smoking habit. A number of point-of-care urine cotinine tests are used to validate self-reported smoking and in some instances, provide feedback to improve smoking cessation. Urine testing is inappropriate in some instances, and while saliva testing is more acceptable, it is more difficult because cotinine is in lower concentrations compared to urine. A prototype saliva test was developed and evaluated, but the colorimetric assay was deemed inadequate. A new, more sensitive assay has been developed and evaluated in a group of healthy volunteers.

Method Volunteers (n=117), aged between 22 and 67 years (36% female), including 61 smokers with a cigarette consumption of five or more cigarettes/day, (mean 16.0), provided a saliva sample using a manufactured collecting device. One ml of saliva was eluted using the test's fixed-volume syringe. The sample was introduced onto freeze-dried reagents and quickly shaken. A sample positive for nicotine metabolites would be expected to turn pink within 1 min, but 4 min were allowed for full colour development. The resultant colour was compared with a four-point colour chart and the level of smoking recorded. Samples from non-smokers should remain unchanged.

Results A positive colour change wasobtained from 56 of the 61 smokers and a negative result from 54 of the 56 non-smokers, giving a sensitivity of 92% and specificity of 96%. The semi-quantitative results correlated with daily cigarette consumption; with light smokers (5–10 per day, n=15) mean 2.3, 11–15 per day (n=14) mean 2.8, 16–20 per day (n=19) 3.4 and more than 20 per day (n=8) mean 3.0 ($p<0.05$).

Discussion The new test was found to be superior to the prototype, being quicker and the final colour easier to read. The saliva collection device was also an improvement on previous methods. The sensitivity and specificity were comparable with the other commercial saliva cotinine test available. A dedicated colorimeter to quantify the result is under development. This test could be an important adjunct for treating smoking-related disease.

P189 SMOKING STATUS PREDICTS BENEFIT FROM BREATHING RETRAINING FOR HYPERVENTILATION

doi:10.1136/thx.2010.151043.40

C A Maguire, A G Robson, J Pentland, D McAllister, J A Innes. *Respiratory Function Service and Dept of Physiotherapy, Royal Infirmary and Western General Hospital, Edinburgh, UK*

Introduction Hyperventilation syndrome has a prevalence of 6–11% in primary care, and can be treated via breathing retraining. Breathing retraining reduces hyperventilation and improves symptoms. However, it is staffing intensive. Therefore, we examined which patient characteristics are associated with benefit from breathing retraining.

Method Retrospectively, we identified 201 consecutive patients referred to the breathing retraining service (February 2003 to June 2009) at a single site. Treatment efficacy was assessed by the treating physiotherapist according to resolution of symptoms. Success was defined as complete or near complete resolution of symptoms at the end of the breathing retraining period. Height, age, sex, smoking status, ethnicity, hyperventilation type (acute or chronic), restrictive/obstructive spirometry and known cardio/respiratory disease were also recorded. Patient characteristics were compared by treatment efficacy using χ^2 tests and *t*-tests, and logistic regression was used to identify which characteristics were independently associated with treatment efficacy.

Results The mean (SD) age was 50.9 (15.5) years. 38.3% were male and 31% had acute hyperventilation. 15.9% had obstructive and 10.5% had restrictive spirometry. 46.3% had known cardiovascular or respiratory disease. 61 patients overall benefited from breathing retraining. Current smokers were much less likely to benefit from breathing retraining compared to non-smokers (1 in 16.5 vs 1 in 2.4, $p=<0.01$). This association persisted after adjusting for the above patient characteristics. Ex-smokers had a similar probability of benefiting to that of non-smokers (1 in 3). Known cardio-respiratory disease was also independently associated with a lower odds of benefiting. The ORs for successful breathing retraining are shown for each predictor in the Abstract P189 Table 1. None of the remaining characteristics were associated with treatment efficacy.

Abstract P189 Table 1

Characteristic	OROR (Odds of benefit from breathing retraining)	95% CI of OR	p Value
Age (per 10 years)	1.12	0.87 to 1.45	0.39
Men	0.37	0.13 to 0.99	0.05
Nijmegen score	0.97	0.94 to 1.01	0.11
Cardio/respiratory disease	0.49	0.24 to 0.98	0.05
Spirometry			0.22
Obstructive	2.41	0.88 to 6.63	
Restrictive	1.07	0.33 to 3.16	
Smoking status			<0.001
Ex-smoker	0.60	0.27 to 1.33	
Current smoker	0.08	0.01 to 0.33	

Conclusion Our sample size was comparatively small as reflected in the wide CI, and the outcome measure was subjective. Nevertheless, smoking status is strongly associated with physiotherapist-assessed treatment efficacy following breathing retraining. Smokers, but not-ex-smokers are much less likely to benefit from breathing retraining. Therefore referral for smoking cessation rather than breathing retraining may be more appropriate in this patient group. It was not possible to assess long term benefit from this retrospective study.

P190 ATTITUDES OF HEALTH CARE PROFESSIONALS TOWARDS SMOKING CESSATION

doi:10.1136/thx.2010.151043.41

S Pearce, J Maycock, C McCauley, D Nazareth, P Stockton. *St Helen's and Knowsley Teaching Hospitals NHS Trust, Prescot, UK*

Background NICE (UK) recommends that all healthcare professionals (HCPs) refer patients who would like to stop smoking to an NHS Stop Smoking Service (SSS).[1] This study explores attitudes of HCPs and factors that may contribute to a low referral rate to SSS.

Methods 164 HCPs (83 doctors, 72 nurses, 9 pharmacists) completed a structured questionnaire exploring reasons as to why they would not refer to smoking cessation services.

Results Smoking cessation was considered to be an important health issue for 95% of respondents, however only 51% routinely asked smokers if they wanted to quit. 37% were not familiar with smoking cessation guidelines (local or national). 40% supported a formal referral system involving a GP and 55% would like more training. The main reasons for NOT referring to SSS are outlined below.

Conclusions The vast majority of HCPs considered smoking cessation to be an important issue. However, a significant proportion of HCPs were unaware of local/national guidelines. This appears tobe a significant barrier to the referral of patients to SSS. Most HCPs would like further targeted training and information. Since this survey the Trust has modified the generic Trust Admission Proforma to prompt HCPs to consider referring to SSS. Teaching sessions have been introduced for HCPs to enable them to deliver accurate stop smoking information to smokers.

Abstract P190 Table 1 Reasons for NOT referring to Stop Smoking Service

Reason	Agree (%)	Disagree (%)
It comes down to individual motivation	60	21
Insufficient information and training	37	37
Lack of time of HCP	19	62
Patients will restart later after referred	15	53
Not part of my job	12	66
Previous patients have failed to attend appointments	12	49

REFERENCE

1. NICE Guidance: Brief interventions and referral for smoking cessationin primary care and other settings, March 2006.

Clinical studies in lung cancer

P191 DEVELOPMENT OF A NEW PATIENT REPORTED EXPERIENCE MEASURE FOR THE IMPROVING LUNG CANCER OUTCOMES PROJECT

doi:10.1136/thx.2010.151043.42

[1]S Christie, [2]N Bell, [3]T Malinowski, [4]A Roberts, [4]I Woolhouse. *[1]Roy Castle Lung Cancer Foundation, Glasgow, UK; [2]National Lung Cancer Forum for Nurses, UK; [3]MacMillan Cancer Support, London, UK; [4]Royal College of Physicians, London, UK*

Background Lung cancer survival rates are poor and the vast majority of patients receive palliative treatment only. Assessment of the patient experience is extremely important in this group, however relatively little is currently known in this area. For the first time at a national level the Improving Lung Cancer Outcomes Project (ILCOP) will collect patient reported experience data using a tool designed specifically for lung cancer patients. We describe the development of this measure, in particular the key areas of the patient experience as identified by lung cancer patients and carers.
Methods The views of a wide range of lung cancer patients and carers on their healthcare experience from diagnosis through to treatment were obtained by the Roy Castle Lung Cancer Foundation and the National Lung Cancer Forum for Nurses via telephone interviews, email and postal questionnaires, and a targeted focus group. Key themes were identified and mapped to previously validated questions from the national cancer survey (with permission of Picker Institute). Macmillan Cancer Support advised on questionnaire design and the final version was tested by a further group of patients.
Results The key areas of the patient experience were reported as communication, privacy, respect and dignity, support for emotional and physical symptoms, and information. These domains were mapped to 12 multiple choice type questions from the national cancer survey. Two free text questions relating to areas of good practice and areas for improvement were added. Testing demonstrated that the questionnaire was straightforward, easy to understand and covered the areas that were most important to patients and carers. The six questionnaires sent out in the pilot phase were completed appropriately and returned the correct address.
Conclusions We have identified the key areas of the patient experience for a wide range of lung cancer patients and carers which we have successfully incorporated into a new lung cancer patient reported experience measure. In addition to guiding quality improvement work in the national ILCOP, this questionnaire could be used by local lung cancer teams to assess the patient experience at trust level.

P192 FIBREOPTIC BRONCHOSCOPIC INSERTION OF THE GIANTURCO STENT FOR TRACHEOBRONCHIAL OBSTRUCTION IN PATIENTS WITH CANCER AT A LUNG CANCER TERTIARY REFERRAL CENTRE: 20 YEAR EXPERIENCE

doi:10.1136/thx.2010.151043.43

A Collins, T Jordan, M Ledson, M Walshaw. *Liverpool Heart and Chest Hospital, Liverpool, UK*

Background Lung cancer is the commonest form of malignant disease in the Western World, and 95% of patients die within 5 years of presentation. Palliation of symptoms is therefore an important aspect of the treatment: up to 30% will develop large airway obstruction due to tumour with ensuing distressing breathlessness and this may be life threatening. Protection of the airway by stenting may be difficult and is traditionally carried out under general anaesthesia and fluoroscopy. In our regional unit we have developed a service for the insertion of self-expanding Gianturco stents under local anaesthesia using the fibreoptic bronchoscope (FOB) and direct vision for the treatment of malignant airway tumours, and we now report our 20-year experience.
Methods A review of all stenting procedures carried out in our unit between 1990 and 2009, looking for tumour type, number and site of stents, procedure complications, and survival.
Results 236 patients (mean age 64 years (range 21–89)) had 414 stents inserted during 242 procedures (mean 1.7 stents/procedure (1–4)); 184 patients for primary lung tumours (49% squamous cell, 25% small cell, 15% adenocarcinoma, 11% unknown), 33 for secondary malignancy, and four for benign conditions (following fully informed consent). There were no operative deaths, but four patients developed a pneumothorax, three haemoptysis, and two procedure-related chest infections. Mean survival of patients with primary lung cancer improved from 103 days (range 1–488) between 1990 and 1999 to 150 days (5–910) between 2000 and 2009.
Conclusion We conclude that Gianturco stents are safe in relieving malignant airway obstruction, with a low complication rate: higher complication rates reported in others studies may be due to poor patient selection or stent placement. Survival improved in our patients over time, suggesting better patient selection or improvement in coexisting treatment modalities (eg, oral chemotherapy and palliative care). Our technique of endobronchial stent insertion using FOB is simple and effective without the need for thoracic surgical facilities, and we therefore recommend its use to other clinicians who are charged with treating patients with this common and distressing disease.

Abstract P192 Table 1 Site of airway narrowing, stent insertion and size

Site	No. of pts	Stent size 20–25	Stent size 20–50	Stent size 30–25	Stent size 30–50
T	65	4	14	20	75
RMB or LMB	109	27	108	3	17
T and LMB	16	3	17	2	17
T and RMB	11	4	6	3	7
RMB and LMB	14	11	22	3	3
T and both B	10	2	18	3	10

T, Trachea; RMB, Right main bronchus; LMB, left main bronchus; B, Bronchi.