Methods Comparison of the in-house NIV registry data 01/08/2004 – 31/01/2006 (Period 1) with 01/01/2011 – 30/06/2012 (Period 2) at an 11-bedded ward-based NIV unit within a 1000-bedded hospital in central England, looking at mortality, length (duration) of NIV and initial arterial blood pH, the latter being widely accepted as a marker of AHRF severity.

Results There were 281 episodes of AHRF treated in Period 1 and 240 in Period 2 with similar distribution of gender (non-significant increase in the number of women); acute exacerbations of COPD constituted similar proportion (about 70%) of dominant diagnosis behind AHRF in both periods (associated risk factor documentation, e.g. kymoscoliosis not analysed); the initial arterial blood pH was significantly lower (median initial pH 7.280 vs 7.261; Wilcoxon rank sum test: p=0.03134; pH significantly lower in Period 2); the mean length (duration) of NIV was significantly higher (median length of NIV 4.0 days vs 6.0 days; Wilcoxon rank sum test: p=0.0000018; Length of NIV is significantly higher in period 2), whilst in-hospital mortality was similar (21.6% vs. 22.7%).

Discussion Our data confirm the clinical surmise that over time, our ward-based NIV unit is treating more severely ill patients with AHRF 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 practises as well as national trends in NIV use are needed to inform health policy/strategies to deal with long term respiratory conditions.

Abstract P222 Table 1

<table>
<thead>
<tr>
<th></th>
<th>2009 (n=22, 33% total)</th>
<th>2012 (n=67, 82% total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Gases (%)</td>
<td>77</td>
<td>95</td>
</tr>
<tr>
<td>Sleep studies (%)</td>
<td>45</td>
<td>93</td>
</tr>
<tr>
<td>Lung function (%)</td>
<td>77</td>
<td>90</td>
</tr>
<tr>
<td>Overall (%)</td>
<td>80</td>
<td>95</td>
</tr>
</tbody>
</table>

Discussion These results show that a dedicated day-case MDT clinic improves the ventilatory assessment of MND patients. Whilst the uptake of NIV and, ultimately, survival, can only be determined in due course, we have previously shown a significant increase in NIV uptake in our MND patients (70% in 2011). We feel that the greater availability of objective testing, demonstrated here, and the structured approach of the service has contributed to this.


Methods A comparative study was conducted in patients with motor neuron disease (MND). Non-invasive ventilation (NIV) was utilised in only 5% of this study group, but has since been shown to improve survival in selected patients. With increasing referrals for NIV, our initial experience indicated a need for respiratory MDT input and a patient preference for day-case assessment. We established a clinic comprising regular specialist respiratory, nursing, physiotherapy and speech therapy assessment, ideally prior to the need for NIV. We undertake regular blood gases, overnight sleep studies and lung function tests, in line with NICE recommendations. This study looks at our experience in transitioning to a dedicated MND day-case model, and how it has affected quality of care.

Results The current cohort comprised 9 new referrals and 73 follow-ups (55 male, average age 63 yrs). Of these, 53 (65%) did not currently require NIV, 27 (33%) were already established on NIV and 2 (2%) received tracheostomy ventilation. As expected, there was a major shift towards day-case attendance (from 33% in 2009 to 82% in 2012). There was a clear increase in objective screening tests. Table 1 shows the proportion of eligible patients receiving these tests.

Discussion These results show that a dedicated day-case MDT clinic improves the ventilatory assessment of MND patients. Whilst the uptake of NIV and, ultimately, survival, can only be determined in due course, we have previously shown a significant increase in NIV uptake in our MND patients (70% in 2011). We feel that the greater availability of objective testing, demonstrated here, and the structured approach of the service has contributed to this.

feels settle very quickly and majority of them feel improvement in their key respiratory symptoms. Contrary to common perception, majority will be happy to have treatment again. Patients felt that a detailed explanation and counselling before starting NIV improves compliance and successful outcome from NIV.

P224 WHY ARE WE FAILING IN THE UK IN NON-INVASIVE VENTILATION (NIV) AND ACUTE EXACERBADATIONS OF COPD (AECOPD)? REVIEW OF OUR LOCAL PRACTICE

doi:10.1136/thoraxjnl-2012-202678.285

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Introduction and Objectives Ward based NIV is proven treatment in AECOPD with type II respiratory failure with pH 7.25–7.35. (1) Increasingly this modality is being used out with the hospital. Did our local service need improvement?

The RCP audit of real world practise showed concerning results: failure or delay to deliver NIV and increased mortality in NIV-traited patients compared to equally severe patients managed without NIV (26% vs 14%). (2)

In light of these factors we reviewed our NIV use across our hospital. Did our local service need improvement?

Methods We audited 4 months of emergency department admissions in late 2011 to 2012, ward based NIV care in February-March 2011 and February-March 2012 using the BTS audit tool and critical care admissions for AECOPD from January 2010 to December 2011.

Results

Emergency Department
NIV was only considered in 78% of possible patients and only given in 57%. Significant delays were seen in starting NIV; median 357 minutes (range 138–1366).

Ward-based NIV
In 2011 overall mortality was 33%, however patients with pH 7.25–7.35 mortality was 11%, matching the landmark trial outcomes. (1)
If pH was <7.25 mortality was 80%. In 2012 oxygen toxicity contributed to acidosis is 33% of patients and overall mortality was 40%.

Critical Care Department (CCD)
Time to respiratory support was a median of 4 hours. 31% of patients required invasive ventilation, this was higher if consolidation was present (25% vs 12.5).

Conclusions Unfortunately NIV is not commenced in all appropriate patients, delays are common place and NIV is being used in severely ill and very acidic patients with high mortality outcomes.

Discussion

Unfortunately NIV is not commenced in all appropriate patients, delays are common place and NIV is being used in severely ill and very acidic patients with high mortality outcomes.

Driven by national audit data, this detailed analysis of our practise has allowed us to drive local changes to improve our service including: 24/7 NIV nurse; early involvement with CCD in appropriate patients with pH<7.25 and re-education of staff across the Trust.

References


P225 ROUTES OF DOMICILIARY NON-INVASIVE VENTILATION (NIV) SET-UP

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Introduction Domiciliary NIV is being increasingly used to treat chronic ventilatory failure, particularly due to obesity and neuromuscular conditions. In the course of evolution of an NIV unit within an acute hospital, most domiciliary NIVs are set up at the end of an acute episode of admission with hypercapnic acidotic respiratory failure to start with, but overtime, as more at-risk patients come under surveillance for respiratory failure, we hypothesised that a unit supervising domiciliary NIV/Home Mechanical Ventilation is expected to do more elective set-ups.


Results The volume more than doubled from 19 new domiciliary NIV set-ups in period 1 to 39 new domiciliary NIV set-ups in period 2; the elective domiciliary NIV set-up rate increased from 7/19 (36.8%) to 19/39 (48.7%) between periods 1 and 2.

Discussion Over time, both the volume and the elective set-up rate for new domiciliary NIV have gone up. This probably indicates that a larger proportion of people at risk of respiratory failure treatable with NIV are coming under the unit's surveillance and has clearly been associated with the expansion and maturation of the NIV service in our experience. The 'elective domiciliary NIV set-up rate' can therefore be tested as a metric for comparison of centres supervising domiciliary NIV/Home Mechanical Ventilation in this rapidly evolving field.

P226 THE CHANGING FACE OF HOME NIV (NON INVASIVE VENTILATION)

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Introduction The number of patients requiring home NIV for chronic hypercapnic respiratory failure is rising and the indications are changing. This has significant service planning and cost implications.

Methods A retrospective review of the database of all patients established on home NIV since 2004 was conducted. All clinical records from these patients were reviewed. The indication for NIV was classified as thoracic cage abnormalities, neuromuscular disease, OHS (obesity hypoventilation syndrome +/- obstructive sleep apnoea), COPD (chronic obstructive pulmonary disease), CF (cystic fibrosis) and ILD (interstitial lung disease)/other. The date of death was gained from the internal hospital records (eDocs) and through the NHS portal with the use of individual NHS numbers.

Results There were 286 patients established on home NIV between 2004 and 2012, 162 were male, the overall mortality was 29%

There has been over a seven fold increase in the yearly prevalence of patients requiring home NIV and the indication for its use is changing over time (figure 1). The proportion of patients with thoracic cage abnormalities is reducing from 25% in 2004 to 11% in 2012. The use of NIV for obesity hypoventilation syndrome has increased 10 fold since 2004. This hospital is the regional neurosciences referral unit which may explain the large number of patients requiring NIV for neuromuscular disease, 45% of which had motor neurone disease.

In 2004, the cost of setup with an NIV machine and consumable was £995 (incl VAT). The cost of an NIV machine and consumable has increased to £308,500 (incl VAT) in 2012. The use of NIV for obesity hypoventilation syndrome has increased 10 fold since 2004. This hospital is the regional neurosciences referral unit which may explain the large number of patients requiring NIV for neuromuscular disease, 45% of which had motor neurone disease.

In 2004, the cost of setup with an NIV machine and consumable was £995 (incl VAT). The cost of an NIV machine and consumable has increased to £308,500 (incl VAT) in 2012. This does not include the cost of personnel.