

Introduction Non-invasive ventilation (NIV) may be used for a number of specific clinical indications in the context of acute type 2 respiratory failure. Prior to October 2013, any doctor at or above ST3 level could initiate NIV on a patient if it was deemed necessary. It was noted in a number of cases the use of NIV was inappropriate and not as per the clinical guidelines.¹ In October 2013 a new guideline was implemented within the Trust whereby all decisions to start patients on NIV must be discussed with and approved by the Respiratory Consultant on-call.

This study was conducted to evaluate the impact of the guideline implementation on the outcome for patients treated with NIV.

Methods Retrospective analysis of data from Inpatient NIV database of patients receiving acute NIV over a 2-year period (one year before and one year after the implementation of the new guidelines). Comparison was drawn between the data from two years for all-cause mortality and mortality specifically in those with COPD.

Results A total of 280 cases were identified over the 2-year period (140 male, 140 female). All-cause mortality was found to be lower overall in the post-intervention group (38.9% post-intervention compared to 48.3% pre-intervention). This was further analysed based on whether or not patients had COPD. Overall there was statistically significant higher mortality in non-COPD patients compared to COPD patients both before and after intervention with p values of 0.023 and 0.0096 respectively. There was significantly lower mortality in COPD patients post-intervention compared to pre-intervention ($p = 0.0237$). There was also lower mortality in non-COPD patients after intervention but this was not statistically significant.

Conclusion Mortality for NIV patients was considerably lower after strict implementation of the local guideline. It shows that Respiratory Consultant-led decisions enable more appropriate use of this treatment and better outcomes for patients. It also highlights the importance of education in NIV initiation for general medical doctors.

REFERENCE

- 1 The use of non-invasive ventilation in the management of patients with COPD admitted to hospital with acute type 2 respiratory failure. A joint BTS/RCP London/Intensive Care Society document, 2008

P41

OUTCOMES OF PATIENTS TRANSFERRED TO RESPIRATORY CARE UNIT (RCU) ON TRACHEOTOMY VENTILATION: A 4 YEAR EXPERIENCE

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Background RCU in Leeds admits patients who had tracheostomy in ICU as part of acute admission and are slow to wean from ventilation. We looked at the long-term outcomes of attempted weaning from ventilator support in terms of survival and level of support at discharge. We also looked at length of stay (LOS), underlying diagnosis and comorbidities.

Methods Thirty one patients admitted to RCU as a step-down from ICU between October 2011 and July 2014 were included. Patients were identified using database and data was collected from electronic records and inpatient notes. Patients were excluded if they had tracheostomy inserted on a previous admission.

Results The demographics, length of stay on RCU and primary diagnosis leading to respiratory failure and intubation are

described in Table 1. All except one patient had significant other comorbidities including muscular dystrophies, MND, COPD, IHD, etc. The average number of days spent in ICU after tracheostomy prior to step-down was 19 ± 15 . Eight (26%) patients died in hospital. Seventeen patients (55%) were discharged without any ventilatory support after decanulation, 3 required overnight NIV and 3 were discharged with tracheostomy ventilation. At 12 months post-discharge 16 (52%) patients were dead; 11 (35%) were not on any ventilatory support; 3 were continuing to be ventilated via tracheostomy, 1 remained on NIV.

Abstract P41 Table 1

Mean age \pm SD (Years)	61 \pm 18
Males	19 (61%)
Mean length of stay on RCU \pm SD (Days)	39 \pm 17
Median length of stay on RCU (Days)	58
Range of length of stay (Days)	1–226
Primary diagnosis (n = 31)	n (%)
Pneumonia (CAP/HAP/Aspiration)	17 (55%)
Post-procedure/surgery	5 (16%)
Neuromuscular causes	5 (16%)
COPD	2 (0.6%)
Other	1 (0.3%)

Discussion and conclusion Patients coming for weaning from trachy-ventilation represent a complex group with diverse aetiology and have multiple comorbidities. Their stay in a high dependency area is unpredictable and the LOS varies considerably. While a third of patients remained successfully weaned at one year they carry a high in-hospital and 1 year mortality. LOS is influenced by the complexity of discharge planning often including patients from outside our catchment area. Our RCU like many others are not staffed to look after more than 2 trachy-ventilated patients at any one time which combined with prolonged stay slows down patient flow from ICU. This highlights the need for dedicated units for weaning with a team that is able to look after complex needs in hospital and coordinate complex discharges.

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FACTORS AFFECTING THE DURATION OF ACUTE NON INVASIVE VENTILATION REQUIRED IN PATIENTS WITH ACUTE HYPERCAPNIC RESPIRATORY FAILURE

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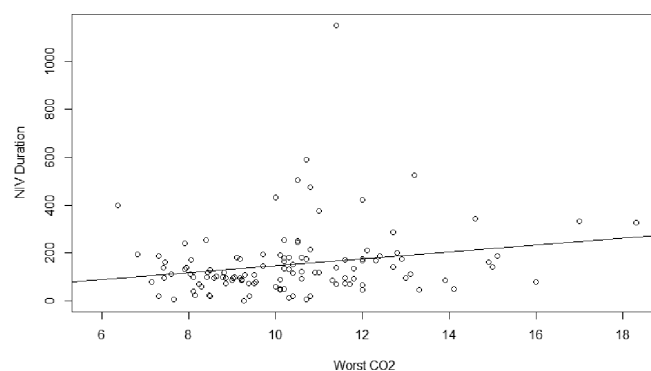
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Introduction and objectives Factors predicting the likelihood of failure of NIV, i.e. requirement of intubation or death, have been well documented with low pH shown to be the most important factor. Factors affecting the duration of NIV required in those patients who receive ward base treatment without the need for intubation have not been established. This study aimed to identify factors which influence the duration of NIV required in acute hypercapnic respiratory failure.

Methods A retrospective analysis of 123 consecutive episodes of acute hypercapnic respiratory failure requiring NIV between June 2013 and June 2014 was carried out. Correlation between duration of NIV treatment and a number of variables, namely

admission creatinine, pH, worst arterial carbon dioxide level (CO₂) and presence and severity of chronic kidney disease (CKD) was assessed by simple linear regression.

Results There was a statistically significant regression coefficient between worst observed CO₂ and the duration of NIV (fitted equation: NIV Duration = 4.281 + 14.357 × Worst CO₂, p = 0.019). The plotted linear relationship showed an increase in duration of NIV treatment of 14.35 h for every 1 kPa increase in CO₂ above 6 kPa. The admission creatinine and severity of CKD did not significantly alter the duration of NIV required. The presence of acute kidney injury was also not significant. The pH value did not significantly alter the duration of NIV treatment.



Abstract P42 Figure 1 NIV duration plotted against worst CO₂. Linear regression fitted equation shown (duration NIV (hours) = 4.281 + 14.357 × Worst CO₂)

Conclusion This survey shows that the level of CO₂ influences the duration of acute NIV required, in that for every 1 kPa rise in CO₂, the duration of acute NIV treatment rises by 14.35 h. The other studied variables do not correlate with treatment duration.

P43 HOW APPROPRIATELY IS NIV USED AS A CEILING OF TREATMENT?

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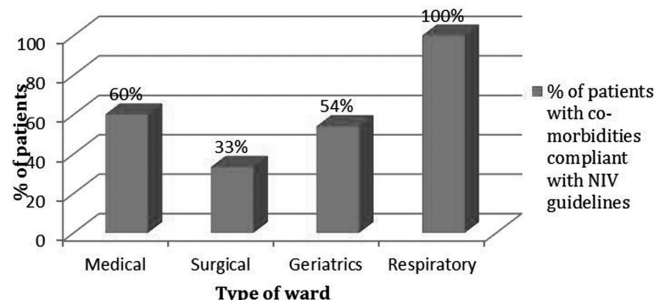
Background Treatment Escalation Plans (TEPs) were introduced at the Royal United Hospitals Bath (RUH) in 2013 to help physicians document decisions regarding ceilings of treatment. In implementing a TEP, a patient may be deemed unsuitable for resuscitation and/or Intensive Care Unit (ICU) but remain a potential candidate for ward-based non-invasive ventilation (NIV). However as ward-based NIV is indicated in relatively few respiratory conditions this option should only be available to a small cohort of patients. This study examines how appropriately patients have NIV cited as a ceiling of treatment, using 2002 BTS acute NIV guidelines as a benchmark.

Method We collected data from medical, surgical and geriatric wards at the RUH on three separate days between November 2014 and June 2015. In patients with a TEP who were deemed unsuitable for CPR, we recorded a) the ceiling of treatment decision b) reason for admission and c) co-morbidities. We reviewed how many patients with NIV as a ceiling of treatment had an indication in accordance with BTS guidelines.

Results 658 patient notes were reviewed. 109/658 patients were deemed not suitable for ICU but had NIV as a ceiling of treatment. 64/109 patients (59%) had an indication in accordance with BTS guidelines, while 45/109 patients (41%) were non-compliant. There was variation in compliance between specialties (General Medicine 60% compliant, Elderly Care 54% compliant and Surgery 33% compliant). The Respiratory ward was the most compliant (100%).

Conclusions Whilst NIV can offer significant survival benefits to patients with certain conditions (eg COPD exacerbations, obesity hypoventilation syndrome and chest wall disease) national BTS audits have repeatedly shown that ward-based NIV is often used unsuccessfully outside of these indications. The current study demonstrates that over 40% of patients admitted to our hospital inappropriately have NIV set as their ceiling of treatment, albeit with some variability between wards and specialties. This suggests that further education is required about the potential limitations of NIV, particularly for non-respiratory specialists who often make TEP decisions.

Percentage of patients with NIV as a ceiling of treatment identified in accordance with BTS guidelines



Abstract P43 Figure 1

P44 CHRONIC OBSTRUCTIVE PULMONARY DISEASE EXACERBATION AND RESPIRATORY ACIDOSIS: PATIENT OUTCOMES AT 6 MONTHS

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Introduction Recognition of hypercapnic respiratory failure is a vital part of the assessment and management of the patient with an acute exacerbation of chronic obstructive pulmonary disease (COPD). Several studies have demonstrated that respiratory acidosis in the context of an acute exacerbation is associated with worse inpatient outcomes. Our study compares the outcomes of patients admitted with an acute exacerbation, between those with respiratory acidosis and those who had a normal pH and PaCO₂ on arterial blood gas (ABG) analysis.

Methods Patients requiring hospital treatment for an acute exacerbation of COPD had an ABG taken on admission. Patients were subsequently assessed for the following outcomes: inpatient