patient group for7 years. We have evaluated concordance data for all patients set-up during this time.

Methodology Data were obtained by retrospective case-note review of all patients set-up on NIV for MND between April 2004 and March 2011inclusive.

Results 42 patients were set-up over 7 years. Mean length of time from diagnosis to ventilation was 13.9 months, with three patients being set-up on diagnosis and a further three before diagnosis. 69% (n=29) were set-up at home, the remainder in hospital. 71% (n=30) of those set up were eventually concordant, 19% (n=8) did not tolerate NIV, while 10% (n=4) died during initiation. Those set-up in hospital had a tendency to be more concordant with ventilation than those set-up at home (76% vs 69%). This group also became concordant more rapidly (4.4 days vs 14.2 days). Those with both symptomatic and physiological indications for ventilation appeared to tolerate it extremely well with 84% (n=24) becoming concordant. There was a failure rate of 75% of those with physiological indications only. Of those with symptoms only and no apparent abnormal physiological markers 80% (n=4) complied with treatment. Symptomatically daytime somnolence was the most commonly reported symptom, with 81% (n=34) of patients being sleepy by day. Nocturia was the least commonly reported at 11%. In terms of mortality, mean survival from initiation to death was 10.2 months (range 0.67–84). In total three patients progressed from NIV to tracheostomy ventilation, one of these survived a further 5 years.

Conclusion Those with MND have a tendency to have better concordance with NIV if started in hospital rather than at home; concordance also appears to be more rapid in this group. As expected, given the nature of this treatment those without symptoms tend not to tolerate NIV.

REFERENCE

1. NICE. *Motor Neurone Disease: The Use of Non-Invasive Ventilation in the Management of Motor Neurone Disease*. London: NICE, 2010.

P273 OUTCOME AFTER PROLONGED INVASIVE MECHANICAL VENTILATION IN MYOTONIC DYSTROPHY

doi:10.1136/thoraxjnl-2011-201054c.273

S K Banerjee, V Licence, N Oscroft, M G Davies, T Quinnell, J Shneerson, I E Smith. *Papworth Hospital NHS Foundation Trust , Papworth Everard, UK*

Introduction Patients with myotonic dystrophy (MD) may present acutely with respiratory failure due to muscle weakness and aspiration pneumonia. We are not aware of published data regarding the outcome of intubation and ventilation in these circumstances.

Method We performed a retrospective case notes review of patients referred to a specialist respiratory support centre with a diagnosis of MD. In this abstract we present the outcomes of patients who had received invasive mechanical ventilation and were transferred as in-patients to our unit.

Results Between 1996 and 2010, 22 patients (seven men), mean age 39 years, who had all been intubated and ventilated for a minimum of 2 weeks, were referred. At transfer, 16 patients were tracheostomy ventilated, two were on non-invasive ventilation (NIV) and five were self-ventilating but had on-going CO_2 retention. Where specified, admission to ICU was precipitated by pneumonia (16), sudden collapse (2) and cardiac failure (2). The mean duration of invasive ventilatory support was 67 (range 17–196) days. One patient died in our unit. Of those discharged, 11 were on NIV, five still required tracheostomy ventilation and six were ventilator independent. Five patients required a mini-trach tube for access to secretions. The mean length of stay in the weaning unit was 35 (range 2–95) days. Mean survival post discharge was 44 (range 1–102) months. In the same period 53 patients with MD who had not been intubated and ventilated were initiated on NIV for ventilatory failure in our unit. Mean survival in this group was 56 (range 1–144) months.

Conclusion Patients with MD may require prolonged invasive ventilation when presenting with acute ventilatory decompensation. In this series the majority weaned from invasive mechanical ventilation and treatment including NIV was associated with survival on average of over 3.5 years. The prognosis may not be as good as for those patients with MD starting NIV who have not required prior intubation.

P274 SEASONAL VARIATION IN INITIATION AND DISCONTINUATION OF DOMICILIARY NON-INVASIVE VENTILATION: A 12-MONTH COHORT STUDY

doi:10.1136/thoraxjnl-2011-201054c.274

[1]Y Khatun, [1]P B Murphy, [2]A C Davidson, [3]N Hart. *[1]King's College London, London, UK; [2]Lane Fox Respiratory Unit, Guy's & St Thomas NHS Foundation Trust, London, UK; [3]Guy's & St Thomas NHS Foundation Trust and King's College London NIHR Comprehensive Biomedical Research Centre, London, UK*

Introduction Domiciliary non-invasive ventilation (NIV) is an established treatment for patients with chronic respiratory failure. Although the proportion of patients that discontinue NIV is reported from clinical trial data, observational cohort studies often lack these details. Furthermore, adherence to treatment and patient retention is enhanced in clinical trials as a consequence of well-defined patient selection and greater clinical and non-clinical support for trial patients.

Aim To investigate initiation, discontinuation and rationale for discontinuation in patients initiated on domiciliary NIV in a regional home mechanical ventilation centre over a 12-month period.

Methods All data were collected prospectively from a discharge summary database form 1 January to 31 December 2010. Monthly initiation and discontinuation trends and rationale for discontinuation were analysed across differing diagnostic groups.

Results 200 patients were initiated (123) and discontinued (77). Chronic obstructive pulmonary disease (COPD), neuromuscular and chest wall disease (NMD and CWD) and obesity related respiratory failure (ORRF) were the most frequent diagnoses for initiation (26.0%, 23.6%, 50.4%, respectively) and discontinuation (13.8%, 22.8%, 41.6%, respectively). Overall initiation rates were constant throughout the year with a fall in the number of COPD patients during the Summer. Death (52.6%) and poor adherence to the ventilator prescription (19.2%) were the commonest reasons for discontinuation across all groups. As expected, death was the commonest indication for discontinuation in the COPD and NMD and CWD group and poor adherence in the ORRF group (Abstract P274 table 1).

Abstract P274 Table 1 Initiation and discontinuation of domiciliary NIV

	Initiation n (%)				Termination n (%)			
	COPD	NMD and CWD	ORRF	Total	COPD	NMD and CWD	ORRF	Total
Spring	9 (28)	9 (31)	17 (27)	35 (28)	7 (41)	9 (32)	11 (34)	27 (35)
Summer	4 (13)	6 (21)	19 (31)	29 (24)	3 (18)	5 (18)	6 (19)	14 (18)
Autumn	10 (31)	9 (31)	13 (21)	32 (26)	2 (12)	5 (18)	8 (25)	15 (19)
Winter	9 (28)	5 (17)	13 (21)	27 (22)	5 (29)	9 (32)	7 (22)	21 (27)
Total	32 (100)	29 (100)	62 (100)	123 (100)	17 (100)	28 (100)	32 (100)	77 (100)

Discussion Although there is seasonal variation in the initiation of NIV in the COPD patients, this is not apparent in the NWD, CWD and ORRF patients. However, there is a seasonal variation in stopping NIV, which may relate to excess mortality in the Winter

Thorax: first published as 10.1136/thoraxjnl-2011-201054c.274 on 2 December 2011. Downloaded from http://thorax.bmj.com/ on April 19, 2024 by guest. Protected by copyright.

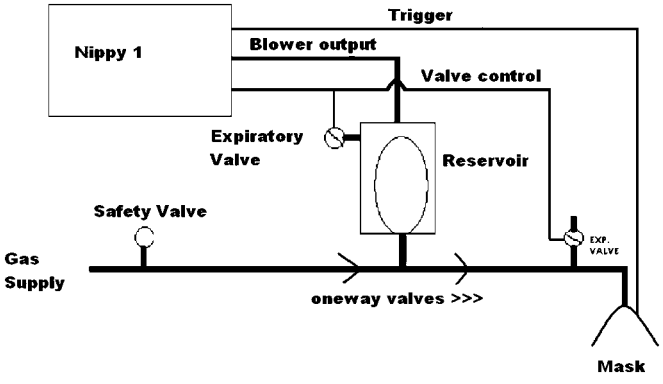
and Spring months. Further analysis of these trends is required to establish a cause and effect relationship for initiation and discontinuation of domiciliary NIV in clinical practice.

P275 AN AFFERENT RESERVOIR ENABLES THE NIPPY 1 TO DELIVER ANY GAS

doi:10.1136/thoraxjnl-2011-201054c.275

R Richards. *Princess Royal University Hospital, Orpington, Kent, UK*

Non-invasive ventilation with some gas mixtures, such as high flow oxygen or Heliox, can be problematic and/or require expensive equipment. The addition of a pressurised afferent reservoir to the Nippy 1 ventilator (B&D Electromedical) was studied to see if this would overcome these problems. The remote trigger of the Nippy 1 is essential to this design. A CPAP circuit was used to give a gas flow of at least 30 l/m; a 30 cm H_2O safety valve was incorporated. A 3 l afferent reservoir (bag in bottle design) was added via a t-tube (Abstract P275 figure 1). The inner flexible bag was directly open to the CPAP circuit. The rigid outer casing had two ports, the first connected to the output from the Nippy 1 and the second connected to and exhaust valve controlled by the Nippy 1. A standard Nippy 1 breathing circuit conveyed the gas to the patient. As the patient breaths in the Nippy 1 is triggered and closes the two exhaust valves. The reservoir is pressurised by the ventilator providing a positive inspiratory pressure. In expiration both valves open enabling the patient to breathe out and the reservoir to refill. Pressure measurements at the mask showed that the system has an intrinsic PEEP of approximately 2.5 cm H_2O; the trigger on the Nippy 1 was changed to a relative design to compensate. The circuit can be adjusted to deliver inspiratory pressures of up to 30 cm H_2O. The pressure performance was unaltered when using Heliox, oxygen or air. The addition of a CPAP valve to the patient exhaust port could also be employed to raise the PEEP pressures as required. The development of this circuit may enable any gas to be used within the HDU/CCU setting without needing expensive equipment.



Abstract P275 Figure 1

P276 THE VALUE OF VITAL CAPACITY AND DAYTIME PULSE OXIMETRY TO PREDICT HYPERCAPNIA IN OBESE PATIENTS

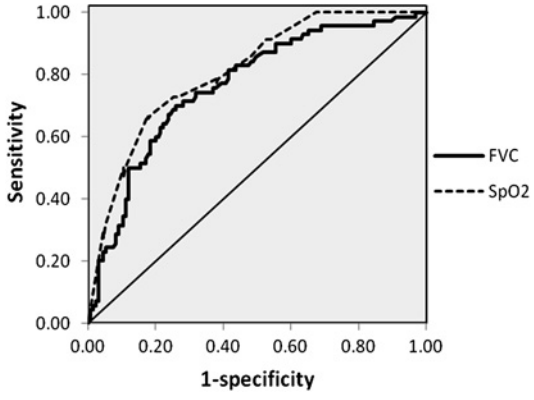
doi:10.1136/thoraxjnl-2011-201054c.276

[1]E Boleat, [1]S Mandal, [1]E Suh, [1,2]N Hart. *[1]Lane Fox Respiratory Unit, Guy's St Thomas NHS Foundation Trust, London, UK; [2]Guy's and St Thomas' NHS Foundation Trust and King's College London, National Institute of Health Research Comprehensive Biomedical Research Centre, London, UK*

Introduction The Health Survey for England reported that 25% of UK adults are obese with a 10% rise over 15 years. Consequently, clinicians are faced with a rising number of obese patients referred for bariatric and non-bariatric surgery. Previous data indicates a 50% incidence of obstructive sleep apnoea in patients with a BMI >40 kg/m^2 with obesity hypoventilation syndrome present in up to a third. These patients have higher risk of peri-operative complications. A screening tool to predict hypercapnic respiratory failure (P_aCO_2 >6 kPa) based on simple clinic tests would be useful. Correlations were performed to determine which tests may be useful.

Methods Data from all obese patients (BMI >30 kg/m^2) with evidence of sleep-disordered breathing on oximetry initiated on home ventilatory support between August 2005 and December 2010 were obtained from a discharge summary database.

Results 205 patients were included for analysis. The group mean age was 54.9 (SD 14.2) years, daytime clinic oxygen saturations ($SpO_{2clinic}$) 91.0% (5.8%), FEV_1 1.8 l (0.96 l), FVC 2.2 l (1.11 l), weight 132.8 kg (28.5 kg), BMI 47.6 kg/m^2 (9.6) and Epworth sleepiness score 8.9 (5.6). Mean daytime P_aCO_2 was 6.68 kPa (1.31). Significant correlations were found between P_aCO_2 and BMI (r=0.20; p<0.005), FEV_1% predicted (r=−0.20; p<0.005), FVC% predicted (r=−0.20; p<0.005) and $SpO_{2clinic}$ (r=−0.52; p<0.005). Receiver operating characteristics (ROC) analysis was used to determine the utility of $SpO_{2clinic}$ and FVC to predict hypercapnia. The area under the curve (AUC) for $SpO_{2clinic}$ was 0.81 (p<0.001); a cut-off of $SpO_{2clinic}$ of <92% demonstrated a sensitivity of 86% and specificity of 52% in predicting hypercapnia. The AUC for FVC was found to be 0.77 (p<0.0001); a cut-off of <1.94 l demonstrated a sensitivity of 77% and specificity of 61% in detecting hypercapnia (see Abstract P276 figure 1).



Abstract P276 Figure 1 Receiver operating characteristics for FVC and $SpO_{2clinic}$ in predicting hypercapnia.

Conclusion These data have significant clinical utility for clinicians involved in providing respiratory support services for obese patients undergoing bariatric and non-bariatric surgery. In particular, it could form the foundations of a screening algorithm including simple measures such as home oximetry, spirometry and clinic pulse oximetry, to identify the highest risk patients that need to be reviewed by sleep and ventilation clinicians.

Thorax: first published as 10.1136/thoraxjnl-2011-201054c.274 on 2 December 2011. Downloaded from http://thorax.bmj.com/ on April 19, 2024 by guest. Protected by copyright.