Abstract S87 Table 1

	A Media	BL Media	A CSE	BL CSE	A LPS	BL LPS	A CSE & LPS	BL CSE & LPS
NS IL-8 [pg/ml]	24060±2514	34490±3260	36193±3755	29417±2352	34166±3347	36969±5019	43031±3211*	43890±5257
HS IL-8 [pg/ml]	28728±2422	22903±3500	41908±3269	27995±4233	37298±3052	33298±5856	39952±3131	34095±5634
COPD IL-8 [pg/ml]	32163±2474	43768±8730	24376±2474*	21994±4176*	44092±3247	54604±11363	20866±1564*	27180±4680*
NS IL-6 [pg/ml]	227±32	735±98	253±35	678±106	391±53	633±68	469±48*	714±107
HS IL-6 [pg/ml]	289±48	518±102	285±53	418±86	447±77	487±125	536±55*	884±169*
COPD IL-6 [pg/ml]	432±128	846±235	300±89	728±113	680±139	1012±186	324±43	578±92

IL-8 and IL-6 release from well differentiated bronchial epithelial cell cultures into apical and basolateral compartments after stimulation with PA LPS±pre-treatment with 5% CSE for 24 h. NS: Non-smoker; HS: Healthy Smoker; A: Apical; BL: Basolateral.
Media: No stimulation; CSE: Stimulation with 5% CSE 24 h; LPS: Stimulation with PA LPS 24 h; CSE & LPS: Pre-treatment with 5% CSE 24 h, stimulation with PA LPS 24 h.
* Statistically significant difference for soluble mediator release into a given compartment within each study group relative to the equivalent compartment without stimulation; $p<0.05$.

phosphorylation patterns of oncoproteins in small clinical samples. Therefore we developed an exquisitely sensitive capillary is oelectric focusing immunoassay (cIEF) method for discriminating phosphorylated isoforms of ERK and AKT in lung tissue.

Methods Participants undergoing curative resection for early stage NSCLC were recruited. Samples from normal lung and tumour tissue were taken shortly after resection and analysed using cIEF.

Results Twenty patients were recruited (12 male, 8 female), mean age 67.3 years (SD 7.5), 10 current and 10 former smokers with a mean smoking exposure of 48.4 pack years (SD 24.4). Tumour tissue (9 squamous and 11 adenocarcinoma) was collected and paired macroscopically normal lung that was histologically normal (n=7) or showed emphysema (n=13), graded pathologically as mild (n=7), moderate (n=3) or severe (n=3). The coefficient of variance was 7.6% for ERK and 4.2% for the AKT assay. The limits of detection and quantification were 8ng and 16ng of total protein respectively.

Diphosphorylated ERK (active form) was nearly three-fold higher in emphysematous lung tissue than normal lung tissue ($p=0.002$) and was associated with pathological severity of emphysema. In contrast, diphosphorylated ERK did not differ between paired normal lung and tumour ($p=0.45$) and there was no correlation of ERK status with age, gender, smoking status, tumour site, histology or stage. AKT was significantly more phosphorylated in tumour than matched normal lung. There was a trend for more phosphorylated AKT with poor differentiation but no correlation with tumour histology, size, site or stage of disease. Current smokers had more phosphorylated AKT than ex-smokers. There was no difference in the phosphorylation patterns of AKT according to age, gender or emphysema status.

Conclusions We found a strong relationship between diphosphorylated ERK and emphysema. By contrast, AKT phosphostatus was associated with lung cancer but not with emphysema. The requirement for just nanograms of protein defines the potential of this technique for determining the phosphostatus of oncogenic signalling proteins in tiny clinical samples.

S89 EPITHELIAL MESENCHYMAL TRANSITION (EMT) IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) AIRWAYS IS ATTENUATED BY INHALED CORTICOSTEROIDS (ICS)

doi:10.1136/thoraxjnl-2012-202678.095

[1]Sukhwinder Singh Sohal, [1]Amir Soltani, [2]David Reid, [3]Chris Ward, [1]Steven Weston, [1]Hans Konrad Muller, [1]Richard Wood-Baker, [1]Eugene Haydn Walters. *[1]NHMRC Centre of Research Excellence in Chronic Respiratory Disease, School of Medicine, University of Tasmania, Hobart, Australia; [2]Iron Metabolism Laboratory, Queensland Institute of Medical Research, Queensland, Australia. [3]Institute of Cellular Medicine, Newcastle University, Newcastle Upon Tyne, United Kingdom*

Introduction and Objectives We recently reported[1, 2] that EMT is active in the airways of COPD patients; in this process epithelial cells change shape and become motile, then digest through the reticular basement membrane (Rbm) which becomes fragmented and transition to a mesenchymal fibroblast-like cell. We also demonstrated that the Rbm is hyper-vascular, a combined picture specifically suggesting active EMT-type-III, which is a dangerous, pre-malignant condition. This may well be the link between COPD and lung cancer. In this study, we have assessed the effects of ICS on markers of EMT in endobronchial biopsies (ebb) in COPD.

Methods A double-blinded, randomised, placebo-controlled study assessed the effects of inhaled fluticasone propionate (FP: 500µg twice daily) on EMT in 34 COPD patients. Ebb were assessed for EMT related Rbm fragmentation (core structural marker) and immunostained for the EMT signatures S100A4 (a fibroblast epitope), matrix-metalloproteinase-9 (MMP-9) and the epithelial activation marker, epidermal growth factor receptor (EGFR).

Results Table 1.

Conclusions This is the first study to report the positive effects of ICS on EMT markers in COPD. This may be the mechanistic link between ICS and its reported preventive action against smoking-related lung cancer in COPD.

References

1. Sohal SS, et al. *Respirology* 2010, **15**(6):930–938.
2. Sohal SS, et al. *Respir Res* 2011, **12**(1):130.

Improving lung cancer survival

S90 THE NATIONAL LUNG CANCER AUDIT – NO EVIDENCE OF A "SEVEN-YEAR ITCH"

doi:10.1136/thoraxjnl-2012-202678.096

[1]P Beckett, [1]MD Peake, [1]I Woolhouse, [2]R Stanley. *[1]Royal College of Physicians, London, England; [2]The Information Centre for health and social care, Leeds, England*

Introduction The National Lung Cancer Audit, now in its7th year, is run jointly by the Royal College of Physicians and The Information Centre for health and social care, and is commissioned by the Healthcare Quality Improvement Partnership (HQIP). Its development was driven by the realisation that lung cancer outcomes vary widely across the UK and are poor compared to other western

Abstract S89 Table 1 Comparison of different indices at baseline and after treatment between the two groups. Data expressed as medians and ranges

Markers	Placebo		Fluticasone Propionate	
Comparison	Before	After	Before	After
% Rbm fragmentation	24(6–100)*	26(2–48)	19(0.2–42)	2(0–88) †!♦
S100A4 positive cells in basal epithelium (BE) per mm of Rbm	19(2–31)*	17(10–35)	25(2–55)	12(0.6–24) †!
S100A4 positive cells in Rbm per mm of Rbm	23(14–82)*	29(3–48)	44(15–92)	20(2–60) †!
MMP-9 positive cells in Rbm clefts per mm of Rbm	11(0–41)*	13(0–27)	5(0–43)	0(0–6)†♦
EGFR % in the epithelium	14(3–38)*	10(1–39)	34(14–59)	5(2–43) †!♦

*No significant difference at baseline between placebo/ICS groups, but all significantly different to normal controls at baseline ($p<0.007$).
Significant differences: † Change within ICS group ($p<0.003$); !changes over time with ICS compared to those on placebo for Rbm fragmentation ($p<0.04$); S100A4 in BE ($p<0.009$) and Rbm ($p<0.002$); EGFR ($p<0.02$).
♦No significant difference after the treatment compared to normal controls.

countries. The aim of the audit is to facilitate service improvement by recording elements of process and outcomes in lung cancer on a large scale and, using case-mix adjustment, to explain the wide variations noted and improve standards of care. Although several other countries also submit data to the audit, this abstract presents provisional results for UK only.

Results In this 7th year of data collection, 31,429 patient records were submitted, making it the most comprehensive annual dataset so far, with year on year improvements in the quality of the data on individual cases. Full details are given in Table 1. Whilst the histological confirmation rate has fallen slightly, it remains well above that recorded in early years. The surgical resection rate has risen and in those patients with NSCLC has gone above 20% for the first time. Almost 80% of patients benefit from the input of a specialist nurses, although in only 60% of cases is the nurse present at the time of diagnosis.

Our final presentation will contain further analyses of survival across the audit lifespan.

Conclusions This new data provides further evidence of rising standards of care in England, which in some cases now approach those quoted by other international groups. Far from seeing a "Seven Year Itch", the enthusiasm of lung cancer teams continues to produce cancer audit of a standard that is the envy of other groups both nationally and internationally. Major changes in the recording of cancer intelligence in England, such as the mandated Cancer Outcomes and Services Dataset (COSD), will have significant implications for the future role of the audit and work is ongoing to ensure that the data collected continues to be appropriate and relevant.

S91 IMPROVED LUNG CANCER SURVIVAL AND REDUCED EMERGENCY DIAGNOSES RESULTING FROM AN EARLY DIAGNOSIS CAMPAIGN IN LEEDS 2011

doi:10.1136/thoraxjnl-2012-202678.097

[1]L Cheyne, [1]C Foster, [2]V Lovatt, [1]F Hewitt, [1]L Cresswell, [2]B Fullard, [2]J Fear, [1]M Darby, [1]R Robertson, [1]PK Plant, [1]R Milton, [1]MEJ Callister. *[1]The Leeds Teaching Hospitals NHS Trust, Leeds, UK; [2]NHS Leeds, Leeds, UK*

Background Lung cancer survival in the UK lags behind other developed nations, and excess early deaths following diagnosis

Abstract S90 Table 1 Headline Results by Year

Data Completeness							
	2005	2006	2007	2008	2009	2010	2011
Number of cases	10,920	16,922	20,639	25,757	30,158	30,329	31,429
PS	66%	77%	80%	87%	88%	84%	89%
Staging	51%	55%	70%	77%	80%	82%	84%
Treatment	66%	72%	79%	82%	89%	89%	91%
Process and Outcomes							
	2005	2006	2007	2008	2009	2010	2011
Confirmed Histological diagnosis	68%	66%	65%	66.7%	69.5%	76.5%	73.8%
Histology NSCLC	44.8%	43.9%	45.5%	52.2%	56%	57%	58.4%
Histology SCLC	10.3%	10%	9.6%	10.3%	10.5%	10.9%	11.1%
Histology Mesothelioma	3.7%	3.5%	4.2%	4.4%	5.0%	5.5%	5.2%
NSCLC NOS rate	-	36%	32%	33.6%	30%	24%	***TBC**
Discussed at MDT?	79%	84.3%	86.8%	88.6%	93.2%	96.1%	95.9%
Any anti-cancer treatment?	45%	50%	52%	54%	58.9%	58.5%	60.5%
Overall surgical resection rate	9%	9.4%	10.3%	11.2%	13.9%	13.9%	15.3%
NSCLC resection rate	13.8%	14.3%	15.2%	16%	19%	18.3%	21%
SCLC chemotherapy rate	57.7%	61.7%	64.5%	63%	66%	65%	68%
1 year survival	35.5%	35.0%	34.6%	34.7%	35.2%	35.8%	***TBC**
Seen by LCNS	-	-	-	50.9%	64.4%	75.5%	79.4%
LCNS at diagnosis	-	-	-	28.5%	41%	51.9%	58.7%

*TBC=to be confirmed; LCNS=lung cancer specialist nurse; NOS=not otherwise specified.