

patient deteriorated in Group A and was withdrawn. The use of accessory muscles of respiration (AMR) reduced significantly in group B at 3, 6 and 7 h ($p < 0.01$), BORG dyspnoea score improved significantly ($p < 0.01$) in group B after 1 h. There was no difference between two groups in terms of improvement in RR, HR, FEV1 and ABG. In group B, the mean IPAP and EPAP used was 14.32 ± 0.945 and 7.16 ± 0.472 cm of water, respectively.

Conclusion The use of NIPPV in patients with acute severe asthma though found to be useful in terms of faster resolution of dyspnoea and decrease in use of AMR but did not improve pulmonary functions significantly.

S69 HOT HMV UK: PREVALENCE OF PERSISTENT SIGNIFICANT HYPERCAPNIA FOLLOWING ACUTE EXACERBATION OF COPD (AECOPD) REQUIRING NON-INVASIVE VENTILATION (NIV)

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Introduction Acute NIV is now standard therapy for hypercapnic respiratory failure (AHRF) complicating AECOPD. However, although chronic hypercapnia is an acknowledged poor prognostic factor in COPD and some data suggest a survival advantage with domiciliary NIV compared with oxygen alone, its use for chronic hypercapnic respiratory failure (CHRF) remains controversial.¹ Patients with CHRF who have recently been treated acutely with NIV for AECOPD may be a particularly appropriate group in whom to consider long term domiciliary NIV.

Method We are conducting an RCT (HOT HMV UK) of domiciliary NIV plus oxygen against domiciliary oxygen alone in CHRF (defined as $\text{PaCO}_2 > 7$ kPa), focussing on patients who have recently received acute NIV for AECOPD, and we have evaluated the likely uptake of such treatment after resolution of the acute episode. All patients seen over a 5-month period at two tertiary centres for consideration of domiciliary NIV following acute NIV were assessed at least 2 weeks following resolution of AHRF and arterial blood gas analysis was performed.

Results 38 patients received acute NIV for an AECOPD. Mean (\pm SD) age was 69 ± 17 years and 50% were male, with PaCO_2 of 9.3 ± 2.4 kPa at acute presentation. Eight (21%) patients died prior to review (six during initial admission, two shortly following discharge); four patients whose diagnosis was clarified as an overlap of obstructive sleep apnoea and COPD were treated on clinical grounds with NIV and one patient was already receiving domiciliary NIV. Of the remaining 25 patients, nine had $\text{PaCO}_2 < 7$ kPa at 2 weeks, leaving 16 (42%) with CHRF at 2 weeks post recovery. Importantly, seven (44%) of these did not wish to be considered for a clinical trial involving domiciliary NIV, the principal reason being poor tolerance during the acute episode.

Conclusion More than 40% of patients requiring NIV for AHRF complicating AECOPD had CHRF with a $\text{PaCO}_2 > 7$ kPa, when assessed 2 weeks after discontinuation of acute NIV. However, nearly half of these reported negative experiences of acute NIV that made them reluctant to consider long term treatment.

REFERENCE

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S70 NON-INVASIVE VENTILATION (NIV) IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) EXACERBATIONS WITH ACUTE HYPERCAPNIC RESPIRATORY FAILURE (AHRF) WITH PH

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Introduction Recent British guidelines on NIV suggest patients with AHRF and $\text{pH} < 7.26$ on arterial blood gases (ABG) should be managed by critical care (ITU) depending upon local circumstances with a low threshold for intubation, unless NIV is deemed to be the ceiling of treatment. The 7.26 pH cut-off was derived from subgroup analysis of in-hospital mortality assessment from the study by Plant *et al* (*Lancet* 2000; 355:1931–5). The use of NIV as an alternative to endotracheal intubation in more severely acidotic COPD patients ($\text{pH} < 7.26$) has been controversial but there is increasing evidence that the outcomes in such patients may not be any worse if treated with NIV.

Methods Analysis of initial ABG (pre-commencement of NIV) for AHRF secondary to COPD between 1 August 2004 and 31 December 2009 was performed. NIV was undertaken in a dedicated unit on a respiratory ward. The admission episodes were stratified by initial pH ranges (predictor variable) and in-hospital mortality was recorded (outcome variable).

Results Out of 728 (505 unique patients) admissions with COPD requiring NIV for AHRF, 282 admissions had a $\text{pH} < 7.26$. Of these, 224 admissions survived to discharge (mortality 20.6%). Stratifying the admissions by pH categories of 0.05, there is no significant difference in the mortality with pH ranges 7.2–7.25 and 7.25–7.30 (p value=0.845). If all COPD admissions requiring NIV ($n=728$) are stratified into two groups above and below 7.2, the ratio of odds of survival below pH 7.2 drops sharply ($p=0.000000088$): Abstract S70 Table 1.

Abstract S70 Table 1

pH	Survived	Not Survived	n
<7.2	110 (73.3%)	40 (26.7%)	150
≥7.2	517 (89.4%)	61 (10.6%)	578
Total	627	101	728

Conclusion Mortality in the group with $\text{pH} 7.20$ – 7.25 was similar to the group with $\text{pH} 7.26$ – 7.30 , suggesting that NIV on a dedicated respiratory ward can manage COPD patients with AHRF and $\text{pH} < 7.26$. Our findings suggest that it is probably justified to recommend that the initial pH cut-off is modified from $\text{pH} > 7.26$ to $\text{pH} > 7.20$ for ward-based NIV in COPD exacerbations with AHRF. This has important resource implications, given that more patients could be managed in a ward-based dedicated NIV unit rather than the utilising ITU beds in the UK National Health Service.

Novel outcomes and interventions in pulmonary rehabilitation

S71 AMBULATORY OXYGEN IMPROVES THE EFFECTIVENESS OF PULMONARY REHABILITATION (PR) IN SELECTED PATIENTS

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Rationale The acute effect of supplemental oxygen on exertion is well documented although its use in PR has not yet been clearly