Abstract P123 Table 1

	Survived<12 months (n=30)	Survived>12 months (n=43)	P Value
Age (years)	71.1 (64.3–74.8)	65.5 (62.4–75.3)	p=0.47
Number (%) Male	10 (33%)	24 (56%)	p=0.06
BMI (kg/m^2)	21.3 (17.2–25.3)	26.1 (21 0–30.8)	p=0.03
Number (%) initiated after acute admission	24 (80%)	31 (72%)	p=0.44
Forced Expiratory Volume in 1 s (L)	0.65 (0.44–0.85)	0.82 (0.52–0.95)	p=0.89
Baseline pCO2 (kPa)	9.9 (8.4–11.7)	9.2 (8.2–10.7)	p=0.33
Inspiratory Positive Airway Pressure (cm H_20)	22 (19–28)	25 (20–27)	p=0.23
Expiratory Positive Airway Pressure (cm H_20)	5 (5–6)	5 (4–5)	p=0.02
Number (%) using NIV≥4 hours per night	20 (67%)	39 (90%)	p=0.1

Data are presented as median (Interquartile Range)

Discussion 109 (73%) patients with COPD and hypercapnic respiratory failure continued using NIV after set up. Our data demonstrates lower body mass index was significantly associated with surviving<12 months after starting NIV. Patients who survived more than 12 months showed a non-significant trend to be male, younger and use NIV for more than 4 hours each night at higher inspiratory pressures. An unexpected finding was that patients intolerant of NIV showed a trend to longer survival, compared to those who continued with NIV. This may be due to the small number of patients with full data, or that 50% of these patients had stable hypercapnic respiratory failure at NIV initiation, compared to 25% in the patients who used NIV.

Conclusions These observations highlight the need for careful patient selection when considering which patients with COPD may benefit from home NIV, an awareness of the different features that may contribute to survival, and subsequent attention to ventilator settings and compliance once the treatment has begun.

P124 EARLY EXPERIENCE WITH 2-WAY REMOTE MONITORING FOR THE INITIATION OF VOLUME-ASSURED HOME NON-INVASIVE VENTILATION

G McDowell, D MacFarlane, R Tourish, C Canavan, A Brown, H Ambler, C Carlin. *Queen Elizabeth University Hospital, Glasgow, UK*

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Introduction The prevalence of conditions requiring nocturnal breathing support is increasing. 2-way remote monitoring via a cloud based system provides access to home non-invasive ventilation (NIV) data, highlights therapy issues and facilitates prescription changes to optimise NIV and potentially rationalise patient follow up. Remote-adjustable volume-assured NIV modes with auto-EPAP and intelligent backup rates offer prospects for improved NIV titration. We have adopted these emerging technologies with aim of improving patient outcomes and service efficiency. Interrogation of remote monitoring NIV data will provide insights to the utility of new NIV modes.

Methods Between February and June 2017 67 patients (26 OHV, 21 COPD, 20 other cause hypoventilation) who had clinical indications for home NIV were commenced on iVAPS with auto-EPAP and intelligent backup rate mode NIV (Lumis, ResMed) with remote monitoring (Airview, ResMed) and their data was retrospectively reviewed.

Results 31 patients commenced NIV as a day-case rather than as inpatients (our previous service model), saving 93 occupied bed days. Patients required on average 3 data reviews and 1 telephone consultation. Remote prescription change – eg capping of pressures or adjustment of iVAPS targets to achieve symptomatic benefit or tolerance – was required in 38 patients, with 20 requiring more than 1 change. Adverse monitoring findings triggered beneficial early follow up day-case review in 12 patients. The majority of patients realised good NIV usage and benefit (based on standard monitoring parameters) after optimisation; 6 patients discontinued NIV use despite treatment adjustments. Disease-specific patterns of iVAPS pressure support provision with volume assured mode were noted. Auto-EPAP was poorly tolerated in COPD patients.

Conclusion 2-way remote monitoring highlights NIV therapy issues, allowing early remote or daycase troubleshooting and optimisation, which should translate to improved treatment outcomes. Remote monitoring facilitates day-case initiation, saving occupied bed days and outpatient visits vs our previous service model. 2-way monitoring identifies intractable non-compliant patients, expediting ventilator recovery. Disease-specific iVAPS provision patterns have been identified which will provide novel management and pathophysiological insights.

P125 THE EFFECT OF PREVENTATIVE HYDROCOLLOID NASAL DRESSINGS IN ACUTE NON INVASIVE VENTILATION (NIV)-RELATED NASAL BRIDGE PRESSURE ULCERATION

[1]A Bishopp, [1]A Oakes, [1]A Watson, [2]B Chakraborty, [1]G Stygall, [1]P Antoine-Pitterson, [1]E Justice, [1]B Rooke, [1]K Stygall, [1]R Mukherjee. *[1]Birmingham Heartlands Hospital, Birmingham, UK; [2]University of Birmingham, Birmingham, UK*

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Introduction There are over 4000 acute mask application episodes coded in the treatment of acute respiratory failure in the UK every month according to a 2017 survey (NCEPOD). Most guidelines on acute NIV use suggest good skin care strategies including regular mask pressure relief. However, data on the magnitude of the problem of nasal bridge pressure ulceration and the effect of proactive preventative steps (e.g., hydrocolloid dressings) remains scant. A previous smaller but similar survey in a district general hospital showed a trend in the reduction of Grade2 Pressure ulcer rates following change in practice but fell short of statistical significance (Stygall G, Morley K, Pickup L, et al. Thorax 2016. 71:3. A124–125.). We set out on a quality improvement project and systematically examined the effect of a proactive approach to prevent Grade2 Pressure ulcers in a dedicated ward-based Physiotherapy-led acute NIV service in a teaching hospital serving a population of about 4 00 000.

Methods In addition to the routine acute NIV data for the unit, additional data was collected from 30/10/14 to 31/08/2015 on: NIV mask used (model and size), total number of admissions with days of NIV (NIV bed-days) and nasal bridge tissue viability grading. This included a 12 month period before (period1) and a 12 month period after (period2) the

introduction of the proactive prevention approach. A pressure ulcer was defined as Grade2 or above. Pearson's chi-squared test for comparison between groups and Fisher's exact test were applied to assess significance.

Results [See Table] In period1, there were 161 admissions and 9 Grade2 pressure ulcers from 666 NIV bed-days (ulceration rate=9/666); in period2 there were 134 admissions and 0 pressure ulcers from 718 NIV bed-days (ulceration rate=0/718). There was a statistically significant reduction in Grade2 Pressure ulceration rates (Pearson's chi-square statistic=7.786; p-value=0.0013 in period2 compared to period1).

Conclusions Application of an early prophylactic pressure-relieving hydrocolloid nasal dressing reduces the chance of developing Grade2 pressure ulcers in patients using NIV acutely. Further longitudinal studies including data on a preventative approach towards NIV-related nasal bridge pressure ulceration are needed to confirm the utility of this approach.

Abstract P125 Table 1

	30/10/14 – 29/10/15 12mth period – BEFORE preventative strategy introduced (PERIOD1)	Commencement date of application of proactive preventative hydrocolloid nasal dressings in acute NIV set ups: 30/10/15	30/10/15-29/10/16 12mth period – AFTER preventative strategy introduced (PERIOD2)
NIV Admissions	161		134
Total NIV duration (NIV bed-days)	**666**		**718**
Grade2 Nasal bridge pressure ulcers	**9**		**0**

The Pearson's chi-square statistic is 7.786 with a p-value of 0.005. Therefore there were significantly fewer Grade2 Nasal bridge pressure ulcers for Period 2. Since the number of Grade2 Nasal bridge pressure ulcers is less than 5 in one of the cells, a Fisher's exact test was performed, which yields a p-value of 0.0013 indicating highly significantly fewer Grade2 Nasal bridge pressure ulcers for the Period2.

P126 WEANING OUTCOMES OF MECHANICALLY VENTILATED SPINAL CORD INJURED PERSONS WITH ACUTE TETRAPLEGIA ADMITTED TO A REGIONAL UK CENTRE OVER A 10 YEAR PERIOD

[1]B Chakrabarti, [2]A Forrest, [2]M Bevan, [2]A Ward, [2]K Chaudhary, [2]B Soni, [2]F Selmi, [1]R Parker, [1]PK Plant, [1]A Manuel, [1]N Duffy, [2]S Lari, [1]RM Angus. *[1]University Hospital Aintree, Liverpool, UK; [2]North West Regional Spinal Injuries Centre, Southport and Ormskirk Hospital, Southport, UK*

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Introduction The occurrence of Spinal Cord Injury (SCI) is often complicated by the need for assisted ventilation. This study charts the weaning outcomes of mechanically ventilated SCI subjects admitted over a 10 year period to a regional Spinal Injuries unit.

Methodology Acute SCI subjects with Tetraplegia admitted from April 2007–2017 to the Northwest Regional Spinal Injuries Centre (NWRSIC) were identified. Only those presenting with all 3 criteria: a) admission injury level C1-C6 b) admission ASIA score A-C and c) need for mechanical ventilation on arrival to the NWRSIC were included in the final analysis.

Results The cohort consisted of 84 subjects (mean age 57 (SD 18) years; 76% male; 81 surviving to discharge). On admission, the level of injury was C1–3 in 28% (C1–3 ASIA A 20%; C1–3 ASIA B 2%; C1–3 ASIA C 6%) and C4–6 in 72% (C4–6 ASIA A 38%; C4–6 ASIA B 17%; C4–6 ASIA C 17%). On admission, 86% (72/84) were tracheostomy ventilated 24 hours/day, 12% (10/84) tracheostomy ventilated at night only and 2% (2/84) using NIV. By discharge, 13% (11/81) were tracheostomy ventilated 24 hours/day (including 2 Phrenic nerve paced), 13% (11/81) tracheostomy ventilated at night only, 7% (6/81) prescribed nocturnal NIV with 65% (53/81) breathing independently. Thus, when taking the entire cohort, 63% (53/81) achieved complete Ventilatory liberation, 12% (10/81) weaned to nocturnal tracheostomy ventilation only and 6% (5/81) were weaned to NIV whilst no further weaning was possible in 16% (13/81). The ability to breathe independently by discharge was found to correlate with level of injury on admission (CC 0.39; p<0.001), level of injury on discharge (CC 0.47; p<0.001) and non-significant trend with improvement in neurological function during admission (CC 0.21; p=0.06) but not age or gender.

Conclusion Our data demonstrates that in a cohort of consecutive SCI patients requiring mechanical ventilation on admission to a regional Spinal injuries unit, weaning from mechanical ventilation was possible in 84% of subjects with 63% being liberated completely from Ventilatory support by discharge. The use of NIV in the SCI cohort appears to be an emergent strategy during the weaning process.

P127 WHAT IS THE OPTIMAL MODE OF NON-INTRAVENOUS BRONCHODILATORS IN ADULT, MECHANICALLY VENTILATED PATIENTS ON THE INTENSIVE CARE UNIT? A SYSTEMATIC REVIEW OF THE LITERATURE

[1]J Finnerty, [2]JJ Kenth, [3]K Bramley. *[1]Pennine Acute Trust, Sutton Coldfield, UK; [2]Royal Manchester Children's Hospital, Manchester, UK; [3]Royal Infirmary of Edinburgh, Edinburgh, UK*

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Background Acute bronchospasm is common amongst mechanically ventilated patients, associated with significant morbidity and mortality and constitutes a substantial burden on already austerely limited resources. The three axial methods by which (non-intravenous) bronchodilators can be administered include nebulisers, metered dose inhalers (MDI) and more recently, direct endotracheal liquid boluses (ELB). Previous studies have failed to demonstrate the advantage of one mode of delivery versus the other and there are no systematic reviews directly comparing all three therapies.

Aims The study sought to ascertain the efficacy of nebulisers, MDI and ELB for the management of acute bronchospasm in adult, mechanically ventilated patients.

Methods By means of a prospective protocol, a systematic review was undertaken to compare randomised controlled trials (RCTs) exploiting both the GRADE and Cochrane methodology. We intended to assess the quality and strength of the evidence, risk of bias, the magnitude of the effect size, and to meta-analyse the main outcome measures: peak inspiratory pressure – PIP and airway resistance – R_{aw}.