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 Trust 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. kyphoscoliosis 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.

P222 A COMPARISON IN SERVICE PROVISION MODELS FOR VENTILATORY ASSESSMENT IN MOTOR NEURONE DISEASE PATIENTS

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Specialist neurological MDT clinics improve outcomes in patients with motor neurone disease (MND)[1]. Non-invasive ventilation (NIV) was utilised in only 3% of this study group, but has since been shown to improve survival in selected patients[2]. 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 community 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.

Methods We looked at two cohorts of MND patients seen over a 3-month period before (2009) and after (2012) the day-case clinic was established. There were 66 patients in the first cohort and 82 patients in the second. We compared the quality of service delivered by looking at the proportion of patients who had received the appropriate respiratory assessments. For lung function studies, we excluded those in whom mouthpiece testing was not possible (due to significant bulbar problems). For blood gases and sleep studies, all were included.

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.

1. Traynor BJ et al. J Neurol Neurosurg Psychiatry 2003.
2. Bourke SC et al. Lancet Neurology 2006.

Abstract P222 Table 1

Day-case	2009 (n=22, 33% total)	2012 (n=67, 82% total)
Blood Gases (%)	77	96
Sleep studies (%)	45	93
Lung function (%)	77	90
Overall (incl. inpatients)	**2009 (n=66)**	**2012 (n=82)**
Blood Gases (%)	80	96
Sleep studies (%)	68	94
Lung function (%)	62	91

P223 NIV....A KISS OF LIFE

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Background Non-invasive ventilation (NIV) can be a lifesaving intervention and this is recommended treatment for acute hypercapnoeic respiratory failure. However it is thought to be a distressing intervention by some patients & families. We performed a survey of patient's perception of acute ward based NIV and its effect on their symptoms.

Method With a brief questionnaire we enquired patients how they felt when NIV was commenced and positive or negative effects of NIV on various symptoms. 20 consecutive patients who were admitted for acute NIV from February to April 2012 were included. A record was also made about the place where NIV was initially instituted.

Findings 75% patients received NIV for COPD exacerbations. 65% patients were NIV naive. 90% of patients recalled initiation of NIV. 55% of treatments were started in emergency department (ED). 63% of ED patients and 77% of ward patients recalled that they were explained about the treatment before starting.

90% patients recognised NIV as a lifesaving intervention and 90% wanted to receive this again if needed acutely and 65% would accept domiciliary NIV if offered.

85% reported improvement in breathing, 40% felt reduction in tiredness & headaches and 5% felt improvement in exercise tolerance. However 5% patients felt that NIV has actually worsened their breathing, another 5% felt that there was no improvement in symptoms at all.

The commonest negative feelings were claustrophobia (45%) followed by fatigue (40%), sleeplessness (35%), inability to breathe (30%) & feeling panicked (25%).

Some interesting comments were,

"Like being given a kiss of life"

"Lifesaving piece of equipment which is not a comfort ride but it is necessary"

"I know this is horrible but I shall always say go for it mate".

Interpretation:

Almost all patients will feel distressing symptoms including agitation and claustrophobia in the beginning of treatment but these

feelings 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 EXACERBATIONS OF COPD (AECOPD)? REVIEW OF OUR LOCAL PRACTISE

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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 trial evidence.

The RCP audit of real world practise showed concerning results: failure or delay to deliver NIV and increaced mortality in NIV-treated 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 admissiond 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 Decemeber 2011.

Results

Emergency Department

NIV was only considered in 78% of possible patients and only given in 37%. 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 on CXR (p=0.005). Overall mortality was 20%, significantly higher if pH<7.25 at any time at 35% (p=0.02) and if CXR 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 acidotic 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 appropraite patients with pH<7.25 and re-education of staff across the Trust.

References

1. Plant PK et al. Early use of NIV for AECOPD on general respiratory wards. *Lancet 2000*; 355:1931–35.
2. Roberts CM et al. Acidosis, NIV and mortality in hospitalised COPD exacerbations. *Thorax 2011*; 66:43–48.

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 hypothesized that a unit supervising domiciliary NIV/Home Mechanical Ventilation is expected to do more elective set-ups.

Methods Comparison of the volume of new domiciliary NIV set-ups and the elective NIV set-up rate over two 12-month periods: Apr 2005-Mar 2006 (period 1) and Apr 2011-Mar 2012 (period 2) in a dedicated 11-bedded ward-based NIV unit (established: Aug 2004) in a 1000-bedded central England teaching hospital trust, providing domiciliary NIV support to over 200 patients with over 350 under surveillance for respiratory failure.

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-uprate 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 for a all new patients, plus the cost of consumables for those established on NIV was estimated to be £73,000; whereas this cost in 2011 was estimated to be £308,500 (incl VAT). This does not include the cost of personnel.