

Improving Practice in NIV – Are We Getting Better?

N Schunke, V Mummery, S Williamson, D Saatci, D Li, N Stephenson, C Brown, C Orton, S Bloch.
Imperial College Healthcare NHS Trust, London, UK

This article presents independent research commissioned by the National Institute for Health Research (NIHR) under the Collaborations for Leadership in Applied Health Research and Care (CLAHRC) programme North West London. The views expressed in this publication are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health.

Introduction

Acute Hypercapnic Respiratory Failure (AHRF) results in 50,000 admissions across the UK every year, with acute exacerbations of COPD being the most common cause (20%)⁽¹⁾. Non-Invasive Ventilation is recommended in those patients who have an acute respiratory acidosis (pH < 7.35, PaCO₂ >6.5 and RR > 23). In 2013, the British Thoracic Society (BTS) national Non-Invasive Ventilation (NIV) audit demonstrated in-hospital mortality of 34% for patients treated with acute NIV. Original studies showed expected mortality closer to 20%⁽²⁾. This increased risk of death in clinical practice demands close attention and review of NIV application. We hypothesised that in response to the 2013 audit our practice may have changed.

Method

Retrospective case note analysis of patients admitted requiring acute NIV over a four month period (2016). Data was compared to published BTS data using Student T-Tests.

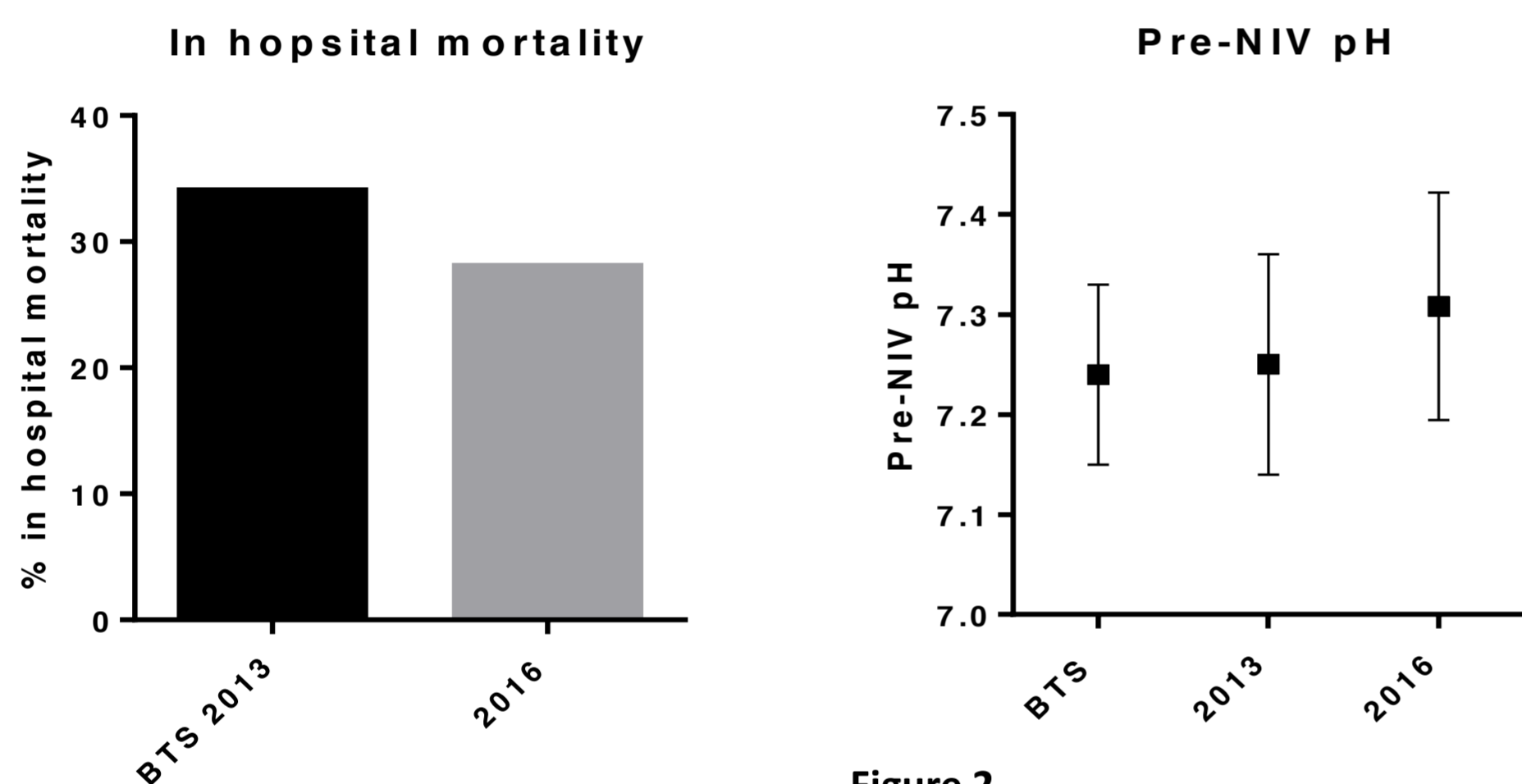


Figure 1. In-hospital mortality in 2016 compared to national BTS data.

Figure 2. Comparison of Pre-NIV pH in 2013 and 2016 compared to national BTS data.

Results

57 patients were identified, with demographic and admission data comparable to the population studied nationally in 2013.

Figure 1 demonstrates in-hospital mortality at 23%

Figure 2 demonstrates mean pre-NIV pH. This was significantly higher than BTS data (7.31±0.11, 7.24±0.09 respectively p<0.001) and our own data from 2013 (7.24±0.11).

All patients in this audit were managed in a level 2 area, compared to only 11% nationally. Documented NIV plan (42%) and ceiling of care decisions (40%) remain poor, particularly when compared to national data.

Conclusion and On-going Work: The 'INTU' Project

This audit has demonstrated reduced mortality when compared to national data. NIV at an earlier stage of acidosis and management of acute NIV in a designated level 2 clinical area, may have contributed to this improved outcome.

The BTS/ICS guidelines (2016) and the 2013 audit highlight the need for early specialist input, escalation of patients with poor prognostic indicators including pH < 7.25 and high quality level 2 care during acute NIV. Our data supports the on-going need for these interventions.



INTU: Improving NIV Through Understanding

- Aim: to improve the quality (timely, effective, safe and patient-centred) of the acute NIV service
- Experience-based co-design: understanding patient experience of NIV to inform improvements within our practice
- Engagement from key stakeholders and continuous patient/public involvement
- Quality improvement tools to review interventions against our outcome, process and balance measures

Key Interventions:

- NIV algorithm
- NIV Care Bundle
- Standardised and accessible staff education
- NIV multidisciplinary competencies
- Accessible patient information/education on NIV treatment and shared-decision making in NIV
- INTU website and twitter page
- TcCO₂ study in acute care