Abstract P183 Table 1

	Central (C)		Intermediate (I)		Peripheral (P)			
Method	Area	Counts	Area	Counts	Area	Counts	C/P	PI
1	18.2	37.3	28.3	38.1	53.5	24.5	1.52	0.40
2	33.0	60.1	0	0	67.0	39.9	1.50	0.46
3	20.2	48.8	0	0	79.8	51.2	0.95	0.47
4	25.0	56.6	0	0	75.0	43.4	1.30	0.47

Values are percentages.
PI, penetration index.

from a krypton-ventilation scan, we compared four reported methods of partitioning the lungs into ROI.[2–5] Percentage lung area in the ROI and radioactive deposition counts for central (C), intermediate (I) and peripheral (P) regions were calculated. The C/P ratio and Penetration Index (PI) were determined (PI = ratio of P/C for the deposition aerosol normalised by P/C for krypton-ventilation gas).

Results Comparisons between the four methods of defining ROI are shown in table 1. All methods defined C as corresponding to central airways and P as peripheral/small airways. The proportionate lung areas of C and P regions and also the radioactive gamma counts varied greatly depending on the method used to define ROI. Only one method defined intermediate regions. However, there was good agreement of PI.

Conclusions PI, which is normalised to lung ventilation, is least affected by how the lung regions/ROI are drawn and analysed. PI should be the primary endpoint to compare results from different scintigraphic lung deposition studies. Care should be taken when comparing individual ROI between studies and attributing these 2DGS regions to specific three-dimensional anatomical airway structures.

1. **Usmani OS**, *et al*. *Am J Respir Crit Care Med* 2005;**172**:1497.
2. **Agnew JE**, *et al*. *J Nucl Med* 1984;**24**:170.
3. **Smaldone GC**, *et al*. *J Aerosol Med* 1989;**2**:81.
4. **Brown JS**, *et al*. *J Aerosol Med* 2001;**4**:443.
5. **Haussermann S**, *et al*. *J Aerosol Med* 2007;**20**:331.

P184 HIGH PREVALENCE OF URINARY INCONTINENCE IN ADULT PATIENTS WITH BRONCHIECTASIS

[1]J Rees, [2]HM Tedd, [3]A De Soyza. *[1]Continence Care Services, Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK; [2]Adult Bronchiectasis Service, Freeman Hospital Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK; [3]Adult Bronchiectasis Service, Freeman Hospital, Newcastle upon Tyne Hospitals NHS Foundation Trust, University of Newcastle, Newcastle upon Tyne, UK*

doi:10.1136/thx.2009.127191b

Introduction Urinary incontinence (UI) is common in patients with cystic fibrosis (CF)-associated bronchiectasis but limited data are available for patients with non-CF bronchiectasis.[1] Patients suffering with UI are often embarrassed by symptoms and don't seek medical attention,[2] consequently remaining untreated. Department of Health guidelines[3] state that primary and secondary care physicians should identify patients with incontinence problems, offer appropriate assessment and facilitate access to specialist services.

Setting In 2007 a new non-CF bronchiectasis service was started with patients referred from existing chest clinics and primary care. Patients attending were specifically asked about UI symptoms including duration of symptoms. If UI was reported, this prompted a nurse consultant review for UI management.

Results Of the 116 patients attending the bronchiectasis service to date, 76 were female; of these 55% (42 patients, mean age 62 years, range 27–82) had UI (UI-Br). 87.5% of UI-Br patients reported symptoms for over 5 years and 40% of patients described symptoms for over 10 years prior to intervention. 37% reported UI as having a ''terrible'' effect on quality of life. After assessment, a personalised UI management plan was formulated. All patients received education and patient literature regarding bladder health, training in pelvic floor strengthening, urge suppression and voiding techniques. Other treatments included bladder retraining (40%), toilet rescheduling (40%), bowel care (12.5%) and containment education (25%). A follow-up phone call was made at 4 weeks, providing motivation and support, followed by further clinic appointments linked to bronchiectasis clinic follow-up. Patients reported high compliance rates with treatment plans. A significant proportion of patients have already been discharged from the UI service following an improvement in symptoms.

Conclusion UI is common in patients with non-CF bronchiectasis. It has a significant psychosocial impact on patients' lives and is rarely self-reported; patients suffer with symptoms for years without seeking medical assistance. Therefore it is important that respiratory physicians include UI as part of systematic care of these patients and that patients identified as suffering from symptoms of UI are referred on for specialist input in order to improve continence and quality of life.

1. **Prys-Picard CO,** Niven R. Urinary incontinence in patients with bronchiectasis. *Eur Respir J* 2006;**27**:866–7.
2. **Peterson JA.** Minimise urinary continence: maximise physical activity in women. *Urol Nurs* 2008;**28**:351–6.
3. **Department of Health**. *Good practice in continence services*. 2000.

COPD: identification and testing

P185 BRITISH LUNG FOUNDATION'S SEARCH FOR THE ''MISSING MILLIONS'' OF COPD PATIENTS

I Jarrold, N Eiser, K Leach, T Lethbridge. *British Lung Foundation, London, UK*

doi:10.1136/thx.2009.127191c

British Lung Foundation (BLF) surveys identified UK hotspots where the most acute admissions for chronic obstructive pulmonary disease (COPD) are expected. Two top hotspots, Nottingham and South Tyneside, were targeted with awareness-raising events. These events were supported by extensive publicity campaigns directed at GPs, pharmacies, community health centres and libraries with local media involvement. In South Tyneside there were also telemarketing campaigns directed towards at-risk groups. Day awareness-raising events were arranged at eight venues—supermarkets, shopping malls or Bingo halls—where spirometry was offered by trained respiratory nurses using Microlab portable spirometers. BTS criteria for acceptable results were used. People without known lung disease were invited to attend.

Complete datasets were obtained from 1273 attendees (table 1). 96% were Caucasian, with mean age 57 years (range 14–95). 60% were smokers or ex-smokers and 40% non-smokers. 20% attendees had abnormal spirometry. 11% had airflow obstruction and 9% had restrictive spirometry. Of 663 aged ⩾35 years with smoking histories, 18% had airflow obstruction while 9% had restrictive

Abstract P185 Table 1

	Number (%)
No of attendees	1302
No of complete datasets obtained	1273
Smoking status	
Smokers	308 (24)
Ex-smokers	456 (36)
Never smokers	507 (40)
Abnormal spirometry: $FEV_1 \leqslant 80\%$ of predicted	261 (20)
Obstructive: $FEV_1 \leqslant 80\%$ of predicted and $FEV_1/FVC \leqslant 70\%$	145 (11)
Restrictive: $FEV_1 \leqslant 80\%$ of predicted and $FEV_1/FVC > 70\%$	116 (9)
No of smokers or ex-smokers aged ⩾35 with abnormal spirometry	178 (27)

FEV_1, forced expiratory volume in 1 s; FVC, forced vital capacity.

spirometry. In attendees with airflow obstruction, it was mild in 79% (FEV_1 50–80% predicted), moderate in 19% (FEV_1 30–49% predicted) and severe in 3% (FEV_1<30% predicted). All those with abnormal spirometry were referred to their GPs, while all smokers were offered access to local quit-smoking programmes. 19% of the 621 people tested in Nottingham had abnormal spirometry compared with 22% of the 652 people in South Tyneside.

Those who suspected that they might have lung disease were presumably more likely to attend these events. A high percentage of attendees had abnormal results, particularly those aged ⩾35 years with smoking histories. Although additional telemarketing failed to increase the number of abnormalities found at events, possibly some at-risk people visited their GPs instead. As yet, we have not identified these people.

Our study demonstrates the benefits of identifying and targeting hotspots to identify and treat people with previously undiagnosed COPD. This is crucial to improving care and equally of access for this large population of disadvantaged patients. However, renewed efforts should be made to encourage members of the black and minority ethnic communities to attend such events.

P186 WHO AND WHERE ARE THE "MISSING MILLIONS" OF COPD PATIENTS IN THE UK?

I Jarrold, N Eiser, J Morrell. *British Lung Foundation, London, UK*

doi:10.1136/thx.2009.127191d

Approximately 900 000 people in the UK have diagnosed chronic obstructive pulmonary disease (COPD). However, it is estimated that the true number is 3.7 million. The aim of this study was to help identify those undiagnosed COPD patients. The British Lung Foundation (BLF) commissioned a survey to calculate the prevalence of COPD in the UK by primary care organisation (PCO) and postcode, using Quality and Outcomes Framework data in general practice and Hospital Episode Statistics for hospital admission rates. Postcodes and PCOs were ranked for potential risk of COPD admissions and "hotspots" were identified. In addition, Experian Mosaic lifestyle segmentation was used to identify the key lifestyle characteristics of those at greatest risk of admission with COPD.

6.5 million people lived in the COPD "hotspot" PCOs selected by the BLF, with 1.9 million living in postcodes at high risk of future COPD admissions. The top 10 PCOs with highest proportions of people at risk of COPD are shown in table 1.

Lifestyles associated with greatest risk of admission with COPD were:

1. Older people (60–80 years) living in crowded apartments in high density social housing (four times as likely to get admitted with COPD than the UK average).
2. Older people, many in poor health from working in heavy industry, in low-rise social housing (three times more likely).
3. Families with school-age children, living in large social housing estates on the outskirts of provincial towns (twice as likely).
4. Older couples, mostly in small towns, who have bought their council houses (twice as likely).

Abstract P186 Table 1

Primary care organisation	Risk higher than national average (%)	Proportion of "at risk" population (%)
South Tyneside PCT	62	0.35
Hull PCT	55	0.33
Barking and Dagenham PCT	55	0.33
Blaenau Gwent LHB	54	0.33
Knowsley PCT	54	0.33
Gateshead PCT	54	0.33
Greater Glasgow and Clyde CHCP	52	0.32
Sunderland Teaching PCT	51	0.32
Sandwell PCT	47	0.31
Lanarkshire CHCP	44	0.31

This survey identified specific communities most at risk of future hospital admissions with COPD. These include ex-industrial and inner city areas, areas of particularly high social deprivation and unemployment and those with disproportionately high populations of older people. Those at risk had often worked in factories, steelworks, dockyards, mines or manufacturing, in semi-skilled jobs or were currently unemployed. Public awareness campaigns should be targeted at these "hotspots". Better smoking cessation and diagnostic services are urgently needed in these areas to improve care for the missing millions of COPD patients.

P187 DEFINING "SYMPTOMATIC" IN COPD PATIENTS: A NATIONAL STUDY

[1]J Upton, [1]E McCutcheon, [1]C Loveridge, [2]J Wiggins, [1]S Walker, [1]M Fletcher. *[1]Education for Health, Warwick, UK; [2]Wexham Park and Heatherwood NHS Trust, Berkshire, UK*

doi:10.1136/thx.2009.127191e

Introduction The National Institute for Health and Clinical Excellence guidelines for chronic obstructive pulmonary disease (COPD) recommends that medication should be initiated or changed in "patients who remain symptomatic". In the absence of an agreed definition of "symptomatic", less experienced healthcare professionals may be unclear when this should happen. The aim of the study was to gain expert consensus on which symptoms and signs are most important when considering treatment changes in patients with COPD.

Methods Leading COPD experts (members of COPD-related national committees or suggested by these members) from primary and secondary care were invited to participate in an online three-stage Delphi exercise. In round 1 participants listed the signs and symptoms that may be considered when initiating or changing treatment. Participants then scored the importance of each on a 5-point Likert scale (round 2). In round 3 participants were provided with the descriptive data analysis from round 2, and given the opportunity to revise their previous scores. Consensus was defined as ⩾80% of the panel scoring an item as 4 or 5 in round 3; these items were deemed by the panel to be the most important to consider when initiating or changing treatment in a patient with COPD.

Results 54 experts were identified, 37 (69%) of whom agreed to participate (providing a respectable sample size for this qualitative study). Only three participants dropped out during the three rounds (92% response rate). Consensus was gained on seven items (table 1).

Conclusion Assessing these seven symptoms and signs during COPD consultations may be a useful guide for all clinicians involved in

Abstract P187 Table 1

Symptom/sign	No (%) of experts who scored item as important
Decreased exercise tolerance	33 (97)
Increased breathlessness at rest or on exertion	33 (97)
Quality of life impairment	31 (91)
Low or reduced oxygen saturations based on pulse oximetry readings	29 (86)
Ability to perform activities of daily living independently	29 (85)
Increase in sputum	27 (80)
Increase in wheeze	27 (80)

managing patients with COPD. Clinical prompts (check lists) and education are needed in order to increase the opportunity to elicit this information during consultations.

P188 PRECISION IN DIAGNOSING AND CLASSIFYING COPD: COMPARISON OF HISTORICAL HEIGHT WITH CURRENT HEIGHT AND ARM SPAN TO PREDICT FEV_1

[1]K Ansari, [2]A Kay, [2]IK Taylor, [1]J Munby, [2]NP Keaney. *[1]Sunderland University, Sunderland, UK; [2]Sunderland Royal Hospital, Sunderland, UK*

doi:10.1136/thx.2009.127191f

Elderly patients have frequently lost height due to osteoporosis and related vertebral collapse. Osteoporosis is more prevalent in smokers and is a recognised co-morbidity associated with chronic obstructive pulmonary disease (COPD) and could affect the linear relationship between height and predicted forced expiratory volume in 1 s (FEV_1). This in turn may lead to a misdiagnosing and misclassifying of COPD. We have studied arm span as a linear variable to calculate predicted values for spirometric measurements.

In 1999–2002 we studied a cohort of primary care patients thought to have COPD and re-examined 109 (55 men) of them during 2007–9. The demographic and spirometric measurements were recorded on each occasion. We calculated FEV_1% predicted for measured and estimated height (arm span/1.03 and arm span/1.01 in men and women respectively: http://www.spirxpert.com/refvalues2.htm). 1n 1999–2002 the subjects were aged 60.5±9.2 years, body mass index (BMI) was 26.4±4.7, measured FEV_1 was 2.6±0.6 l (68.2±23.3% predicted), mean measured height was 1.66±0.08 m and their mean estimated height (from arm span in 2007–8) was 1.65±0.08 m. Thus FEV_1% predicted would not have altered in 1999–2002 with the use of arm span.

However, we found that measured height changed significantly ($p<0.001$) by 2 cm between 1999–2002 (1.66±0.08 m) and 2007–8 (1.64±0.08 m), thus FEV_1% predicted was significantly ($p<0.001$) lower when using estimated height (−67.7±24.6% vs 65.9±24.2%). As a consequence, in borderline non-COPD subjects (according to the standard of the Global Initiative for Obstructive Lung Disease (GOLD) FEV_1% predicted ⩾80) we found that 6.4% (7/109) in the 1999–2002 cohort and 6.4% (7/109) in the 2007–8 cohort had values for FEV_1% predicted of <80% when these were calculated using estimated height. For classifying severity we did not find that using arm span yielded a significant shifting of patients between mild and severe COPD either in 1999–2002 or 2007–8.

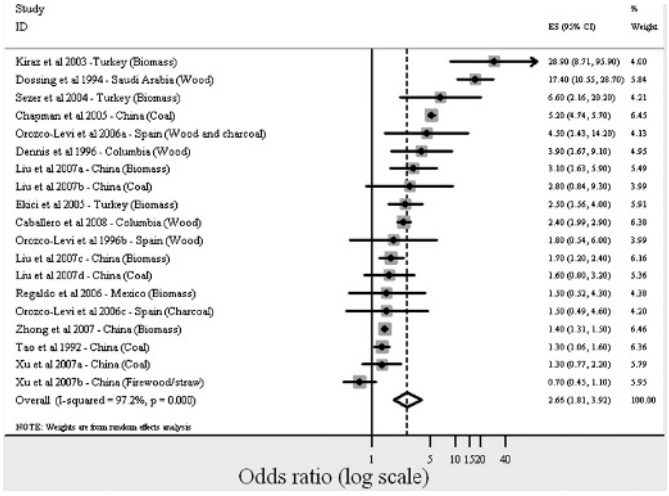
The results of this study suggest that: (1) current measured height may underestimate predicted FEV_1; (2) use of arm span increased the proportion of patients with FEV_1 <80%.

P189 COPD AND CHRONIC BRONCHITIS RISK OF SOLID FUEL SMOKE: A SYSTEMATIC REVIEW AND META-ANALYSIS

[1]O Kurmi, [2]S Semple, [2]PP Simkhada, [2]WCS Smith, [1]JG Ayres. *[1]University of Birmingham, Birmingham, UK; [2]University of Aberdeen, Aberdeen, UK*

doi:10.1136/thx.2009.127191g

Introduction and Objectives Over half the world is exposed daily to the smoke from combustion of solid fuels. Chronic obstructive pulmonary disease (COPD) is one of the main contributors to the global burden of disease and can be caused by biomass smoke exposure. However, studies of biomass exposure and COPD show a wide range of effect sizes. The aim of this systematic review was to quantify the impact of biomass smoke on the development of COPD and define reasons for differences in the reported effect sizes.
Methods A systematic review was conducted of studies with sufficient statistical power to estimate the risk of COPD from exposure to solid fuel smoke which followed standardised criteria for the diagnosis of COPD, adjusted for smoking, were in English and contained original data. The results were pooled by fuel type and country to produce summary estimates using a random effects model. Publication bias was also estimated.
Results 4164 titles were identified which were reduced to 24 studies (11 relating to COPD, 11 to chronic bronchitis and 2 to both). Pooled estimates for the development of COPD with solid fuel use showed an odds ratio of 2.66 (95% CI 1.81 to 3.92) (fig 1) and an OR of 2.32 (95% CI 1.92 to 2.80) for chronic bronchitis. Pooled estimates by fuel type showed that exposure to wood smoke presents a greater risk of development of COPD (wood: OR 4.3; mixed biomass: OR 2.8). The findings for chronic bronchitis were similar. There was no evidence of publication bias but there was clear variation between studies which might be explained by study design, dealing with confounders, use of selected comparator groups or exposure assessment, although differential toxicity of different fuels is the most likely explanation.
Conclusion Despite heterogeneity across the selected studies, exposure to solid fuel smoke is consistently associated with COPD and chronic bronchitis. Efforts should be made to reduce exposure to solid fuel either by using cleaner fuel or relatively cleaner technology while performing domestic work.



Abstract P189 Figure 1 Forest plot of studies reporting COPD due to exposure to solid fuels.

P190 COMPARISON BETWEEN PATIENTS WITH AND WITHOUT AIRWAYS OBSTRUCTION FROM THE SHEFFIELD COPD STUDY: IMPLICATIONS FOR POPULATION SCREENING

[1]AC Darby, [2]JC Waterhouse, [1]C Young, [3]M Aziz, [3]J Wight, [2]CG Billings, [2]C Billings, [2]V Stevens, [1]CM Burton, [1]CM Barber, [1]D Morgan, [4]PD Blanc, [1]D Fishwick. *[1]Health and Safety Laboratory, Buxton, UK; [2]University of Sheffield, Royal Hallamshire Hospital, Sheffield, UK; [3]Department of Public Health Medicine, Sheffield NHS Primary Care Trust, Sheffield, UK; [4]Division of Occupational and Environmental Medicine, University of California, San Francisco, USA*

doi:10.1136/thx.2009.127191h

Introduction and Objectives A recent BLF report has suggested there are 2.8 million people with undiagnosed chronic obstructive pulmonary disease (COPD) in the UK, the so-called ''missing millions''. One of the biggest challenges for the NHS at present is how best to identify these missing cases to allow risk factor modification and disease treatment. Previous work has identified risk factors to assist population identification of such individuals,[1 2] but these approaches have not been validated in UK populations.

Methods A random sample of 4000 residents in a UK city was sent a postal questionnaire enquiring about respiratory symptoms, respiratory disease, smoking and occupational exposures. A proportion had lung function measurement and the EQ-5D quality of life estimate performed. A post hoc descriptive analysis has been conducted along with more detailed logistic regression and Receiver Operating Characteristic (ROC) analysis in order to determine the optimal screening approach for airways obstruction.

Results 2001 participants returned questionnaires, of whom 572 had forced expiratory volume in 1 s (FEV_1) and forced vital capacity (FVC) measured. 165 had evidence of airways obstruction (AO), defined as an FEV_1/FVC ratio of <0.70, and 407 had no evidence of AO. Symptom and demographic differences between those with and without AO are shown in table 1. ROC analysis demonstrated that the previous screening questionnaire suggested by Martinez[1] (AUC value 0.72) performed well for predicting AO in our local population, and that a separate model created from our data to identify AO included other significant predictors including exposure to occupational factors including steel processing work (AUC value 0.77).

Abstract P190 Table 1

Variable	AO	No AO
Number	165	407
Age (mean, SD and range)	69.3 (9.0) (56–88)	66.7 (7.3) (56–90)
Sex (% male)	68.5%	52.3%
Smoking status (ever smoked as much as 1 cigarette/day for 1 year)	79.4%	51.6%
Mean (SD) duration of smoking (years)	32.4 (14.2)	24.2 (14.4)
Ever worked with VGDF	69.7%	53.8%
Either smoking or VGDF	88.5%	73.0%
Mean (SD) deprivation index*	21.8 (15.9)	17.3 (16.4)
Self-reported diagnosis of COPD, emphysema, asthma or chronic bronchitis	57.0%	21.1%
Cough, phlegm, chest tightness or wheeze	72.1%	34.9%
Diagnosis or symptoms	75.2%	37.6%
SOB MRC 3	58.8%	28.7%
Symptoms or SOB	74.5%	36.9%
Problems with mobility		
None	34.4%	56.3%
Some	65.0%	43.7%
Bed-bound	0.6%	0.0%
Problems with usual activities		
None	42.3%	63.0%
Some	47.2%	32.8%
Unable to do	10.4%	4.2%

AO, airway obstruction; SOB, shortness of breath; VGDF, vapours, gases, dusts or fumes. *Percentage in postcode on income support.

Conclusions Despite differences in the demographics of the populations studied and the questions asked, a previously suggested population screening questionnaire for the presence of AO performed well in a local UK-based population. In addition, a locally-derived questionnaire from UK-based data has been produced to assist identifying those with as yet undiagnosed AO.

1. **Martinez FJ**, *et al*. COPD-PS Clinician Working Group. Development and initial validation of a self-scored COPD Population Screener Questionnaire (COPD-PS). *COPD* 2008;**5**:85–95.
2. **Calverley PMA**, *et al*. Development of a population-based screening questionnaire for COPD. *COPD* 2005;**2**:225–32.

P191 COPD IN SHEFFIELD: HOW DO CASE DEFINITIONS OF COPD AFFECT RISK ESTIMATES FOR CAUSATIVE FACTORS?

[1]AC Darby, [1]JC Waterhouse, [1]CM Barber, [1]CM Burton, [2]J Wight, [2]PD Blanc, [1]V Stevens, [1]C Billings, [1]CG Billings, [1]D Fishwick. *[1]Centre for Workplace Health, University of Sheffield, Royal Hallamshire Hospital, Sheffield, UK; [2]Department of Public Health Medicine, Sheffield NHS Primary Care Trust, Sheffield, UK*

doi:10.1136/thx.2009.127191i

Introduction and Objectives Chronic obstructive pulmonary disease (COPD) causes a substantial burden to both individual patients and to society. While smoking is recognised as the predominant cause, other risk factors are identified. Consistent estimates suggest occupational exposure to dust contributes 15% to the overall disease burden. Many of these data are derived, however, from non-UK based studies. We aim to address this gap in the literature with an epidemiological study of COPD in a UK city.

Methods We conducted a questionnaire-based study of a random sample of 4000 people aged over 55. In addition, an enrichment sample of individuals with likely COPD was identified from a secondary care physiology department. The study recorded data on respiratory symptoms, self-reported respiratory diagnoses, smoking and a detailed occupational history including generic exposure to vapours, gases, dusts and fumes (VGDF). A proportion of respondents had spirometry performed. Regression analysis (including age and sex) estimated the association of ever having smoked and ever having VGDF exposure with reported doctor diagnosed COPD, using different definitions of COPD.

Results Having previously presented the cut-off point analysis[1] excluding the enrichment population, these data represent the final analysis including the enrichment sample. 2061 completed questionnaires were received (2001 postal, 60 enrichment), 1935 of which had complete data for smoking and VGDF exposures and were used for this analysis. The mean age was 69.1 years and 49.5% were male. 115 reported a previous doctor diagnosis of COPD, 114 chronic bronchitis, 80 emphysema and 306 asthma. 57.0% had ever smoked and 49.2% reported ever being exposed to VGDF at work. Odds ratios and population attributable risk (PAR) for COPD from ever being exposed to VGDF or from ever smoking are shown in table 1.

Conclusions This study has documented high UK-based PAR% values for the occupational contributions to COPD. These values fall when the diagnosis is based on spirometric values, confirming the variable well-documented relationship between reported symptoms and lung function abnormalities. Even allowing for these issues, these data suggest that, in this UK population, ever exposure to VGDF has contributed significantly to the burden of COPD.

1. Waterhouse *et al*. ERS Congress Berlin 2008, Abstract 3823.

Abstract P191 Table 1

COPD definition	OR for smoking (95% CI)	OR for VGDF exposure (95% CI)	PAR% for VGDF (smoking adjusted)
SR COPD/emphysema (n = 158)	6.3 (3.7 to 10.7)	3.9 (2.5 to 6.0)	58.8%
SR COPD/emphysema/chronic bronchitis (n = 238)	4.7 (3.2 to 7.0)	4.1 (2.8 to 5.8)	58.7%
SR chronic bronchitis alone (n = 80)	2.5 (1.4 to 4.3)	3.3 (1.9 to 5.8)	52.3%
Spirometry alone (GOLD 2 and above) (n = 154)	4.1 (2.6 to 6.5)	2.0 (1.3 to 3.0)	36.1%

OR, odds ratio; PAR, population attributable risk; SR, self-reported; VGDF, vapours gases, dusts and fumes.
Data adjusted for age and sex.

P192 EVALUATION OF PERFORMING SPIROMETRY IN CARDIOLOGY OUTPATIENTS

[1]DM Neville, [2]SMS Smith, [2]SL Elkin. *[1]Imperial College London School of Medicine, London, UK; [2]Imperial College Healthcare NHS Trust, London, UK*

doi:10.1136/thx.2009.127191j

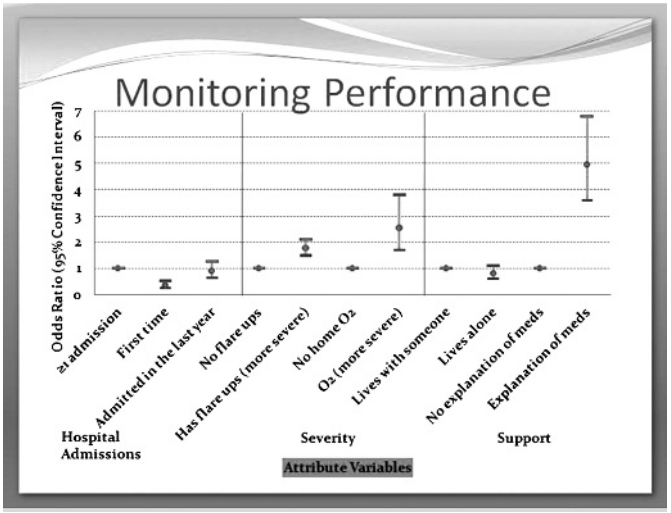
Introduction Chronic obstructive pulmonary disease (COPD) and cardiovascular disease share traditional risk factors including smoking. In some patients these diseases co-exist. We hypothesised that (1) spirometry could be performed in cardiology outpatient clinics and (2) that it might identify previously undiagnosed COPD.
Methods Over a 6-week period, patients aged 35 years and over attending cardiology outpatient clinics were invited to perform simple spirometry and to complete a respiratory questionnaire. This included smoking history, respiratory symptoms and previously diagnosed medical conditions.
Results A total of 163 patients (107 male, mean age 63.83 ± 13.25 years) performed spirometry. 68 patients declined to participate in the study mostly due to time pressure. Of the participants, 79 (49%) had been diagnosed with ischaemic heart disease (IHD) and 4 had a previous diagnosis of COPD. Spirometry tests demonstrated airflow obstruction in 43 (26.4%) patients of whom 30 (69.8%) were male. In current smokers, 14 (58.3%) showed airflow obstruction. The patients with airflow obstruction had smoked a significantly greater number of mean pack years compared with those recording normal spirometry ($p = 0.047$). A significantly greater number of patients with airflow obstruction experienced severe breathlessness (of level 4 on the MRC dyspnoea scale) compared to those with normal spirometry ($p = 0.015$). A restrictive defect was found in 34 (20.9%) patients. Of these, 25 (73.5%) were overweight (BMI >25).
Conclusions Performing spirometry as a screening tool in a population with a high risk for COPD is feasible. Within cardiology outpatient clinics, spirometry detected a large proportion of patients with airflow obstruction and possible COPD. This method of screening has the potential to benefit a patient in terms of both their cardiovascular and respiratory health.

P193 AN EMPIRICAL ANALYSIS OF THE 2008 NATIONAL COPD AUDIT

[1]N Nzekwue, [1]S Bremner, [1]S Taylor, [2]N Pursey, [3]M Roberts, [2]R Stone. *[1]Department of Health Sciences, Queen Mary University of London, London, UK; [2]The Royal College of Physicians, London, UK; [3]Queen Mary University of London and The Royal College of Physicians, London, UK*

doi:10.1136/thx.2009.127191k

Introduction and Objectives Organisation of COPD care and self-management have been thoroughly investigated using tools such as the National COPD Audit. Literature highlights burdens caused by COPD that help inform how to organise care. The government and NHS advocate self-management, citing well evidenced and potentialised benefits. What shapes one's ability to aptly self-manage one's own COPD? One of the main objectives of this study was to identify which factors are related to skilled self-management. Coupled with the 2008 National COPD Audit's assessment of current service use and demands, the overall aim was to propose recommendations for those setting up a COPD service. This service would use necessary improvements to any level of care while integrating factors identified by this study that facilitate the success of already evidence based self-management techniques and initiatives.
Method This study used raw data from the 2008 National COPD Audit. Responses to specific questions were combined forming characteristic variables (condition severity, support and hospital attendance) and attribute variables that constitute certain aspects of self-management (understanding, monitoring, service use and behaviour). Logistic regression was performed to estimate the association between individual characteristic variables including age and sex and adequate self-management performance in each attribute variable. Correlations were made between characteristic variables and themes related to COPD care generated from the audit.
Results There were 2864 patient respondents. Age and gender were not significantly associated with self-management performance. Those living alone had 4–46% [0.72 (0.54–0.96)] less odds of having adequate understanding than those living with someone. First-time hospital patients had 32–66% (0.48 (95% CI 0.34 to 0.68)) less odds of having adequate understanding and 48–74% (0.37 (0.26 to 0.52)) less odds of having adequate monitoring performance than those admitted frequently. Compared with non-exacerbators, those who experienced exacerbations had 8–58% (1.30 (1.08 to 1.58)) more odds of having adequate understanding, and almost double the odds of having adequate monitoring (1.77 (1.49 to 2.11)) and service use performance (1.85 (1.32 to 2.60)) (fig 1).



Abstract P193 Figure 1 Monitoring performance.

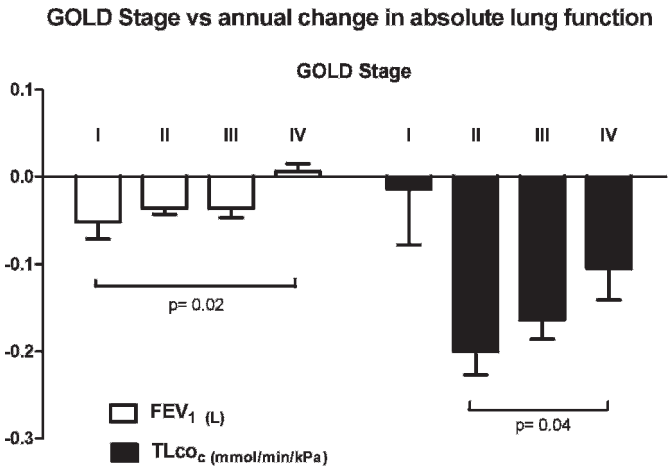
Conclusion An improved COPD service will incorporate self-management. Increasing contact time with community and primary care members (most popular audit themes) will improve patients' ability to self-manage their COPD.

P194 EFFECT OF GOLD STAGE ON RATE OF DECLINE IN GAS TRANSFER AND SPIROMETRY IN COPD

JL Kelly, P Mehta, D Shrikrishna, D Cramer, MI Polkey, NS Hopkinson. *Muscle Laboratory, Royal Brompton Hospital, London, UK*

doi:10.1136/thx.2009.127191l

Introduction Chronic obstructive pulmonary disease (COPD) is a progressive lung disease which has an impact on airways, lung parenchyma and the pulmonary vasculature. Damage to these different compartments is likely to impact differently on different lung function parameters. COPD is conventionally classified into stages according to the degree of airflow obstruction expressed as percentage predicted forced expiratory volume in 1 s (FEV_1).
Aims We wished to evaluate the relationship between GOLD stage of COPD and absolute rate of decline of lung function over time.
Methods Patients were selected from our COPD research audit database if they had had two sets of complete lung function tests performed at least 3 years apart. We excluded patients who had had a lung volume reduction procedure or who had α_1-antitrypsin deficiency. Annual rates of decline in FEV_1, lung carbon monoxide transfer factor ($TLCO_c$), carbon monoxide transfer coefficient (KCO_c), total lung capacity (TLC) and residual value (RV) were calculated both for absolute change and for change in percentage predicted values.
Results Annual decline in FEV_1 and $TLCO_c$ varied significantly with disease stage (ANOVA, $p = 0.0025$ and $p = 0.0494$). Decline in FEV_1 was most rapid in those with the least severe disease (ANOVA, $p = 0.002$) with a change of −52 ml/year in stage I compared with +1 ml/year in stage IV. Gas transfer, however, appeared to be static in stage I. The largest decline in $TLCO_c$ was in stage II disease, decreasing sequentially as GOLD stage increased. However, in contrast to FEV_1, there was an appreciable decline even in GOLD stage IV patients (fig 1). Change in RV and TLC did not differ according to GOLD stage.
Conclusion In patients with the most severe disease, the decline in FEV_1 appears to plateau. Gas transfer decline is most prominent in GOLD stage II disease but continues to decline appreciably in stage IV.



Abstract P194 Figure 1 GOLD stage versus annual change in absolute lung function.

Education and training

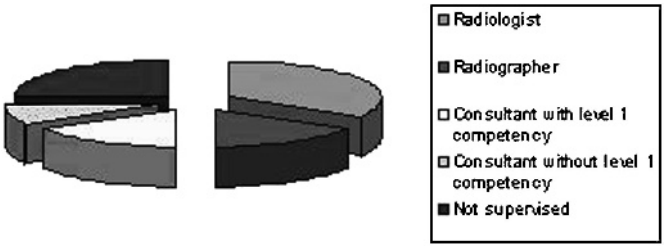
P195 THORACIC ULTRASOUND: COMPETENCY AND TRAINING STRATEGIES WITHIN OUR REGION

[1]LM Jones, [1]AB Hardy, [2]J Hogg. *[1]St James's University Hospital, Leeds, UK; [2]Pinderfields General Hospital, Wakefield, UK*

doi:10.1136/thx.2009.127191m

Introduction A recent National Patient Safety Agency (NPSA) alert[1] highlighted the risks of chest drain insertion using the Seldinger technique and strongly advised thoracic ultrasound (TUSS) be undertaken prior to drain insertion. This study aims to identify the range of TUSS competency in our region as well as investigating local strategies for obtaining the necessary equipment and training.
Method To ascertain the local availability of TUSS an online questionnaire was sent to a consultant at each hospital in the region.
Results All of the hospitals responded. Four of 12 hospitals (33%) had an ultrasound machine within the respiratory department and three hospitals (25%) had a machine available within the hospital but in another department. Of the 12 hospitals, seven (58%) had a lead clinician for thoracic ultrasound. 34% of senior doctors in respiratory departments had attended an ultrasound course (0–86%). Three consultants within the region, but no registrars, have achieved level 1 competency in performing TUSS. In four hospitals TUSS was supervised by radiologists, two hospitals had radiographer supervision, two had respiratory consultants with level 1 USS competency and one hospital had consultants without competency. In three hospitals TUSS was not supervised (fig 1). Three hospitals had secured funding for an ultrasound training course from their trust. One hospital used the NPSA alert to obtain this. Two respondents commented on difficulty in obtaining funding for a formal training programme; indeed, one hospital quoted that they had been told it was "not a management priority" but had developed a strategy for informal training. Seven hospitals did not have a strategy in place or funding at this time.
Conclusions At present there is a significant variability in availability of TUSS within respiratory departments and there is a need to standardise training strategies and opportunities to obtain competencies in the region. Given problems with management support and funding opportunities, locally determined solutions are required in the short term but there is a need for regional leadership on the issue. In light of the recent NPSA alert, there is an urgent need for investment in TUSS training and machine availability within hospitals.

1. **National Patient Safety Agency**. NPSA/2008/RRR003.



Abstract P195 Figure 1 Supervision of thoracic ultrasound.