SMART-COP are better at identifying younger, morbidly ill patients with misleadingly low CURB-65 scores requiring early decisions regarding escalation of care.

P196 PREDICTING ESCALATION TO INTENSIVE CARE FOR PATIENTS WITH PNEUMONIA WITH A NEW CLINICAL PREDICTION RULE: SNA³P

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Introduction Many clinical prediction rules (CPRs) exist for community-acquired pneumonia (CAP), though few have been investigated to predict escalation to an intensive care unit (ICU). Furthermore, most include components (sometimes subjective) that do not allow the potential for electronic automation in clinical practice.

Methods A historical cohort study was performed at two UK adult acute medical units (2013–15). Inclusion was based on an ICD-10 coded diagnosis of pneumonia. Primary outcome was escalation to ICU. Exclusion criteria was: direct ICU admission from A and E, a stay <1 night, age <18 or ≥80 or frail elderly, neutropenia, HIV, malignancy and palliative care. Predictive performance of CURB-65 was compared to CRB-65, CURB, the National Early Warning Score (NEWS) and a modified SMART-COP (SART-CO, as imaging and ABGs were not available) using receiver operating characteristics (ROC) analysis. Multivariable logistic regression was also performed to investigate additional

predictors electronically available at admission (blood and physiological parameters).

Results 1,305 of 24,706 medical admissions were included. 8.3% (n = 109) were escalated to ICU, with significantly increased inpatient mortality (31% vs 6.5%, p < 0.001). 54% of ICU patients had, or developed, AKI vs 11% if not escalated (p < 0.001). To predict escalation, AUCROCs for existing CPRs ranged from 0.54–0.61 (Figure). Using multivariable logistic regression a newly derived CPR – SNA³P – (including 6 components: Sodium, NEWS ≥ 7, Albumin, AST, AKI and Platelets, score range 0–20 points) demonstrated a statistically significant increase in discrimination (AUCROC 0.80, 95% CI: 0.75–0.84). At a cut-off of 2 points to predict ICU escalation, sensitivity was 92% (95% CI: 85–96%), specificity 48% (45–51), positive predictive value (PPV) 14% (11–16) and negative predictive value 98% (97–99); at 6 points sensitivity was 53% (43–63), specificity 87% (85–89), PPV 27% (21–33) and NPV 95% (94–96).

Conclusion Existing pneumonia CPRs, largely derived to predict mortality, have shortcomings when predicting those who require escalation to ICU. The newly derived rule SNA³P, if externally validated could be incorporated into an electronic clinical decision support system to provide automatic objective assessment and evidence of risk at point-of-care for those who may be considered for escalation.

P197 MEDIUM TERM IMPACTS OF ECMO ON ADULT SURVIVORS

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Abstract P196 Figure 1 AUC_{ROC} for escalation to ICU. CURB-65 0.59 (95% CI: 0.52–0.63), CRB-65 0.54 (0.49–0.60), CURB 0.59 (0.54–0.65), NEWS 0.58 (0.53–0.64), SART-CO 0.61 (0.56–0.67), SNAAP 0.80 (0.75–0.84).

Abstract P197 Figure 1 Percentage change in BMI in ECMO survivors over different time periods. Conditioned by gender

Veno-venous Extra-Corporeal Membrane Oxygenation (VV-ECMO) is an established support for severe adult respiratory distress. Previous studies have showed improvement in survival over conventional treatment for ARDS, however little is known about the medium term impact of ECMO on patients, lung physiology and quality of life (QoL). This study investigates these factors in a cohort of patients post-ECMO.

All VV-ECMO survivors at a national cardiothoracic centre were offered follow-up six months post-discharge. Thirty-four patients were followed over a three-year period. We examined lung physiology, six-minute walk distance, chest X-rays and change in BMI. QoL subjective measures included mobility, self-care, psychological state and pain scores.

Mean duration of ECMO support was 14.5 days (± 10.2 ; range = 3–40 days). Indications were infective (22/34), embolic (4/34), bronchospasm (4/34), trauma (3/34) and drug overdose (1/34). There was insignificant correlation between indication/ECMO duration and lung physiology at six months, with good recovery in all lung physiology parameters (%FEV1

mean = $88.0\% \pm 16.9$; %FVC mean = $93.1\% \pm 16.2$) with the exception of TLCO%predicted (mean = $76.6\% \pm 16.6$). This however didn't translate into a measureable difference in exercise physiology, with no correlation between six-minute walk distance and ECMO duration ($R^2 = 0.0022$, mean = $424 \text{ m} \pm 82.5$). Seventy-nine percent of 29 X-rays assessed were normal.

Mean BMI change during ECMO admission was $-6.87\% \pm 11.99$ with greater BMI decline alongside longer ECMO support. Interestingly, post-discharge men regained most weight by follow-up whereas females continued to lose (Figure 1).

No significant correlations were seen between ECMO length, indication, and QoL measures. Qualitative analysis suggests worsening anxiety/depression amongst 13 (6 M 7F) patients/family members post-ECMO; four patients giving unprompted mention of flashbacks/nightmares.

ECMO offers undoubted short term improvement in ARDS mortality. In this cohort, recovery of lung physiology, chest radiology and QoL is good. The isolated transfer factor reduction

probably relates to a loss of functioning alveolar units but doesn't appear to impact exercise physiology or QoL. The main lasting impact appears to be psychological. In the absence of a control group, the impact of critical illness is difficult to separate from that of ECMO, however in this uncontrolled single centre observational study much reassurance can be gained about medium term impact of ECMO.

Service design and delivery

P198 ANCHORING COPD SCREENING TO DRUG SERVICES IN HEROIN AND CRACK SMOKERS TO IMPROVE DIAGNOSIS

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COPD is associated with social deprivation which can reinforce health inequality, especially in difficult to access groups. Heroin and crack smoking is associated with early onset severe COPD but this population engages poorly with non-emergency medical services although they engage effectively with specialist drug services. As such, despite an expansion in community spirometry provision, different models of care may be needed to optimise COPD diagnosis and management. In order to access this group Liverpool Clinical Commissioning Group (CCG) funded a COPD screening programme where all current and former heroin and crack smokers using local drug services were offered spirometry at drug key worker appointments where they collected their opiate substitute prescription. If willing they also completed MRC, CAT, a record of cigarette and drug exposure and had oxygen saturations measured. They also provided feedback about the programme

Eight hundred and seven (807) out of the population of 1100 participated which represents 73% of the client group. Airflow obstruction consistent with COPD was present in 379 (47%) with a further 50 (6%) having reversible airflow obstruction consistent with asthma. Of those with COPD, 154 (41%) had mild, 144 (38%) moderate and 81 (21%) severe or very severe COPD. Mean FEV1 was 2.93L (0.93), mean CAT was 19.5 (10.5) and mean MRC was 2.64 (1.29). Of the 379 with COPD, only a minority (41%) were diagnosed, a third of people were prescribed no inhaler therapy and, when prescribed, treatment was typically sub-optimal. Amongst those with COPD, 337 (90%) were current cigarette smokers while 93 (25%) and 105 (28%) still smoked crack and heroin respectively.

When asked to feedback 96% of respondents were happy with the process and 93% would be willing to attend future COPD appointments at drug centres.

Anchoring spirometry to key worker appointments in heroin and crack smokers was popular amongst service users and a majority completed spirometry. Airway disease was present in a majority with 47% having mostly undiagnosed but symptomatic COPD with significant scope to improve treatment. This model of screening and treatment improved healthcare access and could be used in other hard to reach groups, such as the homeless.

P199 A MULTIDISCIPLINARY COPD HYPERINFLATION SERVICE: REPORT OF DECISION OUTCOMES

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Introduction and objectives Lung volume reduction (LVR) via unilateral VATS or endoscopic placement of endobronchial valves (EBV) in carefully selected individuals with severe emphysema can result in a major improvement in quality of life. Despite being approved by NICE, there remains patchy service provision across the UK.¹

In 2010, we established a multidisciplinary COPD Hyperinflation service for our region. There is a scarcity of information on such services and we report on our referral outcomes for 2015.

Methods Our Hyperinflation MDT includes specialist COPD physician, specialist nurse, thoracic radiologist, thoracic surgeon, interventional pulmonologist and transplant physician. We review clinical features, CT and lung function to decide on specialist assessment, progressing to detailed physiological assessment, lung perfusion scanning and MDT discussion in some. We retrospectively reviewed outcomes on 120 patients referred for LVR assessment between 1/1/15–31/12/15.

Results 111 patients underwent specialist assessment. 20% of patients were discharged, as they did not meet NICE criteria. Nonetheless, many of these patients benefited from clinical phenotyping and management recommendations. 67% of patients were discussed at MDT. 35% of patients were not offered LVR (high risk and lack of hyperinflation targets). 64% of patients were deemed suitable for LVR or transplantation [(EBV or LVRS 37%; LVRS 35%; EBV 15%; EBV bridging to transplantation 7%; transplant 4% (Figure 1)]. One patient received endobronchial coils as part of a clinical study. Patients who are considered suitable for EBV with intact or <10% defect in fissure undergo bronchoscopic balloon catheter assessment for collateral ventilation.

Conclusion Our experience with this service model shows that LVR can be incorporated into existing pathways. Our model has evolved to triage patients at various points to ensure high quality discussion of selected patients at the dedicated MDT. As a result, the proportion of patients at the MDT offered LVR procedures is relatively high. MDT expertise allows optimal patient selection with effective utilisation of existing resources. We hope that these data will stimulate others to develop local models of care to enable better access to LVR for COPD patients.