qualifications may have a greater awareness of the symptoms of an exacerbation, and therefore present to hospital at an earlier stage.

P153 STRATIFYING PNEUMONIC EPISODES AND ACUTE EXACERBATIONS IN COPD PATIENTS – A CONTINUUM OR DISCRETE PHENOMENA?

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Background Acute exacerbations of chronic obstructive pulmonary disease (AECOPD) are characterised by an acute worsening of symptoms beyond the normal day-to-day variability. Pneumonic episodes, confirmed by new chest X-ray (CXR) infiltrates, are common in patients with COPD but are difficult to distinguish in primary care from non-pneumonic exacerbations. It is uncertain whether AECOPD and pneumonic episodes in COPD patients are distinct clinical events in terms of aetiology and/or response to oral therapy. We performed a longitudinal study to characterise these events and to determine clinically meaningful differences associated with CXR changes in the outpatient setting.

Methods The Acute Exacerbation and Respiratory Infections in COPD (AERIS) study is a longitudinal epidemiological study to assess how changes in the COPD airway microbiome contribute to the incidence and severity of AECOPD. Patients with moderate to very severe COPD aged 40–85 years were followed monthly for 2 years, and reviewed within 72 h of onset of symptoms of AECOPD. We compared markers of systemic and airway inflammation between pneumonic AECOPD characterised by new CXR infiltrates, and non-pneumonic AECOPD, in a subcohort of 36 patients.

Results In the first year of study participation 122 exacerbations were recognised of which 120 had a CXR performed. Of these, 20 (16.7%, n = 12 patients) were identified as having new radiographic infiltrates. Statistically significant differences occurred in mean white blood cell count, blood neutrophil count, C-reactive protein, fibrinogen and sputum percentage neutrophil count between those AECOPD with new CXR infiltrates and those without (Table 1). Furthermore, there was a trend towards more severe symptom scores with pneumonic episodes using the EXACT-PRO score (p = 0.057).

Abstract P153 Table 1 Values reported as mean ± standard deviation. NS = no significance

	AECOPD with no CXR infiltrate	AECOPD with new CXR infiltrate	p-value
WBC count (blood) 10*9/L	9.1 (2.8)	11.2 (3.6)	< 0.01
Neutrophils 10*9/L	6.4 (2.5)	8.5 (3.6)	< 0.01
Lymphocytes 10*9/L	1.7 (0.8)	1.4 (0.6)	NS
Eosinophils 10*9/L	0.20 (0.16)	0.33 (0.28)	NS
CRP mg/L	20.6 (28.7)	66.8 (77.0)	< 0.05
Procalcitonin µg/L	0.091 (0.120)	0.093 (0.049)	NS
Fibrinogen g/L	5.3 (1.2)	6.4 (1.2)	< 0.01
Sputum (%):			
Neutrophils	57.5 (35.0)	77.6 (25.6)	< 0.05
Lymphocytes	0.8 (2.6)	0.2 (0.3)	NS
Eosinophils	2.5 (4.7)	2.0 (2.5)	NS
Macrophages	19.0 (16.3)	11.3 (11.5)	NS
EXACT PRO score	41.4 (8.5)	45.3 (7.0)	NS

Conclusion Pneumonic episodes are common in the context of clinical events presenting as outpatient AECOPD. The profile of airway and systemic inflammation is greater during these events than those without CXR changes. Understanding whether the biology and clinical course of these events is distinct from other exacerbations is key, particularly as patients are encouraged to self-manage based on symptom changes alone. Further study of the AERIS cohort will investigate links between aetiology, outcomes and prognostic markers at exacerbation including radiological and clinical indices.

P154 THE IMPACT OF A DISCHARGE CARE BUNDLE ON THE 30-DAY READMISSION RATE FOLLOWING HOSPITALISATION FOR ACUTE COPD EXACERBATION

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Introduction National audit reports high rates of early readmission following hospitalisation for chronic obstructive pulmonary disease (COPD) exacerbation. Discharge bundles aim to optimise care and reduce readmission. Frimley Park Hospital NHS Foundation Trust interacts with different community respiratory teams across three counties.

Aims We hypothesised that a novel COPD discharge bundle would reduce re-admission. We also wished to see if the bundle was effective across multiple community administrations, and in patients with a history of frequent exacerbation.

Methods Admissions with a primary COPD diagnostic code and cases referred to the COPD nurse were collated during Q4 2013/14. Patients were classified according to whether they were assessed by the COPD nurse using the discharge bundle. Readmissions within 30-days and 3-months were identified using a hospital clinical database. Readmissions with COPD exacerbation (infective or non-infective) were included, as well as COPD associated lower respiratory tract infection or pneumonia. The database identified frequent severe exacerbators (patients with >1 admission in the previous year), and recorded age and length of stay as surrogates of disease complexity.

Results 24 patients were excluded (18 had other diagnoses, 4 died, and 2 lived out of area). Table 1 shows the characteristics of the remaining 156 patients according to whether they completed the bundle. There was no overrepresentation of short (zero or one day) length of stay patients in the group not completing the bundle. 17.5% of patients completing the bundle were re-admitted within 30-days, compared to 34% who did not (p = 0.027). A similar trend was seen at 3-months. No difference was observed in the timing or duration of readmissions. Logistic regression using covariates of age, length of stay, history of frequent severe exacerbation and discharge bundle use, suggested the latter two variables were both independent predictors of re-admission at 30-days: OR 5.70 (95% CI 2.46 to 13.2, p < 0.001) and OR 0.33 (95% CI 0.14 to 0.79, p = 0.012) respectively. Different community teams exerted no significant effect when added to the model.

Abstract P154 Table 1 Characteristics and readmission details of patients who were reviewed by the COPD specialist nurse and completed the discharge bundle

	Discharge Bundle (N=103)	No Discharge Bundle (N=53)
Area (Surrey/Hants/Berks%)	59/31/10	53/30/17
Age in years (mean, SD)	75 (10)	76 (10)
Sex (male/female%)	45/55	49/51
>1 admission in previous year (%)	27	28
Length of stay in days (median, range)	5 (1–71)	4 (1–26)
Short (0/1 day) length of stay (%)	18	17
30-day readmission (%)	17.5	34.0*
3-month readmission (%)	36.9	52.8**
Days to readmission (mean, SD)	33 (25)	28 (10)
Readmissions/patient (mean, SD)	0.55 (0.95)	0.68 (0.83)
Hospital days/patient (mean, SD)	9 (10)	9 (8)

* P = 0.027; ** P = 0.062

Discussion Two-thirds of patients completed a discharge bundle during the Trust's busiest quarter for COPD admission. Patients completing the discharge bundle had a significantly lower rate of 30-day readmission.

P155 COMPLIANCE WITH GUIDELINES FOR THE MANAGEMENT OF THEOPHYLLINE IN PATIENTS WITH ACUTE EXACERBATIONS OF COPD

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Introduction Theophylline therapy has a role in COPD patients who fail to respond adequately to inhaled bronchodilators and show symptomatic benefit from a trial of the drug. Treatment is complicated by drug interactions and its narrow therapeutic range (10–20 mg/L). High serum levels increase the risk of toxicity, demonstrating numerous symptoms such as nausea, vomiting, headaches, dyspepsia, insomnia and behavioural disturbances. Serious adverse effects such as cardiac arrhythmias and epileptic seizures tend to occur at serum levels above this reference range. NICE guidelines for COPD state that a theophylline level should be measured on admission in patients admitted for acute exacerbation of COPD (AE-COPD).[1] The aim of this study was to audit compliance with these guidelines.

Methods Patients with a diagnosis of AE-COPD were retrospectively analysed over a 6-month period (June–December 2013) at a university hospital. Those who were prescribed theophylline within 24 h of admission were included in the study. Further information was gathered including theophylline level, date of request, and subsequent dose adjustment. Paper and computerised medical and prescribing records were reviewed using a set pro-forma.

Results Of a total of 54 patients in the study, 23 patients (43%) had theophylline levels checked during their hospital admission. Only 5 (9%) patients had theophylline levels within 24 h of admission, with the mean number of days from admission to assessment being 4.69 (SD+ 5.29). Of those patients, 13 patients (56.5%) had a level within subtherapeutic range (<10 mg/L), and 8 patients (61%) receiving subsequent dose adjustment. There were no patients found to have a theophylline level above therapeutic range (>20 mg/l).

Conclusion Improvement is needed in compliance with guidelines for the theophylline monitoring in patients with AE-COPD, as more than half of patients did not have levels checked during their hospital admission. Furthermore, dose adjustments were made in only 2 of 3 patients. Changes can be implemented through education to junior doctors, implementation of electronic prescribing alerts, and adding this to our MDT COPD bundle checklist. Further prospective audit cycle will be performed to assess improvements.

REFERENCE

1 NICE Guidelines [CG101]2010

P156 CAN SPECIALIST NURSES PREDICT WHICH PATIENTS WILL READMIT FOLLOWING DELIVERY OF A COPD CARE BUNDLE?

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Introduction Adequate follow up is a key element of COPD care bundles (CB). COPD nurse specialists responsible for completing follow up consultations may be able to utilise clinical judgment and measures of health status to predict which patients are at greater risk of readmission.

Objective We explored whether COPD nurse specialists working in the REspiratory Discharge Service (REDS), who delivered the CB, could predict whether patients would readmit within15 days post discharge. We also explored levels of health and psychological status for those patients who the REDS team thought were and were not at risk of readmission.

Methods This was a retrospective audit of patients who received a COPD discharge CB from April 2013 to March 2014. Readmission likelihood was recorded by the REDS team after completion of a 2 day post-discharge phone consultation. Patients also completed the COPD Assessment Test (CAT), MRC breathlessness scale and the Hospital Anxiety and Depression Scale (HADS). Mean between-group differences for the 'will admit' and 'will not admit' groups were analysed using independent t-tests.

Results Readmission risk was recorded for 1003 patients who received the CB prior to discharge. A total of 100 patients of these 1003 readmitted (readmission rate of 9.7%). The REDS team correctly predicted that 39 of these 100 patients would be readmitted. There were statistically significant between-group differences for MRC, CAT and HADS scores (see table): Patients placed in the 'will readmit' group had significantly worse CAT, HADS anxiety and depression scores compared those placed in the will not readmit group.

Conclusions COPD nurse specialists were unable to correctly predict the majority of readmissions. Patients deemed at risk of readmision had worse levels of psychological and health status than those who were not thought to be at risk of readmission.

Abstract P156 Table 1

	REDs " Will readmit"	REDs "Will not readmit"	p value
MRC score	4.28 (0.68)	3.75 (0.90)	<0.0001
CAT score	25.25 (6.97)	22.91 (7.55)	0.012
HADS anxiety	7.97 (4.95)	5.86 (4.23)	0.001
HADS depression	7.94 (4.14)	5.27 (3.40)	<0.0001