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)	0.275
ACCP	Interpleural space >3 cm from apex	30 (81.1)	

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 1500 ± 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 ($51.6 \pm 14.8\%$ pred)
FEV ₁ before t-PA (L)	2 ± 0.6 ($52.8 \pm 16.1\%$ pred)
FVC after tube removal (L)	2.8 ± 0.8 ($63.4 \pm 13.4\%$ pred)
FEV ₁ after tube removal (L)	2.3 ± 0.8 ($64.3 \pm 17.4\%$ pred)
6 MWT after tube removal (m)	528 ± 116
FVC one month after discharge (L)	3.7 ± 0.8 ($83.5 \pm 12.2\%$ pred)
FEV ₁ one month after discharge (L)	3 ± 0.8 ($85.7 \pm 17.1\%$ 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 FEV₁ 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

(ISW), Chronic Respiratory Disease Questionnaire (CRDQ), MRC Dyspnoea score (MRC) and COPD assessment test (CAT) were measured. Between group differences were compared using Mann–Whitney U or unpaired t-test.

Results Data are presented as median (25th, 75th centiles), and summarised in Abstract P37 table 1. 130 COPD patients from this cohort were taking either an ACE-I (n=82), ARB (n=45) or both (n=3). The groups were matched for gender distribution and long-term oral corticosteroid use. Compared with the control COPD patients, those on ACE-I or ARB were older, had better FEV₁ % predicted but similar ISW, CRDQ, MRC and CAT. However, the patients receiving ACE-I or ARB had significantly higher fat free mass (FFM) and fat free mass index (FFMI).

Abstract P37 Table 1 Mean (SD) or median (27th, 75th centile). p Values represent between group differences (Mann–Whitney or unpaired t-test)

	ARB/ACE-I	No ARB/ACE-I	p Value
Age (years)	71 (64, 78)	67.6 (9.8)	0.004
FEV ₁ (% predicted)	44.5 (32.3, 60.8)	39.0 (26.0, 58.5)	0.007
FFM (kg)	51.1 (11.2)	45.5 (40.1, 52.0)	<0.001
FFMI (kg/m ²)	17.8 (16.0, 19.8)	16.5 (14.9, 18.4)	<0.001
ISWT (m)	140 (60, 250)	160 (80, 280)	0.10
CRDQ	71.5 (55.8, 91.0)	68.0 (56.0, 87.0)	0.45
MRC	4 (3, 5)	4 (3, 5)	0.79
CAT	23.0 (8.0)	22.0 (7.0)	0.76

Conclusions In an unselected COPD cohort referred for pulmonary rehabilitation, patients on ACE-I or ARB appear to have increased muscle mass compared with those receiving neither drug. Future longitudinal studies and randomised controlled trials are required to further define the effect of ACE-I and ARB in COPD.

P38 IS NUTRITIONAL STATUS NEGLECTED IN COPD PATIENTS ADMITTED TO HOSPITAL?

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Introduction and Objectives Targeting nutritional status is a key issue in COPD. Studies have shown increased mortality in patients with low BMI¹ which improves following weight gain.² This study examines whether nutritional status is adequately assessed and acted upon in COPD patients admitted to a DGH.

Method Patients admitted to the RUH, Bath with a COPD exacerbation over a 4-month period were prospectively included. Case notes were reviewed to determine whether BMI had been documented. If a BMI wasn't documented, patients' height and weight was measured allowing calculation of BMI. Notes were also assessed for dietician referrals, nutritional supplement prescription and whether patients had their weight monitored. Length of stay (LOS) and in-hospital survival data were collected.

Results BMI was recorded in 25/51 of the patients included (mean age 74 yrs, 47% male.) In 88% of cases BMI had been estimated not calculated. Of these, 11/25 patients had had their BMI additionally calculated by the study investigators—4/11 patients had been estimated to have a normal BMI when in fact they were underweight. 13/51 patients had a BMI <18. Patients with BMI <18 had a lower percentage predicted FEV₁ (32% vs 52% p=0.02) and a lower Urea level (5.6 mmol/l vs 7.9 mmol/l p=0.04). 1/13 were referred to a dietician, 8/13 were prescribed nutritional supplements and nutrition wasn't addressed in 4/14 patients. Only 4/14 patients had their weight monitored. Patients with a BMI<18 exhibited similar

in-hospital mortality (15.4% vs 18.4%) but had a higher LOS (26.8 days vs 15.5 days p=0.03).

Conclusion BMI measurements were poorly recorded in patients admitted to hospital. Where BMI was recorded this was estimated, rather than calculated, leading to underreporting. Only 71% of patients with low BMIs received dietetic input or nutritional supplementation during their stay. Patients with a low BMI had a significantly longer LOS.

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P39 NUTRITIONAL ASSESSMENTS IN COPD: THE RESPIRATORY NURSE PERSPECTIVE ON CURRENT PRACTICE ACROSS THE UK

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Background Low body mass index (BMI) and weight loss are associated with a poorer prognosis for patients with COPD but are potentially reversible.¹ Nutritional assessments should be key part of patient management and respiratory nurses are in a good position to undertake these. Guidelines¹ recommend referral to a dietician for those patients with an abnormal BMI (<20 or >25) and those with a low BMI given nutritional supplements.

Methodology An electronic survey using closed ended questions was emailed to 533 respiratory nurses in the UK. 177 responses (33%) were returned from across primary, secondary and community sectors. Those nurses not managing COPD patients were asked not to respond.

Results 88% reported using weight and BMI to assess patients, with 85% undertaking an assessment at least once or twice year. Only 32% used any further screening tool. 94% of nurses have access to a dietician and 85% of nurses are able to refer directly, but highlight long waiting times. Despite this, 54% refer less than half of patients they identify with an ongoing nutritional problem. 16% are unable to get nutritional supplements for their patients but, where available, 96% had access to a range of supplements. Reasons cited were the need for a dietician referral first and GPs reluctance to prescribe supplements. 65% reported not having any specific criteria for referral to a dietician and 87% felt a specific simple practical tool would help manage this group of patients. 42% felt overall that malnourished patients were managed poorly in their area (see Abstract P39 table 1).

Abstract P39 Table 1

How well do you feel malnourished patients are managed in you area? (%)			
Very well	Well	Poorly	Very poorly
4.1	54.1	40	1.8

Discussion Respiratory nurses conduct nutritional assessments with COPD patients and the majority appear to have access to a dietician. Yet, despite this, referral to specialist dietetic services is low. This may be due to perceived lack of dietician services or long waiting times. Improved awareness, education and training among respiratory nurses regarding nutritional assessment together with improved access to dietetic services would seem to be priorities for the future in order to meet current recommendations.¹