REFERENCES

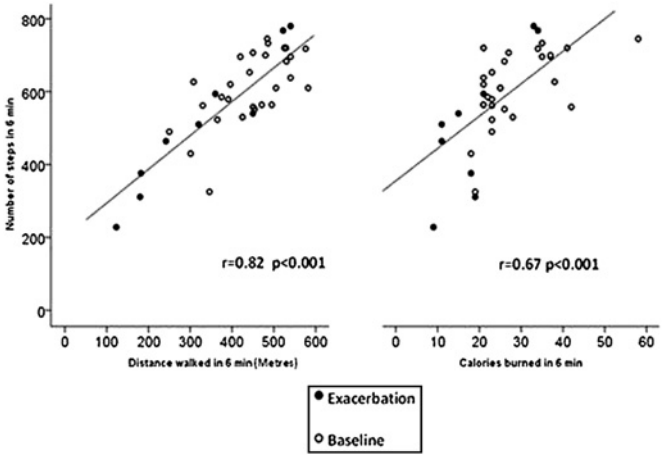
1. **Garcia-Aymerich J,** *et al*. *Thorax* 2006;**61**:772–8.
2. **Vanhees L,** *et al*. *J Cardiovasc Risk* 2005;**12**:102.
3. **Pitta F,** *et al*. *Eur Respir J* 2006;**27**:1040.

P44 VALIDATION OF A PEDOMETER TO MEASURE DAILY PHYSICAL ACTIVITIES IN COPD PATIENTS

doi:10.1136/thoraxjnl-2011-201054c.44

A D Alahmari, B S Kowlessar, A R C Patel, A J Mackay, R Singh, G C Donaldson, J A Wedzicha. *University College London, London, UK*

Introduction Physical activity is reduced at COPD exacerbation but there is little information on the quantification of this activity. Activity can be assessed using walking tests or questionnaires or with expensive accelerometer based monitoring devices that require regular clinic visits to download data. Both approaches are not well suited to prospectively capturing activity during an exacerbation in a large observational cohort as patients will need to be monitored continuously in order to capture the prodrome and early stages of these events. The aim of this study was to determine whether step-counts measured by a pedometer (Yamax Digi-Walker SW-200) were sufficiently correlated with other measures of physical activity prospectively, to show that the device can be used in COPD patients.
Methods Patients with COPD (n=33) wore the pedometer and a SenseWear Armband (BodyMedia, Inc.) during a 6-min walk test (6MWT). FEV_1, height, age and gender were recorded prior to the test. The pedometer was worn on a belt on the left-hand side and a SenseWear device on the left arm. Patients performed a 6MWT according to ATS protocols when stable and while having an exacerbation.
Results The 33 patients had a mean age (±SD) 71.5 (±6.2) and FEV_1 % predicted 48.2% (±13.2); 26 were men. The patients walked a mean 415 (±117) metres in 6 min, taking 587 (±132) steps and expending 26.3 calories (±9.8). Twenty-four patients completed the 6MWT when stable and five completed it during an exacerbation. Four patients were assessed at both baseline and exacerbation. Abstract P44 figure 1 shows that there was a strong correlation between steps counted by the pedometer and distance covered [r=0.82; p<0.001], and little change in this relationship between the stable and exacerbation state. The correlation was significant between steps and calories [r=0.67; p<0.001].



Abstract P44 Figure 1 Relationship between steps measured by pedometer (Yamax Digi-walker SW-200) in 6 min with distance covered and calories burned in the same period.

Conclusion Step count correlates well with 6 min walking distance and energy expenditure in COPD patients. Thus pedometers may be a useful way to prospectively monitor and quantify physical activity during COPD exacerbations in a large observational cohort.

P45 CO-MORBIDITIES IN ALPHA-1-ANTITRYPSIN DEFICIENCY

doi:10.1136/thoraxjnl-2011-201054c.45

H Stone, A Pye, R A Stockley. *Queen Elizabeth Hospital Birmingham, Birmingham, UK*

Introduction Chronic obstructive pulmonary disease is well recognised to be a multi system inflammatory condition with systemic manifestations, including co morbidities such as diabetes, ischaemic heart disease and osteoporosis. Patients with alpha-1 antitrypsin deficiency (A1ATD) have a similar spectrum of lung disease and increased levels inflammation and recognised associations with vasculitis and panniculitis. Our aim was to characterise the co morbidities of the UK cohort of patients with A1ATD.
Methods A retrospective review of the notes of patients with the ZZ phenotype was undertaken for patients who attended the Alpha-1-Antitrypsin Deficiency Assessment and Programme for Treatment (ADAPT) Project in Birmingham, between the years 2001 and 2011.
Results 764 sets of notes were reviewed. Of the patients included, 75 had died. The most common known co morbidity encountered was hypertension (94 patients, 12.3%), followed by depression (34 patients 4.5%) and osteoporosis (40 patients 5.2%). Interestingly, 10 patients in the cohort had been diagnosed with ulcerative colitis (UC), 4 had proven factor V Leiden deficiency and 25 were hypothyroid.
Conclusion Depression and osteoporosis are recognised co morbidities in usual COPD, and are among the most common findings in the A1ATD patients, together with hypertension. The figures are lower than reported in usual COPD. There were more patients than expected who had Factor V Leiden deficiency (56 in 12 000 vs 10 in 12 000 of the UK adult population) and 11 potential patients on long-term anticoagulation in whom it was no longer possible to measure factor V Leiden. UC has a prevalence of 3–9 cases per 10 000 in the UK but our figures suggest 130 per 10 000. Finally, thyroid disease is usually more common in women, affecting 15 in 1000 in the UK. In our patient group, the incidence is double (32 in 1000). Overall, the incidence of several inflammatory/autoimmune diseases was higher than predicted for the UK population and a potential link to a coagulopathy was identified.

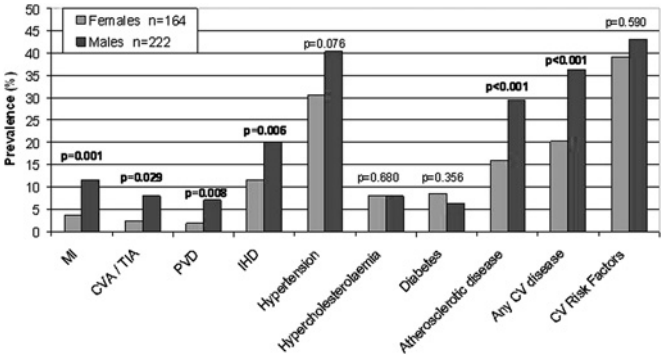
P46 GENDER DIFFERENCES IN THE PREVALENCE OF COMORBIDITIES IN COPD PATIENTS

doi:10.1136/thoraxjnl-2011-201054c.46

A R C Patel, G C Donaldson, A J Mackay, J A Wedzicha, J R Hurst. *Academic Unit of Respiratory Medicine, UCL Medical School, London, UK*

Introduction Effective recognition and appropriate management of comorbidities is an important aspect of modern COPD care. In particular, cardiovascular diseases are a leading cause of morbidity and mortality. There is increasing interest in the differential impact of gender in COPD. This study aims to characterise gender differences in the profile of comorbidities in COPD.
Methods We analysed the recruitment records of 386 well-characterised patients enrolled into the London COPD Cohort. Comorbidities, medication, age, gender, height, weight, spirometry, St George's Respiratory Questionnaire (SGRQ) and MRC dyspnoea scores were recorded.
Results There were no significant differences between females (n=164) and males (n=222) in terms of mean ± SD age; 67.5±8.3 vs 69.0±9.0 years, p=0.102, median (IQR) smoking pack year history 47 (27–62) vs 44 (27–65), p=0.769 or body mass index 25.3 (22.1–29.4) vs 25.5 (22.8–29.0), p=0.311. Females had milder airflow limitation at recruitment with a higher mean ± SD FEV_1 %

predicted; 53.5±19.9 vs 46.4±18.9, p<0.001. Following adjustment for FEV_1 % predicted, there were no gender differences in SGRQ (51.2±18.6 vs 49.8±19.5, p=0.127) or MRC dyspnoea scores (3.0 (2.0, 4.0) vs 3.0 (2.0, 4.0), p=0.104). Cardiovascular conditions were more common in male COPD patients (Abstract P46 figure 1), whereas of the clinically significant comorbidities, only osteoporosis was more common in females (10.4% vs 2.7%, p=0.001).



Abstract P46 Figure 1 Gender differences in the prevalence of cardiovascular diseases in COPD. MI, myocardial infarction, CVA, cerebrovascular accident, TIA, transient ischaemic attack; PVD, peripheral vascular disease; IHD, ischaemic heart disease, CV, cardiovascular.

Conclusions The excess cardiovascular disease in COPD patients is predominantly found in men despite lower gender differences in cardiovascular risk factors such as smoking history, diabetes, hypercholesterolaemia and hypertension. This may partly represent under-diagnosis of cardiovascular disease in COPD patients. Clinical vigilance must be maintained to identify and optimally manage important comorbidities in all COPD patients, although clinicians should be aware of the increased prevalence of cardiovascular disease in men and osteoporosis in women.

P47 THE IMPACT OF COMORBID ISCHAEMIC HEART DISEASE ON EXERCISE CAPACITY IN COPD PATIENTS

doi:10.1136/thoraxjnl-2011-201054c.47

A R C Patel, A D Alahmari, G C Donaldson, B Kowlessar, A J Mackay, R Singh, J R Hurst, J A Wedzicha. *Academic Unit of Respiratory Medicine, UCL Medical School, London, UK*

Introduction Comorbid ischaemic heart disease (IHD) is associated with an adverse impact on health status, symptoms (*ARJCCM* 2011;183:A2614) and exacerbation recovery in COPD patients (*ERJ* 2010;954s:E5209). Any impact on exercise capacity is poorly understood. We aimed to assess and quantify differences in exercise capacity in stable COPD patients with and without IHD.

Methods We assessed 6-min walking distance (6MWD) in accordance with ATS guidance (*AJRCCM* 2002;166:111–117) in patients from the London COPD cohort. All assessments were performed in the stable state with no symptom-defined exacerbations recorded on daily diary cards for 6 weeks prior and 2 weeks following the visit. Dyspnoea and fatigue were measured before and after the test using the Borg scale, as were saturations from a pulse oximeter. Data were analysed using unpaired t-tests, Mann–Whitney U, χ^2 tests and multiple regression techniques.

Results 115 patients had a 6MWD assessment, 19 (17%) had IHD (Abstract P47 table 1). COPD patients with IHD had a lower mean ± SD 6MWD than those without (310±138 vs 354±107 m) although this was not statistically significant (p=0.119). Following adjustment for age, gender, FEV_1 % predicted, BMI and smoking pack year history, IHD was found to be independently related with a 66 m reduction in 6MWD (95% CI 5 to 127 m), p=0.035. Median (IQR) dyspnoea on the Borg scale before the test was not higher in those with IHD (1(1,2) vs 1(0,3), p=0.135), this increased more in those with IHD compared to those without during the test (2(1,3) vs 1(0,3), p=0.043). Fatigue measured on the Borg scale was higher at the start of the test in those with IHD (1.5(0,3) vs 0(0,2), p=0.038), however, the increase after the test was not different between the groups (0(0,2) vs 0(0,2), p=0.831). The mean ± SD pre-test oxygen saturations and post-test change were similar in those with and without IHD (93.8±2.6% vs 94.1±2.4%, p=0.684; −0.9±4.4% vs −1.4±3.2%, p=0.595).

Abstract P47 Table 1 Clinical characteristics of COPD patients with and without comorbid ischaemic heart disease (IHD)

	All COPD patients (n=115)	COPD without IHD† (n=96)	COPD with IHD‡ (n=19)	p Value † vs ‡
Age (years)	69.7±8.7	68.9±8.9	74.0±5.9	0.019
Male gender	67%	65%	79%	0.224
FEV_1 (% predicted)	51.9±18.6	52.3±19.2	49.5±15.5	0.550
FEV_1 (L)	1.36±0.61	1.37±0.64	1.29±0.46	0.583
BMI (kg/m^2)	26.8±5.8	27.1±6.0	25.8±4.8	0.390
Current smoker	28%	28%	26%	0.872
Smoking (pack years)	46 (30,72)	44 (30,72)	57 (40,79)	0.110

Data are presented as percentage, mean ± SD or median (IQR) as appropriate.

Conclusions Comorbid IHD is independently associated with a clinically significant lower exercise capacity in COPD patients. Such patients may have a higher level of fatigue before exercise and develop more dyspnoea during exercise. Such patients may be an appropriate target for further intervention such as tailored pulmonary rehabilitation.

P48 SHOULD CHRONIC OBSTRUCTIVE PULMONARY DISEASE BE A CONTRA-INDICATION TO β BLOCKER PRESCRIPTION IN PATIENTS WITH CONCOMITANT HEART FAILURE?

doi:10.1136/thoraxjnl-2011-201054c.48

D C Lees, M Simpson, E McKay, S J Owen. *Warrington and Halton General Hospitals Trust, Warrington, UK*

Introduction Beta blockers (BB) are now well established in the treatment of heart failure (HF) and other cardiovascular disorders. There is much debate in the literature as to their safety in patients with concomitant chronic obstructive pulmonary disease (COPD) due to the risk of increased symptoms and decline of FEV_1. As BB use improves morbidity and mortality in CVD are we justified in denying this benefit to patients with co-existing COPD?

Objective To ask cardiologists within our Deanery about their prescribing preferences for BB in patients with both HF and COPD and any adverse events they had experienced as a result of those prescriptions.

Method Four questions were sent out to 50 consultant cardiologists and 20 registrars asking BB of choice with adverse events experienced or reasons to avoid them.

Results 30/50 Consultants responded with 7/20 registrar responses. 100% prescribed BB to patient with COPD and HF with only 6 (16%) responders describing adverse outcomes. These included increasing shortness of breath (6/37), wheeze (6/37) and bronchospasm (1/37). The most commonly prescribed BB was bisoprolol