Conclusion In our TB population, the requirement for ICU care was infrequent, with respiratory failure being the most common indication. ICU and overall hospital length of stay was prolonged, but with a majority of patients surviving to discharge. Possible markers of a poor outcome include age, and a requirement for cardiovascular/renal support. These markers and TB-related factors now need to be explored in a larger cohort.

P191 REDUCING THE CARBON FOOTPRINT IN A REGIONAL LONG TERM VENTILATION SERVICE WITH THE USE OF REMOTE MONITORING

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Introduction There is strong emerging evidence on the devastating effect of anthropogenic climate change on lung health. In England, the NHS accounts for 30% of the public sector carbon footprint, with patient travel being accountable for 8% of overall travel (17%). The climate change act (2008) resulted in the government and NHS committing to an 80% reduction in carbon emissions by 2050.

Methods There are many studies detailed the benefit of telemonitoring in reducing carbon footprint within NHS services. Within the Lancashire and South Cumbria Long Term Ventilation Service (LSCLTVS) we have invested in a ventilator remote monitoring system (EncoreAnywhere™). Over a 3 month time period we analysed the telephone consultations of all 138 patients under the care of the LSCLTVS (80 patients on remote monitoring systems). Patients or carers that called reporting deterioration in a clinical condition that could not be rectified over the telephone were identified. The normal intervention that would follow would be a visit from the GP or community respiratory team, hospital admission, clinic visit or home visit from the ventilation team. A ventilator review was indicated in 29 patients which would normally necessitate either a clinic visit to Royal Preston Hospital or a consultation at home. However as these patients had remote ventilator monitoring we were able to review data and make changes remotely.

Results In a 3 month time period 29 return journeys were prevented through the use of remote monitoring. This equated to 1029.3 km (623 miles), 249 kgCO₂e (0.24 t CO₂e)*saved over 28 hours in commuting time and £255 in mileage costs (40 p per mile). It also had a positive impact on patient experience and no hospital admissions or clinic visits were necessary after remote consultation. 62% (n = 18) patients required use of rescue packs including antibiotics and mucolytics as well as remote ventilator changes.

*Emission factors from DEFRA 2012 show for an average petrol car the value is 0.24234 kg CO₂e per km

Discussion The use of remote monitoring within the LSCLTVS has reduced the carbon footprint of the service on average 6.6 kg CO₂e per patient. Patients also reported improved satisfaction and compliance.

P192 IMPROVING OUTCOMES FOR PATIENTS WITH RESPIRATORY FAILURE USING PROTOCOL BASED CARE PLANS FOR NIV (NON-INVASIVE VENTILATION) AND HFNO (HIGH FLOW NASAL OXYGEN)

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Introduction and objectives Respiratory failure is a common clinical problem and a number of treatment options are available. NIV is an established treatment for hypercapnic type two respiratory failure (RF). High Flow Nasal Oxygen (HFNO) is an alternative to standard oxygen or CPAP, and its use in hypoxemic patients has been growing.

NHS adheres to evidence based guidance and protocols to improve the safety, quality and consistency of care. We developed and implemented local guidance and protocols for managing respiratory failure with HFNO and NIV in a District General Hospital.

Methods A retrospective analysis of data from inpatient type 2 respiratory failure and NIV prior and post BTS Guideline based local protocol implementation was collected. Analysis was done to assess adherence to protocol and compare quality care and outcomes with data prior to implementation. For type 1 respiratory failure a literature review was done, evidence appraised and local guidance and protocol for HFNO developed and a pilot study conducted.

Results Since introduction of NIV proforma: NIV more frequently initiated in appropriate setting. Compliance with recommended ABG monitoring improved from 85% to 100%. Documentation of escalation plans improved from 50% to 100% (Figure 1).

HFNO was successfully implemented and commenced in our Trust over 10 weeks. All patients on HFNO tolerated therapy. Prevented ITU admission in 80% of cases selected for monitored ward based care of respiratory failure.

Conclusions In the present study, we showed how to safely implement evidence based local guidance and protocol based care plans for managing type 1 and 2 respiratory failure in a DGH to

Abstract P192 Figure 1 Data comparison: documentation and mortality before and after introduction of NIV proforma

improve quality of care, improve adherence to BTS guidelines, reduce in-hospital mortality and prevent ITU admission.

We believe the guideline and protocol supported the on-call teams to identify and safely manage respiratory failure. We continue to evaluate the service.

P193 EARLY NON-INVASIVE VENTILATION VERSUS STANDARD OXYGEN THERAPY IN IMMUNOCOMPROMISED PATIENTS WITH RESPIRATORY FAILURE: A META-ANALYSIS

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Background and aims Respiratory failure is common in immunocompromised patients. Intubation and mechanical ventilation (MV) is the mainstay of treatment but is associated with increased risk of pneumonia and other complications. Non-invasive ventilation (NIV) is an alternative to MV in a select group of patients and aims to avoid the complications of MV.

In these patients, we performed a meta-analysis on the effect of early NIV versus conventional oxygen therapy in reducing intubation rates and other important clinical outcomes.

Methods We performed an extensive online and unpublished data search for relevant studies that met the inclusion criteria. We included randomised controlled trials that used early NIV versus conventional oxygen therapy in immunocompromised patients with respiratory failure. Risk of bias and acceptability assessment were independently performed by the authors.

The primary outcome of interest was intubation and MV rate. The secondary outcomes were ICU and all-cause mortality, ICU length of stay and duration of mechanical ventilation.

Results Four studies with a total of 553 patients met the criteria for inclusion and were included in the analysis.

Patients given NIV were 38% less likely to be intubated vs. those given oxygen, RR 0.62 (95% CI: 0.42, 0.93); however, this result is significantly heterogenous. After sensitivity analysis, results showed 48% less likelihood of intubation and mechanical ventilation in the group treated with NIV, RR 0.52 (95% CI: 0.35, 0.77).

Patients on NIV had 1.18days less stay in the ICU vs. oxygen group (95% CI: -1.84, -0.5 days). There was no statistically significant decrease in all-cause mortality between the two groups, RR 0.84 (95% CI: 0.63, 1.13), but this effect is heterogenous. After another sensitivity analysis performed specifically for this outcome, results showed a 25% significant reduction in all cause

mortality in patients given NIV vs. oxygen therapy, RR 0.75 (95% CI: 0.58, 0.96).

There is no difference in the duration of mechanical ventilation between groups.

Conclusions In immunocompromised patients with respiratory failure, early NIV reduced intubation rates and decreased all-cause mortality and length of ICU stay compared to standard oxygen therapy.

P194 EARLY WARNING SCORES, TOO IMPRECISE A TOOL IN PATIENTS WITH RESPIRATORY DISEASE?

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Introduction Guidance from the National Institute of Health and Care Excellence in 2007¹ has led to the almost universal use of early warning scores (EWS) derived from vital signs observations in hospitals in the UK to highlight patients at risk of deterioration. Lack of high quality prospective studies limits our understanding of the impact of using such monitoring systems on outcomes and working patterns. No EWS has been validated in respiratory patients despite widespread use. Our aim was to examine the ability of both the locally used EWS and National Early Warning Score (NEWS) to predict patient deterioration and associated burden of escalations generated in a respiratory cohort.

Methods Vital signs observations and outcomes for all admissions under the respiratory department at a tertiary referral centre between April 2015 and March 2016 were analysed. Predicted and actual escalation patterns in relation to primary endpoint of mortality were examined comparing NEWS to local EWS. Patients documented as receiving end of life care were removed from analysis.

Results Over 12 months there were 165,184 observations sets during 5293 admissions, with a mean of 38 observations per admission (standard deviation 50). Occurrence of primary endpoint of in-hospital death was 6.74%. 13% of observations triggered clinical escalation to a registered nurse or beyond, with mean of 1075 per month. 112 (31%) patients who died did not trigger escalation on their final set of observations, 1 patient was escalated despite scoring below protocol threshold. Applying NEWS criteria retrospectively predicts 6 patients who died would not be escalated, while generating a mean of 12,409 escalations of vital signs observations per month to registered nurse or beyond, 1,621 in patients who went on to die in hospital.

Abstract P193 Figure 1