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Title: Increasing severity with unchanged in-hospital mortality in acute hypercapnic respiratory failure (AHRF) at a respiratory ward-based non-invasive ventilation (NIV) unit

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Body: Introduction: There has been a 462% increase in acute NIV use in COPD (Chandra D et al. AJRCCM 2011) over 11 years in the United States with similar changes in the UK, where this has led to the movement of NIV provision out of critical care. We analyse temporal trends in the severity and outcomes of ward-based NIV practices. Methods: In-house NIV registry data compared: 01/08/04 -31/01/06 (Period 1) vs 01/01/11 – 30/06/12 (Period 2) at our 11-bedded ward-based NIV unit in a central England acute hospital, analysing mortality, duration of NIV and initial arterial pH. Results: AHRF: 281 episodes in Period 1 and 240 in Period 2; acute exacerbations of COPD similar proportion (about 70%) in both periods; initial arterial pH significantly lower in Period 2 (median pH 7.280 vs 7.261: see figure); mean duration of NIV was significantly higher (median length of NIV 4 days vs 6 days), in-hospital mortality similar (21.6% vs. 22.7%).

Discussion: Compared to 2004, the ward-based NIV unit is treating more severely ill AHRF patients who are spending longer periods under acute NIV with no significant change in mortality. Further analysis of population characteristics, co-morbid risk factors for respiratory failure and Domiciliary NIV/Home Mechanical Ventilation practices are needed to inform health policy/strategies to deal with long term respiratory conditions.