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

doi:10.1136/thoraxjnl-2012-202678.285

KM Protheroe, R Bentley, TE Sams, S Parker, R Sayers, J Taylor, JW Killen, HJ Curtis. *Gateshead Health NHS Foundation Trust, Gateshead, UK*

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

doi:10.1136/thoraxjnl-2012-202678.286

[1]S Agarwal, [1]M Vaughan, [1]C Wharton, [1]S Ejiofor, [2]B Chakraborty, [1]E Gallagher, [1]R Mukherjee. *[1]Birmingham Heartlands Hospital, Birmingham, UK; [2]School of Mathematics, Univ. of Birmingham, Birmingham, UK*

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)

doi:10.1136/thoraxjnl-2012-202678.287

SV Fletcher, S Ewles, JE Wilkinson. *University Hospital Southampton NHS Foundation Trust, Southampton, UK*

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.

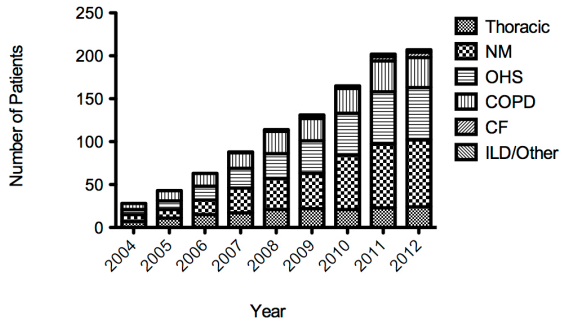
Results There were 286 patients established on home NIV between 2004 and 2012, 162 were male, the overall mortality was 29%.

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.

Conclusion This study highlights the changing face of home NIV service in terms of both the increasing numbers of patients requiring home NIV and the changing pattern of indication, particularly in the face of an emerging obesity epidemic.

Figure 1. Prevalence of use of home NIV by year and indication



Abstract P226 Figure 1

P227 HOME NIV IN COPD: A REAL LIFE STUDY

doi:10.1136/thoraxjnl-2012-202678.288

R Naseer, D Ghosh, A Neep, J Rodger, O Johnson. *Mid Yorkshire NHS Trust, Wakefield, England*

Introduction Home NIV in selected patients with stable hypercapnic COPD has been shown to reduce hospital admissions. Randomised studies have produced conflicting evidence on its effect on quality of life and survival. High intensity ventilation has shown promise. However, most studies of NIV for COPD have been in highly selected patients in the research setting. We attempt to explore the impact of home NIV in a district hospital setting.

Methods All patients established on home NIV for COPD for at least 1 year were identified from NIV database. The primary outcomes were number of hospital admissions, length of hospital stay (LOS) and days requiring acute NIV during the 12 months before starting NIV and the 12 months after. Secondary outcomes were admission blood gases during these periods.

Results Thirty-seven patients were identified, 9 were excluded as COPD was not the primary diagnosis or records could not be traced. Twenty-eight patients (23 females) were included in the study (Age 63±9 years, BMI 34±10, FEV1 0.58±0.18, FEV1% predicted 27±10, FEV1/FVC 41±10). The mean IPAP and EPAP at 3 months were 21±3 and 7±3 cm of H_2O Table 1 describes the results. Fourteen patients did not have any admissions after institution of NIV.

Discussion and conclusion Institution of home NIV significantly reduced admissions, hospital stay and need for acute NIV in a cohort of severe COPD patients with hypercapnia. Even though the decision to offer NIV was not based on any rigid criteria, but was a clinical decision based on blood gases, spirometry and admissions, these patients acted as their own controls. It is possible that following NIV, the patients received more home visits from our respiratory nursing team but as frequent attenders they were already receiving significant nursing input by the same nursing team in the community. The apparent lack of improvement in blood gases was probably due to the fact that only 11 patients had an admission ABG post NIV and only 4 of them more than once. This real life study shows a significant impact of home NIV in COPD in terms of admissions and hospital stay. Bigger studies are necessary to assess its longer term effect.

P228 REFERRAL PATTERNS AND OUTCOMES FOR PATIENTS TREATED IN A NATIONAL CENTRE SPECIALISING IN WEANING FROM INVASIVE MECHANICAL VENTILATION

doi:10.1136/thoraxjnl-2012-202678.289

S Banerjee, M Pittman, R Chadwick, D Packer, N Oscroft, M Davies, J Shneerson, T Quinnell, I Smith. *Papworth Hospital NHS Foundation Trust, Cambridge, United Kingdom*

Introduction With increasing evidence for the use of non-invasive ventilation (NIV) for acute COPD[1], a change in referral pattern to a national weaning unit was anticipated over time. We investigated the case mix and outcomes of patients referred to a unit specialising in weaning from invasive mechanical ventilation (IMV) over a 20 year period, comparing sequential 5-year cohorts.

Methods We undertook a retrospective analysis of 453 patient records referred to a national centre for weaning from IMV between January 1992 and December 2011. They were divided into four 5-year cohorts. Age on admission, gender, diagnostic group, length of stay on the weaning unit, survival, number successfully weaned from IMV and those requiring long term NIV at discharge were examined and compared between cohorts.

Results *Figure 1. Kaplan Meier plot of post discharge survival, comparing the four 5-year cohorts.*

A total of 453 patients were identified, 420 (93%) referred from other centres. Median age was 60.9 (IQR 49.6–70.2), 250 (55%) were male and median length of stay on the weaning unit was 27 days (IQR16–46). Thirty (7%) patients died before discharge. Of the survivors, 360 (79%) were weaned from IMV and 140 (31%) did not require any ventilatory support on discharge. No significant differences were found between the four cohorts in terms of age, gender, length of stay, proportions successfully weaned from IMV and requirement for NIV on discharge. There was no change in case mix, for example the proportions of patients with COPD were 18%, 23%, 26% and 22% across the four 5-year cohorts.

Discussion We did not identify any change in the referral pattern to our weaning unit, despite widespread use of NIV. With rates of 79% successfully weaned from IMV and a median survival of 29.2 months (IQR 20.8–37.7) referral to our weaning centre remains highly relevant for those receiving prolonged IMV and good outcomes can be anticipated.

Abstract P227 Table 1 Hospital activity and blood gases during 12 months before and after home NIV

n = 28	12 months before NIV	12 months after NIV	p value	p value
	Mean (SD)	Mean (SD)	paired t test	Mann Whitney
No. of admissions	3.5 (2.5)	1.5 (2.9)	0.002	<0.001
Mean LOS	10.7 (8.4)	3.5 (3.9)	0.002	<0.001
Total LOS	30.4 (21.1)	9.5 (18)	<0.001	<0.001
Acute NIV Days	13.3 (15.4)	1.4 (3.3)	0.001	<0.001
Admission pH	7.31 (0.08)	7.36 (0.04)	0.16	0.02
Admission PCO_2	9.42 (2.33)	8.05 (1.99)	0.44	0.48