495. Prevalences and characterstics of obstructive airway disease

P4740

COPD prevalence in Romania and possible influence of social and household characteristics

Florin Dumitru Mihaltan[2], Florentina Furtunescu[3], Roxana Maria Nemes[2], Dana Farcasanu[1], Ioana Mirela Daramus[1]. *[1]Programs, Center for Health Policies and Services, Bucharest, Romania; [2] "Marius Nasta", National Institute of Pulmonology, Romanian Society of Pulmonology, Bucharest, Romania;[3]Public Health Department, "Marius Nasta" University of Medicine and Pharmacy, Bucharest, Romania*

COPD is a very important public health issue at individual and society level alike. Knowing the prevalence of COPD is extremely useful in health services planning, but using an early detection tool is crucial for life duration and quality of life of the patient.

We aimed to estimate the prevalence of COPD in Romanians aged 40+ in relations to certain social variables and specific household exposures.

A cross-sectional survey was performed using a stratified sample of 9638 subjects aged 40+. Using a pre-screening questionnaire, 51% of the responders were identified as being at risk for COPD (4930). 2000 subjects, randomly selected, were invited to perform a spirometric evaluation (at least 3 spirometry tests per patient, according to ATS/ERS standards). Smoking subjects (current or former) with a FEV1 ratio lower than 0.7 were considered as having COPD. Social variables considered were geographical region, rural/urban, education, occupation, income category. Specific household exposures were way of cooking and source of household heating.

We found a COPD prevalence of 9.7% (±2.18) (15.7% and 3.9% in males and females). Median age of COPD subjects was 56 and 46 years in males and females. No significant correlations were found with geographical region, urban/rural distribution, education, job and income category, both for males and females. No significant correlations were found for source of heating and cooking.

Conclusions: Our study showed that around half of the general population aged 40+ meets the criteria for being at risk for COPD (around 5 million people). In the risk group, COPD prevalence reached to 9.7%. Social and household variables seemed not to be associated to COPD.

P4741

High prevalence of COPD symptoms in the Tunisian population contrasting with low awareness of the disease

Myriam Denguezli, Hager Daldoul, Louisa Gnatiuc, Anamica Jithoo, Sonia Coton, Bernet Kato, Zaki Boukheroufa, Hadia Azhar, Imed Harrabi, Peter Burney, Zouhair Tabka. *Physiology, Sport and Physical Education Institut, Gafsa, Tunisia Physiology, Faculty of Medicine of Sousse, Tunisia Respiratory Epidemiology and Public Health, Imperial College London, London, United Kingdom Respiratory Epidemiology and Public Health, Imperial College London, London, United Kingdom Respiratory Epidemiology and Public Health, Imperial College London, London, United Kingdom Respiratory Epidemiology and Public Health, Imperial College London, London, United Kingdom Epidemiology, Faculty of Medicine Ibn El Jazzar, Sousse, Tunisia Respiratory Epidemiology and Public Health, Imperial College London, London, United Kingdom Epidemiology, Faculty of Medicine Ibn El Jazzar, Sousse, Tunisia Respiratory Epidemiology and Public Health, Imperial College London, London, United Kingdom Physiology, Faculty of Medicine of Sousse, Tunisia*

Introduction: In Tunisia, the estimated prevalence of COPD was low compared with America and Europe and the disease is certainly under diagnosed. We have estimated the prevalence of COPD in the city of Sousse, following the BOLD protocol.

Methods: We surveyed a representative random sample of 807 adults aged 40 years+ selected from the general population and have collected information on respiratory history and symptoms, risk factors for COPD and health status. Post-bronchodilator spirometry was performed for assessment of COPD. COPD and its stages were defined according to GOLD guidelines. Population weighted prevalence of COPD were computed allowing for survey design.

Results: 661 subjects were included in the final analysis. The response rate was 90%. The estimated population prevalence of GOLD Stage 1 and stage 2 or higher COPD were 7.8% and 4.2%, respectively (LLN modified stage 1 and stage 2 or higher COPD prevalence were 5.3% and 3.8%, respectively). COPD was far more common in men, increased with age and exposure to tobacco smoke. Prevalence of stage 1+ COPD was 2.3% in <10 pack years smoked and 16.1% in 20+ pack years smoked. Only 3.5% of participants reported doctor-diagnosed COPD.

Conclusions: In this Tunisian population, the prevalence of COPD is higher than reported before and higher than self-reported doctor-diagnosed COPD. The implications for disease diagnosis and management in clinical practices might have a public health impact. In subjects with COPD, age seems to be a much more powerful predictor of lung function than smoking. LLN _ Lower Limit of Normal; BOLD _ Burden of Lung Disease; GOLD _ Global Initiative for Chronic Obstructive Lung Disease.

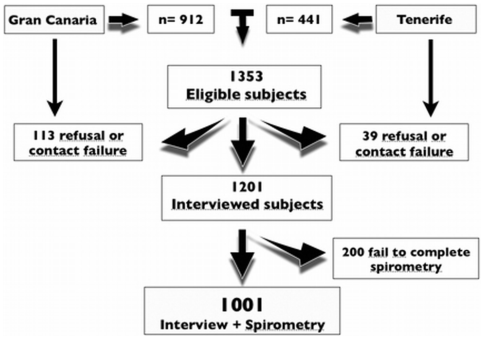
P4742

Low prevalence and severity of COPD in the Canary Islands: A temperate climate effect?

Carlos Cabrera-Lopez[1], Cristina Cabrera-Lacalzada[2], Angeidi Martin-Medina[2], Gabriel Julia-Serda[1], Pedro Cabrera-Navarro. *[1]Pulmonary Medicine, Hospital Universitario de Gran Canaria Dr. Negrín, Las Palmas de Gran Canaria, Canary Islands, Spain; [2]Pulmonary Medicine, Hospital Universitario de Canarias, San Cristobal de La Laguna, Canary Islands, Spain*

Introduction: COPD prevalence varies widely depending on the geography. Two epidemiological studies in Spain showed a 9-10% COPD prevalence in population

older than 40 years. However, none of them included the Canary Islands, a very interesting area for its climate characteristics and high smoking prevalence.
Methods: 1353 people from 40 to 70 years old were randomly selected from a sample of 596,478 individuals. Subjects participating in the study completed a long questionnaire which mainly included items about respiratory health and performed spirometry with broncodilatation test if obstruction was observed.



COPD was diagnosed if FEV1/FVC was lower than 0.7 after a broncodilator test.
Results: COPD prevalence in the Canary islands was 7.3% (IC 95%, 5.5-9.5%) being higher in male than female (8.7% CI 95%, 5.8-12.7% vs 6.3% CI 95%, 4.7-8.4% p<0.005). COPD prevalence classified by GOLD showed a 1.1% in stage I, 5.0% in stage II, 1.1% in stage III and 0.3% in stage IV. The level of underdiagnosis was 63.5% and undertreatment reached 71.6%.
Conclusions: The Canary Islands have a lower COPD prevalence than the rest of Spain as a whole, with a lower severity in spite of having a high smoking prevalence. This finding could be related to the special climate characteristics of the Canaries.

P4743
Prevalence of COPD by disease severity in men and women in relation to smoking in northern Vietnam
Hoàng Thi Lâm, Linda Ekerljung, Nguyen Van Doàn, Nguyen Van Tuong, Eva Rönmark, Kjell Larsson, Bo Lundbäck. *Allergy, Hanoi Medical University, Hanoi, Viet Nam Allergy and Clinical Immunology, Bachmai Hospital, Hanoi, Viet Nam Unit of Lung and Allergy Research, IMM, Karolinska Institutet, Stockholm, Sweden Department of Internal Medicine/Krefting Research Centre, Gothenburg University, Gothenburg, Sweden The OLIN Studies, Norrbotten County Council, Lulea, Sweden Public Health and Clinical Medicine, University of Umea, Sweden*

Background: The prevalence of COPD and its risk factor pattern varies between different areas of the world. The aim of this study was to investigate the prevalence of COPD by disease severity in men and women and risk factors for COPD in northern Vietnam.
Methods: From all 5782 responders to a questionnaire survey, a randomly selected sample of 1500 subjects was invited to a clinical follow-up study. The methods included a structured interview using a modified GA2LEN study questionnaire for registration of symptoms and possible determinants of disease. Spirometry was performed before and after bronchodilation. The age distribution of the sample was 23-72 years.
Results: Of 684 subjects attending, 565 completed acceptable spirometric measurements. The prevalence of COPD defined by the GOLD criteria was 7.1%; in men 10.9% and in women 3.9% (p=0.002). Of those 3.4% had a mild disease, 2.8% a moderate and 0.9% a severe disease. In ages >50 years, 23.5% of men and 6.8% of women had COPD. Among smokers aged >60 years (all men), 47.8% had COPD. None of the women with COPD had been smokers. Increasing age, smoking and male sex were the dominating risk factors, although male sex lost its significance in a multivariate setting.
Conclusions: The prevalence of COPD among adults in northern Vietnam was 7.1% and was considerably higher among men than women. The prevalence increased considerably with age. Increasing age and smoking, the latter among men only, were the most important determinants of COPD.

P4744
Prevalence characteristics of COPD in never smokers
Ramadan Bakr, Ibrahim Elmahallawy. *Chest Department, Menoufiya University, Shebin Elkom, Menoufiya, Egypt*

Background: COPD can be recorded among non smokers due to different causes other than smoking.
Methods: This study was performed in the Chest Department, Menoufiya University, from April 2009 to August 2011, on 300 COPD patients, 230 men (76.66%) and 70 women (23.34%). The mean age was 60.7±5.35 years. History was taken and exposure to risk factors for COPD was assessed by a prewritten questionnaire.
Results: Out of the 300 COPD patients, 120 (40%) were never smokers and 180 (60%) were ever smokers. Women made up 41.7% of the never smokers and 11% of the ever smokers. Never smokers were significantly older than smokers [65.08±5.03 years vs 56.33±5.67 years (P < 0.001)] and were more likely to be women [41.7% vs 11% (P < 0.001)]. Never smokers made up 40% of all COPD cases: 78% of GOLD stage II and 45.5% of GOLD stage III cases. Among never smokers, 58.3% and 41.7% fulfilled the criteria for GOLD stage II and III respectively. Never smokers had more occupational exposure to organic and inorganic dust and irritant gases [41.7% vs 27.7%, P < 0.05], more biomass exposure [41.7% vs 0%, P < 0.001], less education [41.7% vs 72.2%, P < 0.001], more exposure to passive smoking [75% vs 22.2%, P < 0.001]. When compared with never smokers with GOLD stage II, never smokers with GOLD stage III were older in age, have a higher female percentage, lower BMI, more occupational exposure, more biomass exposure, less education, more exposure to passive smoking. Independent predictors of COPD in never smokers were old age, female sex, occupational exposure, biomass exposure and low educational level.
Conclusions: This study revealed that never smokers constitute a significant proportion of the egyptian COPD patients.

P4745
Higher than expected prevalence of alpha-1-antitrypsin deficiency (AATD) may not necessarily impact on airflow, gas exchange or acute exacerbation rate (AER)
Ronald Dandurand[1], Jean Bourbeau[1], David Eidelman[2]. [1]*Respiratory Medicine, Montreal Chest Institute, Montreal, QC, Canada;* [2]*Respiratory Medicine, Royal Victoria Hospital, Montreal, QC, Canada*

AATD is estimated to occur in 1-3% of COPD patients and is believed to accelerate disease. To determine its prevalence in a community practice and impact on disease progression, all patients with COPD, >10 pack-year smoking history and a post-bronchodilator FEV1/FVC < 0.70 were offered testing for AATD. Spirometry and diffusing capacity (DLco) were measured respecting ATS criteria, and serum AAT levels were assayed. Of 323 patients, 291 (90%) accepted screening. 44 (15%) had low serum AAT levels (AATD mean 0.76g/L±0.02SE vs. non-AATD 1.57±0.03). Age (74years±1 vs. 72±1), smoking history (43pack-years±3 vs. 48±2), FEV1 (63%of predicted±3 vs. 61±1) and FEV1/FVC (54%±2 vs. 54±1) were similar. 40 AATD and 187 non-AATD patients had DLco measured and were similar (64%of predicted±4 vs. 62±2). Annual AER and prior spirometry was available in 44 AATD and 217 non-AATD and prior DLco in 39 AATD and 167 non-AATD subjects. Annual AER (1.0infections/year±0.1 vs. 1.2±0.1 over 4.1years±0.1) and annual decline of both FEV1 (18ml/year±19 vs. 3±6 over 6.5years±0.3) and DLco (0.60±0.2ml/min/mmHg/year vs. 0.50±0.1 over 6.4years±0.3) were similar. In this population, AATD prevalence was 5 times greater than previously reported, yet no difference in FEV1, and DLco decline, or AER was observed. Whether this lack of difference is due to strict smoking cessation, medication compliance, aggressive management of exacerbations or a predominance of heterozygotes remains to be determined.

P4746
A new paradigm for classification of disease severity and progression of COPD
David Mannino, Enrique Diaz-Guzman, John Pospisil. *Preventive Medicine, University of Kentucky, Lexington, KY, United States*

Background: The current classification scheme for COPD uses lung function to classify disease severity and monitor disease progression. This scheme does not capture other important components of the disease process, nor does it allow for improvement of disease status.
Methods: We evaluated existing data to develop a classification scheme for COPD using measures beyond lung function, including respiratory symptoms, exacerbation history, quality of life assessment, comorbidity, and body mass index. We then applied this classification to data from the Lung Health Study, calculating a score for study subjects in year 1 and year 5 of the study, along with the difference between year 1 and year 5.
Results: We developed a 4 point scale ranging from 1.00 (mild) to 4.00 (very severe). In year 1 of the study, the mean COPD score was 1.76 (standard deviation [SD] 0.35), in year 5 it was 1.82 (SD 0.38). The mean difference from year 1 to year 5 was an increase (worsening) of 0.06 (SD 0.37), and a range from -1.0 to 1.6. The COPD score at year 1, year 5, and the difference between these scores were all predictive of mortality at follow-up. For example, the 14.0% of subjects whose score improved by at least 0.25 between year 1 and 5 had decreased mortality compared to those with stable scores (between -0.25 and 0.25, hazard ratio 0.6, 95% confidence interval 0.4, 0.8). Conversely, those whose score worsened by 0.75 or more points had increased mortality (HR 1.7, 95% CI 1.2, 2.5).
Conclusions: A COPD score that includes components in addition to lung function and allows for both improvement and worsening of disease may provide additional guidance to COPD classification, management, and prognosis.

P4747

Identifying a 'frequent exacerbator' phenotype in a cohort of COPD patients (EXACO study)

Alexis Cortot[1], Isabelle Tillie-Leblond[1], Frédéric Masure[2], Bruno Housset[3], Nicolas Roche[4], Thierry Perez[1], Isabelle Boucot[5], François Denis[6], Aida Myftiu[7], Juliette Ostinelli[8], Isabelle Pithois-Merli[9], Céline Pribil[5], Stéphane Schück[10], Anne Lallemand[10]. [1]*Pneumology, CHRU Calmette, Lille, France;* [2]*Pneumology, Groupe Médical Saint Rémi, Reims, France;* [3]*Pneumology, CHU, Créteil, France;* [4]*Pneumology, Hôtel-Dieu, Paris, France;* [5]*Medical Department, GlaxoSmithKline, Marly Le Roi, France;* [6]*Medical Department, Boehringer Ingelheim, Paris, France;* [7]*Medical Department, Nycomed, Paris, France;* [8]*Medical Department, AstraZeneca, Rueil-Malmaison, France;* [9]*Medical Department, Pfizer, Paris, France;* [10]*Scientific Department, Kappa Santé, Paris, France*

Background: Exacerbations are a major cause of morbidity and mortality in patients with COPD.
Objectives: To determine whether it is possible to identify a sub-group of 'frequent exacerbators', i.e. COPD patients who experience a high number of exacerbations every year, and to compare their characteristics to that of non-frequent exacerbators.
Methods: In this french prospective observational study, respiratory physicians (n=132) included 835 COPD patients followed over 4 years. Sociodemographic data, clinical history, symptoms, lung function data and treatments were initially recorded. COPD clinical features, pulmonary function tests, treatments and the onset of exacerbations were recorded by the investigators at follow-up visits. Patients also completed exacerbation diaries. The KmL method was used to identify frequent and non-frequent exacerbators. This analysis was conducted in 464 patients with complete exacerbation-related data.
Results: 2 groups with homogeneous numbers of exacerbations were identified. The 1st group consisted of 114 (24.6%) patients who were frequent exacerbators (mean, 3.5 exacerbations/patient/year, SD: 1.3).The 2nd group consisted of 350 patients (75.4%) who experienced fewer exacerbations (mean, 0.9 exacerbations/patient/year, SD: 0.7). Frequent exacerbators were found to have a higher dyspnea score, a lower FEV1 (43.8% of predicted vs 50.3% $P<0.0001$) and reported more impaired daily activities (38% vs 18%, $p < 0.0001$), more frequent chronic cough ($p < 0,01$) and sputum production ($p < 0.001$) more frequently. Their slope of FEV1 decline was steeper.
Conclusion: Frequent exacerbators appear to belong to a distinct, clinically relevant, COPD phenotype.

P4748

Distribution of a COPD population based on the GOLD assessment framework

G. Nadeau[1], P.W. Jones[2], L. Adamek[1], M. Small[3]. [1]*Respiratory Centre of Excellence, GSK, Uxbridge, United Kingdom;* [2]*Clinical Science, St George's, University of London, United Kingdom;* [3]*Adelphi Real World, Adelphi Group, Macclesfield, United Arab Emirates*

Background: GOLD 2011 proposed a new COPD assessment framework based on: 1.Risk of future adverse health events, using $FEV_1<50\%$ and/or history of ≥ 2 exacerbations in the previous year to identify patents at high risk; 2.Symptom level using either COPD Assessment Test (CAT™) or modified Medical Research Council Dyspnoea Scale (mMRC). This analysis focuses on the GOLD symptomatic cut-point for high symptoms of CAT >10 or mMRC ≥ 2.
Methods: Data from 1041 EU COPD patients (38.5% from primary care) in the 2011 Adelphi Disease Specific Programme were used providing CAT and mMRC scores, spirometry and the previous year's exacerbation history.
Results: One third (32.9%) of all patients had ≥ 2 exacerbations in the previous year; 79.5% had an $FEV_1 \geq 50\%$; almost all (97.7%) were on maintenance treatment. The correlation between CAT and mMRC scores was moderate (r=0.55). Within each mMRC Grade, there was a wide distribution of CAT scores. The mMRC categorised more patients as having low symptoms (51.2%) than the CAT (10.0%). The mMRC categorised 13.4% of patients as having low symptoms and high risk ($FEV_1<50\%$ and/or >2 exacerbations in the preceding year). The CAT categorised only 0.7% of patients with this paradoxical picture.

GOLD Group	Symptoms	Risk	Using CAT (% of patients)	Using mMRC (% of patients)
A	Low	Low	9.3	37.8
B	High	Low	48.5	20.1
C	Low	High	0.7	13.4
D	High	High	41.5	28.8

Conclusion: There was a modest concordance between CAT and mMRC. The mMRC cutpoint score of ≥ 2 ("I have to stop for breath when walking at my own pace on the level") for high symptoms appears to classify too many patients as having low symptoms. Use of MRC Grade ≥ 1 as the cut point should be explored.

P4749

Stability of COPD phenotypes over time

Judith Garcia-Aymerich, Marta Benet, Josep M. Antó, the PAC-COPD Research Group. *Center for Research in Environmental Epidemiology, (CREAL), Barcelona, Spain*

Three phenotypes (severe respiratory, moderate respiratory, and systemic COPD) were previously identified by cluster analysis in COPD patients, which differed in clinical expression and outcomes (Garcia-Aymerich 2011, Thorax).
Aim: To study the stability of these phenotypes over time.
Methods: 251 COPD patients from the PAC-COPD study participated in a follow-up visit a mean of 1.7 years after their baseline assessment. Symptoms, lifestyle, comorbidities, quality of life, body mass and composition, complete lung function, muscle function, 6-min walking test, and serum inflammatory biomarkers were measured. Patients were grouped according to the distribution of 104 variables (phenotypic traits) using partitioning cluster analysis (kmeans).
Results: Two or three groups were suggested as the best clustering statistical alternatives, and three groups were clinically more meaningful. Group 1 (n=116 (46%), 69 y) included patients with worse airflow limitation, hyperinflation, and impaired gas exchange; patients in Group 2 (n=108 (43%), 70 y) exhibited better health in all domains; Group 3 (n=27 (8%), 74 y) had a higher prevalence of respiratory symptoms, worse quality of life, impaired exercise capacity and muscle strength, and a higher proportion of co-morbidities. The baseline "severe respiratory" group mostly fell (91%) in follow-up Group 1; 25% and 70% of patients in baseline "moderate respiratory" belonged to follow-up Group 1 and 2, respectively; patients in baseline "systemic" phenotype were distributed across all phenotypes but represented 70% of follow-up Group 3.
Conclusion: The three phenotypes identified in the follow-up visit exhibit very similar clinical characteristics than the baseline ones. Most patients remain in the same group.

P4750

Characterisation of patients with COPD in Scotland

Jordan Covvey, Blair Johnston, Anne Boyter. *Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, United Kingdom*

Background: Characteristics and prevalence of the COPD population vary across the globe. Inequality in disease burden between the sexes has emerged as an important trend.
Aim: To describe the population diagnosed with COPD in NHS Forth Valley.
Methods: Data were obtained from 46 practices in NHS Forth Valley via an electronic interface with practice clinical software. Microsoft SQL® queries were designed to isolate patient characteristics, including age, sex, smoking status, and FEV_1 % predicted. Data were analysed with Minitab® 16 using 2-sample t-tests and binomial proportion confidence intervals.
Results: 4611 patients were prescribed therapy for COPD in 2009; approximately half (48.0%) were men. The mean age of the cohort was higher for men versus women (69.3±10.8 years v. 68.2±11.3 years, p=0.001). Overall COPD prevalence was similar between men and women. Peak prevalence (per 10,000 population) for men was reached at age 80 – 89 years (903.3), but for women occurred earlier at 70 – 79 years (633.8). Compared to men, prevalence rates were significantly higher in women at younger ages (<60 years) and lower at older ages ($\geq$70 years) (Figure 1). Women had a higher FEV_1 % predicted (63.0±17.4% v. 59.2±18.2%, $p<0.001$), but were more likely to be current smokers ($p<0.001$).

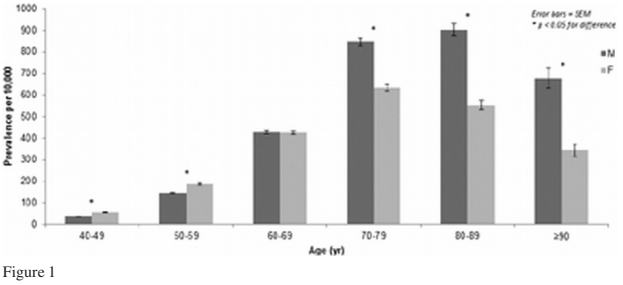


Figure 1

Conclusions: Despite similar overall prevalence, female COPD patients in NHS Forth Valley are younger with less advanced disease, but higher smoking rates than their male counterparts.

P4751

Characteristics and outcomes of hospitalizations for acute exacerbation of chronic obstructive pulmonary disease (AECOPD)

Tyler Knight[1], Xiao Xu[2], Rebecca Baik[1], Xiao Tu[2], Joseph Parker[2], Nestor Molfino[2]. [1]*Health Economics and Outcomes Research, Covance Market Access Services, Inc., Gaithersburg, MD, United States;* [2]*Clinical Development, MedImmune, LLC, Gaithersburg, MD, United States*

Rationale: Up to 25% of AECOPD events require hospitalization. However, data on AECOPD hospitalizations, including seasonal patterns, health resource

use (HRU) and post-discharge readmission is limited. This study describes the characteristics and outcomes of AECOPD treated in US hospitals.
Methods: A retrospective study of COPD patients treated in 376 US hospitals for AECOPD from 2007-2010 was conducted with the Premier Perspective® database. All AECOPD hospitalizations for COPD patients aged 40-85 years were identified. Characteristics of AECOPD hospitalizations (including seasonal patterns, length of stay [LOS], proportions admitted to ICU and treated with ventilator, and in-hospital mortality) and 30- to 90-day post-discharge readmission were summarized.
Results: Of 285,752 AECOPD hospitalizations identified, most were found in the winter season (December-March, range 9.2-10.3%), peaking in March (10.3%); while the fewest were found in the summer season (June-September, range 6.5-7.5%), dipping in August (6.5%). Median LOS was 4 days; 20.5% included ICU admission and 12.9% required ventilator use. In-hospital mortality was 3.3% overall; 10.6% and 1.5% with and without an ICU stay, respectively; and 13.9% and 1.8% with and without ventilator use, respectively. Within 30, 60 and 90 days after discharge, readmission rates to the same hospital were 10.4%, 14.6% and 17.4%, respectively.
Conclusions: AECOPD-related hospitalizations are most prevalent from December to March and represent substantial healthcare burden by high readmission rates, substantial HRU, and resulting mortality. Early preventive treatment may reduce disease burden of AECOPD events.

P4752
Recent trends of hospital admission characteristics for COPD and asthma in England from 1998 to 2011
Ivy Shiue. *European Centre for Environment and Human Health, Peninsula College of Medicine and Dentistry, Truro, Cornwall, United Kingdom The William A. & Barbara R. Owens Institute for Behavioral Research, University of Georgia, GA, United States Centre of Cognitive Epidemiology and Cognitive Ageing, University of Edinburgh, Scotland, United Kingdom*

Background: It is known that hospital admissions of COPD and asthma are increasing, but characteristics of these admissions over years are unclear.
Aims: Hospital admission characteristics in the recent 10 years in England were examined and policy implications were discussed.
Methods: This is an ecological study carried out at the national level. Data were extracted from Hospital Episode Statistics and National Statistics between 1998 and 2011. Primary diagnosis of hospital admissions was used and ICD-10 codes ranging from J40 to J44 plus J47 for COPD and J45-J46 for asthma were included. Linear regression models were performed on yearly changes and 95% confidence intervals were estimated.
Results: Generally, hospital admissions have increased for both COPD and asthma (both P<0.001). More than 90% admissions for both diseases were from emergency calls. The waiting list has been shortened for asthma (P=0.009) but not COPD (P=0.727). The bed days have been significantly decreased for both COPD (Coef -0.00003, 95%CI -0.00006 to -0.00001, P=0.008) and asthma (Coef 0.00014, 95%CI 0.00011 to 0.00016). Same was observed for length of stay (Coef -0.097, 95%CI -0.182 to -0.012 for COPD and Coef -1.11, 95%CI -1.54 to -0.68 for asthma, respectively). Additionally, a delay in mean age was observed for asthma (P=0.027) but it did not change for COPD (P=0.06). Population size has grown (Coef 3.51, 95%CI 3.21 to 3.80) but a decrease was found in children under 15 (Coef -0.00002, 95%CI -0.00002 to -9.30).
Conclusions: Management for both COPD and asthma may have been improved. Further exploration on geographic variations and changes of risk factors including population attributable risks is expected next.

P4753
COPD subtypes most likely to benefit from inhaled corticosteroids (ICS): Cluster analysis
Rachael DiSantostefano[1], Hao Li[1], David Rubin[2], David Stempel[2]. [1]*Worldwide Epidemiology, GlaxoSmithKline, RTP, NC, United States;* [2]*Respiratory Medicines Discovery & Development, GlaxoSmithKline, RTP, NC, United States*

Rationale: Cluster analysis was used to identify potential COPD subtypes that may benefit most from addition of ICS to bronchodilator therapy.
Methods: We re-analysed two, pooled 1-year trials (SCO40023, SCO100250) of 1,543 subjects with a COPD exacerbation history who were randomised to salmeterol/fluticasone propionate (SFC) or salmeterol alone (SAL). Cluster analysis maximised treatment differences between groups on mean annual exacerbation rates. A negative binomial regression model was used, adjusting for baseline FEV1% predicted, reversibility stratum (≥12% and ≥200mL), time on treatment, and region. Data included lung function, demographics, COPD history, St. George's Respiratory Questionnaire (SGRQ), and 19 medication classes.
Results: Three distinct COPD clusters were identified based on diuretic use and reversibility. Patients on treatment with diuretics (Cluster 1, n=454) or with reversibility ≥12% (Cluster 2, n=756) experienced significantly lower exacerbation rates with SFC vs. SAL (0.95 vs. 1.7 and 1.1 vs. 1.7 per/yr, respectively). Patients using diuretics were comparatively older (median 67 vs. 64) with more treatment for co-morbidities (e.g., diabetes, 17% vs. 8%). Patients with reversibility <12% (Cluster 3, n=333) had similar exacerbation rates with SFC vs. SAL (1.3 per/yr) and less severe obstruction than other clusters (median FEV1: 38% vs. 32%).
Conclusions: The greatest ICS benefit on exacerbations was in two COPD clusters: 1) patients with diuretics as well as more treatment for co-morbidities and 2) patients with ≥12% bronchodilator reversibility. Cluster analysis results may aid physicians in implementing personalised medicine.
(Funded by GSK; WEUSKOP5831).

P4754
Association between serum clara cell secretory protein (CC-16) levels and asthma-related phenotypes among adults from the EGEA study
Marta Rava[1], Nicole Le Moual[1], Xavier Dumont[2], Stefano Guerra[3], Valerie Siroux[4], Benedicte Jacquemin[1], Alfred Bernard[2], Francine Kauffmann[1], Rachel Nadif[1]. [1]*Respiratory and Environmental Epidemiology Team CESP, Centre for Research in Epidemiology and Population Health UMRS U1018, INSERM, University Paris Sud, Villejuif, France;* [2]*Louvain Centre for Toxicology and Applied Pharmacology (LTAP), Catholic University of Louvain, Brussels, Belgium;* [3]*Centre for Research in Environmental Epidemiology, CREAL, Barcelona, Spain;* [4]*Inserm, U823, Institut Albert Bonniot, Grenoble, France*

CC16 is a biological marker with anti-inflammatory and protective effects on the respiratory tract from oxidative stress. Lower levels of CC16 were observed in asthmatics, but this result has not been confirmed in any large epidemiological study. Associations between CC16, asthma and asthma-related phenotypes were studied in 1308 adults (43.7 yrs, 51.4% women) from the French Epidemiological study on Genetics and Environment of Asthma (EGEA). Serum CC16 level was determined by ELISA. Estimates were adjusted for age, sex, smoking, pack-years, BMI and time of collection. Median (1st-3rd quartile) CC16 levels were 12.4 (8.02, 19.1) μg/l (range: 2.1-70.6 μg/l). CC16 levels decreased with female sex, BMI and pack-years and increased with age. No association was observed between CC16 level and current asthma. In asthmatics, CC16 levels decreased with severe persistent asthma compared to intermittent asthma.

	n	CC16 level, μg/l (1st-3rd quartile)	Adjusted est. (95% CI)	p
Current asthma[a]	No=808	12.4 (8.3, 20.1)		
	Yes=500	12.5 (7.5, 17.1)	0.9 (0.7, 1.1)	0.2
Asthma symptoms' score[b]	500		1.0 (0.9, 1.1)	0.8
Asthma severity[c,d]: Intermittent (ref)	265	12.7 (7.7, 17.9)		
Mild/moderate persistent	75	12.4 (7.2, 16.7)	1.3 (0.7, 2.4)	0.4
Severe persistent	136	11.8 (7.2, 17.2)	0.7 (0.4, 1.0)	0.04
Bronchial hyperresponsivenessa	No=86	12.1 (8.5, 17.2)		
	Yes=203	13.0 (7.9, 17.8)	1.0 (0.6, 1.6)	0.9

[a]Adjusted ORs (GEE for logistic regression). [b]RR Ratios (GEE for negative binomial and for [c]multinomial regression), [d]GINA 2006 definition.

CC16 level may be related with asthma severity. Further studies are needed to clarify this association.
Funded by NETA project, ERS fellowship 123-2011.

P4755
Obstructive airways diseases (OADs) are the most common diseases for a doctor visit in India: A one-day point-prevalence study in 2,04,912 patients from 880 cities and towns in India
Komalkirti Apte[1], Monica Barne[1], Sapna Madas[1], Jaideep Gogtay[2], Sushmeeta Chhowala[2], Nadar Mahajan[2], Sundeep Salvi[1]. [1]*Research, Chest Research Foundation, Pune, Maharashtra, India;* [2]*Research, CIPLA LTD., Mumbai, Maharashtra, India*

An understanding of the most common diseases for which a patient visits a doctor in India will help set up appropriate health care services. We aimed to study the most common doctor-diagnosed disease for which a patient visits a general practitioner (GPs), general physician (Gen Ps) and pediatricians (Ps) in India, using a 1-day point prevalence cross-sectional study design.
Method: 13,225 GPs, Gen Ps and Ps from 22 states and 5 union territories across India were randomly selected from 880 cities and towns and invited to participate in a 1-day point-prevalence study. On 1st Feb 2011 those doctors who agreed to participate kept a record of all symptoms and diagnosis for which patients visited their clinic or hospital. 7710 doctors consented and clean data was obtained from 7400 doctors (65% GPs, 17.4%Gen Ps, and 17.6% Ps). Data was transferred into Epi-Info software and simple descriptive analysis was performed.
Results: A total of 2,04,912 patients visited 7400 GPs, Gen Ps and Ps in India on 1 day. Amongst these, 16,783 patients visited a doctor for a diagnosis of asthma or COPD accounting for the highest number of visits (8.2%). Systemic hypertension (HT), anemia, diabetes and eczema accounted for 7.8%, 5.5%, 4.8% and 2.3% of the visits respectively. These observations were generally uniform across India, with no disease hot or cold spot regions.
Conclusion: Extrapolating the above figures to around 15,00,000 registered GPs, GenPs and Ps in India, 3.5 million (m) patients visit a doctor every day in India for OADs, followed by 3.3 m for HT, 2.3 m for anemia, 2 m for diabetes and 1 m for eczema.

P4756

Time trends (1985-2011) in asthma and rhinitis in Italian general population samples

Sonia Cerrai[1], Sara Maio[1], Giuseppe Sarno[1], Sandra Baldacci[1], Marzia Simoni[1], Anna Angino[1], Franca Martini[1], Patrizia Silvi[1], Marco Borbotti[1], Giovanni Viegi[1,2]. [1]*Pulmonary Environmental Epidemiology Unit, Institute of Clinical Physiology, National Research Council, Pisa, Italy;* [2]*Institute of Biomedicine and Molecular Immunology, National Research Council, Palermo, Italy*

Aim: To estimate trends in the prevalence of asthma, asthma-related symptoms and risk factors such as allergic rhinitis and smoking.
Methods: Three surveys were carried out on general population samples living in Pisa, Italy, in 1985-88 (PI1,n=3267), 1991-93 (PI2,n=2604) and 2009-2011 (PI3,n=1619). Subjects filled in standardized questionnaires on respiratory symptoms, asthma, rhinitis and smoking habits. In PI1 and PI2 the same questionnaire was administered, whilst in PI3 the IMCA2 questionnaire, with different wording of the questions (particularly about rhinitis), was used. To compare the diseases/symptoms prevalence within the samples the same age range (18-97 yrs) was selected. Comparison of variables across studies was performed by Pearson Chi-squared test.
Results: Both the prevalence of asthma diagnosis and current asthma attacks show a trend to increase. Current rhinitis increased from PI1 to PI2 and doubled from PI2 to PI3. Current smoking significantly decreased among the three surveys.

STUDY	PI1	p-value (PI1-PI2)	PI2	p-value (PI2-PI3)	PI3
Asthma diagnosis	7.4%	0.439	6.9%	0.086	8.3%
Current asthma attacks	4.2%		3.5%		7.7%
Former asthma attacks	4.2%	0.307	4.6%	0.000	6.4%†
Current rhinitis	12.8%*		15.1%		33.2%
Former rhinitis	4.2%*	0.000	5.8%	0.000	4.4%
Current smoking	31.2%		24.8%		20.2%
Former smoking	22.5%	0.000	29.7%	0.000	32.9%

*Subjects, n=3250. †Estimation.

Conclusions: Our results highlight a trend to increased prevalence rates of asthma, and especially rhinitis, among Italian adults. Despite the prevalence of rhinitis is consistent with recent literature (Bjerg, A. et al PLOS ONE, 2011), we underline that a different wording of the question might have determined an overestimation.

P4757

The prescribing patterns for asthma in general practice setting: Adherence to GINA guidelines

Giuseppe Sarno[1], Sandra Baldacci[1], Sara Maio[1], Anna Angino[1], Franca Martini[1], Sonia Cerrai[1], Marzia Simoni[1], Patrizia Silvi[1], Marco Borbotti[1], Anna Paola Pala[2], Megon Bresciani[1], Giovanni Viegi[1,3]. [1]*Pulmonary Environmental Epidemiology Unit, CNR Institute of Clinical Physiology, Pisa, Italy;* [2]*Technosciences Unit, CNR Institute of Clinical Physiology, Pisa, Italy;* [3]*Biomedicine and Molecular Immunology, National Research Council, Palermo, Italy*

Background: General practitioners (GPs) are the first healthcare professionals whom asthma patients refer to for their symptoms.
Aim: To assess drug prescription for asthma by GPs and to evaluate prescriptive adherence to GINA guidelines (GL).
Methods: 107 GPs throughout Italy provided data on 995 asthmatic patients (45% males, mean age 43.3±17.7 yrs).
Results: 48.5% of patients had intermittent (48.5%) or mild persistent asthma (25.3%); 61% had co-morbid allergic rhinitis (AR). More frequently, prescribed medicines were a combination of inhaled corticosteroids (ICS) plus long-acting β_2-agonists (LABA) (55%), and short-acting β_2-agonists (SABA) as mono-therapy or in combination with ICS (40%). In general, prescriptive appropriateness was higher for patients with only asthma (25%) than for those with asthma+AR (16%). Regardless of concomitant rhinitis, the lowest adherence to GL was found in the mild persistent asthma category (11%), whilst the highest was in the severe persistent group (56.3%).
Conclusion: In general, we found low adherence of GPs to GINA GL recommendations, with a trend to over-treatment of intermittent asthma; conversely, more appropriate therapeutic regimens were applied for severe asthma.