Abstract P188 Figure 1 Mean salivary pepsin over 7 days with standard error bars.

between day 1 salivary pepsin and symptom questionnaires. Salivary pepsin measurement over 7 days identified four patterns: persistently low ($n=3$); persistently high ($n=3$); high on day 1 only ($n=6$); and variable ($n=13$).

Discussion Peptest was acceptable to patients. Salivary pepsin measurement appears to be able to categorise different population groups by pattern of pepsin concentration throughout the week. As a feasibility study, it was not powered to identify correlation with clinical outcomes. Our Results suggest that using salivary pepsin as a marker of GOR is feasible and is worthy of further study in a large prospective cohort to evaluate its relationship to outcomes.

REFERENCE

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P189 REDUCING READMISSION IN HIGH RISK COPD PATIENTS

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Introduction and Objectives COPD patients with acute exacerbations make up a significant proportion of the inpatient hospital population. This patient group is at risk of recurrent readmission to hospital, which not only reduces patient quality of life but also has financial implications. The aim of this study was to correctly identify COPD patients at high risk of readmission and reduce this by addressing reversible factors and/or creating an anticipatory care plan (ACP).

Methods 200 consecutive admissions with an acute exacerbation of COPD were reviewed to identify risk factors for readmission at 28 days or mortality within 6 months. Patients who were identified as high risk of readmission were reviewed using an algorithm to identify potential reversible factors and if ACP would be appropriate. This review was carried out either during admission or at the point of discharge.

Results The following factors were shown to predict readmission or death, recurrent admissions (≥ 2 in the last year) (readmission: $p=0.002$, $OR=3.56$, death: $p<0.001$, $OR=11.64$), NIV during admission (readmission: $p=0.073$, $OR=4.06$, death: $p=0.023$, $OR=7.17$) and long term oxygen therapy (readmission: $p=0.034$, $OR=3.23$, death: $p<0.001$, $OR=9.22$). 72 subjects were identified as having a high risk of readmission. Of these 72 subjects, 14 had the algorithm applied during admission (prospectively) and 58 at the point of discharge (retrospectively). 53% of the study population was readmitted within 28 days. 21% of the prospective group was readmitted compared to 60% of the retrospective group.

55% of the prospective group had an ACP in place compared to 32% of the retrospective group.

Conclusions By identifying characteristics associated with high risk of readmission in patients with COPD, we were able to apply an algorithm in the hope of reducing readmission. Although current numbers are small, initial Results indicate that the use of the algorithm during a hospital admission could significantly reduce readmission to hospital. Undoubtedly more data is required. In the future routine use of this proactive approach could potentially improve patient care as well as reduce the financial burden for healthcare providers.

P190 SPECIALIST EMERGENCY CARE AND COPD OUTCOMES

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Introduction On 16/06/15 the Northumbria Specialist Emergency Care Hospital (NSECH) opened, introducing 24/7 speciality consultant on-call, direct transfer from the emergency department to speciality wards and 7 day consultant review. A Respiratory support unit opened for non-invasive ventilation (NIV), with enhanced staffing ratios. Pre-NSECH the NIV service included mandated training and competency assessment, 24/7 single point of access, initiation of ventilation in the Emergency Department, a door-to-mask time target, early titration of pressures, and structured weaning. Pneumonia or hypercapnic coma complicating ECOPD is not considered a contra-indication to NIV. Post-NSECH staff-patient ratios increased, the NIV pathway was streamlined and structured review introduced. The NCEPOD 2015 enquiry and 2013 BTS NIV audit showed $\geq 34\%$ of patients receiving acute NIV died.

Methods Patients hospitalised with ECOPD between 1/1/13 and 31/12/16 were identified using ICD10 J44 codes. Ventilation status was confirmed from rolling audit data, combined with a coding search (J96) and verification from patient records. Age, gender, admission from nursing home, consolidation, Charlson index, key comorbidities, length of stay and inpatient and 30 day mortality were captured. Population characteristics and outcomes were compared pre- and post-NSECH. Independent predictors of mortality were identified by logistic regression. Inpatient and 30 day mortality, adjusted for baseline performance and prognostic indices, was plotted (VLAD: Variable Life Adjusted Display).

Results 6291 patients were identified. Pre- and post-NSECH, demographic and clinical indices were similar. Among ventilated patients, 96.5% and 98% received NIV respectively. Inpatient plus 30 day mortality was lower post-NSECH for the whole cohort, and for ventilated and non-ventilated sub-groups. Independent predictors of mortality in a) the whole cohort were: NSECH [Beta=0.64; $p=0.0001$], age, admission from nursing home and Charlson Index; and b) in ventilated patients were: NSECH [Beta=0.51; $p=0.0016$], age and male gender. The VLAD plot showed sustained improvement in observed/expected mortality post-NSECH. Post-NSECH median length of stay fell by one day in both sub-groups.

Conclusions Introduction of 24/7 specialist emergency care was associated with a substantial fall in ECOPD mortality from strong baseline performance. Improved outcome was not

limited to high-risk patients receiving ventilation. Furthermore, mortality day 0–30 post discharge also fell.

Abstract P190 Table 1

		Pre-NSECH	Post-NSECH	P value
Inpatient Mortality	All patients	223/3943	90/2348	0.0012
	(%)	(5.66)	(3.83)	
	Ventilated (%)	71/540	32/346	0.086
	(13.15)	(9.25)		
Inpatient+30 day combined mortality	Not ventilated (%)	152/3403	58/2002	0.0035
	(4.47)	(2.90)		
	All patients	309/3943	123/2348	<0.0001
	(%)	(7.84)	(5.24)	
	Ventilated (%)	98/540	36/346	0.0015
	(18.15)	(10.40)		
	Not ventilated (%)	211/3403	87/2002	0.0037
	(6.20)	(4.35)		

P191 GENDER DIFFERENCES IN COPD EXACERBATIONS: ANALYSIS FROM THE CPRD DATABASE

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Introduction and Objective In recent years accumulating evidence supports gender differences in COPD, suggesting a steady increase in COPD prevalence and mortality rates in women. In this analysis we evaluated gender differences in COPD exacerbations in a cohort of COPD patients from the Clinical Practice Research Datalink (CPRD), a general practice electronic primary medical care records database in the UK.

Methods This is a retrospective cohort study comparing women and men with an incident diagnosis of COPD, using secondary data from the linkage between the CPRD and the Hospital Episode Statistics (HES) databases. The study period was between 01 January 2005 and 28 February 2016; patients with an incident diagnosis of COPD between 01 January 2010 and 28 February 2015 were included in this study.

Results A cohort of 22,429 COPD patients (48% women) with an incident diagnosis of COPD was identified. At diagnosis, women were younger, more often current or non-smokers and had lower BMI, better lung function (as expressed by FEV₁% predicted), worse mMRC dyspnea scale scores and lower blood eosinophils. Women also had a higher prevalence of asthma, anxiety, depression and osteoporosis, whereas men had more often cardiovascular comorbidities (myocardial infarction, heart failure and atrial fibrillation). The risk of first moderate or severe exacerbation was 17% greater in women than in men (adjusted HR, 1.17; 95% CI, 1.12 to 1.23), with

a median time to first exacerbation of 504 days for women and 637 days for men. These gender differences were more prominent in patients aged 40–64 years and in those with moderate-to-severe airflow obstruction (30% ≤ FEV₁<80% predicted). Women also had a greater rate of moderate or severe exacerbations at year 1 (adjusted RR, 1.15; 95% CI, 1.07 to 1.23), year 2 (adjusted RR, 1.14; 95% CI, 1.08 to 1.21) and year 3 (adjusted RR, 1.14; 95% CI, 1.08 to 1.20) of follow-up.

Conclusions Despite evidence for milder disease at the time of COPD diagnosis, women were at greater risk of COPD exacerbations than men, especially at younger ages. These Results highlight the unmet need for appropriate identification and management of women with COPD in clinical practice.

P192 FUNCTIONAL RESPIRATORY IMAGING (FRI) AND LUNG FUNCTION ASSESSMENT OF GLYCOPYRROLIUM/FORMOTEROL FUMARATE DIHYDRATE FIXED-DOSE COMBINATION DELIVERED USING INNOVATIVE CO-SUSPENSION DELIVERY TECHNOLOGY (GFF MDI) IN COPD

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Introduction and Objectives FRI has been used to provide a detailed view of overall and local changes in airway resistance and lung volume, in addition to spirometry and body plethysmography. The aim of this study was to assess changes in specific image-based airway volume (siVaw) and resistance (siRaw) in patients with moderate-to-severe COPD after administration of GFF vs placebo.

Methods In this double-blind, 2 week dosing, Phase III cross-over study (NCT02643082), 20 patients (40–80 years) received twice daily GFF MDI 14.4/10 µg (equivalent to glycopyrrolate/formoterol fumarate 18/9.6 µg) and placebo MDI. Primary endpoints were siVaw and siRaw at Day 15. Additional outcomes included spirometry, plethysmography and safety.

Results On Day 15, GFF MDI led to an estimated 75% increase in siVaw and 71% decrease in siRaw relative to placebo MDI (both p<0.0001; Table), accompanied by post-dose differences of 443 mL in FEV₁ and 454 mL in IC in change from baseline for GFF MDI vs placebo MDI (both p<0.001). The safety profile was consistent with the drug class with no unexpected safety findings.

Conclusions The dual bronchodilator GFF MDI demonstrated significant benefits on FRI-based airway volume and resistance in the lungs of COPD patients. Benefits were associated with important improvements in FEV₁, IC and hyperinflation.