(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 (25^{th}, 75^{th} 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 FEV_1 % 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 (27^{th}, 75^{th} 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 BMI[1] 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 FEV_1 (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. Guidelines[1] 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 recomendations.[1]

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P40 INCREASED ADVANCED GLYCATION END PRODUCTS IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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Introduction Advanced glycation endproducts (AGE) are markers of glycaemic and oxidative stress, pro-inflammatory and alter structure through collagen cross-linking, formed through the Maillard reaction. There has been recent interest in AGE and its receptor: RAGE in airways[1] and circulating[2] in subjects with COPD as well as in a GWAS of lung function.[3] Skin autofluoresence permits non-invasive measurement of skin AGE, validated against biopsies. Skin levels reflect accumulation, unlike circulating levels which are more variable. We hypothesised that skin AGE was increased in subjects with COPD and related to lung function. Methods Subjects >40 years, with and without COPD, all with >10 smoking pack years, were recruited. All subjects were assessed at clinical stability. Control never smokers were also recruited. Detailed history, post-bronchodilator spirometry and skin AGE were determined. Circulating AGE and soluble RAGE were measured by ELISA.

Results There were 49 COPD subjects; 18 current/ex-smokers without COPD; 16 never smokers, Abstract P40 table 1. The mean skin AGE was greatest in subjects with COPD compared to both control groups, $p<0.05$, ANOVA, Abstract P40 table 1. There was an indirect relationship between FEV_1 % predicted and skin AGE, $r=-0.46$, $p<0.01$. A stepwise multiple regression was performed, with skin AGE as the dependent, and FEV_1 % predicted, smoking pack years, age, BMI and gender entered into the model. FEV_1 % predicted and smoking pack years were independent variables, $p<0.01$. There was no significant difference in serum AGE between groups. Mean soluble RAGE was lowest in the COPD subjects and significantly lower than control never smokers, $p<0.05$, ANOVA, Abstract P40 table 1.

Abstract P40 Table 1

Mean (SD)	Control never smoker (n=16)	Control current/ex smoker (n=18)	COPD (n=49)
Age (years)	56 (7)	55 (10)	67 (10)* †
Men, n (%)	8 (50%)	5 (28%)	28 (57%)
BMI (kg/m^2)	24.5 (3.4)	27.0 (4.6)	27.9 (5.5)
Smoking pack years	0	27 (18)	52 (30)* †
Oxygen saturations (%)	97 (1)	96 (1)	95 (2)
FEV_1 (L)	3.11 (0.75)	2.64 (0.70)	1.52 (0.60)* †
FEV_1 % predicted	103 (14)	99 (15)	58 (15)* †
Skin AGE (AU)	2.2 (0.4)	2.5 (0.6)	2.9 (0.5)* †
Serum AGE‡ (pg/ml)	3863.7 (2.3)	2691.5 (1.8)	3388.4 (1.9)
Serum soluble RAGE‡ (pg/ml)	81.3 (1.9)	41.4 (2.2)	33.8 (3.3)*

*p<0.05 compared to control never smoker.
†p<0.05 compared to control smoker.
‡=arithmetic mean (SD).

Conclusions People with COPD have increased skin AGE compared to subjects with a smoking history and control never smokers. Subjects with COPD also have decreased serum soluble RAGE levels compared to never smokers. The FEV_1 % was an independent variable of skin AGE. Further research should explore the potential role of AGE in the co-morbidities of COPD.

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P41 COGNITIVE DYSFUNCTION IN HOSPITALISED PATIENTS PRIOR TO DISCHARGE FOLLOWING ACUTE EXACERBATION OF COPD

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Rationale Cognitive impairment is one of the least well-studied COPD comorbidities. It occurs in a proportion of hypoxemic patients, but its presence during acute exacerbation has not been established. We assessed neuropsychological performance in patients awaiting discharge from hospital following acute exacerbation and compared them to healthy controls and stable normoxic outpatients with COPD.

Methods 109 participants were recruited: 29 COPD in-patients medically fit and awaiting discharge following an exacerbation (COPD-E), 50 stable COPD patients (COPD-S), and 30 controls. Neuropsychological tests measured performance in episodic memory, executive function, working memory, visuo-spatial function, processing speed and an estimate of premorbid abilities.

Results Unrecognised, moderate to severe impairment was found in over half of COPD-E with the most frequent impairment in immediate verbal episodic memory (55%), delayed visual episodic memory (54%), executive function (52%), working memory (52%), visuo-spatial function (50%) and processing speed (48%). Post hoc analysis confirmed COPD-E group observations were significantly low ($p<0.05$; Abstract P41 table 1). COPD-E were significantly worse than COPD-S patients in episodic and working memory independent of premorbid ability, hypoxaemia, disease severity, cerebrovascular risk or pack years smoked. In addition 20% of COPD-E demonstrated an acquired pathological loss in processing speed.

Abstract P41 Table 1 Group comparison: frequency and severity of cognitive impairment

Cognitive test	COPD-E impaired	COPD-S impaired	CONTROL impaired	(χ^2) Value	df	p Value
Visual memory IR	52%	36%	23%	5.0	2	0.08
Visual memory DR	54%	32%	13%	10.7	2	0.005
Verbal memory IR	55%	24%	10%	15.7	2	<0.001
Verbal memory DR	14%	4%	3%	3.6	2	0.17
Trail making (switching)	52%	40%	7%	14.9	2	0.01
Verbal fluency	43%	10%	7%	16.8	2	<0.001
Working memory index	52%	18%	10%	16.0	2	<0.001
Processing speed index	48%	24%	3%	16.0	2	<0.001
Visuo-spatial	50%	30%	0%	16.0	2	<0.001

Proportion of individuals with moderate to severe cognitive impairment.
DR, Delayed Recall, IR, Immediate Recall.

Conclusion Around half of patients with acute exacerbation were discharged home with unrecognised moderate to severe cognitive impairment. Patients with an acute exacerbation have worse episodic and working memory than stable patients and appear to have an acquired loss in processing speed. It is unclear whether this loss is acute, chronic or reversible.