due to lack of opportunity due to reduction in hours or other factors is uncertain. This may represent a significant risk for patients presenting out of hours who require an emergency pleural procedure.

P33 THORACIC ULTRASOUND TRAINING: HOW ARE WE DOING?—A NATIONAL WEB-BASED SURVEY

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Introduction The 2010 British Thoracic Society guidelines strongly recommend the use of thoracic ultrasound for the investigation and management of pleural disease. Respiratory specialty trainees are expected to achieve level 1 competency in ultrasound by completion of training. There is a paucity of data on the current level of training, availability of teaching and achievement of competency in thoracic ultrasound. We conducted a national web-based survey among respiratory trainees to assess the current availability of training and competency in thoracic ultrasound.

Method A web-based survey was designed using the Kwik Surveys tool. The survey link was emailed to speciality trainees across all 16 deaneries in the UK. Data were collected on year of training, current placement, availability of ultrasound on the ward, dedicated training sessions and training mentors, current competency level, maintenance of a log book and the frequency of complications encountered despite using ultrasound.

Results A total of 170 trainees from all deaneries responded. The level of specialty training was equivalent when stratified by year of training and around half of responders were in teaching hospitals. Nearly three-quarters had access to ultrasound on the ward: there was no difference when stratified by teaching hospital. Three-quarters had attended an ultrasound course. Only 16% of trainees have regular dedicated training sessions, with significantly more in teaching hospitals (p=0.04). Nearly 60% did not have a training mentor. Overall 29% of responders have achieved level 1 competency but 11% stated they were unable to use ultrasound at all (there was no difference when stratified by grade). Over a third of trainees do not maintain a logbook. The complication rate despite using ultrasound was <10%.

Conclusions The majority of specialty trainees have access to ultrasound on the ward and have attended a thoracic ultrasound training course. However, it is concerning that very few trainees have a regular dedicated ultrasound training session or a training mentor. If all trainees are to achieve level one competency by the completion of specialty training, there needs to be more importance placed on practical training and the maintenance of a log book.

Abstract P33 Table 1

	District General (n=69)		Teaching Hospital (n=83)		
	Yes	No	Yes	No	
Access to ultrasound on the ward	59 (73%)	22 (27%)	67 (75%)	22 (25%)	χ^2=0.13 p=0.72
Regular dedicated ultrasound training session	8 (10%)	73 (90%)	19 (21%)	70 (79%)	**χ^2=4.18 p=0.04**
Ultrasound training mentor	27 (33%)	54 (67%)	39 (46%)	50 (56%)	χ^2=1.96 p=0.16

P34 ARE NURSING STAFF SUFFICIENTLY EDUCATED AND COMPETENT IN MANAGING PATIENTS WITH A CHEST DRAIN?

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Background The British Thoracic Society recommends that patients with chest drains should be nursed on a ward familiar with their care. Instruction from doctors and appropriate training of nursing staff is imperative to minimise complications associated with chest drains. Our audit aimed to determine the nurses' level of knowledge regarding chest drain management and the support and direction provided by doctors following drain insertion.

Methods We undertook a prospective case-note audit of chest drain insertion, management and complication rates. In addition we interviewed 100 nurses across medical wards familiar with chest drains, and they undertook a structured questionnaire about training, knowledge and confidence in chest drain care.

Results 29 chest drains were inserted. 65% patients suffered no complications but 25% patients reported pain during or following drain insertion. Potential for serious incidents was high; 20% of effusions drained >2 l within the first hour and 10% of pneumothoraces were clamped following insertion. Although all nurses reported to have managed a drain only 12% had received formal training and only 34% felt confident in managing a drain. Complication rates correlated with nurses' responses; 34% believed pain-relief was only indicated following insertion; 8% would clamp a drain inserted for a pneumothorax, while 20% were unsure whether a pneumothorax drain should be clamped; 16% believed pleural effusion drains should never be clamped, while 28% were unsure. Of those who believed an effusion drain should be clamped, 29% felt this was indicated after >2 l was drained within the first hour. Of concern, nurses on respiratory wards appeared to have limited knowledge of drain management. 78% of nurses felt poor instruction was provided by ward doctors with regard to chest drain management.

Conclusions Lack of evidence-based nursing care and insufficient training has resulted in uncertainty and knowledge deficit in important aspects of chest drain care, exposing patients to avoidable complications. Poor instructions to nurses from doctors following drain insertion further compromises patient care. A carefully designed and implemented care bundle to guide nurses through drain management could significantly lower post-insertion complications; an example has been rolled out and is illustrated.

P35 PRIMARY SPONTANEOUS PNEUMOTHORAX: ADHERENCE TO GUIDELINES AND HEALTHCARE ECONOMIC IMPLICATIONS

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Introduction International guidelines for the management Primary spontaneous pneumothorax (PSP) vary on the definition of size, and treatment of PSP. The American consensus based ACCP guidelines recommend removal of air via an intercostal drain (ICD) in large PSP, and the BTS guidance suggest needle aspiration (NA) first, with quoted success rates of 30%–80%.[1] In 2005/6 there were 5954 finished consultant episodes for PSP in England.[2]

Methods We performed a retrospective audit of PSP presenting to the Emergency Department (ED) over a 24-month period. Electronic

patient records (ED and inpatient) were keyword searched for "pneumothorax" and x-rays were interrogated. We used HRG code DZ26B ("Pneumothorax without complications"), with a tariff of £1840.83 per episode to calculate cost implications. Measure of agreement of PSP size was assessed with Cohen's κ.

Results 43 confirmed pneumothorax cases were identified, 37 PSP. Of those with PSP: mean (SD) age was 28 (6.9) years, 31 (84%) were male, 23 (62%) were right sided. See Abstract P35 table 1 for assessment of PSP size. 21 (56.8%) had NA, successfully in 8 (38%). 17 (46%) patients had an ICD placed; 12 (70.6%) with <14F drains. Median length of stay following ICD was 5 (IQR 2–12) days. 28 (75.6%) had appropriate adherence to BTS guidelines (4 (10.8%) were not aspirated, 5 (13.5%) had a large, rather than small, ICD). 14 (37.8%) patients were sent for thoracoscopic surgery (on site), 4 (9.2%) PSP not resolving, 10 due to ipsi-, or contralateral, reoccurrence of PSP. If Nationally 10% of patients do not have NA as first line treatment, then (assuming a 40% success rate), this may be costing the NHS in England up to £438 412 a year in preventable admissions. Adherence to ACCP guidance would cost the NHS in England an extra £3.9 million in additional ICDs and hospital admissions.

Abstract P35 Table 1 Assessment, and agreement, of PSP size

Guideline	Measurement	Large n=(%)	κ
BTS	Interpleural space >2 cm at level of hilum	15 (40.5)	
ACCP	Interpleural space >3 cm from apex	30 (81.1)	0.275

ACCP, American College of Chest Physicians; BTS, British Thoracic Society.

Conclusions ACCP and BTS guidance on PSP size have only poor-fair agreement. Local practice to increase NA rates and use of small drains should be adopted. Adherence to appropriate National guidelines has large healthcare economic implications.

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P36 RESPIRATORY FUNCTIONAL STATUS AFTER INTRAPLEURAL T-PA ADMINISTRATION FOR COMPLICATED PARAPNEUMONIC EFFUSIONS

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Introduction and Objectives In a large-scale, multicentered randomised trial, intrapleural administration of streptokinase has been proved unsuccessful among patients with pleural infection but >80% of them had visibly purulent pleural fluid while small bore chest tubes (median diameter: 12F) had been used. The aim of our study was to investigate lung function and exercise capacity after intrapleural administration of recombinant tissue plasminogen activator (t-PA) in adult patients with complicated parapneumonic pleural effusion (CPE).

Methods Fifteen consecutive patients (mean age 50.2±19.3 years) with CPE were included. Chest tube (13 patients: 32F, 2 patients: 10F) was inserted under guidance of computed tomography and all patients received IV antibiotics. After pleural fluid drainage has been stopped for 24 h, 25 mg t-PA/day was administered via chest tube for two consecutive days. We evaluated patients with spirometry before t-PA, 1 day after chest tube removal and 1 month after discharge. During the second and third time-point evaluations, 6 min walking test was also performed.

Results Patients reported symptoms 10.7±7.4 days before hospital admission while all of them demonstrated loculated effusions on computed tomography. The mean production of fluid was 721.3±821.7 ml before and 1.500±107.1 ml after t-PA administration ($p<0.001$). Improvement in lung function and exercise capacity during follow-up are presented on Abstract P36 table 1. FVC had been increased by 572.6±653.5 ml initially and by 575.8±366.6 ml 1 month later. VATS was necessary only for one patient. Adverse events were pain (7/15) and minor bleeding (2/15) at the site of chest tube insertion.

Abstract P36 Table 1 Pleural fluid characteristics, lung function and exercise capacity during follow-up

pH	7.22±0.15
Cells (mm^3)	1777±1447
Neutrophils (%)	65.5±12.6
LDH	3120±6097
FVC before t-PA (L)	2.4±0.73 (51.6±14.8% pred)
FEV_1 before t-PA (L)	2±0.6 (52.8±16.1% pred)
FVC after tube removal (L)	2.8±0.8 (63.4±13.4% pred)
FEV_1 after tube removal (L)	2.3±0.8 (64.3±17.4% pred)
6 MWT after tube removal (m)	528±116
FVC one month after discharge (L)	3.7±0.8 (83.5±12.2% pred)
FEV_1 one month after discharge (L)	3±0.8 (85.7±17.1% pred)
6 MWT one month after discharge (m)	573.2±83

Conclusion Intrapleural administration of t-PA for CPE was an effective treatment considering functional status of the respiratory system during follow-up.

COPD: a systemic disease or a co-morbid condition?

P37 MUSCLE MASS IN COPD PATIENTS RECEIVING ANGIOTENSIN II RECEPTOR BLOCKERS AND ACE-INHIBITORS

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Background Skeletal muscle dysfunction is well recognised in chronic obstructive pulmonary disease (COPD) and is associated with increased morbidity and mortality. Considerable circumstantial evidence supports a role for renin-angiotensin systems in skeletal muscle turnover. Angiotensin II (ATII) administration causes cachexia through several biological mechanisms. Angiotensin converting enzyme inhibitors (ACE-I) block the conversion of angiotensin I to ATII. Previous pilot studies have shown that the administration of ATII receptor blockers (ARB) or ACE-I to COPD patients may increase quadriceps strength and peak work rate (Andreas *et al*, 2006; Di Marco *et al*, 2010). We hypothesised that in an unselected COPD population referred for pulmonary rehabilitation (PR), those receiving ARB or ACE-I drugs would have preserved muscle mass.

Methods Data from 373 consecutive COPD patients (213M: 160F; mean age 68.3; median FEV_1 41% predicted) referred to an outpatient pulmonary rehabilitation programme were analysed. Patients were divided into those receiving either an ARB or ACE-I and controls (those receiving neither drug). Fat free mass (FFM; measured by bioelectric impedance analysis), incremental shuttle walk