

**Abstract M143 Table 1** Baseline characteristics of patients (expressed as mean  $\pm$  SD)

	Progressors		p=
	n = 97	Non-progressors n = 103	
Gender (male:female)	48:49	46:57	0.294
Age (years)	66.5 $\pm$ 7.5	66.9 $\pm$ 6.5	0.669
FEV <sub>1</sub> (L)	1.30 $\pm$ 0.59	1.33 $\pm$ 0.53	0.776
FVC (L)	2.53 $\pm$ 0.89	2.47 $\pm$ 0.75	0.614
FEV <sub>1</sub> /FVC (L)	<b>0.49 <math>\pm</math> 0.11</b>	<b>0.53 <math>\pm</math> 0.12</b>	<b>0.044</b>
FEV% predicted	52 $\pm$ 17	57 $\pm$ 21	0.071
BMI (kg/m <sup>2</sup> )	28 $\pm$ 6	28 $\pm$ 5	0.281
Systolic BP (mmHg)	144 $\pm$ 17	149 $\pm$ 18	0.091
Diastolic BP (mmHg)	81 $\pm$ 12	83 $\pm$ 9	0.168
Mean arterial pressure (mmHg)	<b>102 <math>\pm</math> 12</b>	<b>106 <math>\pm</math> 11</b>	<b>0.036</b>
aPWV (m/s)	<b>9.5 <math>\pm</math> 2.2</b>	<b>10.4 <math>\pm</math> 2.4</b>	<b>0.004</b>
Heart rate (bpm)	74 $\pm$ 11	76 $\pm$ 11	0.350
6MWT (m)	300 $\pm$ 98	309 $\pm$ 110	0.563

pressure (MAP), heart rate and 6 min walk distance (6MWT). Based on the change in PWV in hypertensive patients, progressors were defined as individuals with  $>0.5$  m/s PWV increase, over 2 years.<sup>2</sup>

**Results** Thus far 200 patients with COPD have completed the 2 year follow-up assessment. At baseline the progressor and non-progressor were similar in age, gender, BMI, heart rate and 6 MWT. However the progressors had greater airways obstruction, and lower mean arterial pressure and aPWV (Table 1). After 2 years the mean [95% CI] PWV change in progressors was +1.7 [2.0–1.5]m/s while FEV<sub>1</sub> declined by 140 [76–206]ml ( $p < 0.05$ ). In contrast the non-progressors had no change in lung function, while there was a decrease in aPWV 0.7 [0.5–0.9] m/s and MAP 5 [3–7] mmHg ( $p < 0.05$ ).

**Conclusions** Almost half of the ARCADE subjects with COPD had a significant increase of PWV, the clinical relevance requires investigation using longer-term outcome data. The identification of CV risk phenotypes in COPD and the underlying pathophysiology may help identify novel therapeutic targets and improve CV outcomes for patients.

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#### REFERENCES

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#### M144 ACUTE DIETARY NITRATE SUPPLEMENTATION REDUCES THE OXYGEN COST OF SUBMAXIMAL EXERCISE IN COPD

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**Introduction** The recognised link between plasma nitrite levels and exercise performance suggests a role for the nitrate-nitrite-nitric oxide pathway in facilitating exercise. Research in healthy individuals has demonstrated a reduction in the oxygen cost of exercise at submaximal workloads following nitrate supplementation. Dietary nitrate administration has been associated with

reductions in blood pressure and augmented exercise performance. The effect of acute nitrate dosing on performance and metabolic parameters during cardiopulmonary exercise testing in COPD has not previously been investigated.

**Objectives** To investigate the hypotheses that acute nitrate dosing would improve exercise performance, reduce the oxygen cost of submaximal exercise performance and lower arterial blood pressure in COPD patients (GOLD stage II-IV).

**Methods** We performed a randomised, double-blind, placebo-controlled cross-over study comparing the effect of 140 ml of beetroot juice (containing 12.9 mmol nitrate) with a matched placebo of nitrate-depleted beetroot juice in COPD patients not receiving oral nitrates. Subjects were randomised to consume beetroot juice (BR) or placebo (PL) 3 h prior to endurance cycle ergometry, performed at 70% maximal workload assessed by a baseline incremental maximal, symptom-limited test. Blood pressure measurements were taken at baseline and immediately prior to the exercise test. After a washout period of a minimum of 7 days the protocol was repeated with the crossover beverage.

**Results** 25 COPD patients were recruited of whom 21 successfully completed the study (age 68  $\pm$  7 years; BMI 25.2  $\pm$  5.5 kg/m<sup>2</sup>; FEV<sub>1</sub> percentage predicted 50.1  $\pm$  21.6%; peak VO<sub>2</sub> during incremental cycle ergometry 18.0  $\pm$  5.9 ml/min/kg). Diastolic blood pressure was significantly lowered by nitrate supplementation (-6.9  $\pm$  7.8 BR vs. -1.4  $\pm$  8.4 mmHg PL,  $p = 0.008$ ). Nitrate supplementation significantly reduced oxygen consumption during equivalent isotime exercise (60–70% isotime 16.6  $\pm$  5.6 BR vs. 17.1  $\pm$  5.9 ml/min/kg PL,  $p = 0.017$ ; 70–80% isotime 16.7  $\pm$  5.7 BR vs. 17.2  $\pm$  5.5 ml/min/kg PL,  $p = 0.010$ ; 80–90% isotime 16.8  $\pm$  5.7 BR, vs. 17.5  $\pm$  5.75 ml/min/kg PL,  $p = 0.004$ ). The endurance time was not significantly different between the groups (5.65 (3.90–10.40) BR vs. 6.40 (4.01–9.67) minutes PL,  $p = 0.50$ ).

**Conclusion** The acute administration of nitrate reduces oxygen consumption and diastolic blood pressure during equivalent exercise in COPD patients.

#### M145 PREVALENCE AND DETERMINANTS OF VITAMIN D DEFICIENCY IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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**Background** Vitamin D deficiency may be a risk factor for exacerbations of chronic obstructive pulmonary disease (COPD). Studies investigating the prevalence and determinants of vitamin D deficiency among COPD patients in the UK are lacking.

**Methods** We conducted a cross-sectional study in 278 COPD patients aged 40–85 years screened for eligibility to participate in a clinical trial of vitamin D supplementation. Lifestyle and demographic data were collected by questionnaire and a blood sample was collected for analysis of serum 25-hydroxyvitamin D (25[OH]D) concentration and DNA extraction. Serum 25(OH)D concentration was determined by liquid chromatography – tandem mass spectrometry. Thirty-seven single nucleotide polymorphisms (SNP) in 13 vitamin D-related genes (DBP, DHCR7, CUBN, LRP2, CRTAM, LTA4 H, CYP2R1, CYP3A4, CYP27A1, CYP27B1, CYP24A1, VDR, RXRA) were typed using Taqman allelic discrimination assays. Logistic regression was used to