

## Poster sessions

clinicians on health economic grounds in patients after three hospital admissions for acute hypercapnic respiratory failure. Previous systematic reviews of domiciliary NIV have been limited in scope and required updating.

**Methods** Standard systematic review methods were used for identifying relevant clinical and cost-effectiveness studies of any appropriate design assessing NIV compared to usual care, or comparing different types of NIV. Risk of bias was assessed and checked. Primary effectiveness outcomes (mortality, hospitalisations, exacerbations and quality-of-life) were combined using random effects meta-analysis. Results were grouped into patients given NIV within 6 weeks of a hospital admission requiring inpatient NIV and those given NIV when stable.

**Results** Thirty controlled effectiveness studies were identified reporting a variety of outcomes, together with 65 uncontrolled studies. Benefit from NIV in terms of survival and hospital admissions in controlled studies was variable, and where present appeared most marked in post-hospital patients (based on limited evidence). For more stable patients, a modest volume of evidence found no benefit from NIV for survival and some non-significant beneficial trends for hospitalisations and quality-of-life. No conclusions could be drawn regarding potential benefit from different types of NIV due to limited study sizes and heterogeneity.

**Conclusions** Domiciliary NIV has greatest effect when used after a hypercapnic exacerbation and might improve hospitalisation rates and mortality in this group of patients. There is no benefit if used in stable, normocapnic patients.

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### P301 A LARGE RETROSPECTIVE EVALUATION OF DOMICILIARY AND OUTPATIENT INITIATION OF HOME MECHANICAL VENTILATION

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**Introduction and objectives** Home Mechanical Ventilation (HMV) for patients with chronic ventilatory failure (CVF) often requires hospital admission for initiation of treatment. There are limited data evaluating the efficacy, efficiency and safety of initiating HMV in the domiciliary setting. Our centre has undertaken over 200 'home set-ups' and we have evaluated outcomes in these patients.

**Abstract P301 Table 1** Baseline Lung Function and Arterial Blood Gas Parameters in Patients receiving Domiciliary or Outpatient Initiation of HMV

	Mean (SD)	Range
Vital Capacity (L)	2.1 (1.2)	0.45–5.5
pH	7.39 (0.04)	7.25–7.48
Arterial pCO <sub>2</sub> (kPa)	7.0 (1.6)	3.2–14.5
Arterial pO <sub>2</sub> (kPa)	9.2 (2.0)	5.8–18.9
Bicarbonate (mmols/L)	29.5 (5.8)	21–51

**Methods** Patients with CVF who had HMV initiated in the domiciliary or outpatient setting were identified from our hospital database and data were retrospectively collected from their hospital records.

**Results** 214 patients with CVF were set-up at home between 2004 to 2013. Notes were available for 193 (90%) patients, mean (SD) age 59 (14) years, 63% male. The majority of patients had Motor Neuron Disease (MND)(30%) or obesity related respiratory failure (23%). Baseline lung function and arterial blood gas parameters are shown in Table 1.

178 (92%) patients had HMV initiated in their home; 15 attended the outpatient clinic for set-up. Three patients subsequently required hospital admission to support adaptation to HMV.

Following initiation, 135 (70%) patients were assessed as compliant with HMV, defined as >4 h self-reported use each night. Patients with MND had the lowest compliance rate with only 30 (52%) achieving this usage. If those with MND are excluded, overall compliance was 77% which is similar to our inpatient initiated HMV compliance rate of 83% (n = 224) and to case series reported by other centres.

Patients with few symptoms of nocturnal hypoventilation had a lower compliance rate (55%) than more symptomatic patients (71%).

In patients who were compliant with HMV, mean (SD) time until >4 h use per night was 27 (60) days, but 33 (17%) patients achieved this usage after the first night. Those who became compliant with HMV had a mean of 2.9 (3.2) home visits and 1.4 (1.8) phone calls each.

**Conclusion** Establishing HMV in the domiciliary and outpatient setting can be effectively and safely achieved, even in patients with marked nocturnal hypoventilation. Apart from patients with MND or those who are minimally symptomatic, 'home set-up' of HMV does not appear to affect compliance significantly.

### P302 HOME MECHANICAL VENTILATION: HAS VENTILATOR TECHNOLOGY SURPASSED OUR ABILITY TO CARE FOR SOME PATIENTS IN A COMMUNITY SETTING?

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**Introduction** Home mechanical ventilation (HMV) for patients with chronic respiratory failure is a growing therapeutic modality that can reduce morbidity and mortality.<sup>1</sup> HMV may be complex to establish and requires a clear care pathway from acute to community services. The aim was to ascertain factors influencing inpatient length of stay (LoS) and mortality in individuals requiring HMV who were unable to use the device independently.

All HMV was initiated in a respiratory high dependency unit (RHDU) in a university hospital.

**Method** A retrospective analysis of medical notes was conducted for all patients initiated on HMV between September 2012 and September 2013. Patients who were unable to manage the device independently were identified. Data collected included: admission data, social history, primary diagnosis, date deemed medically fit, readmission to RHDU, bed days post medically fit (section 5), reasons for delayed discharge and outcome.

LoS and bed day cost were calculated based on trust finance data for level 1 and 2 beds.

**Abstract P302 Table 1** Bed day cost of in-patient stay post section 5 for patients initiated on HMV

Length of stay once declared medically fit for discharge	<5 days:		>5 days:	
	Group 1	n = 5	Group 2	n = 7
Neuromuscular disease (%)	80		71	
	Mean	205	6,172	
		(0–820)	(2,460–10,455)	
Cost of stay once declared medically fit (£)	Total	1,025	43,205	
		0		
	Mean		4270	
			(0–12,810)	
Cost of HDU readmission (£)	Total	0	29,890	
Total cost (£)		1,025	73,095	
In-patient Mortality (%)		0	86	

**Results** Twelve patients were identified and separated into 2 groups according to LoS: less than 5 days (group 1; n = 5) or greater than 5 days (group 2; n = 7).

Various primary diagnoses were represented in each group. The main variable separating groups was pre-admission social status. Patients with a live-in carer, willing spouse or established 24-hour care were discharged back to their original home within 4 days of being declared medically fit. Those without such care had an average LoS of 27.4 days (17–51), with a large increase in associated cost and mortality. (Table 1). All patients in Group 1 survived and were successfully discharged. The in-hospital mortality for patients in Group 2 was 86%.

**Discussion** HMV is a complex modality requiring specialist training to facilitate home use. Patients unable to manage HMV independently have significant care needs. This study showed that patients who do not have an established care network pre-discharge have an increased LoS and higher mortality. The current Continuing Healthcare process and Social Services structure is not robust enough to meet these patients' needs.

## REFERENCES

- 1 European Respiratory Journal. 2005;25(6):1025-1031
- 2 Rello J, et al. *Chest*. 2010;137(5):1138-1144

## P303 DOES REGULAR SURVEILLANCE ENSURE THE OPPORTUNITY OF NON-INVASIVE VENTILATION TO PATIENTS WITH MOTOR NEURONE DISEASE?

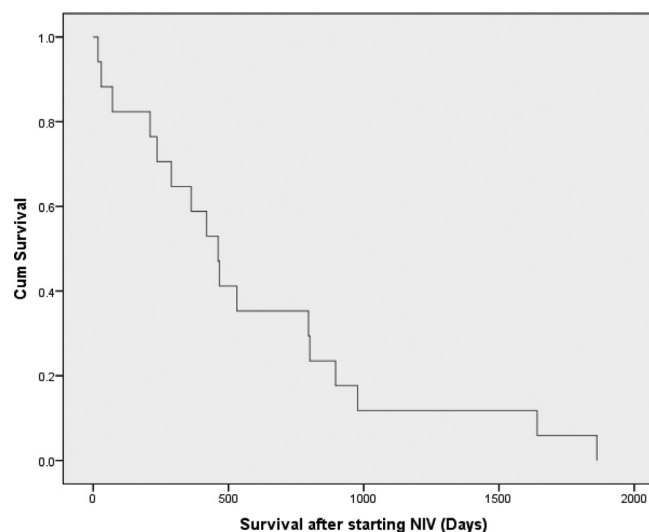
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**Introduction** Most people with motor neurone disease (MND) die from respiratory failure and non-invasive ventilation (NIV) can improve survival. The median survival of patients with good bulbar function not treated with NIV was just 11 days in one RCT (1). We wished to establish whether our 3 monthly follow up regime, following NICE guidance (2), ensures all patients are offered NIV or whether many are dying without this treatment opportunity.

**Aim** Establish what proportion of patients died before NIV was offered while under our follow up.

**Method** A retrospective analysis of case notes of patients who died during the calendar year 2013. Survival was calculated as days (d) from starting of NIV until death.

**Abstract P303 Figure 1** Kaplan-Meier curve showing survival in NIV compliant group

**Results** From our cohort, 24 patients died in 2013 of whom 20 had been offered NIV (17 compliant). Median survival was 390 (IQR 147–798) d. Median survival for NIV compliant patients was 462 (IQR 223–848) d. Median survival was 190 d for the 2 NIV compliant patients with severe bulbar dysfunction and 85 days for 3 patients who were non-compliant with NIV.

Of the 4 patients who died before NIV was offered, 2 had severe bulbar dysfunction and 1 patient was on CPAP for treatment of obstructive sleep apnoea. Pneumonia was reported as the cause of death in 2 of these patients. Details of the mode of dying of the other 2 patients could not be established (certified as MND).

**Conclusion** Most of the patients dying with MND had been offered NIV, 85% were compliant with treatment and survival was at least as good as published results. 4 died before NIV was offered but in 2, death was precipitant due to pneumonia, not ventilatory failure. As a default, 3 monthly review seems a reasonably safe interval for ventilatory surveillance in people with MND balancing intrusive hospital visits with the risk of missing the opportunity to try NIV at the end of life.

## REFERENCES

- 1 Bourke SC, et al. *Lancet neurol*. 2006; 5: 140-7
- 2 NICE guidelines (CG105). 2010. Use of NIV in the management of MND

## P304 COMPLICATIONS RELATED TO TRACHEOSTOMY TUBE CHANGE: EVALUATION OF PRACTICE

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**Introduction and objectives** Tracheostomy tubes are used outside intensive care unit in a variety of settings. Tracheostomy tube change is a potentially high risk procedure with life threatening complications attached to it. The Respiratory Sleep and Support Centre (RSSC) at Papworth Hospital specialises in weaning patients from prolonged invasive ventilation and providing domiciliary invasive and non-invasive ventilatory support. Tracheostomy tube change is regularly undertaken for both patient groups. Review of our current clinical practice and complications related to this procedure was needed due to the risks involved.