**Primary Care
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ABSTRACTS

2nd IPCRG International Scientific Meeting
"Primary Care at the leading edge"
Thursday 26th May (Evening) - Friday 27th May 2011, Amsterdam

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

They are in order of presentation at the meeting

093: A randomised control trial of the effect on asthma-related behaviours of education in the GP's office

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Aim: The purpose of educational interventions is to change the recipient's behaviour. Not many trials test this. We introduce a new measure of behaviour change

Method: A randomised control trial, the REPC study, introduced respiratory educators into 29 family physicians' offices in Alberta, Canada. 125 patients with asthma received 3 patient-centred educational sessions at 0, 2 and 6 months with 125 controls. 95 patients completed the Edmonton Asthma Behaviour Scale (EABS) before each intervention. (49 subjects and 46 controls).This scale includes six domains of asthma-related behaviours; (1) compliance to regimen (2) trigger avoidance (3) prevention activities (4) interaction with health care(5) symptom intervention (6)problem behaviours; and has been piloted for consistency and reliability. Changes between the groups and within the groups were measured over time using the six domains of the EABS

Results: Changes over time between the intervention and control groups did not differ significantly. Within the intervention group, subjects showed significant changes over time for three of the six domains; #1and#3 and #5; (compliance, prevention and symptom intervention) For domains #1 and#5 the changes were maximal at the two month evaluation and dropped off at the six month evaluation.

Conclusion: Education of primary care patients with asthma by trained educators in their family physician's office can lead to changes in some of their asthma related behaviours. Further studies are needed with larger numbers to determine the potential size of this effect and the effect on other asthma related behaviours for which this study failed to show a change.

073: An educational initiative to enhance knowledge on COPD among general practitioners serving rural areas in Greece

Tsiligianni I, Dimopoulou S, Merkouris B, Batikas A, Ioannidis D, Kosmas E, Mantzouranis G, Smagadi A, Zisi P, Moraitaki D, Dumitru S, Andritsou M, Tzanakis N
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Aim: In Greece, general practitioners (GPs) often lack knowledge on COPD management and spirometry. In an attempt to cover this gap, the Greek Association of General Practitioners (ELEGEIA) in collaboration with the Hellenic Thoracic Society decided to offer Schools on COPD and spirometry on an annual basis.

Method: Each school consisted of 4 days intensive programme that covered aspects such as COPD early diagnosis and differential diagnosis, hands-on workshop on performing and interpreting spirometry, COPD treatment, smoking cessation, comorbidities in COPD, exacerbations and practical demonstration of the use of inhaler devices. Participants completed an evaluation form after their attendance.

Results: During 2010, 3 Schools on COPD were performed with about 70 participants, all of them serving as GPs mainly in rural and sometimes also remote areas. At the completion of the School all participants agreed to be a part of a research time leading by ELEGEIA. All trainees were asked to complete an evaluation form at the end of the COPD School. The evaluation form had a Likert scale from 1-10 (1=not happy with the course, 10= completely happy). The School's courses covered the trainee expectations (median score= 9.2), total evaluation of the course (median score= 9.3), usefulness of the course for the trainee future approach of COPD patients (median score= 9.4).

Conclusion: A COPD course focused to GPs serving mainly rural areas in Greece offered them the opportunity to receive a well structured education and fill several gaps on their knowledge and skills on COPD education and management.

090: The personal and social burden of COPD: individual lifestyle impact

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Aim: COPD affects around 210m people worldwide. An increasing number of people aged under 65 years are being diagnosed. The impact of COPD on the younger working age population may be different to that of an older population and merits further study. The aim of this study was to ascertain the effect of COPD on a younger working age population: including financial and psychosocial impacts. Here country level data are presented from a multi-region survey of younger individuals.

Method: 2426 respondents participated in a cross sectional survey in six countries. 49% male (n:1180), mean age 56.4 years (SD 7.1), 29% (n:710) were working. Respondents were recruited utilising a mixed methods design, either via telephone or face-to-face interview. Data was collected on the economic impacts of COPD on individuals and their families, including effect on household income, ability to maintain lifestyles, planning for the future and the impact of the illness on family and friends.

Results: The results suggest many respondents do not feel able to plan for the future or maintain their lifestyle (Table 1). Over a third of respondents' felt their household income had been decreasing as a result of their COPD (n:896), many felt they were a burden to their friends and family (17% n:421) (Table 2) and over a quarter felt they were not taking care of their children and family as usual (n:636). Over 50% went out less often to visit others, and similar numbers felt embarrassed by their cough in public. Over half said their condition had stopped them achieving life goals or dreams (n:1224). See http://www.theipcrg.org/abstracts_2011/fletcher_abstract_personal_and_social_burden1_HA_22-3-11.doc for tables.

Conclusion: Respondents felt they were restricted by their COPD in terms of achieving life goals, socialising with others and in providing usual family care. The results confirm the serious psychosocial and financial impact of COPD, issues of particular importance for working age patients.

036: Nurses' and patients' communication in smoking cessation at nurse-led COPD clinics in primary health care

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Aim: To examine smoking cessation communication between patients and registered nurses, with a few days of Motivational Interviewing (MI) based education, in consultations over time at nurse-led Chronic Obstructive Pulmonary Disease (COPD) clinics in primary health care (PHC).

Method: The first and third of three consultations were videotaped, involving 13 smokers and six nurses. In these consultations smoking cessation communication was analyzed using the Motivational Interviewing Treatment Integrity (MITI) Scale and Client Language Assessment in Motivational Interviewing (CLAMI).

Results: The nurses did, but only to a small extent, evoke patients' reasons for change, foster collaboration and support patients' autonomy. In the registration of specific utterances; they provided a lot of information (42%), asked closed (21%) rather than open questions (3%) and made more simple (14%) than complex (2%) reflections. Most of the registration of the patients' utterances in the communication were either toward or away from smoking cessation coded in the category Follow/Neutral (59%), followed by utterances in the categories of Reason for change 40%, Taking steps 1% and Commitment 0%. No significant differences could be observed in the results of MITI and CLAMI between the first and third consultations.

Conclusion: Smoking cessation communication at nurse-led COPD clinics neither focused on the patients' reasons for or against smoking nor motivated patients to express commitment to, or take steps towards, smoking cessation.

Conflict of interest and funding: There are no conflict of interest

028: Evaluation of socio-demographic characteristics of patients receiving specific immunotherapy in Antalya

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Aim: In this study, the socio-demographic characteristics were evaluated in subcutaneous specific allergen immunotherapy-treated patients diagnosed with allergic rhino-conjunctivitis and asthma. Allergic rhinitis is a common disease in the community. Allergic rhinitis manifests in two forms, as seasonal and perennial allergic rhinitis. The allergic rhinitis prevalence and etiology varies from region to region and affects 10-20% of the population approximately.

Method: The study was conducted in Antalya between 10th of November 2009 and 20th of September 2010. The cases having subcutaneous specific immune-therapy due to allergic rhino-conjunctivitis or asthma were included. A questionnaire made by the investigators taking the latest literature data into consideration were used during the study. The total and specific IgE levels were made by fluoroenzyme immunoassay method via use of ImmunoCAP kit. For dermal prick tests Alyostal ST-IR standard allergen extracts were used.

Results: The total duration of the allergic rhinitis was 7.2 ± 0.2 years, and the mean duration of the disease at the start of the immune-therapy was 4.3 ± 3.6 years. The total Ig E level was 307.6 ± 14.5 Ku/l. The most common allergen was plant and cereal pollens.

Conclusion: High asthma prevalence in people living in shanties and in housewives may be due to exposure to house dust mites. In allergic diseases; allergens may have regional variations. That's why; the allergen profiles of the regions must be determined and the dermal Prick tests must be prepared accordingly. Key words: allergens, Prick test, allergic rhinitis, allergic conjunctivitis, asthma

Conflict of interest and funding: No

043: COPD Patient education: physician and patient communication gaps

Kaplan A, Chapman KR

University of Toronto, Canada

Aim: To explore physician and patient attitudes regarding perception of COPD pathophysiology, healthcare resources and smoking cessation.

Method: Patients aged 35-74 with moderate to severe COPD, and physicians with experience treating patients with COPD were recruited through various methods. Attitudes concerning COPD patient education were explored during two focus group sessions (Toronto and Montreal) in October 2010 using semi-structured interviews. Patients and physicians were interviewed separately (with physicians able to observe the patient discussion) and a physician-patient group discussion followed.

Results: Twelve patients and 12 physicians participated; 6 patients and 6 physicians (two respirologists and four GPs) per focus group. Patients were unclear about the definition, role and consequences of inflammation in COPD. Although patients understand smoking to be the cause of their COPD, many were reluctant to discuss their disease given their doctors judgmental /unsympathetic attitudes towards smoking. Patients filled in information gaps on their own and their awareness of community support resources was limited. Their motivation for education was driven primarily by for relief of immediate symptoms, rather than minimizing the long-term impact of their disease. In contrast, although physicians have a clear understanding that sustained inflammation underlies the chronic and progressive natural history of COPD, patient-physician information-sharing was limited by the following: difficulty in explaining inflammation, time restraints, desire not to "overwhelm", and focus on co-morbid conditions. Physicians regularly discussed the importance of smoking cessation, in what they felt was a sensitive and constructive way.

Conclusion: The findings highlight significant gaps in patients understanding of the role of inflammation in COPD and their knowledge of educational resources in the community. Patient-physician communication gaps regarding smoking cessation also exist. Further patient education and more effective communication strategies are required.

Conflict of interest and funding: Funded by Nycomed Canada Inc.

044: Attitudes to COPD exacerbations: do patients and physicians differ?

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University of Toronto, Canada

Aim: To explore physician and patient attitudes towards the prevention, treatment and reporting of COPD exacerbations.

Method: Patients aged 35-74 with moderate to severe COPD, and physicians with experience treating patients with COPD were recruited through various methods. Attitudes concerning COPD exacerbations were explored during two focus group sessions (Toronto and Montreal) in October 2010 using semi-structured interviews. Patients and physicians were interviewed separately (with physicians able to observe the patient discussion) and a physician-patient group discussion followed.

Results: Twelve patients and 12 physicians participated; 6 patients and 6 physicians (two respirologists and four GPs) per focus group. Patients do not understand the term "exacerbation", what constitutes a COPD exacerbation, its impact, and effective preventative strategies. Many patients do not recognize the onset of an exacerbation, delay treatment and often try to manage exacerbations on their own, which results in delayed treatment and the under-reporting of exacerbations. The frequency of exacerbations reported by patients was highly variable. Patients also were often unclear about exacerbation prevention, understanding hand washing but underusing influenza shots (~1/2 received) and not recognizing the preventive role of their inhalers. In contrast, physicians have a relatively clear understanding of a COPD exacerbation and its impact, and often defining it in terms of health-care utilization. Despite this understanding, some uncertainties when defining the severity of an exacerbation remain. Physicians stated that on average, patients reported three to four exacerbations/year, which they felt was likely an underestimation.

Conclusion: The findings indicate that there are significant gaps in patients understanding and management of COPD exacerbations. Further patient awareness and education with regards to defining, preventing and reporting COPD exacerbations are required.

Conflict of interest and funding: Funded by Nycomed Canada Inc.

049: The effect of integrated care on asthma control

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Aim: To describe the effect of an integrated care system on asthma control
Method: We developed an integrated care system for communication between pulmonologists and General Practitioners (GP). In this system patients with respiratory problems complete questionnaires (history, control and health status) and visit the laboratory for spirometry. These data are collected and uploaded to a central server. Based on these data without seeing the patient and supported by a decision support system the pulmonologists (n=9) give advice about diagnosis and treatment to the GP (n=250), who treats the patient.
Results: From a total of 7877 patients referred to our integrated care system 3721 patients were diagnosed with asthma. In 889 of these patients ACQ data were available at baseline and follow up. The median ACQ scores at baseline (median: 1.0) proved to be significantly different from the median ACQ scores of the follow up visit (median: 0.7; p < .001). Improvement of asthma control >= MCID (0.4) was measured in 32% of patients (n=284). Additionally the results showed deteriorated asthma control in 15% of patients (n=134) and unchanging asthma control in 51% of patients (n=454).
Conclusion: This integrated care model improved asthma control
Conflict of interest and funding: None

072: 'Knowing the patient': perspectives of patients and healthcare professionals on clinical support for tele-monitoring of COPD

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Aim: There is increasing interest in the use of tele-monitoring as a means of managing patients with severe COPD. The supporting clinical service is crucial, however, there is considerable diversity in how such care is organised. The TELESCOT randomised control trial based in Lothian, Scotland, is investigating the impact of tele-monitoring services for COPD. The nested qualitative study explored the views of patients and professionals on models of telemetric service delivery.
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 stressed the importance of continuity of care. Professionals generally considered integration of telemetric provision with local practitioner services preferable to centralised 'call centre'-type provision, emphasising the value of the patient-practitioner relationship and clinical expertise ('knowing the patient' and 'knowing what's normal for the individual') in interpreting tele-monitoring data. Patients spoke of the importance of personalised care provided by tele-monitoring staff familiar with their circumstances and state of health. Patients and professionals were both concerned that centralised call handling may be perceived as cost-effective as services are rolled-out, but questioned the wisdom of this approach.
Conclusion: The patient-practitioner relationship, personalisation and continuity of care were prioritised as important elements in delivering clinical support for tele-monitoring services by patients and professionals, overriding apparent economies of centralised, but impersonal services.
Conflict of interest and funding: Conflict of interest: none. Funding: Chief Scientist Office, Scottish Government.

038: Does pulse oximetry reflect pulmonary function and quality of life in people aged over 40 with COPD in general practice?

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Aim: Pulse oximetry is a simple screening test for systemic hypoxia. This study aimed to evaluate pulse oximetry in general practice, in patients with stable COPD, and assess how pulse oximetry results (SpO2) reflect lung function and symptoms.
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 were asked by mail to take part in the project. 380 patients took part in the baseline examination. Oxygen saturation was measured by pulse oximeter Nonin Onyx II. Spirometry was carried out following ERS/ATS guidelines, using Spirare equipment. Respiratory symptoms and disease specific quality of life items experienced the previous week were registered on a validated COPD Questionnaire (CCQ). The questionnaire utilises a seven-point scale where 0 = asymptomatic/no limitations and 6 =extremely symptomatic/totally limited.
Results: 12 of 378 patients from baseline examinations had oxygen saturation 92%. 11 of these patients had COPD (FEV1/FVC<0.7), eight with severe COPD (FEV1 % predicted <50). 7.1% of the patients with COPD had SpO2 ≤ 92% compared to 0.5% in those with FEV1/FVC ratio ? 0.7 (p<0.001). Median score of the COPD questionnaire (CCQ) was 3.0 in the patients with SpO2≤ 92% compared to 1.6 in the patients with SpO2 >92% (p=0.001).
Conclusion: Oximetry in primary care has the potential to help in the diagnosis and assessment of COPD, and, in some instances, identify unsuspected hypoxia.Being 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

055: Functional status measurement in COPD: a review of available methods and their feasibility in primary care

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Aim: Guidelines advocate to designate the improvement of functional status a major goal in COPD treatment. Many tools are available to assess functional status and related constructs. This review aims to categorize available tools based on their construct, and to rate the tools for use in the primary care setting.
Method: PubMed was searched with the keywords: 'Functional status' or 'physical capacity' or 'functional capacity' and 'COPD'. All tools were categorized and rated on their measurement properties, feasibility and usage in primary care COPD patients. The tools were divided into four constructs: functional capacity, functional performance, functional reserve, and capacity utilization and four categories: laboratory tests, semi laboratory tests, field tests, and patient reported outcomes.
Results: The PubMed search resulted in 364 articles. Thirty-two tools were identified and rated.
Conclusion: for primary care, the six minute walking distance test is the most reliable semi-laboratory functional capacity test, but is not very practical. The pedometer is the best functional performance field test and the Medical Research Council dyspnoea questionnaire(MRC) and the Clinical COPD Questionnaire(CCQ) functional status domain are the best patient reported outcome tools to assess functional performance.
Conflict of interest and funding: none

Abstracts

037: The effect of active implementation of a chronic disease management program for patients with COPD on use of healthcare resources

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Aim: Evaluate the effect of an active, structured implementation of a chronic-disease-management guideline for patients with Chronic Obstructive Pulmonary Disease (COPD) on the use of health-care-resources.

Method: A cluster- and bloc-randomized controlled trial with two arms and an additional control group. In the intervention arm with patients from half of the general practices in Ringkoebing-Skjern municipality, the general practices received an active, structured implementation of a disease management program for COPD. The other half of the practices continued as usual and their patients formed the control arm. To control for bias a comparable municipality's practices and patients formed an external control group. At baseline, questionnaires were sent to patients identified by a COPD-algorithm based on administrative data. One year after the intervention start, follow-up questionnaires were sent to patients who had responded that they had COPD at baseline. Data from health-care registries for patients returning the second questionnaire were collected. Data were analyzed as differences in each group.

Results: 2917 patients were sent a baseline-questionnaire, 1998 (68.4%) answered. 73% verified their diagnosis of COPD. Follow-up-questionnaires were sent to 1395 (59 had died or sought research protection) and 83% answered. There was an increase in the use of planned preventive consultations from 120 (36%) to 190 consultations (57%) (p<0.0003) in the intervention-group. The control and external control-groups showed no change. There was an increase in spirometries done among the intervention patients from 34% (114) to 43% (142 spirometries), (p<0.008). No change in the two control-groups. We also saw a quadrupling of the spirometries with a reversibility test in the intervention-practices from 3% (11) to 12% (38 spirometries with reversibility test) (p<0.001) and no change in the two control-groups. In the follow-up questionnaire 36% (109) vs. 17% (59) and 19% (83) (p<0.001) of the patients from intervention-practices reported they had been to a check-up for their COPD during the last 12 months. Further, 22% (67) in the intervention-group knew the date for their next check-up compared with 11% (39) and 12% (56) in the two control-groups, respectively (p<0.001).

Conclusion: The results suggest that implementing a structured disease-management-program for COPD in general practice changed the use of related health-care resources indicating higher medical process quality.

Conflict of interest and funding: The study is funded by The Central Denmark Region, Ringkoebing-Skjern Municipality and The Research Fund at Aarhus University. The authors declare that there is no conflict of interest.

068: Comparative effectiveness of extrafine versus standard particle HFA-BDP in real-world asthma

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Aim: Smaller particle inhaled corticosteroids (ICS) may offer greater inhalation tolerance and more even distribution within the lungs. We compared asthma control outcomes over 1 year for two hydrofluoroalkane (HFA) formulations of beclomethasone dipropionate (BDP) prescribed in the UK: extrafine (EF) HFA-BDP (Qvar®, particle size ~1.1μ) and standard particle (SP) HFA-BDP (Clenil®, particle size ~2.9μ).

Method: We utilised the UK's Optimum Patient Care Research Database to identify adult patients (12–80years) with asthma (diagnostic code and/or ≥2 ICS prescriptions in the outcome year) who changed from any CFC ICS to EF or SP HFA-BDP at an index date with no change in baseline equivalent BDP dose (i.e. SP HFA-BDP at equivalent BDP dose; EF-HFA-BDP at half equivalent BDP dose). Composite asthma control measures were evaluated over 1 year: ASTHMA CONTROL: no asthma-related hospital attendance, admissions, out-of-hours consultation, outpatient department attendance; no acute oral steroid prescriptions; no asthma-related primary care consultations for lower respiratory tract infection (LRTI); EXACERBATIONS: asthma hospital attendance, out patient department attendance or Accident&Emergency

admission, and/or acute oral steroid courses or antibiotics for LRTI. Matching was not required due to similarity of patients at baseline; results were adjusted for baseline differences using regression modeling.

Results: During baseline 78.8% and 76.6% of EF (n=1762) and SP (n=1740) HFA-BDP patients achieved asthma control, respectively (p=0.114). Following the change in therapy, EF HFA-BDP patients had significantly greater adjusted odds of achieving asthma control (OR[95%CI]: 1.19[1.00,1.43]) than SP HFA-BDP patients. There was a trend to lower adjusted exacerbation rate for EF compared with SP HFA-BDP (RR[95%CI]: 0.86[0.73,1.16]).

Conclusion: When switched from CFC-BDP, EF HFA-BDP patients achieved similar or better outcomes than those switched to SP HFA-BDP.

Conflict of interest and funding: Analysis funded by Teva Pharmaceuticals Limited.

061: CAT and CCQ validation in Crete: preliminary results

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Aim: The COPD Assessment Test and the Clinical COPD Questionnaire are both developed to measure COPD related health status. The aim of this study is to do a head to head comparison of the two questionnaires.

Method: 69 patients with COPD, in Crete, Greece have until now participated in the study. In visit 1, visit 2 (7-12 days after visit 1) and visit three after 42 days, the following were assessed: CCQ, CAT, St George Respiratory Questionnaire (SGRQ), and spirometry with bronchodilation.

Results: The 69 patients that have participated were in GOLD stage I (10.2%), stage II (56.5%), stage III (27.5%), IV (5.8%). Mean+sd was for CAT: 12.19 ± 7.77, for CCQ tot: 1.47 ± 1.00, for SGRQ: 35.67 ± 18.22. Internal consistency: Cronbach's α was 0.955 for the CCQ total score, 0,961 for CAT, and 0.976 for SGRQ. Convergent validity: CCQ total score and CAT score correlated strongly, (ρ=0.794;p<0.01). The total scores between CCQ and SGRQ scores were significantly correlated, (ρ=0.780;p<0.01). The functional domain of the CCQ correlated significantly with the activity domain of SGRQ (ρ=0.762;p<0.01). CAT score correlated significantly with the SGRQ total (ρ=0.786;p<0.01 respectively). The ICC was 0.877 for the total CCQ score and 0.892 for the CAT score. Correlation of CAT, CCQ tot and SGRQ with MRC was 0.665, 0.710, and 0.773 respectively, p<0,001. Divergent validity: The correlation between CAT, CCQ tot, and SGRQ tot and FEV1%pred was -0.493, -0.548, and -0.582 respectively, p<0.001.

Conclusion: Both CCQ and CAT have very good psychometric properties with no statistical differences between the questionnaires.

Conflict of interest and funding: None

047: Empowerment and quality of life in asthma patients (the EQLAP study): a cross-sectional study from a family practice

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Aim: To assess the severity of asthma, medication use, asthma control, level of patient enablement and quality of life in a population of asthmatic patients in primary care.

Method: A cross-sectional study carried out in an urban population in northern Portugal. Data were collected both from clinical records and questionnaires administered to a stratified random sample of asthma patients. The modified patient enablement instrument (mPEI), the asthma quality of life questionnaire (AQLQ) and the asthma control test (ACT) were used. Pulmonary function was assessed by measuring peak expiratory flow (PEF) and forced expiratory volume at one second (FEV1).

Results: The study sample included 175 patients treated by 7 physicians with a response rate of 97.2%. The mean age was 45.9 years and 68% of the patients were female. Over half of the patients (57%) had forms of persistent asthma. The mean PEI scores was significantly higher for patients with intermittent asthma compared to those with persistent forms (p<0.01). There was a strong and statistically significant correlation between asthma control

and quality of life (r=0.8). There was a weak but significant correlation between patient enablement and both asthma control and quality of life. There was no correlation between patient enablement and the results of the pulmonary function tests.

Conclusion: The findings in this study confirm the correlation between good asthma control and quality of life. The finding of a weak correlation between scores on the patient enablement instrument and asthma control and quality of life scores requires further study.

Conflict of interest and funding: No conflicts of interests are reported for this study. The study required no external funding as it was practice–based research conducted within the National Health Service. Dr. Correia de Sousa is an unpaid member of the scientific board of AstraZeneca Foundation Portugal. His department has received research funding from AstraZeneca in the past.

095: Asthma, physical and mental well-being in elite swimmers compared to age-matched controls
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Aim: Sporting activity has been reported both as a risk factor and as a factor promoting health. An increased risk of developing asthma has been reported among swimmers exposed to chloramine in pool arenas. The aim of the present study was to compare the prevalence of respiratory symptoms among elite swimmers compared to age-matched controls with different degrees of physical activity. We also aimed to relate these findings to life style factors, psychological and physical well-being.

Method: 101 elite swimmers and 1628 age-matched controls answered a questionnaire containing questions about respiratory symptoms, lifestyle factors, mental and physical well-being. The controls were divided into three different groups according to degree of physical activity.

Results: Swimmers reported significantly more asthma symptoms. 36.6% of the swimmers had physician diagnosed asthma, compared to 16.2% among the controls. Use of regular medication was more common (14.9% vs 8.0%). More swimmers reported an exacerbation during the previous 12 months (16.8% vs 5.8%). Despite increased prevalence of asthma symptoms, the swimmers reported the best mental and physical well-being. They had a healthier life style with absence of smoking and low alcohol consumption. The influence from their home environment seems to be important together with strong motivation achieved as part of the sporting activity per se.

Conclusion: Swimmers have high frequency of respiratory symptoms and the chloramines in the swimming pool arenas are probable contributing factors. Better control of pool environments is warranted in order to achieve a better balance between the positive benefits of sporting activity and being exposed to a higher risk of developing asthma.

Conflict of interest and funding: Independent grants from AstraZeneca, Schering-Plough and MSD

031: COPD patients' experience of a nurse-led multidisciplinary programme in primary health care, one year after participation
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Aim: To describe patients' with COPD experience of participating in a nurse-led multidisciplinary programme in primary health care setting, one year after completing the programme.

Method: The study has a descriptive qualitative design and is a part of a longitudinal study, a nurse-led multidisciplinary programme for patients with COPD in primary health care. Qualitative interviews with 20 participants were performed and data was analysed by qualitative content analysis.

Results: The result is presented in one theme; I have allowed me to live my life in my own pace, and three sub-themes; I was helped taking control over life; The education was nothing that bothered to me; and I have got insights of limitations in life.

Conclusion: Regardless if the patients already had found their own strategies to handle the disease or if the programme had changed their lives, there was

a constant fear present. In future educational programs it should be taken into consideration if the selection of patients should be based on function in everyday life instead of based on results of spirometry. Furthermore, COPD-nurses need to be trained in education in group-sessions in future pulmonary rehabilitation activities.

Conflict of interest and funding: No conflict of interest. The study is funded by Foundation of Maja Johanssons och Maria Brantefors scholarship fund in development work in health- and medical service. Also the Research Committé of Örebro County Council funded the study.

052: The effect of integrated care on health status in COPD
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Aim: To describe the effect of advice from an integrated care system on health status in COPD patients.

Method: We developed an integrated care system in which pulmonologists provide diagnostic support to the General Practitioner (GP). Patients with respiratory problems complete questionnaires (history, control and Clinical COPD Questionnaire (CCQ)) and visit the laboratory for spirometry. These data are collected and uploaded to a central server. Based on these data without seeing the patient and supported by a decision support system the pulmonologists (n=9) give advice about diagnosis and treatment to the GP (n=250) who treats the patient.

Results: From 7877 patients referred to the integrated care system 1331 patients were diagnosed with COPD. In 310 of these patients CCQ data were available both at baseline and follow up (3 months or 1 year). The median CCQ score of the baseline visit (median: 1.1) proved to be significantly different from the median CCQ scores on the second visit (median:1.0 ; p = .013). Improvement of health status $\geq$ the minimal clinical important difference (MCID) of 0.4   was measured in 27% of patients (n=82). Deteriorated health status $\geq$ the MCID was reported by 29% of patients (n=91). 44% of patients reported unchanging health status (n=135).

Conclusion: This integrated care model where the pulmonologist directly advises the GP provided a significant yet small improvement of COPD health status where one would expect a small decline in health status due to the natural course of the disease. Clinical implications however are unclear.

Conflict of interest and funding: None

035: Basic knowledge of COPD, spirometry and smoking cessation in Norway
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Aim: The specialty of primary care is obtained after fulfilling several criteria. Every fifth year it has to be recertified. CME accredited courses are mandatory in this process. The majority of which do not require the participants to pass any evaluation. We wanted to assess the learning effect of a respiratory course with focus on spirometry and COPD. Baseline data will be presented.

Method: Invitation to participate was send to GPs on a regional basis. Participants who signed up for the course received written information about the study in advance. Written consent was obtained. A questionnaire was filled out before the start of the course and 3 months after. The questionnaire contained key questions regarding diagnosis, follow-up and treatment of COPD, key criteria for spriometry testing and a section on smoking cessation.

Results: One hundred and ninety four delegates filled in the questionnaire before the course. There was an equal distribution between the sexes and 60% of delegates were specialists. Almost all centres had spriometry (96%) and the majority of tests (83%) were performed by health secretaries. There was a striking uncertainty among the delegates in diagnosis and interpretation of spriometry with only 18% and 13% respectably feeling confident. Only 32% conformed to current guideline use for short acting bronchodilators as first choice in therapy. A majority of GPs (57%) ask all new patients of smoking status but only 18% have a structured cessation programme in their practice.

Conclusion: There is a great need for updating GPs in basic spriometry and

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knowledge on diagnosis, treatment and follow-up of COPD. There is still a lack of smoking cessation support from GPs.

Conflict of interest and funding: Conflict of interest: None Funding: Supported by a grant from the Norwegian Directorate for Health.

040: Patient Symptoms Dictate How Physicians Behave in the Early Diagnosis of COPD.

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Aim: To assess physician behaviours regarding early diagnosis of COPD based on their assessment of patients' symptoms

Method: Family physician practice patterns regarding COPD were studied. Any smoker or ex-smoker, $\geq$40 years of age, and answering yes to any of the Canada Lung Health test questions were included in the practice assessment (exclusion: known COPD diagnosis, prior spirometry <2 years).

Results: 74 Quebec family physicians assessed 1482 patients in their office between May and July 2009 (n=890), and between March and May 2010 (n=592). 31% of the patients had respiratory symptoms and 51% presented for general check-ups. Of those who coughed, 43% coughed at least weekly. 75% of the symptomatic patients were MRC <2. 59% of physicians vs. 39% of patients perceived that symptoms affected activity, across all MRC levels. COPD was not top-of-mind for physicians unless respiratory symptoms were present, but even then spirometry was requested in only half the patients. More spirometry was ordered if the patient had respiratory infection, dyspnea or cough, or if respiratory symptoms affected their activity. Reasons for not ordering spirometry included having limited access to spirometry (18.9%), concluding that results would not change practice (33.9%), predicting it would be normal (9.9%), or patient having seemingly more significant other medical priorities (30.5%).

Conclusion: Screening prior or currently smoking patients 40 years of age or older with the Canada Lung Health Test appropriately identifies patients with COPD. The degree that their disease seemed to affect their activities had much to do with how aggressively they were diagnosed and even treated. Physicians had many reasons to not order spirometry, which continues to be a barrier for proper diagnosis.

Conflict of interest and funding: Sponsored by Boehringer Ingelheim (Canada) Ltd./Ltée

042: A clinic-based structured physician program (Airwaves) to educate patients with asthma

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Aim: To assess the effect of physician use of a structured asthma flow sheet in the education of patients with asthma.

Method: One hundred physicians were asked to assess 10 asthma patients, who were initiating HFA-beclomethasone treatment, at two visits four weeks apart. A structured flow sheet was used to document asthma control and assess patient education implementation. An anonymous patient survey assessing patient and physician knowledge of disease, symptoms, and quality of life were completed after the first visit (V1).

Results: Sixty-one physicians and 374 patients participated; 294 had V2 assessment, and 257 submitted the survey. Respiratory tract infections and dust were the asthma triggers reported for the most patients by physicians (57% and 34%) and by patients (53% and 41%), respectively. At V1, only 34% of patients had a previous diagnostic spirometry. At V1 and V2, respectively, 57% versus 73% had a personalized action plan completed or ordered, 30% versus 34% had formal asthma education completed or ordered, and 60% versus 70% had inhaler demonstration completed. Smoking cessation was or had been discussed with 21% and 24% of patients at V1 and V2, respectively. In the surveys, 95% of patients reported having been taught on their medications, including what was their medication (68%), why take them (68%), when to take them (75%) and how to take them (70%).

Conclusion: In an uncontrolled study, use of a structured asthma flow sheet similar to the one found at www.fpagc.com was accompanied by an increase in patients being educated on asthma

Conflict of interest and funding: Study funding by Graceway Canada

032: Pregancy, Smoking and Vaccines

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Aims:
1. To know the smoking status of pregnant women and their partners.
2. To know the influenza vaccination status of pregnant women, and the recommendations made by health workers promoting vaccination.
3. To assess the relationship between pregnancy, vaccines, maternal smoking and respiratory disease in postpartum neonates.

Method: Subjects: 398 children born between 01/07/2008 and 30/06/2009. Telephone interviews were conducted with the mothers using a previously-validated questionnaire. The period in question matched the 2nd and 3rd trimesters of pregnancy and any influenza vaccination period.

Surveys conducted by administrative (40%) and healthcare (60%) staff in the period 01/01/2010 and 28/02/2010. Cross sectional study. Semi-urban area.

Results:
a) On telephone enquiry, 51% answered: 33% agreed to the study, 15% deferred, and 3% refused. Wrong number in 1% of cases, and 48% did not answer.

There was no change if the interviewer was administrative or medical staff.
b) Age of mother (mean = 32.29 years). 16% of women had no current partner. Education: no education: 3%, primary: 13% Secondary: 19%; high school: 48%; college: 16%. Work: 74.19%.
c) History of smoking:

Smokers: 22.58% - and all quit when they became pregnant. Postpartum relapse of non-smokers: 32% never smoked, 20% quit during pregnancy and did not relapse, 32% were ex-smokers prior and 16% have current addiction. 20% of smokers received advice and assistance by AP.
Partners of smokers:

- Group total: not smoker: 45.2%, ex-smoker: 22.6%, smoking: 32.2;
- Group with women smokers: never-smokers: 5% ex-smoker: 21%, smoking:

74% female - Group with women never-smokers: never-smokers: 54%, ex-smoker: 23%; smoking: 23%.
d) Influenza vaccines: 6.45%; recommendations to 16% (family physicians 60%; nursery: 20%; midwives 20%; gynaecologists: 0%)
e) Respiratory infections in women and 9% and 32% infants (repeated at 3%).

Conclusions:
1. The completion of calls was high (33%).
2. Administrative tasks were perfectly acceptable.
3. Prevalence of smoking matched the general population (22.58%); there was a high prevalence of smoking amongst the partners of pregnant women (32.25%).
4. Relationship between smoking / mother / postpartum relapse, and smoking partner (p <0.001)
5. Very low-influenza vaccination coverage (6.45%), very low influenza vaccination recommendations by health and absent in gynaecology.
6. No significant relationship between respiratory infections / smoking / influenza vaccine

Conflict of interest and funding: No

092: COPD and its impact on ability to continue to work: an international survey

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Aim: COPD affects large numbers of people of working age COPD Uncovered is an international study which measured the personal, social and economic burden of disease in this population. Here the age, disease severity, and co-morbidities are presented according to employment status to identify the characteristics of individuals across the groups.

Method: 2426 respondents from 6 countries (Brazil, China, Germany, Turkey, UK, US) were recruited utilising a mixed methods design. Employment status was recorded as working, not working and premature retirement due to COPD. Disease severity was assessed using MRC scores (Mild: 1-2, Mod 3-4, Severe 5). *See http://www.theipcrg.org/abstracts_2011/fletcher_employment_abstract_MFHA. doc for tables.*

Results: The results suggest early retirees reported; greater disease severity than workers (MRC m: 4.1v 3.1, p<0.005), more co-morbidities (m:2.5 m:1.1) and were more likely to report anxiety and depression. 60% of retirees had mild or moderate disease v 91% in work 64% (n284) of early retirees did so over 4 years ago.

Conclusion: Disease severity at retirement was unknown and may have worsened post retirement. It is highly likely that disease severity will limit ability to work depending on occupation however the trigger to retire may be due to other factors including co-morbidities. Workers registered the lowest prevalence of psychological disorders, it is unclear whether this is due to milder disease, age or employment status. This would be worthy of further study This data suggests that employers and occupational health professionals have an important role in keeping people with COPD in active work for longer.

Conflict of interest and funding: This study was funded by a grant from Novartis.

091: The impact of COPD and psychological co-morbidities in primary care

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Aim: Anxiety and depression frequently co-exist with COPD and breathless has been associated with anxiety attacks. Anxiety and depression is also frequently undiagnosed. This international survey study measured the personal, social, health and economic impact of COPD on the younger, working age population.

Method: A cross-sectional survey was conducted in Brazil, China, Germany, Turkey, UK and US (n= 2426). A mixture of telephone and face-to-face interviews were used. GP visits were recorded, along with disease severity and anxiety and depression. Severity was measured using the MRC dyspnoea scale (Mild 1-2, Moderate 3-4, Severe 5). Participants were also asked if they had experienced a recent anxiety attack and whether this anxiety attack was due to their breathing problems.

Results: 50% respondents had visited their GP in the last month as a result of their COPD. 21% also had anxiety, and 25% depression, compared to 17% and 21% respectively across the entire cohort. The majority of people with anxiety and depression had moderate or severe disease. 27% experienced anxiety attacks and 63% (of these) said this was due to breathing problems (see Table 2). Most of those having anxiety attacks due to breathing problems had moderate disease, but a number had mild disease. *See tables at http://www.theipcrg.org/abstracts_2011/fletcher_abstract_primary_care_anxi ety_and_depression_tables.doc*

Conclusion: Patients frequently attend their GP for their COPD. Some may also have anxiety and/or depression. Primary care practitioners therefore have a key role in initiating interventions for both conditions. The extent of anxiety and depression may suggest a need to screen for mental health conditions in order to support patients holistically. As a large number of people having an anxiety attack experience this due to their breathing problems and many of these have mild COPD, they may possibly benefit from psychological interventions and breathing techniques.

Conflict of interest and funding: Funded by a grant awarded by Novartis

050: Lung function and anxiety in association with dyspnoea - the HUNT study

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Aim: Anxiety is common among people with obstructive lung diseases. However, reduced lung function in combination with anxiety in relation to the reporting of dyspnoea is not well studied. We aimed to study the association between reduced lung function and dyspnoea, and how anxiety affects this association.

Method: We analysed data on 5627 women and 5066 men who participated in the Lung substudy of the Nord-Trøndelag Health Study in 1995-97. In a cross-sectional design we used logistic regression to calculate multivariably adjusted odds ratios (ORs) for dyspnoea associated with levels of FEV1% predicted and anxiety (measured by the Hospital Anxiety and Depression scale).

Results: Among women with FEV1 $\geq$100% predicted, those who had anxiety had an OR (95% confidence interval) for reporting dyspnoea when walking of 1.99 (0.68-5.84) compared to those without anxiety. Using the same reference group (FEV1 $\geq$100% predicted and no anxiety), women with FEV1 80-99% predicted had an OR of 2.46 (1.25-4.83) without anxiety and 7.71 (3.65-16.28) with anxiety, whereas those with FEV1 <80% predicted had an OR of 6.23 (3.45-11.28) without anxiety and 15.14 (7.13-32.12) with anxiety. The corresponding ORs among men without and with anxiety were 1.00 (reference) and 4.46 (0.86-23.19); 1.10 (0.44-2.73) and 5.17 (1.88-14.24); and 5.75 (2.23-14.81) and 15.19 (4.74-48.64), respectively. The ORs for reporting dyspnoea at rest and waking up by dyspnoea showed similar patterns in both women and men.

Conclusion: Reduced lung function in combination with anxiety had a stronger association with dyspnoea than reduced lung function alone.

Conflict of interest and funding: There is no conflict of interest.
This project has been financially supported by the Norwegian ExtraFoundation for Health and Rehabilitation through EXTRA funds, the Liaison Committee between the Central Norway Regional Health Authority (RHA) and the Norwegian University of Science and Technology (NTNU), and the Leif Richard Erichsen and wife Maren Hertzberg Erichsens fund for Norwegian medical research.

060: Autoimmune disease in parents is a risk factor for the development of allergic disease in their offspring

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Aim: Autoimmune disease and allergy, are thought to be mutually exclusive. These diseases, however, are not only characterized distinctions but share common denominators as well (genetic and environmental influencing factors, co-occurrence in patients, geographic distribution, rise in prevalence since 1950). This may imply that both types of diseases share etiologic influences and show intra-familial co-occurrence.

Method: In population based general practice pilot research (n=6328 households, RNH data) it was tested if any autoimmune disease in parents (rheumatoid arthritis or ankylosing spondylitis and/or psoriasis and/or diabetes mellitus type 1 and/or multiple sclerosis and/or colitis ulcerosa or Crohn's disease) increases the occurrence of any allergy in their offspring. A secondary research question was focused on the influence of the specific autoimmune diseases. A multiple logistic regression analysis was carried out.

Results: Any autoimmune disease in fathers, irrespective of co-occurrence of a diagnosis of allergic disease, showed to increase the occurrence of any allergy in their children (p=0.046, OR 1.312, CI 1.005 1.712). Autoimmune rheumatoid diseases in the mothers (rheumatoid arthritis or ankylosing spondylitis, OR 1.736, CI 1.033 2.915) and psoriasis in the fathers (OR 1.443, CI 1.030 2.021), showed to be of main interest.

Conclusion: Further research in larger samples, taking relevant environmental factors into account, will give more definite information on the effect of autoimmune disease in parents on the development of allergic disease in their

offspring. This information may be useful in the diagnostic process for allergic diseases, expanding the knowledge on the pathogenesis of allergies and thereby on the development of new therapies.

Conflict of interest and funding: None

096: Including variability as a criterion increases diagnostic accuracy in elite asthmatic swimmers after mannitol and exercise challenge

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Aim: An increased frequency of asthma have been reported among swimmers possibly due to a mix of endurance training and exposure to chloramines in indoor environments. The aim of the present study was to investigate the prevalence of exercise induced asthma (EIA) among elite swimmers and to compare sport specific exercise provocation with mannitol as an alternative indirect test.

Method: 101 elite or elite aspiring swimmers, aged 14-24 years were investigated with mannitol provocation and a sport specific exercise challenge test. Mannitol positivity was defined as either direct FEV1 PD15 with a cumulative dose of <635 mg, or as β2-reversibility >15% after challenge. A direct positive exercise test was defined as a drop in FEV1 of 10% compared to baseline or a difference in FEV of >15% either spontaneous (variability) or with β2-agonist (reversibility).

Results: We found a high prevalence of mannitol and/or exercise positivity. Twenty six were mannitol direct positive while 43 were positive with the extended criteria (including reversibility). Fourteen were direct exercise positive, while 24 were positive when using extended criteria (including variability and reversibility). When including reversibility and variability to define a positive test the sensitivity for current asthma, asthma with exercise induced symptoms increased while the specificity roughly remained unchanged. Direct positivity for mannitol or exercise poorly overlapped but was much better when extended criteria were used.

Conclusion: We found a high prevalence of EIA among elite swimmers. The use of variability and reversibility as additional criteria to define a positive test provided.

Conflict of interest and funding: Independent grants from AstraZeneca, Schering-Plough and MSD. Nigaard /Pharmaxis sponsored the study with Aridol® tests (Mannitol provocation test).

039: Identification of People with COPD from Administrative Data

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Aim: Defining a set of criteria from administrative data which can be used to identify patients with Chronic Obstructive Pulmonary Disease (COPD) in a Danish practice population.

Method: Seven GPs from Aarhus County were asked to identify all their patients with COPD. For the 266 patients identified, administrative data on hospital contacts for lung-related-diagnoses, redeemed prescriptions for medicine for lung-related-diseases and on lung-function-tests were combined to develop an algorithm identifying the highest proportion of patients with COPD with the least criteria involved. We tested nine different algorithms with two to four criteria. The best algorithm was used to identify patients with possible COPD in five GP practices in Central Denmark Region and two municipalities. GPs and patients were asked to verify the diagnoses.

Results: The tested algorithms identified from 70.7% to 72.6% of patients with COPD in seven GP practices. We chose an algorithm with a positive predictive value of 72.2% and three criteria: 1) hospitalcontact at least once during the last 5 years or 2) redeemed prescription at least twice during the last year or 3) spirometry done at least twice at different dates during the last year. 45.9% of 532 patients were verified to have COPD by the five GPs. The GPs indicated "not sure" for 19.1%. 2,905 patients were identified by the algorithm in two municipalities and 1,985 responded. 72.8% verified that they had COPD.

Conclusion: An algorithm based on administrative data has been developed with sufficient positive predictive value to be used as screening tool to identify patients with COPD in a population. This may be useful in identifying COPD patients for integrated care and to provide proactive care for the whole population with COPD.

Conflict of interest and funding: The study is funded by the Central Denmark Region, Ringkoebing-Skjern Municipality and The Research Fund at Aarhus University. The authors declare that there is no conflict of interest.

071: An initiative with community-oriented free spirometry in Heraklion, Crete, Greece: early diagnosis and education on COPD

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Aim: The aim of this study was to present the results of the spirometry days that were offered free to Heraklion residents, Crete, Greece in years 2005-2010.

Method: People that accepted the invitation, completed a questionnaire that included demographic informations as well as details about smoking habit, pack years and respiratory symptoms. Afterwards all patients performed a spirometry.

Results: 820 citizens of median age 52.8 (min-max) (31- 84) responded to the invitation and performed a spirometry. Out of the 820 participants, 630 were males (76.8%), 61.2% were smokers, 20.8% were former smokers. ∞n acceptable spirometry was obtained in 782 participants (95%). COPD diagnosis (FEV1/FVC < 0.70) has been set in 104 patients (12.7%), median age 59 (min:47 max:90). 56.9% of the participants didn't know anything at all about COPD (43% of the participants that received a COPD diagnosis). COPD stages were: Stage : 10 (9.6%), stage : 65 (62.5%), stage : 22 (21%) & stage IV: 7 (7.9%).

54 (52%) from the participants that obtained a COPD diagnosis didn't know that they were suffering from COPD. Patients with COPD had more pack years than those that didn't (x±SD) (46.7±29 versus 33.7±17).

Conclusion: The offer of a free-community oriented spirometry added significantly in the early COPD diagnosis. The suspicious that public was not aware of COPD was confirmed. About half of the people that were COPD patients ignored their disease.

Conflict of interest and funding: None

064: Association of co-morbidity and mortality in COPD

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Aim: The aim of this study was to investigate the association of comorbidity and underweight with all cause-mortality in COPD patients.

Method: A total of 1548 patients with a diagnosis of COPD were randomly selected from 56 primary care and 14 secondary care centres in Sweden. The response rate was 75%. Information was collected using questionnaires in 2005 and record review for the period of 2000-2003. The Swedish Board of Health and Welfare provided mortality data. Lung function and history of comorbidities were obtained from the patients' records. This analysis included patients with available spirometry data. Cox's proportional hazards model was used to estimate the hazard ratio.

Results: A total of 552 patients (aged 34-75) were included in the study, 43% men (mean age 65) and 57% women (mean age 62). Of all, 27% were current smokers and mean FEV1 (percent of predicted) was 58. Over five years, in total 120 patients (22%) died, 13% in primary care and 33% in secondary care. Mortality was significantly higher in patients with ischemic heart disease/cardiac failure, hazard ratio 1.91 (95%CI 1.30-2.80), with hypertension, hazard ratio 1.83 (95%CI 1.22-2.75) and with underweight (BMI<20), hazard ratio 1.74 (95%CI 1.12-2.70) after adjustments for age, sex, smoking, education, level of care and lung function. There was no significant difference in mortality for patients with diabetes or depression.

Conclusion: Heart disease, hypertension and underweight were in this study associated with higher mortality in COPD patients.

Conflict of interest and funding: No conflicts of interest.

066: Feasibility of a prevalence and burden of COPD survey in a rural area of Uganda: Fresh air pilot-survey Uganda

van Gemert FA, Nabadda N, Nakanwagi A, Luzige S, van der Molen T, Jones R, Tsiligianni I, Williams S, Chavannes NH

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Aim: Assessing beliefs and attitudes concerning respiratory health, smoking, traditional ways of cooking, and the use of spirometry in a rural area of Uganda.

Method: A qualitative survey has been conducted in 9 rural villages in the district of Masindi, using focus group discussions among men , women and community leaders, as well as key informant interviews among healthcare workers. Spirometry with solar energy has been tested.

Results: Out of the 37 at-risk participants, aged between 30 and 75, we found 7 patients with COPD, 2 with asthma and COPD, and 2 with asthma. Contributory factors for COPD such as biomass fuel use, smoking and untreated asthma are unknown. The influence of local traditions and beliefs is high. Women spent about 4 to 8 hours a day using wood for cooking indoor, and children between the age of 5 and 12 have to help their mother to learn the art of cooking. Chronic cough is common and sometimes even stigmatized. The knowledge of obstructive respiratory diseases is poor, although respiratory symptoms are common among women and men, and even children. TB-negative is an often mentioned diagnosis. Medication for asthma and COPD is hardly available, and treatment is focused on acute exacerbations.

Conclusion: The knowledge of asthma and COPD and their risk factors is poor and has to be increased. The development of local expertise in the provision of healthcare and in healthcare research should be an integral component of future research.

Conflict of interest and funding: This pilot survey has been funded by the IPCRG. There is no conflict of interest.

067: Implementation of Asthma Guidelines in Primary Care

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Asthma Society of Ireland, Dublin, Ireland

Brief outline of context: A study of barriers and facilitators to implementation of evidence based guidelines in primary care in Ireland.

Brief outline of what change you planned to make: Asthma Society of Ireland (ASI) wished to implement asthma guidelines in primary care to improve patient care, reduce variation in care, help decision making, improve referral processes.

Assessment of existing situation and analysis of its causes: The HARP study found 60% of patients had uncontrolled asthma. ASI collaborated with Dept. of Health, Health Service Executive (HSE) and healthcare professional (HPC) bodies to develop the Asthma Management Programme. Prior to this initiative there was no consistent guideline approach to asthma care in Ireland.

Strategy for change: 25 primary care teams completed guideline based asthma education and practical training on spirometry, inhaler technique, peak flow monitoring and written asthma plans. Patients were followed in the programme for 6 months.

Measurement of improvement: Final analysis of HPC attitudes found, guidelines easy to follow (92.7%), helped with decision making (87.9%), improved teamwork (73.1%), improved referral process (70.8%), improved patient care (92.7%), facilitated cost effective care (70.7%), reduced variation in management (77.5 %)

Effects of changes: HSE identified the ASI programme as a core deliverable in a systematic approach to tackling asthma in Ireland. The practical programme including patient and HPC education has been incorporated into the HSE National Asthma Programme.

Lessons learnt: Strategic collaboration between patient organisations, HPCs

and government can influence policy and facilitate change to improve patient care.

Message for others: Guideline based asthma management programmes can be implemented successfully in primary care if practices are provided with resources for diagnosis, management and patient education.

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

053: Implementing HARP (iHARP): improving asthma control through assessment and inhaler education

Price D, Haughney J, Ryan D, Gruffydd-Jones K, Roche N, Lavorini F, Papi A, Infantino A, Bosnic-Anticevich S, Virchow JC, Roman M, Lisspers K, Stallberg B, Henrichsen S, Chrystyn H

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Brief outline of context: The International Primary Care Respiratory Group's (IPCRG) Helping Asthma in Real Patients (HARP) initiative called for better provision of information for patients to improve understanding and asthma control.[1] (1.Haughney J, *et al*. *Allergy* 2010;**65**:413–414)

Brief outline of what change you planned to make: Enhanced asthma reviews, including a structured inhaler technique assessment and improve patient engagement.

Assessment of existing situation and analysis of its causes: In response to HARP and recent literature on frequent inhaler handling[2] and inhalation problems,[3,4] an international steering committee will implement an enhanced asthma review service. (2. Roche N, *et al.* ERJ 2002;**19**:246-51; 3. Hardwell A, *et al*. *PCRJ* 2011:doi:10.4104/pcrj.2010.00088; 4. Lavorini F, *et al*. *PCRJ* 2010;**19**:335-341)

Strategy for change: iHARP asthma reviews will be integrated into routine practice, with additional nurse support provided as necessary. A combined review of clinical records and questionnaire responses will be carried out as will guided reviews of inhaler technique. 5100 patients form across the UK, Germany, France, Italy, Spain, Sweden, Norway, Australia will undergo the iHARP review between June 2011–February 2012.

Measurement of improvement: Therapy recommendations, in-line with IPCRG asthma control assessment recommendations,[5] will be returned to the clinician for consideration. Patients will receive appropriate inhaler training and lifestyle advice. (5. Haughney J, *et al*. *Respir Med* 2008;**102**:1681-1693)

Effects of changes: Hypothesised results include: more tailored asthma management; improved patient engagement and empowerment, improved identification of common handling and inhalation errors and opportunity to provide appropriate inhaler training.

Lessons learnt: Will be disseminated following completion of the service.

Message for others: Will be disseminated following completion of the service.

Conflict of interest and funding: Co-funded by Mundipharma International Limited and Optimum Patient Care.

097: CASPIR, a nation wide programme on spirometry in primary care: results and plans

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COPD & Astma GP Advisory Group (CAHAG) Netherlands

Brief outline of context: There are concerns about the quality of spirometry performance in primary care. This was confirmed by research done in Dutch general practice.

Brief outline of what change you planned to make: The CASPIR (Copd AsthmaSPIRometry) project was initiated by the professional groups (Dutch association of Lungfunction Technician NVLA, Pulmonary Physicians NVALT, GP's CAHAG, practice nurses V&VN in cooperation with the Radboud University Nijmegen) with the goal of enhancing development of an interactive course for spirometry for primary care to improve spirometry performance.

Assessment of existing situation and analysis of its causes: Due to changes in the reimbursement and practice accreditation, a formal training is necessary, in cooperation with GP's with special interest in Asthma and COPD, lung-function technicians and pulmonary physicians.

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Strategy for change: A blended learning course which consists of five elements was designed consisting of two group sessions on knowledge and skills of spirometry, a visit to the lungfunctionlaboraty, portfolio with performed flow-volume loops, biological check or 3L syringe control and a practical and theoretical exam. A special spirometry performace form for use in daily practice was developed. The follow up is a refresher course once a year.

Measurement of improvement: Number of partcipants, regional spread, number of parcipants flowing the complete course and number passing the exam.

Effects of changes: In two years, about 150 courses have been given in the Netherlands with more than 2500 participants. More than 80% passed all modules and exams. Some participants did extra work for their portfolio. A certicification system has been set up and criteria for re-certification after 3 years formulated. Work is done on an e-learningmodule, distant quality control and feedback.

Lessons learnt: More attention for organizational aspects. Training of teachers necessary.

Message for others: It is possible to set up a nationwide programma. Cooperation with allied health professionals obligatory. A refresher course is important to maintain skills. Additional criteria and tools are developed to maintain quality in daily practice.

Conflict of interest and funding: The start-up of the CASPIR project was funded by an unrestricted grant of AstraZeneca, Boerhinger-Ingelheim and GlaxoSmithKline.

059: COPD disease severity stratification obtained by electronic review of routinely collected primary care data

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Woodbrook Medical Centre

Brief outline of context: In COPD little is known with regards to quantification of different strata of severity and identification of high risk patients.

Brief outline of what change you planned to make: To characterise the burden of COPD by severity in our local health economy.

Assessment of existing situation and analysis of its causes: Beyond raw data concerning recorded prevalence of disease and hospital admissions, no characterisation of our population existed

Strategy for change: Practice databases were interrogated for routinely held data for COPD using OPC software. Reports were provided at individual, practice and locality level. Following analysis a practice visit was undertaken by a member of OPC (FDR) to provide feedback.

Measurement of improvement: Practices were offered an electronic review of routinely collected data from patients with COPD. 41 accepted the electronic review.

Effects of changes: These practices had a total population of 310, 240 of whom 4214 had COPD as a coded diagnosis (prevalence 1.4%) Known Severity of COPD in LCR: COPD based on % predicted FEV1 (classified according to updated NICE CG101)

Severity	% of COPD Patients	Number of COPD Patients
Mild	14.2%	438
Moderate	49.8%	1534
Severe	28.8%	887
Very Severe	7.2%	221

Further stratification employing the DOSE index revealed 177 high risk patients, suitable for active case management. http://ajrccm.atsjournals.org/cgi/content/abstract/180/12/1189 .

Lessons learnt: Stratification should facilitate individualise patient management by permitting therapy mapping. Furthermore, it permits the identification of those patients who are most at risk of exacerbation/hospitalisation.

Message for others: Electronic review of routinely held data using appropriate software offers the potential to improve individual patient care, practice level care and planning for community infrastructure by characterising disease severity

Conflict of interest and funding: No conflicts:

069: Integrative collaboration in the Innovative Medicines Initiative – harvesting synergies

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Brief outline of context: U-BIOPRED is a consortium within the Innovative Medicines Initiative with an ambitious objective of redefining the sub-phenotypes of severe asthma by leveraging a systems biology approach applied to clinical data, data from high throughput techniques to generate "handprints" which would serve as multi-dimensional biomarkers. There are 40 partners.

Brief outline of what change you planned to make: Every effort was made to work in a highly integrated way: agreement and delivery of objectives, risk identification and problem solving. The plan was to hold frequent decision-oriented teleconferences and meetings minuted in a structured manner that enables recall of discussions.

Assessment of existing situation and analysis of its causes: The IMI is an effort where pharmaceutical companies function more as active partners no funders and requiring a new manner of collaboration.

Strategy for change: An iterative strategy of utilizing online collaboration tools as well attention to group formation.

Measurement of improvement: Success can be judged by collaborative achievements

Effects of changes: Combining data from two different partners a track in the development of an animal model could be abandoned – estimated 6 months time savings. A Knowledge management system was established using a system developed by one company, deployed in an academic center and validated using data from another company.

Lessons learnt: Working in a large integrative consortium has a myriad of challenges, that can be mitigated and counterbalanced by the synergistic gain from structured collaborative problem identification and collaborative problem solving.

Message for others: The rise of P4 medicine accentuates the importance of collaboration and the added value of working in a structured collaboration can outweigh the coordination challenges inherent to large multidisciplinary working groups.

Conflict of interest and funding: Author is the managing director of BioSci Consulting. U-BIOPRED project is funded the IMI- a joint technology initiative funded by the European Commission with funding from the European Commission

098: Two years Integrated Care for asthma/COPD in primary care: improvements in registration and care

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Brief outline of context: The DOH Caregroup implements integrated care for COPD and asthma in primary care and has contracts with health insurance companies.

Brief outline of what change you planned to make: Improving Quality of Care by implementing structured multidisciplinary care in primary care.

Assessment of existing situation and analysis of its causes: Baseline measurements showed deficiencies in care.

Strategy for change: Within the care group DOH (+ 100.000 patients registered) 50 GP's and 23 practice-nurses are working in group of practices that are all Dutch College certified. Implementation of the integrated care programme was done by educational sessions (8), protocol-books on care and registration, additional support through website/newsletter, annual feedback meetings and two times a year benchmarkdata feedback.

Measurement of improvement: Measurements (4) were done in 2008-2010 using the Dutch National set of quality indicators. Patients included where those treated in primary care only. Th practice registration system was the 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%. The baseline measurement showed much room for improvement both on registration and care provided. On average 25% of patients used no medication. Improvements from baseline were seen (37% in asthma and 34% in COPD). The registered number of exacerbations was low. Referrals to physical therapy and smoking cessation interventions where hardly registered.

Lessons learnt: The diagnostic process is complex. It is possible to collect indicators of care extracted from the practice registration system, however with great effort. More attention has to be paid to smoking cessation and primary care rehabilitation interventions.

Message for others: Implementing integrated care for asthma and COPD is possible and shows demonstrable improvements in both registration and care provided.

Conflict of interest and funding: None

045: A pilot study of the use of near-patient C-Reactive Protein testing in the treatment of adult respiratory tract infections (RTIs) in one Irish general practice.

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Aim: New approaches are being sought to safely reduce community antibiotic prescribing. A recent study demonstrated that CRP testing resulted in decreased antibiotic prescribing for lower RTIs in primary care but there is little other relevant published primary care data available. This study aims to describe the performance of near-patient CRP testing, in patients over the age of 18 years, with acute cough and/or sore throat, in routine clinical practice.

Method: A pilot with a cross-sectional design. The first 60 recruited patients were treated with routine clinical management, and GP's had no access to a CRP test. For the subsequent 60 patients, CRP testing was available. 3 GP's in 1 Irish primary care practice recruited 120 eligible patients over 5 months in 2010. Primary outcome was antibiotic prescription at index consultation. Secondary outcomes were numbers of delayed prescriptions, patient satisfaction immediately after consultation, and re-consultations and antibiotic prescriptions during 28 days follow-up.

Results: Thirty-five (58%) patients in the no-test group received antibiotic prescriptions compared to 27 (45%) in the test group. Both groups demonstrated similarly high level of patient satisfaction (85%). Fifteen (25%) patients in the CRP test group re-attended within 28 days compared to 9 (15%) in the no-CRP test group.

Conclusion: This pilot study confirms the feasibility of a full trial in Irish general practice. It suggests use of near-patient CRP testing may be associated with reduced antibiotic prescribing for RTIs, high levels of patient satisfaction and increased re-consultations. We intend to pursue a larger trial in a newly established regional primary care research network.

Conflict of interest and funding: The Discipline of General Practice, NUI Galway has received unrestricted educational funding from MSD, Menarini and Pfizer pharmaceutical companies. This funding has been solely used to support educational meetings for general practitioners who take medical students from NUI Galway. The Claddagh Medical Centre is a member of WestREN (Western Research and Education Network- an academic general practice research network in the West of Ireland) and received an unrestricted WestREN Research Bursary funded by MSD to support conduction of this study.

054: Development of a questionnaire to measure patients' self-reported illness and recovery in acute respiratory infections

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Aim: To develop a questionnaire with high content validity and adequate psychometric properties measuring patients' degree of restrictions from acute respiratory infections to be used in clinical therapeutic trials in general practice.

Method: Items belonging to selected domains were derived from previous disease specific questionnaires and group interviews. The item bank was tested for content validity (relevance and coverage) in focus groups including patients from general practice with acute respiratory infection. This resulted in a draft version of the questionnaire. Patients visiting their general practitioners with and without an acute respiratory infection were asked to complete the draft version. These data were used to test the domains for unidimensionality and ensure invariance of the items by item response theory (the partial credit Rasch model) before completing of the final questionnaire.

Results: 269 patients completed the draft version of the questionnaire; 10 were excluded due to missing data or exclusion criteria. Of the 259 remaining patients 64% were females, the median age was 41 years (range 18-77 years) and 121 (47%) had an acute respiratory infection. Ten GPs recruited between 5-40 patients each. Rasch analyses are still pending and will be presented at the conference.

Conclusion: Acute Respiratory Infection Questionnaire (ARIQ) is currently under evaluation for validity and reliability to serve as an outcome measure for clinical trials evaluating therapy and/or monitoring of acute respiratory infections in general practice. Complete results and updated conclusions included final version of ARIQ will be presented at the conference.

Conflict of interest and funding: Authors declare no conflicts of interest. The study was funded by PLU (Trust for Development of General Practitioners) and MPU (Trust for Cooperation in Primary Care).

048: Cross-cultural adaptation of Control of Rhinitis and Asthma Test (CARAT)

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Aim: To develop versions of the Control of Rhinitis and Asthma Test (CARAT) in 9 countries in order to be used as a tool to implement ARIA guidelines.

Method: CARAT is a 10-item questionnaire, primarily developed and validated in Portuguese, assessing the disease control of adults with allergic rhinitis and asthma. Cross-cultural adaptation of CARAT within different countries was organized in 3 phases, following GA2LEN network recommendations: Forward translation(FT); Backward translation(BT) and Patient testing(PT). In the FT, 2 independent forward translations of the original CARAT were produced. Translators and investigators convened to reach a single reconciled version. This reconciled version was translated back to Portuguese (BT). CARAT's authors then compared the original questionnaire and any problems detected were reported. This report guided forward translators to produce the Test Version. This was tested in 10 adult patients along with an interview that covered issues as questionnaire understanding and interpretation (PT). To support this study a web tool was developed at www.caratnetwork.org.

Results: The cross-cultural adaptation process was conducted in 9 countries. Two countries completed the 3 phases (France and Turkey). English (UK) and Portuguese(BR) versions are ready to be tested on patients. Italian English (US), Greek and Spanish are in the BT and Dutch version is in the FT phase.

Conclusion: CARAT is being successfully adapted in different languages. Clinical validation for these languages should follow.

Conflict of interest and funding: No conflict of interest for this study; CARAT team received a research grant from MSD Portugal. Dr. Correia de Sousa is an unpaid member of the scientific board of AstraZeneca Foundation Portugal. His department has received research funding from AstraZeneca in the past.

065: The economic impact of asthma in patients from primary health care

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Aim: To assess the economic impact of asthma in patients from Ponte and Ronfe Family Health Units, relating the direct costs of asthma to its control and severity.

Method: A cross sectional study was conducted in a sample of 212 patients, selected randomly from the practice's registry of asthma patients. Using an interview, demographic variables, classification of asthma severity, levels of asthma control, health services cost (consultations, emergencies, hospital admissions and diagnostic tests) and the cost of treatment were collected.

Results: The total monthly cost was 5494€, with a monthly average of 53.87€ per patient. The average cost of health services per patient (p = 0.007), the costs of medication (p <0.001) and the total costs (p <0.001) are inversely proportional to the degree of asthma control. Statistically significant differences were also found between asthma control groups in the costs with consultations (p=0.020), relieve medication (p<0.001) and control medication (p=0.002). The average age rose gradually with the increase in asthma severity. Medication was the variable with the greatest impact on costs, reaching 52.17% of total costs, followed by hospital admission (17.86%).

Conclusion: The cost of health care relates directly to the severity and control of asthma. The implementation of new measures with more patient empowerment, a regular follow-up, with better use of preventive medication and a more thorough use of guidelines could contribute to a better asthma control, thus reducing the overall costs of the disease.

Conflict of interest and funding: No conflict of interest declared. Funding: study conducted within the National Health Service.

056: Differences between primary and secondary care COPD management: global results from the hidden depths survey

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Aim: To identify whether there are differences in the management of COPD patients by primary and secondary care clinicians in a real-world, global setting.

Method: A cross-sectional online survey of clinicians from 14 countries conducted from July to September 2010. Clinicians were recruited from a research panel with >500,000 physicians. Interviews were conducted with both respiratory specialists (Sps) and primary care doctors (GPs) seeing ≥20 or ≥10 COPD patients per month respectively.

Results: 1,400 clinicians were interviewed (GPs=893 and Sps=507). GPs saw an average of 47 patients with COPD per month and Sps 105. The proportion of GPs (73%) and Sps (75%) using spirometry for diagnosis was similar. To manage their patients' COPD GPs reported using less anticholinergics (66%(593)) than Sps (87%(440)), less pulmonary rehabilitation (48%(433)) than Sps (76%(386)) and less oxygen therapy (46%(410)) than Sps (72%(363)). Use of inhaled corticosteroids alone was higher for GPs (27%(239)) than Sps (13%(66)). Both GPs (516(58%) and Sps (308(61%) prioritized quality of life, but GPs were less likely to prioritize exacerbation prevention 331(37%) and more likely to prioritize improvement in lung function 231(26%) than Sps (232(46%) and 69(14%) respectively). GPs were more likely than Sps to think that treatments were effective in preventing exacerbations (661(74%) vs. 342(67%)) but less likely to think that hospitalisation for a COPD exacerbation had a major long-term impact (369(41%) vs. 285(56%)).

Conclusion: Several differences were identified. GPs recommend inhaled corticosteroids alone more often than Sps and comparatively under use pulmonary rehabilitation. GPs also place less priority on exacerbations but believe that treatments are relatively effective in their prevention. In addition, GPs underestimate the long-term impact of these events.

Conflict of interest and funding: Study funded by Nycomed

057: Understanding COPD patients' fears: global results from the hidden depths survey

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Aim: To gain insight into the emotional impact and fear associated with COPD in a real-world, global patient population

Method: A cross-sectional online survey of COPD patients from 14 countries conducted between July and September 2010. Patients were recruited from general population opt-in research panels with >18,000,000 members. 255,710 people were invited to participate and 75,233 respondents were screened. Patients had clinician diagnosed COPD and were also suffering from at least two symptoms of breathlessness, sputum production, cough, exertional chest pain, regular chest infections especially in the winter, or exertional leg pain. Patients self-classified their COPD severity using the MRC dyspnoea scale.

Results: 2,000 patients were interviewed (1231=MRC1&2 and 769=MRC3,4&5) with a mean age of 53 years. 907(74%) MRC1&2 and 629(82%) MRC3,4&5 patients were currently worried about their long-term health and 469(38%) MRC1&2 453(59%) MRC3,4&5 patients feared premature death due to COPD. Of those who had experienced an exacerbation (1534) 409(47%) MRC1&2 and 416(63%) MRC3,4&5 were scared of premature death during an event. 590(48%) MRC1&2 and 613(80%) MRC3,4&5 considered their COPD to be serious. The 1203 patients who considered their COPD to be serious were more likely to be scared that their COPD may cause them to die prematurely 761(63%) and also more likely to think that their doctor took their condition seriously 991 (82%) than those who did not (114(19%) and 395(53%) respectively).

Conclusion: COPD patients, regardless of severity, are scared by their COPD and this fear is heightened during an exacerbation. While many patients acknowledge that their doctors do take their condition seriously they remain scared. Clinicians should take these patients fears into account when managing COPD patients and their consultations.

Conflict of interest and funding: Funded by Nycomed

051: Possible cut-off values for stable or instable COPD as measured by the Clinical COPD Questionnaire (CCQ)

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Aim: Based on GINA the cut-off values for the Asthma Control Questionnaire (ACQ) have been established for 'well-controlled' and 'not well-controlled' asthma. Cut-off values for health status questionnaires like the Clinical COPD Questionnaire (CCQ) for use in COPD, however, are lacking. We wish to give insight into possible cut-off values of the CCQ by comparing it with the ACQ.

Method: In 7599 patients with respiratory disease, referred by the general practitioner to a diagnostic center, data on both the ACQ and CCQ were collected. Scores on both questionnaires were compared and possible cut-off values for the CCQ were determined by using the ACQ as gold standard.

Results: A diagnosis of COPD, asthma or a combination of asthma/COPD was established in 16,8%, 46,3% and 7,4% of patients. Mean ACQ and CCQ scores according to level of control (based on the ACQ) are presented in table 1.

Table 1. Mean ACQ and CCQ scores per diagnosis selected by ACQ score

Groups	Diagnosis	Mean ACQ	Mean CCQ
<0.75	COPD	0.31	0.69
	Asthma	0.32	0.63
	Asthma/COPD	0.35	0.66
0.75-1.50	COPD	1.07	1.39
	Asthma	1.08	1.31
	Asthma/COPD	1.07	1.28
>1.50	COPD	2.17	2.34
	Asthma	2.23	2.25
	Asthma/COPD	2.26	2.30

Conclusion: The average CCQ per ACQ-score has been calculated and using the ACQ as gold standard this study estimated the cut-off points for the CCQ to be <1 for COPD with stable disease and >1.7 for COPD with instable or uncontrolled disease.

Conflict of interest and funding: None

094: Tools to measure patient wellbeing in COPD

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Aim: To provide a guide for the family physician to help choose a tool to assess patients with COPD in his/her practice.

Method: A thorough search of relevant databases was conducted by a trained librarian (LA) for articles containing the words "COPD" and "tools". Abstracts were reviewed by two researchers (AC, LA) for relevance to primary care and complete articles obtained of those selected. these were loaded to a "drop-box" available to the members of the IPCRG research committee. Members were asked to rank their top ten preferred tools from those available and their reading of the literature related to them. Criteria to judge the tools by were developed.

Results: 1825 articles were identified relating to 84 tools for measuring COPD. 42 tools assessed patient wellbeing and these were ranked by the members. After ranking,nine tools were clearly in the leading group. These were entered on a table of the chosen criteria and the score for each criterion represented by a 'smiley face'. This table was produced as a laminated guide with user instructions.

Conclusion: From a multitude of tools for assessment of COPD in primary care we identified the most relevant nine and produced a guide for physician choice of tool by circumstance.

Conflict of interest and funding: The study was funded by the IPCRG. None of the authors have a conflict of interest with the study material.