Occupational lung disease

[1]C M Barber, [1]C M Burton, [2]D J Hendrick, [3]C A C Pickering, [4]A S Robertson, [5]W Robertson, [4]P S Burge. [1]*Centre for Workplace Health, Buxton, UK;* [2]*University of Newcastle, Newcastle, UK;* [3]*Wythenshawe Hospital, Manchester, UK;* [4]*Heart of England Hospital, Birmingham, UK;* [5]*University of Warwick, Coventry, UK*

Introduction and objectives Although a number of case definitions for MWF EAA have been used in previous outbreaks, none has emerged as an evidence-based standard. This study used data from a large UK MWF outbreak investigation, to develop and validate a new case definition for MWF EAA.

Methods Demographic and clinical data from the 37 workers with suspected EAA during a large outbreak were reviewed by an Expert Panel. A new case definition for MWF EAA was developed using significant differences between workers with and without definite clinical EAA. This MWF EAA Score was modelled to match Expert Panel opinion as closely as possible, and used clinical criteria relatively weighted by their positive predictive value for EAA in the outbreak. The performance of the new scoring system was compared with other existing case definitions, and applied to 50 cases of MWF-EAA from nine published US outbreaks.

Results The MWF EAA Score is shown in Abstract S1 table 1, where the highest score is applied in each section. A score of >26 represents definite EAA, 19–26 possible EAA, and <19 not a case of EAA. When applied to the 37 workers, the MWF EAA Score showed good correlation (coefficient=0.85) with the Expert Panel Score (per cent likelihood of EAA), and agreed with the Expert Panel opinion in 81% of cases. The MWF EAA Score appeared to perform well when compared with other established case definitions, and when applied to 50 US cases of MWF EAA.

Abstract S1 Table 1   MWF EAA Score for workers with suspected EAA during MWF outbreaks

Respiratory symptoms	
Work-related cough/wheeze/sob/chest tightness	+4
Stopping for breath when walking at own pace on level ground	+6
Previous time off work with any chest illness	+7
Constitutional symptoms	
Recurrent flu-like symptoms worse at the end of the working week	+5
Unexplained weight loss	+7
Physiology	
FVC <80% predicted	+3
FVC <70% predicted or Tlco <80% predicted	+5
Tlco <60% predicted	+10
Radiology/clinical examination	
Abnormal CXR (diffuse ground glass or nodularity)	+6
Abnormal HRCT (ground glass, nodularity, mosaic, or UIP fibrosis)	+7
Fine end-inspiratory crepitations on auscultation	+7
Evidence of inflammation	
Neutrophilia >7 or CRP ≥10	+5
BAL lymphocytosis ≥20%	+8
Lung biopsy typical of EAA (sub-acute EAA or UIP)	+10
Total (max 41)	/41

Conclusions Although difficult to truly validate, the MWF EAA Score offers a weighted and evidence-based case definition for workers suspected of suffering from EAA in MWF outbreaks. If adopted as a standard, the MWF EAA score will facilitate comparison of the findings from future outbreaks, in terms of risk factors and causation of this interesting disease.

[1]E Pickles, [2]J Szram, [1]S J Schofield, [1]A P M Woods, [1]P Cullinan. [1]*Imperial College, London, UK;* [2]*Royal Brompton and Harefield NHS Foundation Trust, London, UK*

Most COPD is attributable to smoking, however evidence from workforce and general population studies suggest that occupational exposure is also associated with the disease. This study examines the relationship between respiratory symptoms, doctor-diagnosed COPD and occupational exposure in a general UK population. Lifetime occupational and smoking history, doctor-diagnosed disease and current respiratory symptoms were collected by postal questionnaire in a cohort of subjects aged 51–60, recruited from 33 general practices in Kent; here we present the results in men (n=3011). Occupations were defined *a priori* as being associated with an increased risk of COPD using 13 job categories as defined for the European Community Respiratory Health Survey[1]; all other occupations were designated low risk (referent). Logistic regression in men with complete data and no history of asthma (n=2452) demonstrated a statistically significant increase in both the odds of breathlessness (modified MRC score 1 or greater, Abstract S2 table 1) and breathlessness reported along with symptoms of chronic bronchitis (data not shown) in subjects who had a history of ever having been employed in a risky job, compared to other referent (mainly white collar) workers. This association, between work in

Abstract S2 Table 1 Logistic regression: relationship between breathlessness in men and ever working in an occupational group with an *a priori* risk of COPD (as defined for the ECRHS) compared to referent occupations

ECRHS occupational groups at risk of COPD	Total (n)	Subjects reporting breathlessness (n, %)	Crude OR (95%CI)	Adjusted* OR (95%CI)	p
Referent occupations	654	84 (12.8)	1.0	1.0	na
Ever working in an at risk job	1798	379 (21.1)	1.81 (1.40 to 2.34)	1.57 (1.21 to 2.04)	0.001
Cleaning	120	38 (31.7)	3.14 (2.00 to 4.92)	2.62 (1.64 to 4.17)	<0.001
Painting	88	26 (29.6)	2.85 (1.70 to 4.75)	2.22 (1.30 to 3.80)	0.003
Agriculture	190	53 (27.9)	2.63 (1.78 to 3.88)	2.31 (1.54 to 3.45)	<0.001
Transport	566	151 (26.7)	2.47 (1.84 to 3.32)	2.07 (1.52 to 2.81)	<0.001
Food	128	34 (26.6)	2.45 (1.56 to 3.87)	1.96 (1.20 to 3.2)	0.007
Healthcare	126	30 (23.8)	2.12 (1.33 to 3.39)	1.96 (1.21 to 3.16)	0.006
Other manual work	307	76 (24.8)	2.23 (1.58 to 3.12)	1.81 (1.26 to 2.60)	0.001
Wood	234	54 (23.1)	2.04 (1.39 to 2.98)	1.81 (1.23 to 2.68)	0.003
Construction	389	92 (23.7)	2.10 (1.52 to 2.92)	1.73 (1.23 to 2.43)	0.002
Mining	378	81 (21.4)	1.85 (1.32 to 2.59)	1.44 (1.01 to 2.04)	0.045
Metal industries	586	113 (19.3)	1.62 (1.19 to 2.20)	1.38 (1.00 to 1.89)	0.048
Electrical	293	51 (17.4)	1.43 (0.98 to 2.09)	1.32 (0.90 to 1.94)	0.159
Chemical	110	15 (13.6)	1.07 (0.59 to 1.93)	0.82 (0.51 to 1.71)	0.822

Crude ORs and *adjusted for age and smoking (by pack year history) are shown.