and pack/years (BODAS) improved the model further (0.721). In a group of 161 survivors tested in 2007/2008 health status (SGRQ) was significantly worse in those with the worst quartile of BOD scores (p<0.001).

Conclusion: BOD is a simple multidimensional Read-coded index suitable for use in primary care and it avoids the requirement of a 6 minute walk test. BODAS may be more discriminatory for our cohort but may underestimate risk in younger patients.

Conflict of interest and funding: No conflicts of interest to report.

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217: A simple prognostic index, BOD, facilitates end of life discussion for COPD patients in primary care

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Brief outline of context: Awareness of a need for end of life discussion would be facilitated by a simple prognostic tool. BOD is an individualised Read-coded multidimensional prognostic index for patients with COPD (range of scores 0-7) derived from BMI <22 (score 0/1), FEV_1% predicted (score 0-3) and the MRC Dyspnoea scale (score 0-3). BOD predicts mortality in a primary care cohort of COPD patients. Use of this simple prognostic tool could prompt end of life discussion.

Brief outline of what change you planned to make: The aim was to use the practice Palliative Care Register to monitor the number of additional patients with whom end of life discussion had occurred following identification of a high BOD score.

Assessment of existing situation and analysis of its causes: Relatives and carers are frequently unprepared for death from COPD.

Strategy for change: BOD was introduced into one general practice in Hartlepool.

Measurement of improvement: BOD scores were obtained for 179 patients with confirmed COPD. Quartiles of BOD scores (0-1; 2-3; 4-5; & 6-7) were generated for 46, 72, 46 & 15 patients respectively.

Effects of changes: 5 new patients were registered, four of whom died within twelve months (BOD scores 6,6,6 and 7). End of life discussion was held with all four

Lessons learnt: A difficulty was the lack of confidence in approaching end of life discussion and a training need for advanced communication skills was identified.

Message for others: Practice nurses were the main users of the process and stated that they found that BOD scores agreed with their intuitive assessment of the patients.

Conflict of interest and funding: No conflicts of interest to report

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218: Structured management of COPD in primary care

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Aim: To describe development and effectiveness of COPD primary health care structure in Sweden during 11 years based on availability of asthma/COPD nurse.

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Method: Retrospective study based on electronic medical records, mandatory national health care registers, and questionnaire on PC structure (CTW.gov, NCT01146392). Patients older than 18 diagnosed with COPD during January 1999 to December 2009 were included. Index date was defined as first date of COPD diagnosis. Exacerbations were defined as an emergency room visit, hospitalization, need for oral corticosteroids or antibiotics. Primary health care centers (PHCCs) were classified with regard to the presence or absence of asthma/COPD nurse. Statistical analysis included propensity score matching.
Results: In all, 21,361 patients were included from 76 PHCCs (11,850 patients from PHCCs with asthma/COPD nurse and 9,511 patients from PHCCs without asthma/COPD nurse). Matching yielded 7,971 patients per PHCC type.
Availability of asthma/COPD nurse, spirometry, and smoking cessation programs were approximately doubled during the study period, in 2009 84, 95 and 82%, respectively. Patients in centers with asthma/COPD nurse were younger at COPD diagnosis than patients in centers without asthma/COPD nurse 67.4 (11.4) vs. 68.7 (11.2) years, and had a higher number of prescriptions for COPD related drugs.
Patients who visited PHCCs with asthma/COPD nurse had 27% significantly lower yearly rate of exacerbations (0.71 vs; 0.93), fewer hospitalizations/patient/year (0.28 vs 0.47), and a lower number of days at hospital due to COPD exacerbations (1.83 vs 2.94) than patients controlled at PHCCs without asthma/COPD nurse.
Conclusion: COPD patients attending a primary health care center with structured COPD care have fewer yearly exacerbations than PHCCs without dedicated staff
Conflict of interest and funding: The study was funded by AstraZeneca
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219: Training and feedback of prescribing indicators improves asthma care in Andalusia

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Brief outline of context: Clinical Practice Guidelines and Consensus stress the need to implement diversified strategies to enhance knowledge and skills of professionals to achieve better control of childhood asthma.
Brief outline of what change you planned to make: 1. Improve the quality of prescribing in childhood asthma in primary care in Andalusia. 2. Reduce the variability of prescription between different areas of health services
Assessment of existing situation and analysis of its causes: Inappropriate prescribing of asthma drugs by general practitioners (GP) and pediatricians in Primary Care (n=1349)
Source: Registration of drugs in the Pharmacy Unit of the Andalusian Health Service.
Strategy for change: In 2007 the Andalusian Health Service has scheduled a training activity on rational drug use in childhood asthma (18 worshop for GP and Pediatricians (n=820).
Two indicators were created to assess the quality of prescribing:
Ratio corticosteroids/combination of corticosteroids and long acting beta-adrenergic: Indicator 1
Ratio corticoisteroids/montelukast: Indicator 2
In 2008 the improvement of these indicators are linked to incentives through management agreements.
Follow-up 5 years
Measurement of improvement: Indicator 1 in 2007: 1.29. Indicator 1 in 2011: 2.20 (p= 0.000)
Indicator 2 in 2007: 0,99. Indicator 2 in 2011: 1.35 (p= 0.014)
The variability in prescriptions has remained, with no significant differences
Effects of changes: The quality of prescribing in childhood asthma has improved after 5 years of monitoring.
Lessons learnt: Continued Medical Education improves the knowledge of doctors, but financial incentives are an important stimulus to improve prescribing quality targets
Message for others: We are still far from having good indicators. Successive increases in the indicators related to education and economic incentives will lead to better prescribing of asthma drugs
Conflict of interest and funding: We have no conflict of interest. Funding: Andalusian Health Service
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221: The impact of graphic warnings on cigarette packets: more harm than good?

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Aim: Graphic warning labels on cigarette packet are deployed globally in an attempt to prevent people from starting smoking and encourage smoking cessation. We aimed to review the impact of current graphic warnings, studying both efficacy and potential for harm.
Method: Efficacy of current graphic warnings: an updated literature review based on a recent systematic review was carried out. The adverse effects produced by graphic warnings are currently being examined in a new ongoing systematic review.
Results: Evidence for efficacy in promoting smoking cessation largely report intention to quit; data on quit rates showed small actual changes, in one Australian study quit attempts increased by 1.2%, successful by 0.1%. Of the papers considering adverse effects of graphic warnings, many found evidence of adverse effects e.g. denial, defensive avoidance and relief craving (such effects were found in the majority of experimentally controlled studies). Evidence was found that the warnings may be detrimental in some high risk populations, in particular heavy smokers. None of the warnings encouraged early diagnosis of smoking.
Conclusion: The benefits of graphic warnings may have been overestimated by policy makers. Graphic warnings may be harmful in groups such as heavy smokers by creating negative emotions and thereby reducing the likelihood of quitting. Given the massive prominence of the campaign supported by WHO there should be robust evidence of effectiveness and the warnings modified accordingly to optimise outcomes. Research should be considered into warnings designed to alert people of the early symptoms of smoking related diseases.
Conflict of interest and funding: No conflicts of interest No external funding
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223: COPD care and management at nurse-led COPD-clinics in Swedish primary health care: a literature review

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Aim: The aim was to describe scientific knowledge regarding care and management of patients at nurse-led COPD-clinics in Swedish primary health care in relation to national guidelines on COPD care, self-management education and support for smoking cessation
Method: A literature review included ten studies, three qualitative, six quantitative and one both qualitative and quantitative (eight descriptive and two educational-interventions). The search was carried out in Pub Med/MEDLINE and CINAHL between year 1999 and 2012 with the following search-words: COPD, nurse-led clinics, patient education, primary healthcare, quality of life, self-management, smoking cessation and Sweden, in various combinations. Two reviewers rated independently (using rating-scales for qualitative and quantitative research) and extracted data from the articles.
Results: At nurse-led COPD-clinics in Swedish primary health care, nurses ran structured investigations including measurements according to medical guidelines, and gave information about self-management and smoking cessation. The COPD-clinics allotted sufficient time according to the guidelines: when the nurse had been trained in COPD care, more patients were diagnosed with COPD and fewer exacerbations were noted among COPD-patients. If structured programs for smoking cessation and/or self-management were used, an increased number of patients stopped smoking and patients' quality of life was improved. COPD nurses showed shortcomings in self-management and smoking cessation concerning individualized care, the involvement of patients in shared understanding and responsibility and

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motivational dialogue. More collaborative teamwork was needed for COPD-clinics to reach their full potential.
Conclusion: Structured self-management and smoking cessation programs were effective and improved patients' quality of life. For COPD-nurses and COPD–clinics to reach their full potential, more teamwork and training for the nurses in self-management education and smoking cessation are needed.
Conflict of interest and funding: None
For admin only: PhD, RN Eva Österlund Efraimsson, eoe@du.se

224: Improving medicines management for COPD & asthma patients

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Brief outline of context: The practice participated in a national improvement programme to improve management of patients with COPD, focusing on the cost and quality of prescribing, and patient adherence.
Brief outline of what change you planned to make: To evaluate the cost- & clinical effectiveness of pharmacist-led reviews in improving medicines management
Assessment of existing situation and analysis of its causes: Respiratory prescribing costs were high and there was scope to focus on medicines management as part of patients' annual review. Bringing in a clinical pharmacist provided additional skills to address this.
Strategy for change: A highly qualified clinical pharmacist was employed one session a week to conduct annual reviews for respiratory patients. She used open questioning techniques to understand patients' attitude to medication and trainer devices to improve inhaler technique.
Measurement of improvement: Monthly prescribing costs and patterns, patient CAT score and admissions were monitored.
Effects of changes: Average monthly respiratory prescribing costs fell from £11k to £9.6k. CAT scores improved for 8 of the first 10 patients evaluated. No significant change in admissions was identified.
Lessons learnt: 30 minute appointments allow time to establish rapport with the patient and understand issues affecting adherence. Telephone calls in advance can reduce DNA rates.
Message for others: Pharmacist skills can provide a cost effective approach to medicines management and enhance the skill mix in the practice team.
Conflict of interest and funding: No conflict of interest.
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226: Screening for occupational respiratory disease: a necessity in primary care

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Aim: To determine respiratory dysfunction among patients referred for spirometry. To assess the association between respiratory symptoms and spirometry results among subjects exposed to occupational respiratory hazards.
Method: A cross sectional study was conducted on 137 consecutive patients referred for respiratory function tests by primary care physicians. Subjects were assessed for respiratory symptoms by a disability questionnaire and for respiratory function by a Vitallograph spirometer. The data were analysed in groups for reversible obstructive airway disease (BA), non reversible obstructive airway disease (COPD) and restrictive air way disease (RD). COPD was staged according to GINA guidelines.
Results: 137 subjects were studied and 70% were males. BA was diagnosed in 52% of subjects, 45% had COPD and 2% had RD. 28% had stage 2 COPD and 14% had stage 3 COPD. All male COPD subjects were smokers. 30 % of COPD patients were exposed to occupation related COPD and 36% had occupation related BA. There was a positive correlation between the duration of employment and respiratory symptom scores ($p < 0.05$).
Conclusion: Occupation related respiratory disease is commonly encountered in primary care. Early assessment of respiratory function in high risk occupations is crucial to prevent major respiratory disability and disease.
Conflict of interest and funding: There is no conflict of interest. IPCRG bursary confirmed
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228: Difficult asthma: the Plymouth experience

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Aim: Difficult asthma represents a significant unmet clinical need and burden on healthcare resources. We recently set up a difficult asthma clinic (DAC) in Plymouth and conducted an observational study of our experience to date.
Method: The DAC started in April 2010 evaluating patients using a systematic multidisciplinary approach. Patients were symptomatic at $\geq$ Step 4 BTS guidelines.
Results: 117 patients were evaluated within the DAC. 77 women. 17 patients were felt either not to have asthma or asthma was not the primary diagnosis. 100 patients had difficult asthma. 14 patients had an occupational element. 72 had comorbidities which included: vocal cord dysfunction/dysfunctional breathing (20), bronchiectasis (20), BMI >35 (19), COPD/emphysema (9), GORD (31), immune deficiency (5), OSA (5), psychological (11), allergic bronchopulmonary aspergillosis (3). 50 patients were on long term oral corticosteroids (OCS) (mean 22mg/d). Most patients were able to significantly reduce their OCS dose, mean reduction 53%. 12 were able to discontinue OCS entirely. Medications: Mean inhaled corticosteroid dose 2287mcg/d (BDP equivalent), 60 patients were on LTRA, 47 on theophylline, subcutaneous terbutaline (3), cyclosporin (2), Anti-IgE therapy (1). Currently 13 patients are on anti-IgE therapy. 59 had severe refractory asthma by American Thoracic Society criteria. Adherence: 7 of 29 patients on regular OCS were identified as non-adherent with undetectable prednisolone level and normal cortisol. Healthcare utilisation: 95 patients with 12 months follow up data demonstrated a 50% reduction in hospitalisations compared to the previous 12 months, 0.96 vs 0.48.
Conclusion: This study highlights the importance of alternative diagnoses and co morbidities in the systematic work up of difficult asthma. The implementation of a DAC has reduced hospital admissions, reduced OCS requirement and enhanced access to treatments such as Anti-IgE therapy.
Conflict of interest and funding: None
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231: Non-asthma GP visits as predictors of asthma exacerbations compared with adherence and severity

Michael E Hyland, Ben Whalley, David MG Halpin, Colin J Greaves, Clare Seamark, Sue Blake, Margaret Pinnuck, David Ward, Adam L Hawkins, Dave Seamark
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Aim: Avoidance of asthma exacerbations remains a key objective in asthma management. In a health care system where resources are limited, an ability to predict which patients are most likely to have an exacerbation allows resources to be targeted for maximum benefit. Although asthma severity and adherence both are related to exacerbation frequency, population studies show that the relationship between either variable and outcome is poor. In this study we tested the theoretically derived prediction that the number of non-asthma related visits to the GP predicts exacerbations.
Method: We carried out a manual search of patients' notes for 166 patients all of whom were prescribed regular prophylactic medication for whom we had data on self-reported adherence, adherence as measured by prescription records, and severity as indicated by BTS step. The number of non-routine episodes of asthma care requiring intervention (asthma exacerbations) and the number of non-asthma visits were counted over a 5 year period.
Results: The Spearman correlation between exacerbations and non-asthma visits was .35*** , with BTS step was .28***, with self-reported regular adherence was .13, and with adherence by prescription records was .21**. Further analysis by receiver operator curves (ROC) showed that 3 ot more non-asthma visits per year yielded an area under the curve (AUC) of .75 when predicting 3 or more asthma exacerbations over the 5 year period.

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Conclusion: Exacerbations can be predicted from the frequency of non-asthma visits, which may be useful in clinical practice, and provides preliminary evidence to support the hypothesis that non-specific dysregulation plays a role in asthma exacerbations.

Conflict of interest and funding: Financial support towards the study was provided in the form of a Medical grant by GSK(UK)

For admin only: Dr Ben Whalley, ben.whalley@plymouth.ac.uk

234: Reducing asthma admissions by improving asthma management

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Brief outline of context: There were 79,794 emergency hospital admissions for asthma in the UK in 2008-09 - an estimated 75% were avoidable[1]. Asthma admissions from Bristol GP practices contributed to this.

Brief outline of what change you planned to make: Improve asthma management and reduce asthma hospital admissions across NHS Bristol.

Assessment of existing situation and analysis of its causes: Previous audits identified variations in asthma management across Bristol GP practices. NHS Bristol commissioned NSHI* to run the IMPACT* service in practices. Searches identified some practices provided annual asthma reviews to 73.3% of their asthma register, others 36.4%.

Strategy for change: IMPACT provided a therapeutic review, modular education and detailed clinical review by diploma trained asthma nurses, according to agreed practice protocols. Asthmatics attended a structured clinical review where their asthma control, inhaler technique and short-acting bronchodilator use was checked. Patients were given a self-management plan and educated in managing their condition. Practice staff were provided with respiratory training, and supported in reviewing their asthma register.

Measurement of improvement: There has been a 7% reduction in asthma admissions in 2010/11 in Bristol (n=37) compared to the previous year. Practices participating in the IMPACT programme accounted for 73% of this (n=27), compared to 27% in practices who had not (n=10). 99% of patients reviewed during the IMPACT service had been provided with an asthma self-management plan (20.8% previously).

Effects of changes: Increased patient awareness of asthma and improved knowledge of symptom management. GP's better able to manage their asthma register.

Lessons learnt: Variations in asthma management contributed to variations in patient outcomes across Bristol.

Message for others: A structured approach to asthma management can reduce hospital admissions

Conflict of interest and funding: *NSHI Ltd (National Services for Health Improvement) *Improving the Management of Patients Asthma and COPD Treatment. The IMPACT service is an independent nurse service sponsored by TEVA UK Limited 1 Asthma UK for Journalists: Key facts and stats: www.asthma.uk.org (Viewed Dec 2011)

For admin only: Ms Jenny Gibbs, jenny.gibbs@bristol.nhs.uk

237: Randomized phase II trial of homeopathy to prevent post treatment impairment of pulmonary tuberculosis

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Aim: Despite the successful anti tuberculosis treatment (ATT), impaired pulmonary function and low quality of life is well-documented in tuberculosis treated patients, resulting increased morbidity and mortality. Current study aim to assess the efficacy of an adjuvant homeopathy treatment in preventing pulmonary impairment and persistent symptoms in individuals treated tuberculosis patients.

Method: one hundred forty nine newly diagnosed pulmonary tuberculosis patients were randomized to receive homeopathy as an adjuvant to ATT or only ATT. After completing 6 month of ATT, all the patients were followed up for a year. Symptom score, pulmonary function test, and health related quality of life were assessed during follow up at completing ATT, at 6 month and at 12 month.

Results: One hundred two patients (n=54 in homeopathy, n= 48 in control group) completed a year of follow up. Both the groups had similar risk factors. After successful completion of ATT, patients on homeopathy had significant increased body weight (p<.0001), better quality of life (p<0.05) with lower symptom scores for cough and breathlessness (p<.0001) compared with control. Benefits were maintained in homeopathy group after a year whereas symptom (p<0.01) and impact score (p<0.001) deteriorate in control. FVC, FEV_1, FEV_1/FVC Ratio were higher than control group after a year. Physicians' visits were significantly lower in homeopathy group (p<0.0001). After a year, 12.97% in homeopathy group had impairment compared to 64.6% in control group.

Conclusion: These findings indicate that supplementation with homeopathy during anti tuberculosis treatment could prevent pulmonary impairment.

Conflict of interest and funding: No conflict of interest

Study was funded by NMP medical research institute

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239: "Lite Touch": piloting an innovative approach to promoting self-management in COPD

Sparrius C

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Brief outline of context: The specialist physiotherapy-led Community Respiratory Team (CRT) provides a 7-day service managing acute exacerbations, supporting early discharge, and providing home-based pulmonary rehabilitation for COPD patients in Edinburgh.

Brief outline of what change you planned to make: After two years' experience of a full tele-monitoring service, we sought to identify for whom a "lighter touch" might be more appropriate.

Assessment of existing situation and analysis of its causes: Despite a generally positive experience for both patients and the CRT, a full tele-monitoring service, as provided in the Telescot trial for 58 patients was unsustainable, and we sought a cost effective option to enable the service to continue.

Strategy for change: We developed the 'Lite Touch' service. Patients with COPD are visited by a member of the CRT and given a personalised self-management plan and a pulse oximeter. A dedicated phone number with answerphone was monitored by the CRT 7 days a week. In September 2011, 12 pilot patients were recruited.

Measurement of improvement: We monitored service usage and administered a self-completed questionnaire.

Effects of changes: After 4 months the CRT has received 14 calls via 'Lite Touch' and all these patients have required rapid intervention for the management of an acute exacerbation of COPD. 11 patients completed the questionnaire. 91% agreed that Lite Touch has "improved my confidence in managing my condition at home". 82% reported that "the technology has kept me out of hospital".

Lessons learnt: Patients love 'Lite Touch'! The service is being expanded in the light of this initial positive experience.

Message for others: 'Lite-touch' is potentially a cost-effective option for supporting self-management.

Conflict of interest and funding: No conflict of interests and funding all provided by NHS Lothian.

For admin only: Miss Clair Sparrius, clair.sparrius@luht.scot.nhs.uk

241: Improved asthma outcomes with FENO-guided anti-inflammatory treatment: a randomised controlled trial

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Aim: To examine the effects of anti-inflammatory treatment guided by fractional exhaled nitric oxide (FENO) on asthma-related quality of life, asthma control and exacerbation rate in adult patients with allergic asthma.

Method: This was a randomised controlled, multicentre study (17 sites). A total of 181 non-smoking participants (18-64 years) with confirmed perennial allergy and regular inhaled corticosteroid (ICS) treatment were randomly assigned to one of two treatment arms: a control group (n=88), where F_ENO

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was blinded for both patient and physician and the anti-inflammatory treatment adjusted according to routine clinical practice, and an active group (n=93), where the anti-inflammatory treatment was adjusted according to F_ENO. Participants were followed for one year (5 visits). F_ENO was measured and questionnaires on asthma-related quality of life (mini-AQLQ) and asthma control (6-item ACQ) were completed. All participants received a logbook in which they noted health care contacts and other asthma events between visits.

Results: The change in mini-AQLQ overall score over one year was not significantly different between the groups (p=0.20). However, the improvement in the symptom domain of the mini-AQLQ instrument was significantly larger in the F_ENO-guided group (p=0.041). In line with this, the ACQ score improved significantly more in the F_ENO-guided group vs. control group (p=0.045). A significantly lower cumulative incidence of moderate exacerbations was found in the F_ENO-guided group than in the control group (p=0.009), but no difference was found for severe exacerbations (p=0.73). Mean use of ICS over the study period was similar in the two groups (576 vs. 572 mg/daily budesonide equivalents, p=0.95).

Conclusion: Using F_ENO to guide anti-inflammatory treatment improved asthma outcomes in adults with atopic asthma without increasing overall ICS use.

Conflict of interest and funding: Kjell Alving is an associate and minority shareholder of Aerocrine AB. Jörgen Syk has received research support from Aerocrine AB. The study was primarily funded by the county council of Stockholm (PickUp). Support was also received from the Centre for Allergy Research at Karolinska Institutet, Aerocrine AB, MSD Sweden, Phadia AB, and Meda AB.

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244: Implementing a COPD care package: a case study within a primary care network

Round T, Hull SA, Gunaratne I, Pushparajah S, Renno K, Bari N
Round T, GP Tower Hamlets and Academic Clinical Fellow, Department of Primary Care and Public Health Sciences, Kings College London.

Brief outline of context: Tower Hamlets has some of the highest rates of COPD admissions/readmissions in London with significant practice variation. Primary care networks were utilised to implement a COPD care package. See linked abstract "Implementing a COPD Care Package in Tower Hamlets: supporting sustainable improvement". Network 2 has 5 practices, and in April 2011 had 38,772 patients, 412 with COPD, prevalence 1.06% (range 0.62% - 2%).

Brief outline of what change you planned to make: Through a network based structure working towards implementation of key performance indicators and aiming to reduce inter-practice variability.

Assessment of existing situation and analysis of its causes:

Strategy for change: Organisational/structural changes: Developing a working group of network/practice COPD teams; call/recall systems utilising real-time IT and robust data; incentivised performance payments; regular MDT meetings between community/secondary care teams. Education/training: Increased capacity for COPD reviews, including increasing equipment and trained staff provision; educational sessions at practice meetings/MDTs. Clinical leadership: Funded COPD network lead; audit and case notes review; piloting validated COPD screening; healthy competition between practices to reach collective incentivised targets.

Measurement of improvement: Aiming towards incentivised targets (30% of care package payment): 10% increase in COPD register size; 80% or more patients having annual reviews for mild to severe COPD, biannual reviews for very severe COPD (including housebound reviews); 75% uptake ever referred to pulmonary rehabilitation (MRC 3 and above).

Effects of changes: At six month review: 8.4% increase in network prevalence to 447 patients; 3 out of 5 practices achieving mild to severe annual review targets; 37% increase in housebound reviews. We will present the first year evaluation results along with qualitative stakeholder feedback assessing changes within practices.

Lessons learnt: Implementation of a primary care network based COPD care package can be achieved through organisational/structural changes, staff up-skilling/training and clinical leadership.

Message for others: Delivery of a COPD care package can be implemented via a primary care network. This requires organisational investment, professional and educational support, ongoing high quality data monitoring and feedback, with incentivised targets.

Conflict of interest and funding: None

For admin only: Dr Thomas Round, thomasround@nhs.net

245: Implementing a COPD care package in Tower Hamlets: supporting sustainable improvement

Hull SA, Round T, Pushparajah P, Gunaratne I, Renno K, Bari N
Hull SA, GP Tower Hamlets, Reader in Primary Care Development, Queen Mary University of London

Brief outline of context: Tower Hamlets is a socially deprived and ethnically diverse borough in London, with high rates of COPD emergency admissions/readmissions and length of stay. Early identification and primary care management could be improved. Please see also linked abstract "Implementing a COPD care package: a case study within a primary care network".

Brief outline of what change you planned to make: System change involving networks of GP practices, community and secondary health services to engage with a funded 'COPD care package'.

Assessment of existing situation and analysis of its causes:

Strategy for change: 1. The formation of clusters of GP practices (networks) to deliver enhanced COPD care collectively, overseen by peers on network boards. 2. Funding to support network development, service delivery, and financial incentives for achievement. 3. The production of 'practice dashboards' based on EMIS Web, monitoring real time progress against performance indicators. 4. Organising community health services to provide admission avoidance service, expanded pulmonary rehabilitation and a diagnostic spirometry service. 5. Engage consultant physicians to join network MDT meetings to provide educational support to primary care teams.

Measurement of improvement: Using monthly dashboard figures, progress towards the key aims of the care package can be reviewed by network managers and clinical leads.

Key metrics: 10% increase in diagnosed prevalence: extended annual /bi-annual review including all housebound patients: pulmonary rehabilitation uptake: COPD prescribing rates: unplanned admission rates for COPD by network/practice.

Effects of changes: Evidence will be presented on: increased COPD case identification; improvements in measures of primary care management; data on admissions.

Discussion will focus on the effects of network formation on developing uniform service quality across primary care, and the value of the community MDT to practice and secondary care teams.

Message for others: Commissioner investment in primary care networks for a cluster of chronic conditions provides more benefit than a single disease focus. Harnessing the combined benefits of investment, access to real time IT, the power of professional leadership, support and persuasion can provide a sustainable model for improvements in COPD management.

Conflict of interest and funding: None

For admin only: Dr Thomas Round, thomasround@nhs.net

247: New codes are needed to record COPD severity in UK primary care: a modified Delphi exercise

Sims E, Price D, Jones R
Research in Real Life

Aim: In the UK electronics are used to classify COPD severity, but there is confusion about codes used in primary care for recording COPD. The aim was to explore which codes are needed for coding severity and for measures of health status and future risk of exacerbation.

Method: A Delphi exercise in 3 rounds was used: in Round 1 questionnaires, consisting of background information and unstructured, open ended

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questions were email to PCRS-UK members. Round 2 questionnaires: areas of high uncertainty: using structured and open ended questions. 'Best approach' recommendations and preferred measures were used in Round 3 structured questionnaire, distributed to delegates at the 2011 PCRS-UK conference.

Results: Response rates were 20 in Round 1, 11 in Round 2 and 55 in Round 3. In Round 1 respondents the most frequently reported measures of COPD severity were MRC score (90%), FEV_1% predicted (75%), exacerbations (55%), CAT score (40%), DOSE Index (35%) and CCQ score (20%). 75% of respondents agreed that new codes, or a revision of current codes is required for recording of lung function severity. In Round 2, respondents preferred CAT to CCQ and willingness to use DOSE score were identified. In Round 3, 96% of delegates agreed to use the CAT score and DOSE Index as preferred measures of health status and risk of future exacerbation; 89% agreed that current COPD severity codes should be replaced with new codes.

Conclusion: Strong support exists within the primary care respiratory community for the introduction of new READ codes to replace the outdated current codes, and for the CAT score and DOSE Index to be used routinely in the primary care management of COPD.

Conflict of interest and funding: Professor David Price has consultant arrangements with Altana, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Merck, Mundipharma, Novartis, Pfizer, Sandoz and Teva. He or his research team have received grants and support for research in respiratory disease from the following organisations in the last 5 years: UK National Health Service, Aerocrine, AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Merck, Mundipharma, Novartis, Nycomed, Pfizer, and Teva He has spoken for: Almirral, AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, GlaxoSmithKline, Kyorin, Merck, Mundipharma, Pfizer and Teva He has shares in AKL Ltd which produces phytopharmaceuticals. He is the sole owner of Research in Real Life Ltd. Dr Erika Sims is an employee of Research in Real Life Ltd Dr Rupert Jones - No conflict of interest

For admin only: Professor David Price, david@rirl.org

251: Edinburgh Community Respiratory Team: an innovative approach to managing the COPD population

Benn L, Buchanan L, Daniell E, Groom L, Harborrow G, Sparrius C, Thomson A, White W

Edinburgh Community Respiratory Team, NHS Lothian

Brief outline of context: In NHS Lothian, Scotland 1.48% of the population has COPD.

Brief outline of what change you planned to make: We aimed to develop a new service to meet the challenge of providing proactive primary care services to people with COPD

Assessment of existing situation and analysis of its causes: A new physiotherapy-led team was designed to supplement existing primary care services

Strategy for change: Since April 2008 a specialist physiotherapy-led Community Respiratory Team (CRT) has provided a 7-day service managing acute exacerbations, supporting early discharge, and providing home-based pulmonary rehabilitation for COPD patients in Edinburgh.

Measurement of improvement: We collected routine data and administered the Talking points questionnaire, designed to measure outcomes important to users of the community care services in Scotland. We received 105 responses (50% response rate).

Effects of changes: In just under four years, the CRT received 1613 referrals and conducted 10,492 home visits. 94% of patients reported they were able to access the service without difficulty. 83% of patients reported the service had supported them to "stay as well as I can be" and 56% to "live where I want to live" and "keep active".

Lessons learnt: The CRT has helped to ensure that the right care is delivered at the right time and in the right place, working to assist COPD patients to optimise the self-management of their long term condition.

Message for others: This new way of working has created a model that respiratory services are now considering replicating within other NHS health boards.

Conflict of interest and funding: No conflict of interests and funding all provided byl NHS Lothian

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252: Primary care EarLy Intervention for Copd mANagement (PELICAN) study: progress on a cluster randomised trial

Zwar NA, Middleton S, Reddel HK, van Schayck CP, Crockett A, Dennis S, Marks G, Bunker J, Vagholkar S, Liaw T. Hasan I, Hermiz O

School of Public Health and Community Medicine, University of New South Wales, Sydney, Australia

Aim: COPD is an important major health problem managed in general practice but diagnosis and intervention is often delayed. This cluster RCT is examining whether intervention by a practice nurse-GP partnership will improve outcomes for people with newly diagnosed COPD. In the intervention model there is active case finding in people aged 40 to 85 who are current or former smokers. These patients are invited to a case finding appointment with the practice nurse who has been trained in performing spirometry. Patients newly diagnosed with COPD are then offered early intervention or usual care depending on the practice randomisation.

Method: A cluster randomised trial is in progress in Sydney, Australia. Outcome measures include disease related quality of life, smoking status, immunisation, disease knowledge and inhaler technique.

Results: Forty one practices were recruited, four subsequently withdrew (two intervention and two usual care). Educational events have been held for practice nurses and GPs in the study according to group randomisation. To date letters of invitation have been sent to 8654 patients and 976 have attended a case finding appointment (11.3% of those invited). Regular feedback being provided to practice nurses on quality of spirometry. So far 170 new diagnoses of COPD have been made (17.4% of those attending).

Conclusion: The training of practice nurses in spirometry and early intervention has been feasible but support is needed in implementation. The rate of attendance at case finding appointments is lower than expected. The rate of new diagnoses is substantial.

Conflict of interest and funding: No conflicts. Funding is from the Australian National Health and Medical Research Council of Australia.

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253: Socioeconomic status, quality of life and health care access in COPD

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King's College London, King's Health Partners, Department of Primary Care and Public Health Sciences, London, UK

Aim: To seek associations between socio-economic status (SES) and health-related quality of life (HRQoL) and healthcare access (HA) in patients with COPD from a systematic review of the literature.

Method: Medline, IBSS, PsychInfo, Embase, Web of Science, Ingenta Connect and CINAHL were searched (1947 to May 2010) using search terms including "Chronic Obstructive Pulmonary Disease", "COPD" and "prevalence". SES was defined by education, income or occupation. HA was defined by utilisation as attendance, prescription pattern and specialist referral. HRQoL was defined as physical, functional, social and emotional well-being measured with validated instruments. Quality was assessed by design, external validity, measurement bias, instrument validation, definition of outcome and confounding. A key quality measure was inclusion of severity as a confounding element.

Results: 6,844 papers were screened, 4,837 abstracts were assessed, 72 articles were assessed in full, and 21 were included in the review, 16 on association between SES and HRQoL, and 5 between SES and HA. 6 studies were of adequate quality for the analysis of association: three between SES and HRQoL and three between SES and HA. SES was significantly correlated with HRQoL (lower educational attainment and household income were related to greater disease severity, poorer lung function, greater functional

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limitation and lower HRQoL) and to a limited extent with HA (lower education and household income were related to greater discussion of prognosis, and greater adherence to inhaler use).

Conclusion: In studies that controlled for the effect of disease severity low socioeconomic status in COPD was associated with marginal increased access to healthcare but poorer outcome in quality of life.

Conflict of interest and funding: Ms Georgopoulou is funded by a King's College London PhD scheme. No conflicts of interest are declared.

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254: Yearly change of spirometry in Vietnamese asthma patients managed by Global Initiative for Asthma (GINA) guideline: a 5-year follow-up study

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University of Medicine and Pharmacy, Ho Chi Minh City, Viet Nam

Aim: To assess the yearly change of spirometry of asthma patients have managed by GINA guideline for 5 years in Ho Chi Minh City, Viet Nam.

Method: Prospective and retrospective descriptive study including all asthma patients registered in Respiratory Care Center, University Medical Center at Ho Chi Minh City Viet Nam in five years from 01/2006 to 01/2011.

Results: 4554 patients were included in the first year with average age of 33 and females comprise 42%. The numbers of patients were followed after 1, 2, 3, 4 and 5 years are 853, 685, 629, 545, and 464, respectively. All spirometry parameters were improved significantly after one year therapy: percent predicted FVC (%FVC) was improved from 81% to 88%, percent predicted FEV_1 (%FEV_1) from 79% to 85%, percent predicted PEF (%PEF) from 71% to 84% and percent predicted FEF_{25-75} (%FEF_{25-75}) from 64% to 75%. %PEF was improved much more than others were as 13% and that made it be changed from abnormal values ($\leq$80%) to normal values ($\geq$80%). %FEV_1 reach its peak after 12 weeks (males) to 48 weeks (females) and have maintained without significant change for next 4 years. %FVC, %PEF and %FEF_{25-75} reached their peaks after 12, 24 and 12 weeks, respectively, and have been continuously stable in the subsequent years without significant difference between two sexes.

Conclusion: All spirometry parameters of Vietnamese asthma patients were significant improved and reach their peaks after 1 year of management based on GINA guidelines and were stable after reaching these peaks in the following 4 years.

Conflict of interest and funding: No conflict of interest, funding from University of Medicine and Pharmacy at Ho Chi Minh City, Viet Nam

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255: Validation of a questionnaire for the assessment of bronchial hyperresponsiveness in a Greek population

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Aim: To validate the bronchial hyperresponsiveness (BHR) questionnaire in a Greek population

Method: A cross sectional study was conducted at the asthma outpatient clinic of the University Pulmonary Clinic of the Aristotle University of Thessaloniki, Greece. Inclusion criteria were males and females, age 14 to 75, with recent history of asthma symptoms and without any other known respiratory/systematic disease that affect BHR. During their assessment, translated copies of the BHR questionnaire were delivered to eligible subjects that gave their informed consent. The gold standard method chosen was the mannitol challenge test.

Results: 62 patients in total (21 males and 41 females) were recruited (mean value±SD): mean age 34±14.9, mean total score of the questionnaire 54.39±40.88 and mean subscores for symptoms and stimuli 28.29±19.97 and 26.10±24.07 respectively. During mannitol challenge subjects achieved a mean fall of FEV_1 13.41±1.79 and a provocative dose of mannitol, mean PD15 373.11±61.7 mg. Correlations among variables have shown significant positive correlations among all score variables and negative correlations among the scores and the mannitol test results. Construct validity was assessed with principal component analysis identifying one reliable underlying factor that explain 42.4% of the variance. Reliability test has showed Cronbach's alpha: 0.957 that represents a very good reliability regarding the internal consistency of the questionnaire items. Sampling adequacy was assessed with Kaiser-Mayer-Olkin (KMO) statistic (KMO = 0.8). Receiver Operating Curve analysis has determined a cut off value of 26 of the total questionnaire score for BHR response with sensitivity of 57.1% and specificity of 80%.

Conclusion: BHR questionnaire was validated to a Greek population consisting thus an applicable tool for assessing BHR response to the community.

Conflict of interest and funding: None

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256: Effect of self-administered yoga program for patients with COPD

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Aim: To develop inexpensive and practical therapeutic program, present study assessed the efficacy self-administered yoga program practiced at home on dyspnoea, exercise function and health related quality of life (HRQOL) in patients with chronic obstructive pulmonary disease (COPD).

Method: This was a single-blind, randomised controlled trial of self-administered yoga program for COPD, comparing the effectiveness of 6 months of home practice with the control group receiving normal care only. The primary outcome measure was dyspnoea, measured by MRC dyspnoea scale. Secondary outcome measure included, physical functioning, 6 min walking distance (6MWD) and chronic respiratory disease questionnaire (CRQ) which includes four domains: dyspnoea, fatigue, emotional function, and mastery

Results: Patients completing this study consisted of: 49 patients in the self-care yoga group, and 47 patients in control. Clinically meaningful changes in dyspnoea from baseline to 6 months ($P < .001$), physical functioning ($P < .0001$), and self-efficacy for managing dyspnoea ($P < .0001$) were observed in yoga groups with. Significant improvements were achieved in 6MWD, CRQ (Dyspnoea, Mastery, Fatigue and emotional function) in the yoga group only.

Conclusion: Our study suggested that self-administered yoga program could be cost, time and treatment effective for improving exercise tolerance and HRQOL in patients with COPD.

Conflict of interest and funding: No conflict of interest and study was funded by NMP Medical Research Institute, India

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258: Patient activation among COPD patients, and implications for self-management support needs

Heijmans M, Rijken M, Rademakers J

NIVEL - Netherlands institute for health services research, Utrecht, The Netherlands

Aim: There is a growing awareness that patients should be more active in their own care. For COPD patients this can be challenging given the progressive course, disabling symptoms and frequent co morbidity. For healthcare providers it is not always clear to what extent patients are willing and capable to play an active role themselves or rather want support for their self-management. This study explores the level of patient activation in COPD patients and its association with self-management support needs as perceived by patients themselves.

Method: a representative sample of 325 medically diagnosed COPD patients filled in the Patient Activation Measure (PAM) and rated the type and number of self-management tasks and associated support needs they encountered in daily life. The PAM evaluates the knowledge, skills and confidence essential to managing one's own disease and segments patients into one of four progressively higher activation levels.

Results: Almost 40% of the COPD patients were at the two lowest levels of activation indicating that they lack the motivation, knowledge and skills to perform self-management activities independently. After adjusting for

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demographics and disease characteristics and the number of self-management tasks, the level of patient activation contributed significantly to the prediction of self-management support needs as perceived by patients, with patients at lower levels of activation being more in need for support.
Conclusion: Insight into the level of patient activation may help to tailor the care to the support needs of COPD patients. Further research should examine the potential of the PAM as a screener for self-mangement support needs in clinical practice.
Conflict of interest and funding: This study was funded by the Dutch Asthma Foundation. The authors declare that they have no competing interests.
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259: Predictors of exacerbations of asthma and COPD during one year

Salwan Al-ani, Mark Spigt, Hasse Melbye
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Aim: The aim of the study was to investigate the incidence of exacerbations in primary care during one year and to identify risk factors for such events.
Method: The study was carried out at seven general practice offices in Norway. Among 18931 patients listed at these offices aged 40 years or more, 1784 (9.4%) had been registered with a diagnosis of asthma or COPD (or both) during the previous five years. Out of these patients a random sample of 1111 patients was invited for several measurements including spirometry. Subsequently, participants were asked to consult their GP during exacerbations the following 12 months. The participants also answered a questionnaire on exacerbations during the same period. We determined the frequency of exacerbations per year and how the exacerbations were associated with relevant predictors.
Results: Out of 376 patients who were included and observed during 1 year follow up, 159 (42.3%) experienced one exacerbation or more. This was the case for 45.1% of the women and 37.8% of the men. Exacerbations were more frequently registered in those aged 65 years or more (50%) than among younger patients (37.1%), p=0.01. Patients who had been treated with antibiotics and/or corticosteroids due to an exacerbation the year before baseline (n=95), had a higher risk of getting an exacerbation during the subsequent year (71.6% compared to 32.6% among the remaining patients (p<0.001)). The frequency of exacerbations was not significantly associated with GOLD stage and smoking status.
Conclusion: The study confirms what has been reported from secondary care that previous exacerbations strongly predict future exacerbations. Surprisingly, exacerbations could not be predicted by GOLD stage.
Conflict of interest and funding: none
For admin only: Dr Salwan Al-ani, tara_rasha@yahoo.com

263: Outcomes of establishing community practice for oxygen services across NHS North West Strategic Health Authority (NWSHA)

Williams J, Gaduzo S, Roberts J, Hatch K, Smith V, Squires B
NHS North West Respiratory Clinical Pathway team

Brief outline of context: NWSHA COPD pathway leads, appointed in April 2010, complemented Regional Home oxygen services (HOS) leads' work by establishing a community of practice for HOS assessment and review (HOS-AR) teams.
Brief outline of what change you planned to make: Producing cost savings by decreasing variation in service organisation and prescribing.
Assessment of existing situation and analysis of its causes: PCT Data obtained of oxygen provision and service organisation in April 2010 from questionnaires & regional HOS data. 50 % of PCT and Hospitals never met or only in a crisis. Quality of service varied e.g. 3 of 23 services had no formal follow up arrangements following initiation in secondary care. Average cost per patient varied significantly across the region with the lowest value being half the most expensive value.
Strategy for change: Arranging SHA Workshops for primary and secondary care teams to meet together and formulate action plans. Distribution of 'Top tips' for monitoring /management of oxygen prescription via SHA respiratory website to HOS-AR teams.
Measurement of improvement: Action plans outcomes feedback. Quarterly cost data.
Effects of changes: Primary and secondary care HOS-AR teams action plans are being implemented. Regional HOS steering group established. NWSHA Oxygen service cost decreased from £3.1m to £2.8m/quarter following the first workshop. 19/24 PCT's have decreased their annual cost in the last 12 months.
Lessons learnt: Problems shared are rarely unsurmountable.
Message for others: Better working and cost savings can be achieved by establishing a motivated integrated community of practice.
Conflict of interest and funding: None
For admin only: Dr John Williams, Johnwilliams5@nhs.net

264: Listening to your voice: patient and carer perspectives on COPD care in NHS NorthWest

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NHS NorthWest

Aim: To gain insight into patient and carer perspectives of COPD care to inform clinical practice and service development.
Method: Patients and carers from 24 localities across NHS NorthWest (NW) were invited to attend an interactive networking event facilitated by service experience experts. Personal reflection of experience and feelings were captured on post-it notes and shared in tabletop discussions to identify common themes and differences. Post-its were transferred to a core pathway which ran along the wall. This was used to engage whole group discussion in the development of key messages.
Results: 23 patients and 3 carers representing 11/24 localities (45%) attended the event. The key messages patients and carers wanted clinicians to hear were: In the beginning; know my COPD journey started a long time before the diagnosis or before I saw a health professional; it takes time to get a diagnosis; there was delay in referring me to a consultant (specialist); I need confidence in local NHS services to help me. Living with my chest; recognise the importance of support groups and networks; I need the right information for me and my carer; I need access to pulmonary rehabilitation to keep me healthy; get the relationships right, "show me you care", involve me in my care. When I need help; I need access to the best clinical care and who can help me when I need it most; help me to understand and manage my own care; give me consistent messages.
Conclusion: Patient and carer perspectives of COPD care in NW provide powerful insights on experience and feelings that can be used to develop clinical practice and influence service development.
Conflict of interest and funding: None
For admin only: Mrs June Roberts, june.roberts@nhs.net

266: Listen to your lungs: Blow Football Challenge!

Roberts J, Gaduzo S, Williams J, Sud P
NHS NorthWest

Brief outline of context: COPD is under diagnosed across NHS NorthWest (NW) and awareness of lung health and lung disease is low.
Brief outline of what change you planned to make: Campaign to raise awareness of lung health/ lung disease amongst general public in NW.
Assessment of existing situation and analysis of its causes: 2.1% NW population has COPD with predicted prevalence 4.4%; smoking rates above national average.
Strategy for change: We developed a campaign that would have resonance with the public and local media. The "listen to your lungs" campaign focused on positive non-medical messages about maintaining lung health, recognizing symptoms of lung disease, where to go for more advice. In partnership with British Lung Foundation (BLF) we used the game of blow football to create interest with blow football challenge on lead up-to World COPD Day (WCOPDD) November 2011.
Measurement of improvement: 22/24 (91%) BLF Breathe Easy groups

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raised awareness of the campaign with 14/24 (58%) groups holding public blow football challenges. BLF worked with local clinicians to provide lung function tests for over 300 people. 3 primary schools held blow football challenges with over 70 children taking part. Clinicians in 12/24 (50%) localities also held a variety of events using our materials.

Effects of changes: BLF website gained over 100,000 visitors to their website during November, with 16,000 hits on their COPD page, 10,000 on WCOPDD day and 7,000 people have taken online breathing test. The campaign will continue in 2012 with further events planned for no smoking day, world spirometry day and the Olympics.

Lessons learnt: Innovative communications strategies can increase awareness of lung health and disease

Message for others: Collaboration with patient organisations can increases effectiveness of awareness campaigns

Conflict of interest and funding: None

For admin only: Mrs June Roberts, june.roberts@nhs.net

270: Evaluation of guideline-structured asthma management in primary care: a nursing perspective

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Asthma Society of Ireland

Aim: Poor asthma control places a significant burden on patients, their families and the health care system. Sub-optimal asthma control can incur expensive emergency care, possible hospitalisation and premature deaths. To address this the Asthma Society of Ireland developed a guideline based theoretical and clinical programme.

Method: Primary health care professionals participated in modules addressing asthma management in addition to a clinical workshop. Five asthma nurse specialists were appointed to support practice nurses, specific areas being:

- Spirometry
- Inhaler technique
- Patient education
- Self care management

An online electronic patient record (EPR) was developed and installed in each practice. This template assisted in the capture of quantitative and qualitative data.

Results: In summary Nurses identified the following;

- Structured guideline based care facilitated improved decision making and team work.
- Improved patient care
- Encouraged patient empowerment
- Enabled protected time for patient education
- Encouraged patients to self manage their asthma
- Increased uptake of flu vaccine
- Opportunity to support smoking cessation
- EPR was time consuming
- Level of spirometry skill varied, although many considered it an essential component.
- Majority of patient management was performed by practice nurses
- The lack of consistency in prescribing medication was noted
- Poor utilisation of home monitoring devices

Conclusion: Practice nurses demonstrated they are committed to delivering a high standard of guideline structured asthma care. They identified protected time as a necessary component for the appropriate care and education of patients; recognising the importance of patient empowerment, compliance and control.

Conflict of interest and funding: The Asthma Society of Ireland does not report any conflict of interest and the project was funded solely by the Asthma Society of Ireland

For admin only: Ms Frances Guiney, frances.guiney@asthmasociety.ie

271: Preferences of patients with asthma or COPD towards active patient participation

Baan D, Heijmans M

NIVEL

Aim: To investigate preferences of asthma and COPD patients towards active patient participation in their own care. According to the chronic care model, patients should take this active role, but are patients willing to do so?

Method: A representative group of 750 patients with a medical diagnosis of asthma or COPD completed a questionnaire assessing the level and content of current participation and preferences towards future participation.

Results: 47% of people with asthma and 53% of patients with COPD indicate that they never or only sometimes actively participate in their own treatment. From this group the majority doesn't even want to be more involved. A large group has no opinion about active participation (38% asthma, 48% COPD); only 20% of people with asthma and 14% of people with COPD want a more active role. Preferences, however, differ according to educational level and seriousness of the disease.

Main reason for patients with asthma to not become more active is that they are satisfied with their current situation and judge their illness as not serious enough. The majority of COPD patients think their health care provider should be in charge for this active role. In addition, concerning their willingness to take a more active role, patients indicate that they don't want to take the lead, but want to be involved in a more passive way, e.g. by gaining more advice and information and to be kept informed on updates regarding their treatment.

Conclusion: Although active engagement is recommended within the chronic care model, a substantial part of people with asthma or COPD isn't actively involved nor wants to take an active role. It's important to further investigate the barriers for active involvement from the patient's perspective.

Conflict of interest and funding: This study was Funded by the Dutch Asthma Foundation. The authors declare that they have no competing interests.

For admin only: MSc Dagmar Baan, d.baan@nivel.nl

273: Introducing a COPD discharge care bundle across a large hospital trust.

Elkin SL, Harvey V, Macfie D, Oyston M, Otienne C, Goddard Y, Patel I, Schofield G, Falzon C, Lee C, Lyons N, Woodcock T, Howe C

Imperial College NHS Trust

Brief outline of context: Imperial College Healthcare NHS Trust (ICHT) was formed by amalgamating 3 hospitals. It became apparent that care received by patients admitted with COPD across sites varied with some long length of stays (LOS). We introduced the discharge bundle to unify approach to care.

Brief outline of what change you planned to make: Implementing 5 elements of evidence based care for patients discharged after an exacerbation of COPD (commenced April 2010)

- Smoking cessation assistance
- Pulmonary rehabilitation referral
- Self-management
- Effective inhaler use
- Follow up arrangements/liaising with community

Assessment of existing situation and analysis of its causes:: Data collected from informatics on LOS and admissions for year before iniative Discussions with teams from all sites, community and CLAHRC.

Strategy for change: Over 18 months the bundle was rolled out across the trust. Starting on respiratory wards, then acute wards and finally general medical.

Measurement of improvement: Measures of improvement were collected weekly and reviewed to inform plan-do-study-act (PDSA) cycles using a web-reporting tool:

- % Compliance for completion of all 5 bundle elements.
- % Bundles filled / J441 coded admission Outcomes measures included:
  - Admissions. • Length of stay

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Effects of changes: Compliance slowly improved. Over 1 year Admissions dropped from 360 to 274 days. LOS dropped from 9 days to 6.5 days
Lessons learnt:
- Early engagement of nursing management
- Correct coding
- Educating staff
- Respiratory nurses crucial
- Utilising PDSA adaptations can occur

Message for others: Implementing the COPD bundle takes time and requires champions pushing usage. Involve senior nurses early. Each new implementation area presents new challenges and requires dedicated time.
Conflict of interest and funding: This work was funded in partnership between ICHT and the NIHR CLAHRC for Northwest London.
For admin only: Dr Sarah Elkin, sarah.elkin@imperial.nhs.uk

276: Nurse-initiated intervention provides timely rescue therapy to relieve patients of their acute respiratory exacerbations in public primary care clinics in Singapore

Tan NC, Tay IH
SingHealth Polyclinics, Singapore

Brief outline of context: Timely response to patients with acute respiratory exacerbation (AE) due to bronchoconstriction with rescue therapy is critical to avert a potentially life-threatening event. Such access could be delayed by exisiting barriers at local polyclinics.
Brief outline of what change you planned to make: A protocolised intervention would be developed to provide timely management of AE patients.
Assessment of existing situation and analysis of its causes: The patient's waiting time prior to rescue theray varied between 15 to 90 minutes, due to absence of triage system and multiple clinic processes prior to doctor consultation.
Strategy for change:: After multiple plan-do-study-assess cycles by the respiratory workgroup, a Nurse-Initiated Breathless Patient Protocol (NIBPP) was developed. Registered nurses were trained to assess patients' respiratory status and to initiate inhalational rescue therapy based on protocol.
Measurement of improvement: The time of patient's registration to the time of initiation of rescue therapy is defined as the "Registered to Rescue therapy" ("RTR") and is used as a process indicator. These data was collected monthly and processed to determine the proportion of AE patients, with "RTR 15" timing of within 15 minutes.
Effects of changes: From August08 to July10, 10 047 patients received rescue therapy using the NIBPP, with proportion of patients with "RTR 15" increased from 23% to 69%, with no significant adverse event.
Lessons learnt: The NIBPP resulted in timely and safe treatment for patients with AE. It is now incorporated as routine practice in these polyclinics.
Message for others: Timely access to appropriate acute care can be improved with re-design of system and role of healthcare professionals.
Conflict of interest and funding: Nil
For admin only: Dr Ngiap Chuan Tan, Tan.Ngiap.Chuan@singhealth.com.sg

277: Patients with asthma show greater improvements in lung function after combination therapy with fluticasone propionate/formoterol fumarate than with its individual components administered alone

Price D, Papi A, Kaiser K, Grothe B, Lomax M, McIver T, Dissanayake S
Centre of Academic Primary Care, University of Aberdeen, Aberdeen, UK

Aim: According to the GINA guidelines, combination therapy with an inhaled corticosteroid (ICS) and a long-acting β2-agonist (LABA) is the most effective treatment option for patients with asthma uncontrolled with ICS monotherapy. Combining the ICS fluticasone propionate (FLUT) and the LABA formoterol fumarate (FORM) in a single aerosol inhaler (FLUT/FORM) has been developed as a new therapy option. This integrated analysis of data from up to five randomised, double-blind, parallel-group studies assessed the efficacy of FLUT/FORM in terms of improvement in lung function.
Method: Adults and adolescents with mild, moderate or severe asthma treated for 8 or 12 weeks with FLUT/FORM (100/10, 250/10 or 500/20 µg, twice daily (b.i.d.); n=641) or the equivalent nominal dose of FLUT (100, 250 or 500 µg, b.i.d.; n=643; five studies) or FORM monotherapy (10 µg, b.i.d.; n=345; three studies), were included in this study.
Results: Superiority of FLUT/FORM was demonstrated by greater improvements in lung function compared with its individual components alone. FLUT/FORM compared to FORM showed significantly greater improvements in lung function as measured by change in pre-dose FEV_1 from baseline to study end (least-squares [LS] mean difference was 0.13 l [95% CI 0.07 to 0.19; p<0.001]). FLUT/FORM was also superior to FLUT with regard to change in FEV_1 from pre-dose at baseline to 2 h post-dose at study end (LS mean difference was 0.15 L [95%CI 0.10 to 0.19; p<0.001]).
Conclusion: Fluticasone/formoterol combination therapy is superior to either component administered alone in improving lung function for patients with a range of asthma severities.
Conflict of interest and funding: This abstract is an encore submission and parts of it were first presented at the BTS Congress 2011. David Price has consultant arrangements with Boehringer Ingelheim, GlaxoSmithKline, Merck, Mundipharma, Novartis, Cheisi and Teva. He or his research team have received grants and support for research in respiratory disease from the following organisations in the last 5 years: UK National Health Service, Aerocrine, AstraZeneca, Boehringer Ingelheim, GlaxoSmithKline, Merck, Mundipharma, Novartis, Nycomed, Pfizer, Chiesi and Teva. He has spoken for: AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Merck, Mundipharma, Pfizer and Teva. He has shares in AKL Ltd which produces phytopharmaceuticals. He is the sole owner of Research in Real Life Ltd. Alberto Papi has consultant arrangements with Chiesi, GlaxoSmithKline, Merck, Mundipharma, Sunovion, Teva, Zambon. He or his research team have received grants and support for research in respiratory disease from the following organisations in the last 5 years: AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Merck, Novartis. He has spoken for: AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Merck, Mundipharma, Nycomed, Novartis, Pfizer. Kirsten Kaiser works for Skye Pharma; Birgit Grothe, Tammy McIver and Mark Lomax all work for Mundipharma Research Limited.
For admin only: Professor David Price, david@respiratoryresearch.org

279: Asthma control status in participants and non-participants of a pragmatic trial in primary care

Honkoop PJ, Loymans RJ, Termeer EH, Snoeck-Stroband JB, Assendelft WJ, Sterk PJ, ter Riet G, Schermer TRJ, Sont JK, The ACCURATE Study Group
Leiden University Medical Center, Leiden, The Netherlands

Aim: Pragmatic trials aim to include a representative sample of a target population. We aimed to assess by how much the level of asthma control differed between participants and non-participants of a pragmatically intended trial in general practices.
Method: We conducted a non-participant analysis of patients invited for the Accurate trial (Trial registration: NTR1756). By mail we contacted patients who were aged between 18 and 50 years old, with a doctor's diagnosis of asthma and a prescription of inhaled corticosteroids in the previous year from 132 participating general practices around Amsterdam, Nijmegen and Leiden. We asked patients who did not want to participate for their reasons and to fill out an Asthma Control Questionnaire (ACQ). Current asthma control in participants and non-participants was assessed by the ACQ and results were compared by Student's t-test.
Results: We mailed 3,662 patients, 640 (18%) participated in the trial and 613 amongst those not willing to participate (17%) filled out an ACQ. Patients not willing to participate had better asthma control (mean ACQ 0.62; IQR 0.0 to 1.0) than trial participants (ACQ 0.97; IQR 0.3 to 1.3). The mean difference was -0.35 (95% CI: -0.43 to -0.27, p<0.001). Main reasons given for non-participation in the trial were: lack of time (33%) no asthma complaints (32%); and no interest (27%).

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Conclusion: Patients who participated in the Accurate trial have worse asthma control than those not participating. Our data indicate that current level of asthma control is probably amongst patients' reasons for trial participation. This stresses the importance of pre-planned subgroup analyses of trial outcome based on baseline asthma control categories.

Conflict of interest and funding: This study was supported by The Netherlands Asthma Foundation and The Netherlands Organisation for Health Research and Development.

For admin only: Mr Persijn Honkoop, P.J.Honkoop@lumc.nl

280: Level of asthma control in a primary care setting assessed by the Asthma Control Questionnaire (ACQ)

Loymans RJ, Honkoop PJ, Termeer EH, Snoeck-Stroband JB, Assendelft WJ, Schermer TRJ, Sont JK, Sterk PJ, ter Riet G, The ACCURATE Study Group

Academic Medical Center - University of Amsterdam, Amsterdam, The Netherlands

Aim: The objective of this study was to evaluate the level of asthma control in a Dutch primary care setting.

Method: We conducted a cross sectional survey among patients who were invited to participate in the Accurate trial (Trial registration: NTR1756). All patients with a doctors' diagnosis of asthma, aged between 18 and 50 years old and a prescription of inhaled corticosteroids in the previous year were invited. Patients who did not want to participate were nevertheless requested to complete an Asthma Control Questionnaire (ACQ). Results of patients not willing to participate were added to baseline ACQs of participants. Asthma control categories were defined as strictly controlled with an ACQ ≤ 0.75; partly controlled with an ACQ between 0.75 and 1.50 and uncontrolled asthma with an ACQ ≥ 1.5.

Results: We obtained 1,237 ACQs after inviting 3,662 patients in 132 general practices. The median ACQ was 0.7; interquartile range from 0.17 to 1.17; range 0.0 to 5.0). Nineteen percent of patients were uncontrolled; 22% partly controlled and 58% strictly controlled. Females were less controlled than men (¢ACQ 0.18; 95%CI 0.08 to 1.10); asthma control was not associated with age (p=0.83).

Conclusion: In about one fifth of a Dutch primary care population asthma is uncontrolled. Notably, although the majority of patients with asthma have an adequate level of control, there is still room for improvement in almost a quarter of patients, as GINA guidelines recommend considering stepping up asthma medication when patients are partly controlled. These data suggest that currently asthma is sub-optimally controlled in primary care.

Conflict of interest and funding: This study was supported by The Netherlands Asthma Foundation and The Netherlands Organisation for Health Research and Development.

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281: Screening of citizens with suspicion of COPD in eight municipalities in Denmark

Poulsen PB, Jakobsen TH, Fischer HH, Hemmingsen UB, Ollendorff S, Madsen JN, Gulstad MB, Borggren H, Kvist B, Dollerup J

Pfizer, Ballerup, Denmark

Aim: Around 430,000 Danes suffer from chronic obstructive lung disease (COPD) with one-third diagnosed today. Danish National Board of Health (NBH) recommends early detection of COPD, focusing on smokers/ex-smokers (or high-risk occupation) above 35 years with >1 respiratory symptom. Municipalities have been suggested to be responsible for early detection. A pilot study found municipalities to be feasible and reliable in terms of citizens ending up with the final diagnosis of COPD at their GP. The aim of the study was to investigate the success of screening for COPD in eight Danish municipalities.

Method: Eight municipalities (430,000 inhabitants) participated in the study offering spirometry to citizens (self-referral) with no previous COPD diagnosis fulfilling the NBH criteria. Citizens with airway obstruction (fixed ratio: $FEV_1/FVC<70\%$) were requested to visit their GP for further diagnosis. Data, including spirometry and smoking habits/history, were recorded in a secure database.

Results: 950 citizens in the risk group of COPD were included (55% females, 58 years, 45% smokers, 30 pack-years, 1-2 lung symptoms, MRC 1.6). Of the sample 34% (323) (22-44% in municipalities) had indication of airway obstruction. Screening spirometry suggested 86% had mild to moderate COPD. With evidence from the pilot study: 85% detected by municipality screening end up diagnosed with COPD at their GP. This suggests that 29% (275) of the patients in the present sample were COPD patients. After screening 65% of smokers were interested in quitting smoking.

Conclusion: The results from the municipalities showed that early detection of COPD at the municipality level seem to be worthwhile and successful. Together with the GP-level this might identify undiagnosed COPD patients.

Conflict of interest and funding: Pfizer and Boehringer Ingelheim funded the project database and assisted in analyses. Poulsen PB and Dollerup J are employees of Pfizer.

For admin only: Dr. Peter Bo Poulsen, peterbo.poulsen@pfizer.com

282: Sublingual allergen extract immunotherapy in a rush pattern to reach maintenance levels faster

* Naren. Pandey, ** Bibhore Sengupta, Saurabh Kole, S. P. Singh, Apoorva Krishna, Shankar Saha, S. Gupta Bhattacharya

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Aim: Slit (sub-lingual immunotherapy) as Rush immunotherapy was tried on some patients to evolve some faster and affordable immunotherapy modality to make the patient achieve the maintenance plateau within a very short time. Conventional method of immunotherapy is administered with long durations; rush immunotherapy is super fast methodology in attaining the maintenance/boosting module, but in this method it was found that within 15-20 days the relief of the immunotherapy was reached.

Method: 186 patients out of which 48 with urticaria allergy and 138 with allergic rhinitis. bronchial asthma were selected. The therapy consists of administration of four vials of allergen extracts. The patients had been given pre-medication. Blood examination and IgG IgE level estimation were done before after 8 weeks

Results: It was observed in the patients' symptom score showed marked improvement, some of the patients showed local skin reactions which subsided without drugs and no systemic reaction was noted. There was a substantial decrease in IgE, increased IgG level, significant marked satisfactory relief was noted, and the procedure was graded as a very fast affordable SAFE immunotherapy.

Conclusion: Immunotherapy in a rush pattern revealed very good quality of life and marked reduction was observed in drug administration and also symptomatic relief was documented. It can be graded as the most affordable, simple, method for control of allergic disorders like asthma, rhinitis, urticaria & other allergic disorders, and the only immunomodulatory modality.

Conflict of interest and funding: the project was not funded

For admin only: Dr Naren Pandey, pandeynaren@yahoo.com

285: Inhaler choice in asthma and COPD: a poorly addressed issue in guidelines

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Brief outline of context: Inhaled therapy is the cornerstone of pharmacotherapy in patients with asthma and COPD. In addition to drug choice, selection of an appropriate inhalation device is an important consideration.

Brief outline of what change you planned to make: Encourage greater emphasis on choice of inhaler devices in guidelines.

Assessment of existing situation and analysis of its causes: Very little guidance regarding the use of inhaler devices is provided in asthma and COPD treatment guidelines beyond recommendations for demonstrating and testing

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correct inhalation technique. For asthma, GINA guidelines dedicate <2 of 92 pages with 32 of 866 references (<4%) to inhaler devices, while UK (BTS/SIGN) guidelines dedicate <3 of 140 pages with 35 of 946 references (<4%). In COPD, GOLD guidelines dedicate <1 of 93 pages with 5 of 557 references (<1%), while ATS/ERS clinical practice guidelines contain no references or inhaler-specific recommendations. These statistics highlight how few published clinical data there are to quantify the importance of device choice in asthma and COPD.

Strategy for change: Encourage more studies on the impact of inhaler device on asthma outcomes through education, political pressure and direct action.

Measurement of improvement: Increase in published studies, evidence statements and recommendations in guidelines regarding inhaler devices than at present.

Effects of changes: Greater consideration of inhaler device when selecting asthma and COPD therapies, with the aim of producing better outcomes.

Lessons learnt: Drug, device and device use are important influencers of outcomes.

Message for others: More precise information and guidance about inhaler devices is warranted as device choice can have a significant impact on treatment success.

Conflict of interest and funding: PNRD has received fees for talks from AstraZeneca, Boehringer, Chiesi, Meda, Novartis and Teva.

FL has received fees for conferences/talks from Chiesi, Menarini Industrie Farmaceutiche, AstraZeneca, and Meda AB.

VN has received fees for talks from AstraZeneca, Boehringer and GlaxoSmithKline.

JH has received reimbursements for attending symposia, fees for speaking, organising educational events, funds for research or fees for consulting from Almirall, AstraZeneca, Chiesi, GlaxoSmithKline, Merck Sharp & Dohme, Mundipharma, Novartis, Nycomed, sanofi-aventis and Teva.

For admin only: Dr John Haughney, j.haughney@abdn.ac.uk

292: Smoking prevalence and willingness to quit in newly-screened Danish patients diagnosed with airway obstruction

Dollerup J, Poulsen PB, Ulrik CS, Løkke A, Dahl R, Holt J, Cording PH, & Andersen KK

Pfizer, Ballerup, Denmark

Aim: 436,000 Danes have chronic obstructive pulmonary disease (COPD) with one third diagnosed. 80-90% is tobacco related. Smoking cessation (SC) initiatives is primary intervention curbing disease progression. The Danish National Board of Health (NBH) recommends early detection of COPD focusing on: Age above 35 years. Smokers/ex-smokers and at least one pulmonary symptom. Aim: To evaluate the smoking prevalence and willingness to quit smoking in a population of newly diagnosed patients with airway obstruction in primary care in Denmark.

Method: Following the recommendations by the NBH, participating GPs (n=335; 10% of Danish GPs) offered consecutively spirometry to patients with no previous diagnosis of airway obstruction. Fixed ratio $FEV_1/FVC < 70$ % was used for screening for airway obstruction. Demographics, spirometry, smoking status, smoking history and willingness to quit was recorded. The population indicated having COPD, was assed as to smoking status and smoking cessation initiatives.

Results: 3498 patients had spirometry, 1295 patients (37%, mean 61 years, 48% females) had airway obstruction. With more women than men (P=0.03) in total 64%, diagnosed with obstruction smoked (37 pack years, 17 cigarettes/day). 66% of smokers had a history of cessation attempts and 54% had used medication as part of the SC. 62% of the smokers liked to quit, but only 11% intended to start immediately. COPD severity and willingness to quit was not correlated.

Conclusion: Many patients identified with airway obstruction, indicating COPD, are current smokers. There is willingness to quit smoking, but only a few intend to initiate SC immediately, though guidelines recommend smoking cessation as primary intervention.

Conflict of interest and funding: Pfizer and Boehringer Ingelheim funded the project database and assisted in analyses. JD is an employees at Pfizer. CSU, AL and RD has received honorarium participating in the steering committee. LP is an employee at Boehringer Ingelheim. LCK, PHC and CD have recived honorarium in connection with designing, hosting the consolidated database.

For admin only: Mr Jens Dollerup, jens.dollerup@pfizer.com

294: Early diagnosis of COPD in a high-risk population using spirometric screening in general practice: the TOP-GOLD study

Dollerup J, Ulrik CS, Løkke A, Dahl R, Plauborg L, Kristiansen LC, Cording PH, Dehlendorff C on behalf of the TOP GOLD study-group

Pfizer, Ballerup, Denmark

Aim: Around 430,000 Danes suffer from chronic obstructive lung disease (COPD) with only around 1/3 diagnosed. The National Board of Health (NBH) recommends early detection, focusing on smokers/ex-smokers or in high-risk occupations, above 35 years with at least one respiratory symptom. Aim: To identify early stages of COPD in a high-risk population identified in general practice.

Method: Participating GPs (n=241) recruited subjects with no previous diagnosis of obstructive lung disease, > 35 yrs, smokers/ex-smokers and at least one respiratory symptom (i.e. dyspnoea, cough, wheeze, phlegm, infection). Age, smoking status, pack-years, BMI, dyspnoea score (MRC). Subjects with airway obstruction (Fixed ratio $FEV_1/FVC \leq 0.7$) at initial spirometry were tested for bronchodilator reversibility.

Results: A total of 4.049 (49% females) subjects were included; mean age 58 yrs, BMI 27, and 32 pack-years. The COPD prevalence in our population of high risk patients was 21.7%; 8.3% in subjects younger than 48 years. Most patients were classified in GOLD stages I and II (36% and 50%, respectively). The number needed to screen (NNS) for a new diagnosis of COPD was 4.6.

Conclusion: A case-finding strategy providing screening and diagnostic spirometry to high-risk subjects in primary care identifies a large proportion of undiagnosed COPD patients, especially in the early stages of the disease.

Conflict of interest and funding: Pfizer and Boehringer Ingelheim funded the project database and assisted in analyses. JD is an employees at Pfizer. CSU, AL and RD has received honorarium participating in the steering committee. LP is an employee at Boehringer Ingelheim. LCK, PHC and CD have recived honorarium in connection with designing, hosting the consolidated database.

For admin only: Mr Jens Dollerup, jens.dollerup@pfizer.com

295: Patient consultation in the development of a COPD self-management plan

Gaduzo S, O'Hara D

NHS Stockport

Brief outline of context: Various self-management action plans (SMP) are in use in the UK. Stockport community respiratory team use our own version of the PCRS SMP developed in Plymouth. Uptake and use outside our team is disappointing.

Brief outline of what change you planned to make: We wanted to involve patients in development of a new SMP acceptable in both primary and secondary settings.

Assessment of existing situation and analysis of its causes:: Comments from patients suggested it's too "wordy" and a simpler design would make it easier to use.

Strategy for change:: Patients consulted in Breathe Easy and pulmonary rehabilitation settings suggested use of the term "warning signs", and greater prominence of the traffic light action plan graphic. Primary and secondary care doctors and nurses were also consulted. A final version was agreed by consensus and produced with assistance from IT department.

Measurement of improvement: The final document was approved by all stakeholders, praised for its clarity and embraced enthusiastically. Pharmaceutical company sponsorship was obtained for a large print run, there's been high demand from both primary and secondary care.

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Effects of changes: The Stockport SMP has been adopted by all parts of the local healthcare community as part of the integrated pathway. Three of the four GP localities have decided use of SMP will form part of local targets the new QIPS section of QOF.
Lessons learnt: Involvement of all stakeholders, including patients, proved very rewarding and greatly enhanced the final product.
Message for others: Development of patient resources should involve all stakeholders.
Conflict of interest and funding: Chiesi pharmaceuticals paid for SMP printing
For admin only: Dr Stephen Gaduzo, sgaduzo@nhs.net

296: Patterns of symptoms and treatment in patients with COPD: data from the Telescot pilot study

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Aim: Telemonitoring of symptoms and physiological variables for patients with COPD is being widely deployed . Existing algorithms for interpreting data have been derived from paper-based studies in highly compliant patients. We aimed to describe patterns of symptoms and simultaneous physiological measures in relation to exacerbations among patients taking part in a pilot trial of telemonitoring for COPD.
Method: Telemonitoring data were submitted daily by patients. Time series data were displayed graphically and two researchers categorised patients according to the pattern of their reported symptoms and use of antibiotic treatment for exacerbations. Physiological data were entered into multilevel logistic regression models to quantify changes in association with patients starting antibiotics.
Results: Data were obtained from 17 patients who recorded between 60 and 400 days of data. They were categorised into three groups: (a) rolling exacerbations – frequent antibiotics, symptoms rarely returning to normal levels; (b) intermittent exacerbations – intermittent antibiotics in association with temporary increase in symptoms; (c) over-ruled exacerbations – intermittent increases in symptoms without antibiotic treatment. In a multifactorial model, symptom score and heart rate were significantly increased on the first day of antibiotic treatment but FEV_1 and SpO_2 were not.
Conclusion: The patients with COPD in our study commonly had complex patterns of symptoms rather than long periods of normality punctuated by discrete exacerbations. Physiological measures had little predictive value for these patients using conventional statistical models. Clinicians using telemonitoring for patients with COPD need effective and efficient algorithms which account for different patient types and behaviours.
Conflict of interest and funding: This pilot study was part of the Telescot programme and funded by the Chief Scientist Office, Intel / Tunstall and the Scottish Centre for Telehealth and Telecare.
The authors declare they have no conflict of interest.
For admin only: Dr Christopher Burton, chris.burton@ed.ac.uk

299: Are disease management programs for COPD cost-saving?

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EUR

Aim: Although disease management (DM) programs are generally believed to be cost-effective, the available evidence is inconclusive. The aim of this study is to review the impact of COPD-DM programs on healthcare costs and health outcomes. We also investigate whether this impact depends on disease-, intervention-, and study-characteristics.
Method: A systematic review was conducted to identify cost-effectiveness studies of COPD-DM programs based on predefined inclusion criteria. The data, results, and characteristics of the selected studies were grouped and included in a random-effects meta-analysis, where possible.
Results: Sixteen papers describing 11 studies were included. The meta-analysis showed that DM decreased the RR of hospitalizations (RR: 0.76, 95%CI: 0.63-0.93), and led to a statistically significant reduction of hospitalization costs of €1135 (95% CI: €679 to €1591) per person per year (PPPY). The average health care costs savings were estimated to be €2023 (95% CI: €1601 to €2445) PPPY. The costs of developing, implementing and managing the program were excluded from this estimate. The review showed that there is great variability in DM interventions, study characteristics, patient characteristics and quality of studies. There are indications that DM showed greater savings in hospital costs in studies with severe COPD patients (GOLD stage 3+), patients with a history of exacerbations, relative more smokers, non-RCT study design, a shorter duration of the intervention (0-12 months), lower quality score and EU origin. Furthermore, hospital costs were greater when DM programs included 3 or more compared to 1-2 Chronic Care Model (CCM) components.
Conclusion: DM programs decreased the RR of hospitalization, hospitalization costs, and total healthcare costs (excluding program costs). However, more studies investigating the total costs of DM, heterogeneity of studies, changes in care delivery and healthcare behavior are needed to reach more certain conclusions.
Conflict of interest and funding: MRSB, AT, ALK, NHC and MRM: are part of the ongoing RECODE trial,which investigates the cost-effectiveness of integrated care in primary care COPD patients in a cluster-randomised controlled trial in primary care. The Leiden University Medical Centre received a grant by ZonMW (Dutch governmental agency) for the RECODE trial and the Erasmus University (iMTA), received and additional financial support by Achmea (Dutch Healthcare Insurer) for the economic evaluation of the intervention in the RECODE trial. In the future, our RCT will be included in the Cochrane Review. MRM: is involved in cost-effectiveness studies of various COPD interventions, both pharmacological and non-pharmacological. She was the project leader of the cost-effectiveness study of the INTERCOM trial, a trial which is included in this review. NHC: As a senior researcher in the field of integrated disease management programs, involved in several initiatives promoting education, developing software applications and providing ehealth solutions, that may be considered as a potential conflict of interest.
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300: Experience of the admission avoidance respiratory "Hot" clinic at North Bristol Lung Centre, Southmead Hospital, UK

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Brief outline of context: NHS budget and acute bed base reductions require development of new models of care preserving service quality whilst reducing costs and avoiding hospital admissions. The North Bristol Lung Centre has developed a comprehensive respiratory "Admission avoidance" service over the last 5 years.
Brief outline of what change you planned to make: The "Hot" clinic is a "one stop" "consultant led" same day service, assessing primary care referrals threatening admission, supported by dedicated CT and lung function slots and works closely with PCT funded Community Respiratory Nursing Team.
Assessment of existing situation and analysis of its causes: Prior to the Hot Clinic, the existing "out-patient" system was too inflexible to provide rapid access to specialist advice when it was required by the patient and primary care resulting in unnecessary admissions.
Strategy for change: The "Hot" clinic commenced in 2006. In 2011, restructuring doubled the capacity by extending clinic hours and allowed rapid access to diagnostic services and improved integration with community services.
Measurement of improvement: 736 patients were reviewed in 2011. 93% were judged as appropriate by a respiratory specialist. 90% were managed in the HOT clinic - avoiding an acute admission. The top diagnosis included COPD (153), Asthma (79), Bronchiectasis (77), LRTI (65) and Effusion (62).We performed 46 CTPA and 34 pleural procedures.
Effects of changes: The Hot clinic attracted largely appropriate referrals helping avoid 662 acute admissions – a saving of £1.4m.
Lessons learnt: Rapid access ambulatory clinics offer good care and outcomes, high patient satisfaction and financial dividends.
Message for others: Service re-design can lead to a responsive service with high quality care at lower cost.

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Conflict of interest and funding: None
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301: Study of physician prescribing behaviour and management of bronchial asthma

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Aim: To study the magnitude and causes of oral steroid over use and underuse of inhalation therapy in patients with bronchial asthma.
Method: Two hundred and fifty diagnosed patients with bronchial asthma were graded according to severity with the help of spirometry. The treatment regimen being followed by patients were reviewed & then the causes of oral steroids overuse & underuse of inhalation therapy was analysed.
Results: A. In this case study it was seen that 24.4% patients had mild disease, 34% had severe disease while severe asthma was seen in 41.6% patients. B. There was an overuse of oral steroids in treating bronchial asthma; 25(40.98%) patients with mild bronchial asthma were on oral steroids along with other medications, in moderate disease 45(52.82%), and 80(57.69%) of severe group respectively. C. There was gross underuse of inhalation therapy i.e. inhaled β_2-agonist alone or in combination with inhaled steroids. In mild cases only 20(32.78%) patients were on inhalation therapy. D. Other medications being used are oral β_2-agonist used by 34% of patients, phosphodiedterase inhibitors by 68% of the patients, and antihistamines by 14% of the patients. E. In this study, poor socio-economic status was the most common cause influencing the prescribing behaviour of the physicians followed by psychological factors; other reasons include poor doctor patient relationship and poor compliance. 60(57.69%)
Conclusion: There is an over dependence on oral steroid use for treating the patients of bronchial asthma & the poor socio-economic status of the patients was the most common cause for this prescribing behaviour of the physicians.
Conflict of interest and funding: Indian Primary Respiratory Care & Allergy foundation funding
For admin only: Dr Naren Pandey, pandeynaren@yahoo.com

303: Aerobiological and proteonomics study of coconut pollen allergy

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M.P.Birla Medical Research Centre

Aim: To prove that Coconut pollen is an important allergen causing Type I hypersensitivity in a significant proportion of human beings living in around Kolkata and to identify the major allergenic protein through protein through proteomics and other techniques. Type I hypersensitivity is responsible for allergic Rhinitis and Asthma.
Method: Two year aerobiological study was conducted using Burkard volumetric sampler. Allergenicity of Coccus nucifera pollen was tested through skin prick test, LFT and ELISA. Proteins from pollen grains were obtained by initially de-fatting and then extracted with sodium phosphate buffer. SDS pag, Western Blotting two dimensional Electrophoresis and immunoblotting were done.
Results: Maximum concentration of pollen was found in the month of august. The total protein from pollen was separated on a SDS PAGE gel showed 2l prominent bands by Coomassie Blue staining. Western blot with patient specific sera gave 3 bands out of which a major band was obtained at 60 Kd. This result was obtained in more than 65% of the patients. 2D gel electrophoresis of the crude protein sample was performed which showed 120 protein spots in the PI range of 3-10 and molecular weight 14Kd-97Kd.Immunoblotting the 2D gel with pooled patient specific sera showed 20 spots thus implying IgE reactivity.
Conclusion: Thus coconut pollen grains are very common in the air and are an important airborne allergen and causes typel hypersensitivity and is also responsible for allergic Rhinitis and Asthma.
Conflict of interest and funding: Division of Plant Biology (Main Campus) Bose Institute of Sciences.
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304: Implementing supportive self-care models for COPD patients using service improvement methodology

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Brief outline of context: Supportive self-care is an important component of long term conditions management which may help patients cope with their condition and reduce the need for hospital admission.
Brief outline of what change you planned to make: Increasing COPD patients' ability to self-care, by testing different approaches to implementation in two PCTs, a general practice and specialist team.
Assessment of existing situation and analysis of its causes:: There was no consistent approach to the form or delivery of self-care plans or support. Small numbers of patients accounted for high proportions of admissions.
Strategy for change:: As part of a national improvement programme, sites analysed current pathways of care using service improvement methodology. Over 12 months, they tested different approaches to implementation including large scale roll out and targeted intervention.
Measurement of improvement: Measures included uptake of self-care plans, use of urgent appointments, admission rates and patient satisfaction.
Effects of changes: Changes for individual sites included reducing the proportion of exacerbations resulting in admission from 8% to 5%, increase in uptake of plans from 10% to 82%, adoption of an agreed self-management plan in 100% of targeted practices, 94% patients reporting a better understanding of their condition and 90% reduction in admissions for one targeted cohort of 34 patients.
Lessons learnt: Supportive self-care requires time and rapport not just a comprehensive written plan. Focussed effort at practice or team level may be more effective than large scale roll out.
Message for others: Systematic investment of time and effort can allow existing resources to be used differently to deliver supportive self-care more effectively.
Conflict of interest and funding: None
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307: Illness uncertainty, worry, and depression in adults with COPD

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Aim: To compare three subsets of adults living with chronic obstructive pulmonary disease(COPD)on illness uncertainty,worry,and depression.
Method: Three non-random subsets of adults with a physician's diagnosis of COPD completed the Michell Uncertainty Illness Scale- Community Version (MUIS), the Penn State Worry Questionnaire (PSWQ),and the Patient Health Questionnaire-Depression (PHQ9). Higher scores for each instrument mean higher levels in each of the states of illness uncertainty, worry, and depression respectively. Two of the subsets of adults were recruited from a pulmonary rehabilitation program (PR) and included: recent attendees (PRA), and graduates after at least 12 months (PRG). A third subset was recruited from Integrated Supportive Living for Seniors Health Program (ISSP).
Results: The sample included: n = 75 PRA, n = 74 PRG and n = 53 ISSP. Results of a MANOVA showed statistically significant differences between groups on the combined dependent variables, $F(6, 340) = 4.79$, $p = .00$, Pillai's Trace =.16, partial eta squared = .08. Separate ANOVA showed group differences on all variables, $p < .05$. Post-hoc analyses showed the ISSP and the PRG significantly differed on uncertainty and depression ($p < .01$). The PRA only differed from the ISSP and the PRG on depression ($p = .01$). Scores on the PHQ9 showed at least minor depression for 7% of PRA, 12% of PRG and 29% of ISSP. Scores exceeded the mid-range score of 69 on the MUIS for 26% of

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PRA, 17% of PRG and 40% of ISSP.
Conclusion: The findings have important implications in terms of informing patient education programs and psychological care.
Conflict of interest and funding: There are no conflicts of interest to declare. The project was funded by Alberta Lung Association
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308: Environmental lead and childhood asthma: an analysis of pediatric asthma hospitalization and lead toxicity in New York

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Aim: The goal of this study was to examine rates of pediatric asthma hospitalization and lead toxicity from 2000 to 2005. Enviornmental lead has been identified as an immunoactive heavy metal associated with T helper 2 responses, IgE levels and eosinophil counts. Childhood asthma is complex, multifactorial and influenced by environmental exposures.
Method: Available data from links provided by the Department of Health and publically available databases were searched for citywide, borough and neighborhood statistics on lead toxicity and pediatric asthma hospitalization rates. A p value of <0.05 or r- >0.5 was defined as significant.
Results: The citywide pediatric asthma hospitalization rates did not change appreciably and remained steady 6.1 and 6.0/1000 from 2000/1 to 2004/5 respectively.The incidence of toxic lead levels defined as >/= 10ug/dL declined significantly during the same period from 2.9 to 1.78/1000. In all 5 boroughs there was a decline in lead toxicity; Brooklyn had the highest incidence, 4.39/1000 and also had one of the highest rates of asthma hospitalization (9.3/1000). All boroughs had no significant change in the rate of asthma hospitalization, with a mean change of 0.18/1000 at risk. In some high risk neighborhoods, eg Bedford-Stuyvesant there were high rates of both lead toxicity and asthma hospitalization.
Conclusion: Based on the potential immunomodulatory properties of lead, this study describes the trends over time in both NYC lead toxicity and asthma hospitalization among a pediatric population. There were no citywide correlative trends. Some neighborhoods at high risk and with similar trends in both lead toxicity and asthma hospitalization were identified. Further investigation of local environments and cellular studies will be performed to further investigate.
Conflict of interest and funding: none
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309: Benefits of a multi-skilled, multi-professional team delivering care for patients with respiratory disease

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Brief outline of context: A team of clinicians (physiotherapists & nurses) established to reduce hospital admissions for patients with exacerbations of COPD. It was the first team in the UK that assessed the patient at home. This approach was expanded to include patients with all respiratory diseases.
Brief outline of what change you planned to make: To develop a gold standard of respiratory care for admission avoidance, early supported discharge, pulmonary rehabilitation, oxygen service, non-invasive ventilation service, advising palliative care teams,clinics, utilising the same multi-disciplinary team.
Assessment of existing situation and analysis of its causes:: Existing service delivery relied on clinicians working independently. Absences meant services were cancelled, waiting lists grew, patients received a disjointed service. Peer review and bench marking was limited. A visit to Canada to research respiratory therapy practise acted as a catalyst to change.
Strategy for change:: Integrated in-service training. Shared clinical practice. Regular multi-disciplinary team meetings with consultant. Flexible Staff cover all clinical areas.
Measurement of improvement: Patient satisfaction questionnaires, higher number of patients seen in all areas with retention of staff, good feedback from users.
Effects of changes: Sharing of skills has improved the delivery of seamless episodes of care, services are never cancelled and Staff enjoy a wider variety of skills.
Lessons learnt: Inter-professional boundaries can be overcome.
Message for others: Integrated working improves the quality of patient care and expands the horizons of clinicians aspirations.
Conflict of interest and funding: None
For admin only: Ms Barbara Furnival, Barbara.Furnival@whh.nhs.uk

312: The association between small airways dysfunction and asthma symptoms based on the Asthma Control Questionnaire (ACQ) and the Clinical COPD Questionnaire (CCQ)

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Aim: To investigate the association between Small Airways Dysfunction and asthma symptoms based on the ACQ and CCQ questionnaires.
Method: We have investigated lung function variables in asthma patients from primary care practices referred to LabNoord, Groningen, The Netherlands. A total of 814 patients met the following inclusion criteria: asthma according to their GP, age > 18 years, availability of lung function measurements according to ATS-criteria and FEV_1 %pred > 90%. Their mean ± SD age was .53 ± 13,7 years, 32% were male). FEV_1%predicted and PEF%predicted pre bronchodilator were considered to reflect large airway function and midexpiratory flow at 50% of the forced vital capacity (MEF50%) % predicted before bronchodilator was chosen as measure of SAD.
Results: MEF50% was negatively correlated with ACQ wheezing and ACQ number of rescue puffs. The other items contained in ACQ and CCQ were not significantly correlated with MEF50%.FEV_1 %predicted was associated with ACQ asthma symptoms, ACQ number of rescue puffs and CCQ functional. Finally, the strongest correlations were found with the PEF. Only ACQ number of rescue puffs and CCQ mental were not significantly correlated with PEF.
Conclusion: PEF is most strongly correlated to both ACQ and CCQ symptoms. PEF is a measure of large airway function in asthma, in contrast to MEF50% which more closely reflects SAD. It therefore seems that the present ACQ and CCQ-items are not fit to assess symptoms of SAD-patients. The development of new patient reported outcome tools which assess symptoms of small airway dysfunction should therefore be considered.
Conflict of interest and funding: None.
For admin only: Dr Lieke Schiphof-Godart, l.schiphof@rug.nl

315: Development of an integrated respiratory service in West London

Patel I, Lord Z, Sayers D, Petri A
Imperial College Healthcare NHS Trust/Central London Community Healthcare.

Brief outline of context: Imperial College Healthcare NHS Trust and NHS Hammersmith and Fulham have been working together to improve services and outcomes for patients with COPD.
Brief outline of what change you planned to make: An integrated COPD patient pathway was agreed and a respiratory redesign group was convened, chaired by a local GP.
Assessment of existing situation and analysis of its causes: The PCT had poor outcomes for COPD, with high admission rates costing £1,014,817 a year. 52% of patients admitted with COPD exacerbations were not recorded on GP registers. 5,000 patients were estimated undiagnosed with few practices having access to spirometers and few operators meeting recognised standards.
Strategy for change: Service developments included: community pulmonary rehabilitation; early supported discharge and rapid response telephone service; community respiratory consultant clinics; specialist respiratory nurse-

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led support to primary care; multidisciplinary respiratory education and training for community healthcare professionals and close working between the community and secondary care respiratory teams with a regular MDT.
Measurement of improvement: Acute COPD admissions and readmissions, length of stay and outpatient attendances were reviewed.
Effects of changes: Compared to 2009/10: Acute admissions reduced by 19%; Readmissions reduced by 66%; patients admitted with COPD exacerbation as new diagnosis of COPD reduced from 50% to 10%; Reduction in first and follow-up chest clinic attendances.
Lessons learnt: An innovative integrated service supported by improvement methodology has improved and will continue to improve the quality of patient care, delivering better patient outcomes and value for money.
Message for others: Shared aims and joint working across primary, secondary and community care, with engagement of commissioners have been critical to this process.
Conflict of interest and funding: None
For admin only: Dr Irem Patel, irem.patel@imperial.nhs.uk

339: Utility of the COPD Assessment Test ("CAT") in primary care consultations

Gruffydd-Jones K, Marsden H, Holmes S, Kardos P, Escamila R, Dal Negro R, Roberts J, Nadeau G, Vasselle M, Leather D and Jones P
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Aim: The quality of a consultation can impact the quality of care and patient engagement in treatment decisions. We developed a novel study design to assess whether the COPD Assessment Test ("CAT") could improve the quality of communication between physician and COPD patient in a primary care consultation.
Method: Primary care physicians (PCPs) across Europe conducted six consultations with standardised COPD patients (played by trained actors), which included specific patient issues. PCPs were randomised to have the patient medical history only ("CAT-" arm), or the patient history plus the CAT ("CAT+" arm) in the consultation. The consultations were videoed, and PCPs were scored by independent assessors on their ability to identify and address individual patient issues (sub-score A), review standard COPD issues (sub-score B), their understanding of the case (diagnosis score) and their overall performance. The primary endpoint for the study was a global score (sub-scores A+B, scored out of 40).
Results: Of the 165 PCPs enrolled in the study, 147 were evaluable (at least one consultation assessed, and met eligibility criteria). No difference was seen between the arms in the mean global score (CAT- 20.3; CAT+ 20.7; 95% CI [-1.0:1.8] p=0.606). Similarly, no effect of the CAT was observed in sub-score A (p=0.255), however sub-score B mean was significantly different between the arms (CAT- 8.8; CAT+ 9.6; 95%CI [0:1.6] p=0.045). There was no difference between the arms in diagnosis score (p=0.824) or overall performance (p=0.655).
Conclusion: The CAT helps clinicians understand COPD-related symptoms, however needs to be used alongside good clinical practice for holistic management of co-morbidities.
Conflict of interest and funding: This study was funded by GlaxoSmithKline (SCO114293) Marsden H, Nadeau G, Vasselle M, Leather D are employees of GlaxoSmithKline. All other authors received honoraria from GSK for participation in the steering committee of this study. In addition: Holmes S has received speaker fees, travel grants and honoraria for advisory board from AZ, Boehringer Ingelheim, Chiesi, GSK, MSD, Napp, Novartis; Roberts J has received speaker fees, travel grants and honoraria for advisory board from AZ, Boehringer Ingelheim, Chiesi, GSK, MSD, Novartis, Teva
Kardos P has received honoraria for advisory board, travel grants and speaker fees from AZ, Boehringer Ingelheim, Chiesi, GSK, MSD, Novartis, Nycomed
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320: Improving home oxygen services

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Brief outline of context: Home oxygen therapy is provided to about 85,000 people in England, costing approximately £110 million a year. Home oxygen service – assessment and review (HOS-AR) is variable and an estimated 24% to 43% of oxygen prescribed is not used or provides no clinical benefit.
Brief outline of what change you planned to make: Patient list review, specialist clinical assessment, therapy alteration or withdrawal, systematic and coordinated prescribing and improved multi-disciplinary care.
Assessment of existing situation and analysis of its causes:: Un-assessed patients were prescribed oxygen inappropriately, services lacked coordination, inaccurate patient registers, poor access to oxygen usage data, increasing costs and no clinical review.
Strategy for change: A national improvement programme supporting 12 project teams of clinical and managerial staff undertaking service improvements through process mapping, examination of baseline oxygen usage data, measurement of demand and capacity and use of Plan-Do-Study-Act testing cycles in a range of hospital or community based settings from July 2010 to July 2011.
Measurement of improvement: Therapy usage and concordance data was analysed, focusing on flow rates, therapy modalities and over or under use.
Effects of changes: Improved data management and service coordination, strengthened clinical governance and collective prescribing cost efficiencies totalling approximately £640,000 achieved by 9 out of the 12 project teams.
Lessons learnt: This work involved data review and management, clinical assessment and review and service integration for sustainability. Patient list cleansing, appropriate prescribing and rationalisation of therapy and equipment resulted in improved cost efficiency.
Message for others: Sustainable quality improvement requires collaboration, consistent communication and the effective use of data to focus improvement efforts.
Conflict of interest and funding: None
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321: Hospital admissions due to asthma and COPD exacerbations

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Aim: To describe contacts with GPs of patients admitted to hospital due to asthma or COPD exacerbations and treatment prescribed the days before admission
Method: Patients aged 18 years or more whos were hospitalized due to exacerbation of asthma or COPD answered a questionnaire on the duration of the exacerbation and the involvement of primary care before admission
Results: 89 of 100 included patients reported a diagnosis of COPD or asthma and COPD combined. Median duration of illness before the first contact with health care was 4 days. Their personal GP was contactyed by 52 (52%), a GP on call by 40, whereas 8 contacted the hospital directly. The first consultation with a GP, which took place by phone in 48% of cases, led to hospital admission in 56 (56%), more seldom when the personal GP was consulted (40%), than when a GP on call was involved (70%, p=0.004). Among those not admitted in connection with the first contact, 22 (50%) were treated with prednisolon and/or antibiotics.
Conclusion: A considerable number of admissions due to asthma and COPD exacerbations are based on telephone consultations and not on examination by a GP the same day.
Conflict of interest and funding: No conflicts of interest
For admin only: Professor Hasse Melbye, hasse.melbye@uit.no

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322: Prescription levels in primary care of unspecific therapy in asthma: a cross-sectional study in France and in Italy

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Aim: In medical practice, asthma is often poorly controlled and guidelines inadequately followed. Unspecific drugs are frequently prescribed, which may affect the quality of care. A better understanding of unspecific drugs prescribed is desirable to improve the management of asthma. This study aims to identify, in French and Italian primary care, the factors associated with higher prescription levels of unspecific drug classes to asthmatic patients.
Method: A cross-sectional study, based on general practitioners' computerized prescription databases (Cegedim-Strategic-Data), was conducted. Patients aged 13-40, with ≥4 units of prescribed respiratory drugs in 2007 or ≥4 visits for asthma and ≥2 units of prescribed respiratory drugs in 2007 and 2008 (adapted from HEDIS criteria for persistent asthma), were selected. Those who received tiotropium were excluded. Prescription levels in 2008 of antibiotics, antitussives, mucolytics, antihistamines hypnotics/anxiolytics were studied, according to patient characteristics and asthma prescription patterns.
Results: Among the 3,093 French patients (mean age 28, 50% women) and 3,872 Italian patients (mean age 29, 49% women), unspecific therapy was common. French patients under antibiotics and antihistamines were 49% and 57%, versus 60% and 43% in Italy. Increased levels of prescribed antibiotics was associated with female gender (p<0.0001), receiving oral corticosteroids drugs (p<0.0001), ≥6 units of short-acting beta agonists (p<0.0001nasal therapy (p<0.0001), and respiratory drugs (p<0.0001). Similar factors were found for antihistamines. Results for other drug classes will be presented for France and Italy.
Conclusion: prescription of unspecific therapy is common in asthma management and is correlated with patients' characteristics and the level of specific asthma therapy.
Conflict of interest and funding: None
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323: Pulse oximetry in patients over 40 years old with asthma or COPD in general practice

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Aim: The study aimed to evaluate possible predictors of decreased pulse oximetry in in general practice, in patients with COPD and/or asthma.
Method: Among 18931 adults aged 40 years or more, listed at 7 general practice offices, 1784 were identified in the medical records with a diagnosis of asthma or COPD within the last five years. Of these, a random sample of 1111 patients was asked to take part in the project. 380 patients took part in the baseline examination. The examinations included pulse oximetry, spirometry, a COPD questionnaire (CCQ), weight and height. An oxygen saturation (SpO_2) <96% was considered as abnormal value, and <93 as severely decreased value. Predictors of SpO_2 <96% and SpO_2 <93%% with a staistical significance of p<0,1 were entered a binary logistic regression.
Results: The prevalence of SpO_2 <96% was 22,5% and SpO_2 <93% 3,2%. The frequency of SpO_2 <96% and SpO_2 <93% increased by decreasing levels of FEV_1 % predicted from 7,4% and 0%,respectively, when FEV_1% predicted ≥90, to 53,6% and 28,6% when FEV_1% predicted <40. The frequencies increased with increasing CCQ score, from 9,7% and 1,1%, respectively, when CCQ<1, to 66,7% and 22,2% when CCQ≥4. The strongest predictors of SpO_2 <96% in the binary logistic regression were FEV_1 <50% predicted with odds ratio (OR) = 4,6 (P<0.001), CCQ score ≥3 with OR=4,5(P<0.001), Body mass index (kg/m^2) < 20 with OR=1,6(P<0.001), and a GP's diagnosis of COPD which was not combined with a diagnosis of asthma with OR=1,2(P=0.001).
Conclusion: Low pulse oximetry values were strongly associated with known indicators of severe obstructive lung disease. Easy to use and acceptable to patients, pulse oximetry may be useful in the monitoring of patients with obstructive lung diseases.
Conflict of interest and funding: None
For admin only: Dr. Lene Gjelseth Dalbak, l.g.dalbak@medisin.uio.no

324: Symptoms of respiratory tract infection and associated care-seeking in subjects with and without obstructive lung disease. The Tromsø Study: Tromsø 6

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Aim: To describe the frequency of respiratory tract infection (RTI) symptoms in a general adult population, and how care-seeking is associated with the presence of obstructive lung disease
Method: Cross-sectional data including spirometry and self-reported chronic diseases were collected among middle-aged and elderly in the the Tromsø population survey (Tromsø 6). Self-reported RTI symptoms, consultation with doctors, and antibiotic use were the main outcome variables.
Results: Of 6414 included, 798 (12.4%) reported RTI symptoms last week. Such symptoms were reported less often by subjects aged 65 years or more than by younger participants (OR 0.82). Current smoking (OR 1.65), low relf-rated health (OR 1.25), and reduced lung function (OR 1.40) were also independent predictors of RTI symptoms, which could be explained by an increased duration of symptoms. Among subjects with recent RTI symptoms, 5.1% also reported a consultation with a doctor, among those with bronchial obstruction by spirometry, who did not report asthma or COPD, this frequency was 2.4%. Antibiotics were more frequently taken when asthma or COPD was reported (13.7%), but not in subjects with bronchial obstruction who did not report these diseases (7.2%).
Conclusion: RTI symptoms seldom led to consultation with a doctor, not even in subjects with obstructive lung disease. Antibiotics were more frequently taken in subjects with self-reported asthma or COPD, but not in subjects with bronchial obstruction unknown ro them.
Conflict of interest and funding: No conflicts of interest
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325: Integrated working across boundaries to improve COPD diagnosis and management in primary care

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Brief outline of context: Integrated respiratory team participated in a national improvement programme to improve the quality of respiratory services.
Brief outline of what change you planned to make: Introduction of specialist support to primary care to deliver quality assured spirometry, workplace based training and quality reviews to improve quality and reduce variation across the PCT.
Assessment of existing situation and analysis of its causes:: High admission rates and poor outcomes for COPD patients. 52% of patients admitted for COPD exacerbations were not recorded on GP disease registers. Approximately 5,000 patients were undiagnosed and few practices had access to spirometers and few operators met recognised standards.
Strategy for change:: Pareto analysis targeted practices with highest admissions and readmissions. The integrated respiratory team and GP Lead worked with practice staff to improve skills and knowledge, and support quality NICE quality standard COPD reviews.
Measurement of improvement: Data relates to the first three practices. Patient and practice level data was collected before and after intervention.
Effects of changes: Staff in practices received both workplace based and modular education and training. 145 patients had a quality COPD review inline with NICE quality standards. Results include 44% of patients undergoing changes to prescribed pharmacotherapy and significantly improved recording of FEV_1, exacerbations and breathlessness. Practices agreed to a sustainable plan of future reviews and ongoing care for their patients.
Lessons learnt: Implementation of the chronic care model in COPD pathway can improve outcomes.

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Message for others: Shared aims and joint working across traditional boundaries has the potential to build sustainable improvements.
Conflict of interest and funding: Points audit programme provided by GSK
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327: Knowledge and attitudes of community pharmacists about antibiotic resistance: a pilot study

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Aim: This study sought to evaluate reliability and reproducibility of a questionnaire on knowledge and attitudes of community pharmacists about antibiotic use and microbial resistance.
Method: A structured questionnaire was constructed accordingly dates obtained during a qualitative study, designed with community pharmacists focus group sessions. Our research was developed in an area of Statistically Territorial Unity Nomenclature (NUT) II of Portugal, defined by Health Northern Regional Administration (ARS-N), which includes five geographical districts. We have informed ARS-N about this study. To obtain information of all geographical area, this survey occurred in the five districts. Questionnaires were administered to each pharmacist twice, at an interval of 2 to 4 weeks. Attitudes were measured using a continuous visual analog scale, with answers scored from 0 (total disagreement) to 20 (total agreement). Questionnaire reproducibility was determined using the intraclass correlation coefficient (ICC), and reliability with Cronbach´s alpha calculation.
Results: A total of 43 pharmacists participated in this survey. Questionnaire evaluated 17 attitudes that were grouped in four dimensions of attitudes to antibiotic resistances: perception of the problem, attribution of responsibilities, confidence and factors associated to dispensing habits. All evaluated attitudes demonstrated good ICC and the reliability (Cronbach's alpha) was 0.624.
Conclusion: Cronbach´s alpha and ICCS obtained from attitudes allow us to conclude that this questionnaire is reproducible. Thus we could say that our questionnaire is valid to evaluate the attitudes and knowledge of pharmacists, since it allows to detect differences among these health professionals that work in primary care.
Conflict of interest and funding: Supported by Fundação para a Ciência e Tecnologia (FCT). Funding references: PTDC/SAU-ESA/105530/2008.
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329: Older adults with asthma: what is the difference?

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Aim: To study differences between older and younger asthmatics.
Method: 1725 patients aged 18-75 with a diagnosis of asthma were randomly selected from 56 primary and 14 secondary care in Sweden. Response rate 71%. Information was collected using questionnaires in 2005 and record review for the period of 2000-2003. History of comorbidities and allergy were obtained from the patients' records. This analysis included patients aged 25-75.
Results: 1094 patients (1226 from primary and 499 from secondary care) were included, 215 aged 25-39 (younger adults, YA), 618 aged 40-63 (middle age, MA) and 261 aged 64-75 (older adults, OA). 40% were men. Daily smoking was less common in older age, YA 12%, MA 13%, OA 5% (p=0.007). There was no difference regarding depression. Heart disease and hypertension were more common in the older, 27% and 32% respectively, than among the MA, 7% and 18% respectively. Allergic rhinitis was commoner in the younger, YA 51%, MA 26%, OA 16% (p<0.001).
Regarding pharmacological treatment, 29% of YA, 24% of MA and 22% of OA were on level 2 and 43% of YA, 56% of MA and 63% of OA on level 3 (p<0.001).
Total mean of MiniAQLQ was lower in the older asthmatics, YA 5.61, MA 5.25 and OA 5.01 (p<0.001). Of the older 28% achieved optimal asthma control vs 46% in YA and 32% in MA. Odds ratio for not achieving asthma control was in OA 2.07, in MA 1.53 (with YA as reference), adjusted for sex, daily smoking, educational level and level of care.
Conclusion: In this study older asthmatics had lower asthma control than younger asthmatics despite medication on higher treatment level.
Conflict of interest and funding: None
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330: Study on the drug costs associated with COPD prescription medicine in Denmark

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Aim: Spirometric studies of the general population estimate that 430,000 Danish individuals have chronic obstructive lung disease (COPD). COPD is mainly caused by smoking, and smoking cessation is considered the most important intervention to prevent progression of the disease. Cost-of-illness of COPD in Denmark is significant. However, the use of prescription medicine - an important part of costs – has not been analysed for the Danish population.
Aim: Analyse the societal costs associated with prescription medicine for the treatment of COPD in Denmark.
Method: The study was designed as a nation-wide retrospective register study of the drug costs (ATC group R03) associated with COPD from 2001-2010. Data were retrieved from the Prescription Database and the National Patient Register. The population comprised individuals (40+ years) having had at least one prescription of COPD drugs with an indication code indicating COPD. A societal perspective included both public reimbursement costs and co-payment. Costs were calculated in fixed 2010-prices using a Laypeyres price index (average treatment cost per DDD and DDD amount sold).
Results: In the period 2001-2010, 234,769 individuals (40+ years) have had at least one prescription of COPD drugs (R03). Among these, 124,020 had the code indicating COPD. The annual average drug cost (R03) was DKK 7,998 per patient (Euro 1,070) with a total average cost per year around 500 million DKK (67 million euro). For a population of 124,020 COPD patients the total drug costs (R03) were 992 million DKK (1.3 million euro).
Conclusion: The annual costs of prescription medicine for COPD in Denmark are significant. This is also the case, when compared with similar costs for the primary intervention towards COPD, i.e. smoking cessation.
Conflict of interest and funding: Pfizer has funded the project. Poulsen PB and Dollerup J are employees of Pfizer Denmark.
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332: Knowledge and attitudes of primary care physicians about antibiotic resistance: a pilot study

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Aim: This study sought to evaluate reliability and reproducibility of a questionnaire on knowledge and attitudes of primary care physicians about antibiotic use and microbial resistance.
Method: Questionnaire was designed after extent bibliographic research, and taking account previous studies developed in Spain. Our research was developed in an area of Statistically Territorial Unity Nomenclature (NUT) II of Portugal, defined by Health Northern Regional Administration (ARS-N), which includes five geographical districts. We have informed ARS-N about this research, and physicians included in this study work in public primary care settings. Questionnaires were administered to each physician twice, at an interval of 2 to 4 weeks. Attitudes were measured using a continuous visual analogue scale, with answers scored from 0 (total disagreement) to 20 (total agreement). Questionnaire reproducibility was determined using the intraclass correlation coefficient (ICC), and reliability with Cronbach´s alpha calculation.

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Results: A total of 32 primary care physicians participated in this survey. Questionnaire evaluated 17 attitudes that were grouped in four dimensions of attitudes to antibiotic resistances: perception of the problem, attribution of responsibilities, confidence and, factors associated to prescription habits. All attitudes evaluated demonstrated good ICC and the reliability (Cronbach's alpha) was 0,711.
Conclusion: Cronbach's alpha and ICCs obtained from attitudes allow us to conclude that this questionnaire is reproducible. Thus we could say that our questionnaire is valid to evaluate the attitudes and knowledge of primary care physicians, since it allows detect differences among this health care professionals.
Conflict of interest and funding: Supported by Fundação para a Ciência e Tecnologia (FCT). Funding references: PTDC/SAU-ESA/105530
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333: Can we use diabetes or hypertension to predict a diagnosis of obstructive sleep apnoea?

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Aim: Sources suggest the prevalence of obstructive apnoea/hypopnoea (OSAH) syndrome is 2% in women and 4% in men. This is similar to the prevalence of diabetes in the UK. Our practice has a high proportion of patients with diabetes (7.4%) and a lot of data about their care. Diabetes and high body mass index (BMI) have been suggested as risk factors for OSAH. It is also known that drug resistant hypertension is linked to OSAH. Have we identified those patients with these morbidities and made a diagnosis of OSAH?
Method: Database search of all patients with diagnosis of OSAH, diabetes (type 1 and 2) and hypertension. Only patients with sleep study confirmed OSAH were included in final analysis. Contingency table analysis of co morbid diagnoses (two tailed).
Results: 480/6500 patients had diabetes mellitus 48/480 type 1. 840/6500 with diagnosis of hypertension. 42/6500 had diagnosis of OSAH, but only 29 confirmed by sleep study. Association between diabetes and OSAH was highly significant $p<0.0001$. None of the confirmed OSAH patients had type 1 diabetes making the link with type 2 significant at $p<0.0013$. LInks with hypertension were also highly significant at $p<0.0001$ with median antihypertensive 3 (range 0 to 5). Median BMI was 37.1 (range 20 to 51.5) 29/6500 = 0.45%
Conclusion: There was underdiagnosis of OSAH overall. More likely to find OSAH in TYpe 2 diabetes and hypertensive patients with obesity. Uncontrolled hypertension or needing multiple agents to achieve control is another predictor. Targeting sleep studies in these populations is likely to be more efficient.
Conflict of interest and funding: Daryl Goodwin has received payment for speaking, advising or sponsorship for attending meetings from all the major pharmaceutical companies. ResMed, a supplier of non-invasive ventilation devices used in treating OSAH have indirectly paid for articles and reviews.
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334: Development of an innovative data warehouse to audit, monitor and improve primary care respiratory services

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Brief outline of context: A respiratory improvement initiative highlighted a need for a real time tool to benchmark, monitor and drive up the quality of COPD services at practice level.
Brief outline of what change you planned to make: To develop a tool to understand the standard of COPD services and the variation between practices. The output would be used to improve quality and decision making. Assessment of existing situation and analysis of its causes: Initial analysis highlighted extreme variation between practices and that national guidance was not consistently practised. No real time, easily accessible practice data available for decision making or monitoring quality.
Strategy for change: A multidisciplinary team worked closely with stakeholders to develop a tool which met their needs and requirements. Full testing of the system was carried out before full implementation.
Measurement of improvement: This tool will be used to audit the impact of a number of different strands of the integrated respiratory service, and provide real time feedback to GP practices about admissions and readmissions.
Effects of changes: The tool enables clinicians, commissioners and public health to access and merge the data from the local acute services and general practices to provide a whole system picture of the care received by respiratory patients.
Lessons learnt: The reports are dependent on the quality of coded data. Data coding issues can report unexpected results, which require local investigation.
Message for others: Timely data is crucial for understanding the quality of care and the impact of service redesign. The tool is available for other healthcare providers.
Conflict of interest and funding: Nothing to declare
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335: Does owning a spirometer improve COPD care?

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Aim: This study explored the association between Practice ownership of a spirometer and care quality indicators of validated COPD diagnosis, admissions and prevalence.
Method: Airways Nurses were deployed to 42 Practices in Waltham Forest to work with Practice staff. Availability of spirometers, numbers of registered COPD cases with diagnosis confirmed by spirometry, prevalence rates compared to Eastern Region Public Health Observatory estimates and 12 month unscheduled COPD admission rates were all recorded. Statistical analyses were performed to explore correlations between spirometer ownership and quality care measures.
Results: 36% of Practices (n= 15) had desktop spirometers, 38% (n=16) had handhelds, and 26% (n= 11) no spirometer. 19 percent of registered patients did not have their COPD diagnosis confirmed by spirometry with no statistical difference between practices with desktop (18%), hand held (16%) or no spirometer (18%). There was however a huge range between practices (0% and 97% patients not having spirometry confirmed diagnosis).The mean difference between estimated and recorded prevalence of COPD was 1.23 (desktop), 2.13 (handheld) and 2.16 (no spirometer), with no statistical difference between practice type. COPD admission rate for 2010/2011 was 35% for Practices with desktop spirometers and 31% for both Practices with handheld and no spirometers.
Conclusion: Owning a spirometer or a higher quality spirometer is not associated with improvement in quality of care indicators. Within all groups of practice there was very wide variation in these quality care indicators suggesting that targeted clinical support for practices is required and not simply new equipment.
Conflict of interest and funding: Airways nurses performing audits were non- promotional private nurses funded through a collaboration with Boehringer Ingelheim.
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337: A sex-specific effect of parental smoking cessation in the prevention of asthma among 2 year-old children. A controlled interventional multicentre study in primary health care: the prevention of allergy among children in Trondheim (Pact) study

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Aim: Environmental factors as tobacco exposure, indoor climate and diet are identified to be involved in the development of allergy related disorders. The aim was to study the effect of altered exposure to these factors during pregnancy and infancy on the incidence of allergy related diseases at 2 years of age.

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Method: Children from a non-selected maternal population were recruited to a controlled, interventional multicentre study in primary health care. The interventions focused on an increased maternal and infant intake of cod liver oil and oily fish, reduced parental smoking, and reduced indoor dampness during pregnancy and the first 2 years of life. Questionnaires on baseline data and risk factors, and health were collected at 2 years of age.
Results: The odds ratio for the incidence of asthma was 0.72 (95% CI, 0.55-0.93; p=0.01; NNTb 53), and 0.75 for the use of asthma medication (95% CI, 0.58-0.96; p=0.02). The odds ratio for girls was 0.41 (95% CI 0.24-0.70; p<0.01; NNTb 32), and for boys 0.93 (95% CI 0.68-1.26; p=0.63). There were no significant change for atopic dermatitis, and allergic rhino-conjunctivitis.
Conclusion: Reduced tobacco exposure during pregnancy and early childhood might be effective in reducing the incidence of asthma at 2 years of age. The differential effect in boys and girls indicate that the aetiology of asthma is dependent of the children's sex.
Conflict of interest and funding: None declared
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344: Home visits for improving asthma follow-up consultation attendance

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Brief outline of context: Regular review is a marker of quality care and relates to better asthma control. Non-attendance is a frequent and concerning problem.
Brief outline of what change you planned to make: Improve attendance to asthma follow-up consultations.
Assessment of existing situation and analysis of its causes:: The Child Asthma Program provides care for around 500 patients. Every 6 months the population under control is reviewed. Since December 2010 non-attendance (missing appointments for more than 3 months) was recorded, 37.2% were non-attenders.
Strategy for change: We implemented a home visit strategy. Every month the non-attenders were identified and a home visit was planned. Completed visits considered a survey, asthma control assessment and a medical appointment.
Measurement of improvement: We measured at 6 and 12 months the non-attenders and if the home visit lead to attendance or not.
Effects of changes: 147 home visits were done. 67 were completed, with a 65.7% of success (patient attends to appointment). 80 home visits failed and only 16.3% of those patients had spontaneous appointments. At 6 months 17% of patients were non-attenders, and 24% at 12 months. In one year the nonattendance rate was reduced in 13.2%.
Lessons learnt: Improving attendance is feasible. Patients appreciate interventions outside the health center. In many cases management doesn't match the indicated prescription. Causes of non-attendance are diverse and had to be explored deeper. Feeling well despite of uncontrolled asthma and difficult to access appointments are worrisome.
Message for others: Looking for non-attenders is an important issue for managing asthmatic children. Home visits also provide the opportunity to reinforce prescriptions in patient´s natural environment.
Conflict of interest and funding: None
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345: Nurse led team admission avoidance (AA) for COPD exacerbations

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Brief outline of context: COPD exacerbation AA reports consist of doctor/nurse assessments in emergency department/community clinic followed by community management.
Brief outline of what change you planned to make: Patients referred by GPs to Suffolk COPD Services, visited in their home on same day.
Assessment of existing situation and analysis of its causes:: Respiratory team reviewed 132 consecutive referrals for one year period.
Strategy for change:: Data analyzed using SigmaPlot™, expressed as mean (±SEM). Summary report of anonymised patient satisfaction data routinely collected over 2 years includes study population.
Measurement of improvement: 16 referrals resulted in admission: four with severe hypoxia/acute type II respiratory failure; three myocardial infarctions; three after failure to respond to treatment, others for various reasons. There were two deaths. One referred for terminal event support. The 2nd admitted, too unwell for home management.

Characteristic	Admission Avoided	Admitted
episodes (N)	116	16
patients (N)	91	14
age (years)	71.64 (±1.07)	74.06 (±2.25)
FEV_1 (l/min)	0.79 (±0.33)	0.67 (±0.09)
FEV_1/FVC (%)	43.8 (±16)	35.2 (±16)
O_2 sats (%)	92.1 (±4.1)	89.3 (±4.3)
MRC breathlessness Score	3.9 (±0.7)	4.8 (±0.6)
Mortalities (N)	1	1

Effects of changes: Patients spent average 4.9 (±0.4) days under service, received 3.7 (± 0.2) visits, 0.9 (± 0.1) telephone consultations. 252 satisfaction surveys were sent. 178 responded, 119 were very satisfied, 13 satisfied, 2 dissatisfied, 1 very dissatisfied. Our service prevented 87% of potential admissions.
Lessons learnt: Referral by GPs to trained specialist nurses presents a safe form of AA for COPD exacerbations. 96% of patients were very satisfied / satisfied.
Message for others: This may be an effective way to reduce admissions, directing work away from emergency departments/clinics.
Conflict of interest and funding: None
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