80. New trends in noninvasive ventilation for chronic respiratory failure

**P823**
Changes in pulmonary function in patients with obesity hypoventilation syndrome (OHS) treated with home mechanical noninvasive ventilation (NIV)  
Pilar De Lucas Ramos, Elena Ojeda, Soledad Lucero, Teresa Gómez, Jose M Bellón Cano, Jose Miguel R. Gonzalez-Moro, Neumología, Hospital General Universitario Gregorio Marañón, Madrid, Spain; Estadística, Fundación de Investigación Biomédica Gregorio Marañón, Madrid, Spain

**Introduction:** NIV at home has proven to be efficient in the treatment of patients with OHS. Although on physiopathological basis, in these patients NIV might improve their pulmonary function, few results can confirm this hypothesis.

**Objective:** To assess the changes in pulmonary function tests and gas exchange in a cohort of patients with OHS included in a NIV program.

**Methods:** 12-year-long, prospective observational study. Indicating criteria for ventilation were obesity with BMI ≥ 30 and hypercapnia with daytime PaCO2 ≥ 45 mmHg or nighttime PaCO2 ≥ 50 mmHg, with or without Sleep Apnea Syndrome associated. Patients with associated obstructive pathology were excluded.

**Results:** 75 patients (67M, 8F) included in NIV were studied. When they started NIV, patients had moderate or severe restriction (FVC%: 65.96 ± 19.1 FEV1/FVC: 81.9 ± 7.2), hypercapnia and hypoxemia (PaCO2: 61.1 ± 15; PaO2: 51.1 ± 14). Average time with NIV was 8.4 years (0% CI 7.21-9.67). 8 deaths and 8 dropouts were registered. A significant increment in both FEV1 and FVC, which persisted at 5th year, was observed. An increase of PaCO2 and a reduction of PaCO2 maintained through time were also observed.

<table>
<thead>
<tr>
<th>Year</th>
<th>Start</th>
<th>1</th>
<th>5</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>%FEV1</td>
<td>66.3 ± 19</td>
<td>78.3 ± 21.6*</td>
<td>73.8 ± 16.8*</td>
<td>68.8 ± 18.6</td>
</tr>
<tr>
<td>%FVC</td>
<td>65.9 ± 19</td>
<td>78.25 ± 8.3</td>
<td>75.5 ± 6.2</td>
<td>76.9 ± 5.3</td>
</tr>
<tr>
<td>FEV1/FVC</td>
<td>81.2 ± 7.2</td>
<td>81.25 ± 8.3</td>
<td>75.5 ± 6.2</td>
<td>76.9 ± 5.3</td>
</tr>
<tr>
<td>PaO2</td>
<td>52.6 ± 14</td>
<td>63.8 ± 9.4*</td>
<td>61.85 ± 8.7*</td>
<td>59.57 ± 4.8</td>
</tr>
<tr>
<td>PaCO2</td>
<td>61.07 ± 15*</td>
<td>43.55 ± 10.6*</td>
<td>42.34 ± 4.8*</td>
<td>42.42*</td>
</tr>
</tbody>
</table>

**Conclusions:** In our series, NIV in OHS patients is associated not only to an improvement of gas exchange, but also in the ventilatory mechanics. These results, along with the low mortality, confirm the efficiency of the procedure.

**P824**
Noninvasive mechanical ventilation (NIV) in obesity hypoventilation syndrome (OHS). Long-term results and prognostic factors  
Elena Ojeda, Jose Miguel R. Gonzalez-Moro, Soledad Lucero, Jose M Bellón Cano, Soledad López-Martín, Pilar De Lucas-Ramos, Neumología, Hospital General Universitario Gregorio Marañón, Madrid, Spain; Estadística, Fundación de Investigación Biomédica Gregorio Marañón, Madrid, Spain

**Introduction:** The use of NIV in patients with OHS has increased in the last decade, although there are still few studies that assess its long-term results.

**Objective:** To analyze the long-term results observed in a group of patients included in a NIV program with OHS diagnosis, trying to identify prognostic factors.

**Methodology:** 12-year-long, prospective observational study. Inclusion criteria: obesity, defined as BMI ≥ 30 and daytime hypercapnia ≥ 45 or nighttime hypercapnia ≥ 50. Exclusion criteria: airflow obstruction with FEF25-75 ≤ 60%. Two subgroups were established: A-Patients with OHS, and B-Patients with OHS and Sleep Apnea Syndrome (SAS).

**Results:** Out of 153 patients in the database, 70 presented obstructive data, and 83 patients were valid for the study (60M, 23F; age 64 ± 9.5, patients 60%, had pure OHS and 33, 39.8%, associated SAS. When NIV started, patients had ventilatory restriction (FEV1/C: 65.96 ± 19.1 FEV1/FVC: 81.9 ± 7.2), hypercapnia and hypoxemia (PaCO2: 61.1 ± 15; PaO2: 51.1 ± 14). Patients in group A had a significantly higher PaCO2 (p < 0.05) than group B. Accumulated survival for the 1st, 3rd, 5th and 10th year was 95, 84, 72 and 60% respectively. Multivariate risk analysis proved that ventilatory alteration was the only had prognostic factor (FVC: RR 0.953, IC 0.924-0.983, p 0.002). Patients with OHS-SAS had better survival, but with no statistical significance.

**Conclusions:** In our series, patients with OHS on NIV show a very good long-term evolution, although when severe ventilatory limitation is present, prognosis is significant worse. Even if statistical significance was not proven, better results are shown in patients with associated SAS.
invasive positive pressure ventilation (NPPV), a previous study showed that 36% of patients required a face mask or ventilator setting adjustments to maintain optimization of their gas exchange and compliance with the therapy. However, little is known about the effect of resetting NPPV on clinical course of CRF.

**Purpose:** This study investigated the frequency of the need to reset NPPV during the course of therapy and to assess the influence of resetting NPPV on the clinical course in patients with CRF treated with NPPV.

**Methods:** We retrospectively analyzed clinical data from 32 patients who receiving long-term NPPV.

**Results:** The median age of patients was 71 (range, 54-86 years). Twenty-one patients had restrictive thoracic disease (primary pulmonary tuberculosis sequelae or kyphoscoliosis patients) and 11 had chronic obstructive pulmonary disease. Sixty-three percent of patients (20 of 32) needed resetting of NPPV. When patients were classified into two groups according to the resetting of NPPV, patients in the resetting group (n=20) experienced more episodes of CRF exacerbation and had longer treatment periods than those in the no-resetting group (n=12) (p<0.01).

**Conclusions:** Our data suggest that most patients who receive long-term NPPV need resetting of NPPV and that higher pressure support should be initially set to prevent CRF exacerbation.

**P825**

The quality of life in patients with home mechanical ventilation (HMV)
Maria Alfonso, Nuria Marina, Valentín Cabriada, Sandra Pedreño, Marta Inchausti, Patricia Sobradillo, Milagros Ir attending Pulmonology, Pilar Marina, Larraitz Garcia. Pneumonología, Cruces Hospital, Baracaldo, Vizcaya, Spain

**Aim:** To analyze the health-related quality of life (HRQL) in patients with HMV according to Severe Respiratory Insufficiency (SRI) questionnaire.

**Methods:** We studied, during 2 months (October-November 2008), 52 patients receiving HMV monitored in our hospital. The SRI questionnaire comprises 49 questions across 7 domains covering respiratory complaints (RC), physical functioning (PF), attendant symptoms and sleep (AS), social relationship (SR), anxiety (AX), psychological wellbeing (PW), and social functioning (SF). These subscales are aggregated into one summary score (SRI-SS), whereas high values indicate high HRQL and converse. The questionnaire was filled up by patients.

**Results:** 52 patients. 32 men/20 women. Primary diagnosis upon initiation of HMV: COPD 12 (23%). Restrictive Thoracic Disease (RTD) 13 (25%). Neuromuscular Disease (NMD) 14 (26.9%) and Obesity-Hyperventilation Syndrome (OHS) 13 (25%). Patients had spent 44 (2-144) months on HMV, ventilator use was 9 h/day. Mean time to fill up the questionnaire was 7.6 (4-15) minutes. The punctuation is in Table 1.

**Conclusions:** 1) Mean HRQL by SRI questionnaire in our patients with HMV is lower in the resetting group (p<0.01). Moreover, the initial inspiratory positive airway pressure and pressure support were significantly lower in the resetting group (p<0.01).

**P830**

Utilising a respiratory support group to introduce the concept of NIV in COPD
Duncan Powrie, Lisa Ward, Mary Monaghan, Anthony Davison. Heart and Chest Clinic, Southend University Hospital, Westcliff-on-Sea, Essex, United Kingdom

The use of non invasive ventilation (NIV) in exacerbations of COPD has revolutionised the management of type 2 respiratory failure. Nevertheless many patients and carers are unaware of the existence of NIV. A consultant chest physiician and 2 specialist nurses attended a meeting of the local Breathe Easy respiratory support group. The meeting was attended by 29 COPD patients and 24 carers. 23 had previously been admitted to hospital and 8 were on home oxygen. 17% had heard of NIV; 83% were unaware of its role. 1 patient had previously required NIV and 3 had discussed its potential use in the future. Prior to the meeting 2% of patients said they would refuse NIV if offered, 13% would accept it and 85% required more information to decide. A short presentation was given on NIV in COPD followed by a practical demonstration and question and answer session. 100% of attendees found the session useful and increased their understanding of NIV. Following the presentation 70% indicated that they would accept NIV if indicated, 28% were undecided and 2% would refuse. 65% requested supplementary information after the session. Preferred methods of receiving this information included leaflets, internet sites and videos.

We have demonstrated that respiratory support groups can be an effective way of introducing the concept of NIV to patients and carers. Following the session there was a dramatic increase in the number of patients prepared to accept NIV if it were required. Such an intervention could potentially be included in pulmonary rehabilitation programmes. A single educational intervention is, however, not sufficient and supplementary information should be offered.

**P831**

Fatal pneumomediastinum in COPD and interstitial lung fibrosis associated with use of non invasive mechanical ventilation
Paolo Ruggeri1, Claudia Predazzo,1 , Alfredo Proietto,1 , Stefano Piaciolo1,2, Filippo Andò1, Giuseppe Gobino1.1 Clinical and Experimental Department of Medicine and Pharmacology, Respiratory Unit, Messina, Italy, 2 Department of Internal Medicine, Internal Medicine, Messina, Italy

We present a case of fatal pneumomediastinum (FP) in a patient with acute respiratory failure due to acute exacerbated chronic obstructive pulmonary disease (AECOPD) and non specific interstitial pneumonia (NSIP) precipitated by non invasive mechanical ventilation (NIV).

Spontaneous pneumomediastinum is a rare disorder that is usually benign and self-limited. Cases of FP are reported during invasive mechanical ventilation in patients with interstitial lung disease (ILD). Protective ventilation with lower tidal volume is best mode of invasive ventilation to reduce acute lung injury and potential fatal complications. Use of NIMV in end stage ILD is not standardized and efficacy is to be proven. Cause of FP in this case is explained with barotrauma due to application of NIMV in patient with AECOPD and ILD. Inhomogeneous distribution of areas of pulmonary fibrosis characterized by reduced lung compliance and areas affected by COPD is precipitated by overdistention of lung tissue due to air trapping can be considered to explain this fatal complication. NIMV is very useful to treat acute respiratory failure due to AECOPD improving survival and avoiding endotracheal intubation. In presence of AECOPD and ILD NIMV can be used with particular attention due to potential serious complications. This is the first report of pneumomediastinum due to NIMV that lead to death a patient with AECOPD and ILD. This case emphasized potential fatal and uncommon complication of NIMV.

**P832**

Non-invasive ventilation in children with cystic fibrosis
Rabia Emel Senay, Zeynep Sedat Uyan, Sedat Oktem, Bulent Karadag, Fazilet Karakoc, Refika Ersu, Elif Dagli. Pediatric Pulmonology, Marmara University, Istanbul, Turkey

**Aim:** To evaluate the results of non-invasive ventilation (NIV) in patients with cystic fibrosis (CF).

**Method:** Fifteen patients who have been included in the study. Demographic data and hospitalization rate, blood gas results, Sp02 and pulmonary function tests (PFT) before and after NIV were compared.

**Results:** Eleven (73%) of the patients were male, mean age was 10.3±5.7 years, mean age when the first diagnosis has been established was 2.6±3.1 years. In
3 (21.4%) patients P. Aeruginosa was detected in sputum cultures. Pulmonary hypertension was present in 18 (53.3%) patients. Indication for the NIV application was hypoxia and/or CO2 retention. The mean age of the patients at the start of NIV treatment was 82±4.7 years. Mean hospitalization rate of the patients before the application of NIV was 7.7±3.8 and mean hospitalization rate after the application of NIV was 1.9±1.2. Need for O2 treatment was detected in 12 (80%) patients during the application of NIV. SpO2, pH and CO2 retention of the patients before and after the use of NIV were 86.7±3.4%, 94.2±2.8% (p<0.001), 7.3±0.6±0.4% vs 7.4±1.0±0.3 (p=0.007) and 53.1±12.4% vs 46.4±4.05 (p=0.047), respectively. Mean follow up period was 6.5±5.8 years. Within this period the mean duration of NIV support was 15.4±8 days in 7 (46.6%) patients, 7 (46.6%) patients are still on NIV support. During the follow up period 1 (6.7%) patient was discharged with no further need for NIV. 7 (46.7%) patients were discharged with home type NIV, the mortality rate was 46.7% with 7 patients, the overall survival rate was 53.3%.

Conclusion: Noninvasive ventilation in patients with CF and chronic respiratory failure improves blood gas values and decreases the number of hospitalization due to acute attacks.

P833 Long term effects of noninvasive ventilation (NIV) in hypercapnic COPD – preliminary results of a randomized controlled pilot study
Lieve De Backer 1, Wim Vos 2, Jan De Backer 1, Byren Dierss 1, Denise Daems 3, Rita Claes 2, Willefried De Backer 1, Paul Gormepop 3. 1 Respiratory Medicine, Antwerp University Hospital, Antwerp, Belgium; 2R&D, FLUIDDA, Antwerp, Belgium

5 COPD patients (pts) GOLD III and IV got maximal pharmacological treatment (MPT) (n=1) or MPT and NIV (Synchon, Respinomics) (n=4) for a period of 6 months after an exacerbation with hypercapnic ventilatory failure. Arterial blood gases (ABG), lung function (LFT) and CT scan of the thorax were performed. CT was made at TLC and airway structures were segmented using Mimics software (Materialise). Using patient specific boundary conditions (inspiratory flow based on flow-volume curves) regional distribution of flow and resistances were calculated [1] providing functional imaging (FI). In all pts blood gases improved (<ΔPaCO2 -12 mmHg, <ΔPaO2>−9 mmHg). In all pts LFT remained stable or slightly improved. In NIV treated pts, FI shows a heterogeneous mass flow redistribution and variable changes in Total airway resistance (Raw tot).

In the control patient FI shows a homogenous change in resistance and flow. We conclude that in COPDpts under NIV, remodeling of airway structures occurs that may influence the airway resistance and flow, possibly allowing for additional optimisation of previously occurring V/Q mismatch. FI might be a more sensitive method than classical LFT to evaluate effects of NIV treatment.


P834 Volume or pressure targeted noninvasive ventilation in kyphoscoliosis: a comparison
F.M. Struijk, P.M. Meijer, M.L. Duivenman, J.A. Nieuwenhuis, P.J. Wijkstra. Pulmonary Diseases/Home Mechanical Ventilation, University Medical Center Groningen, Groningen, Netherlands

Background: Non-invasive ventilation is a standard and effective treatment in patients with respiratory failure due to kyphoscoliosis. It is unknown if volume or pressure ventilation is the most easy to implement.

Aim: To compare volume- and pressure ventilation in patients with respiratory failure due to kyphoscoliosis.

Methods: Seven previously unventilated patients were randomised to volume and 6 to pressure targeted nocturnal ventilation. Primary outcome was the number of days needed to achieve effective ventilation. Effectiveness of ventilation was monitored by arterial blood gas registration at 6 a.m. 1) before initiation 2) when patients slept adequately with ventilation, before discharge and 3) after 3-month ventilation at home.

Results: Two patients switched from volume to pressure ventilation due to lack of tolerance. Effective ventilation was found in the volume group after a mean of 6.0 and in the pressure group after a mean of 7.6 days, which was not significantly different.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>PaCO2 V</td>
<td>7.15±0.7</td>
<td>6.05±0.9</td>
<td>5.3±1.3*</td>
</tr>
<tr>
<td>PaCO2 P</td>
<td>7.63±1.0</td>
<td>5.36±1.2*</td>
<td>5.65±1.3*</td>
</tr>
<tr>
<td>PaO2 V</td>
<td>10.73±1.8*</td>
<td>11.4±2.5*</td>
<td>11.4±2.5*</td>
</tr>
<tr>
<td>PaO2 P</td>
<td>9.23±3.1</td>
<td>10.31±2.2</td>
<td>10.4±3.2</td>
</tr>
</tbody>
</table>

P: volume group; V: pressure group. Mean ± SD. *p<0.05 compared to 1.

PaCO2 and PaO2 were not significantly different between both treatments at all time points, neither were changes over time.

Conclusions and discussion: There is no difference in days needed to achieve effective ventilation in either volume- or pressure ventilation in patients with kyphoscoliosis. Noteworthy, 2 patients switched from volume to pressure ventilation suggesting that they prefer the latter.

P835 Adverse effects and adherence to autoadjusting positive airway pressure
Carla Lopes, Cristina Brisa, Emicke Pires, Tatiana Fradinho, Paulo Lopes, Maria Joao Matos. Pneumologic and Allergologic Sciences, University Hospital of Coimbra, Coimbra, Portugal

Although, autoadjusting PAP (APAP) has proven to be an effective treatment option in obstructive sleep apnea syndrome (OSAS), it is often subject to adverse effects that may compromise the adherence to the treatment. The aim of this study was to determine whether adverse effects of treatment influence the adherence to APAP and clinical outcomes.

The patients underwent a trial of APAP after diagnoses of OSAS were established by cardiopulmonary sleep study. A questionnaire about side effects was fulfilled and the compliance data results downloaded from the APAP devices.

48 male patients participated. The mean (±SD) values were: 56.7±10.5 years, body mass index of 31.3±4.2, RDI of 37.4±19.6 and Epworth sleepiness score (ESS) of 13.2±4.7. The median (IQR) number of complaints were 3 (0–8); 8.3% had no adverse effects. The most common complaints were dry mouth/throat (52.1%) and nasal obstruction (39.6%). The compliance data results (mean ±SD) were: adherence, 70.9±4.7%±75%, hours per night (h/n)-5.8±1.7, 90th percentile pressure (30,6±2,2 and 90th percentile peak –31,3±2,1. Adherence (>70%/nights and 4h/n) occurred in 60,4% (p=0.05) and 45,8% ≥8h/n. Patients with higher RDI tended to require higher pressure and reported 5 or more side effects. More complaints also meant a smaller reduction in ESS and the number of h/n with APAP was lower for patients with 5 or more complaints. Less h/n and percentage of days used was related to more side effects (p<0.01). Only patients with ≥3 of APAP had a significant reduction in ESS (7.3±4.6).

Therapy efficacy is affected by the severity of the adverse effects, highlighting the importance of supporting patients to prevent these effects and improve adherence rates and clinical outcomes.

P836 Mortality in obesity related respiratory failure (ORRF)
Patrick Murphy1, Nishani Jayasooriya 2, Heather Lumgair 2, Chandni Ondhia 2, Nicholas Hart3. 1Respiratory Medicine, Guy’s & St Thomas’ Hospital Foundation Trust, London, United Kingdom; 2School of Medicine, Kings College London, London, United Kingdom, 3NHR Comprehensive Biomedical Research Centre, Guy’s & St Thomas’ NHS Foundation Trust/Kings’ College London, London, United Kingdom

Introduction: The rising incidence of obesity has resulted in an expansion in the number of patients receiving home mechanical ventilation (HMV) for ORRF. Current published evidence indicates a poor prognosis for patients left untreated (Nowbar et al. Am J Med 2004). The aim of this study was to determine initiation of HMV incidence and mortality over a 3-year period.

Method: Demographic and clinical cohort data, from September 2005, was collected prospectively.

Results: Data showed HMV was initiated in 112 patients with ORRF over the period of the study. There was a 44% increase in patients initiated from years 1 to 3. Mean duration of HMV was a 588±326 days. During the length of the study, 21% of cases were patients with 7.7% (n=8). Average time to death from initiation of HMV was 336±359 days (range 31–1122 days). There were no significant differences in baseline ABGs, ventilator settings or Epworth sleepiness score (ESS) between patients alive at the end of the study and those that died.

Conclusion: These data indicate the increasing incidence of initiation of HMV for ORRF. The 3-year mortality of these patients is relatively low, comparable with previous series (Buusweiler et al. J Intern Med 2007). It is predicted that with the increasing incidence of ORRF requiring intubation of HMV at a relatively young age, combined with a relatively low mortality rate, specialist centres are likely to
have a significant increased demands on their service for initiation of HMV and longterm respiratory support.

P837
Patient/caregiver experiences of non-invasive ventilation in motor neurone disease
L.H. Piggin1, E.W. Thornton1, C.A. Young2, B. Chakrabarti1, R.M. Angus1
1School of Psychology, University of Liverpool, Liverpool, United Kingdom; 2Department of Neurology, Walton Centre for Neurology and Neurosurgery NHS Trust, Liverpool, United Kingdom; 3Department of Respiratory Medicine, University Hospital Aintree NHS Trust, Liverpool, United Kingdom

Non-invasive ventilation (NIV) is used in motor neurone disease (MND) to palliate symptoms of nocturnal hypoxia. Evidence indicates it may also slow decline in respiratory function, enhance quality of life and prolong survival. This research has focused on quantitative measures, motivating little insight into the ‘lived’ experiences of MND patients/caregivers and the meaning they attach to NIV.

Method: In this cross-sectional study, five ventilated MND patients and three caregivers participated in semi-structured interviews. Transcripts underwent Interpretative Phenomenological Analysis, with emergent themes triangled by a neurologist, respiratory physician and health psychologist.

Findings: Narratives highlight the importance of: information seeking behaviour related to coping strategies; patient perceptions of ‘choice’ (with reluctance to use NIV fuelled by fear of dependence); transitions towards acceptance (motivated by physical benefits); caregiver role and responsibility; the journey towards NIV being seen as an ‘essential’ resource; NIV in the home; frustrations/limitations; and ‘the future’. Experiences differed, some topics occupying more prominent roles than others in individual cases. Caregivers and patients faced different journeys with NIV and often caregivers sacrificed more to enable a ‘successful’ experience. Patients and caregivers felt physical benefits outweighed negative emotional reactions to NIV; however, often ‘conflict’ remained.

Discussion: Findings support qualitative accounts of the physical benefits of NIV but there remain psychological responses to life-sustaining treatments in terminal illnesses for both patient and caregiver.

P838
The limitations of quantitative measures: assessing approaches to research into NIV use in MND
L.H. Piggins, E.W. Thornton, C.A. Young, B. Chakrabarti, R.M. Angus
1School of Psychology, University of Liverpool, Liverpool, United Kingdom; 2Department of Neurology, Walton Centre for Neurology and Neurosurgery NHS Trust, Liverpool, United Kingdom; 3Department of Respiratory Medicine, University Hospital Aintree NHS Trust, Liverpool, United Kingdom

Background: There is far more quantitative research into non-invasive ventilation (NIV) use in motor neurone disease (MND) than qualitative research. Yet, it is unknown how capable quantitative vs qualitative data are at representing patient experiences and predicting/describing reactions to NIV.

Aims: This cross-sectional study qualitatively explored MND patients’ experiences of NIV and related these data to questionnaire measures.

Method: Five ventilated MND patients and three caregivers took part in semi-structured interviews. Transcripts underwent Interpretive Phenomenological Analysis by a neurologist, respiratory physician and health psychologist. Patients also completed the ALS Functional Rating Scale, ALS Assessment Questionnaire, MND Dyspnoea Ratings Scale, Beck Depression Inventory & Hopelessness Scale, and Epworth Sleepiness Scale. Each patient was considered as a case-study.

Findings: A number of themes emerged from narratives (e.g. ‘reluctance’ fuelled by fear of dependence and ‘acceptance’ motivated by physical benefits of NIV use). Yet differences in experiences/attitudes apparent in qualitative data were not always reflected in quantitative data. It was not possible to differentiate between patient experiences using quantitative measures alone (functional status and respiratory measures did not predict psychological status or reaction to NIV).

Conclusions: Little of the qualitative data was reflected in the quantitative data, suggesting an idiographic approach is needed to understand the impact of NIV in MND. There are clear implications for researchers, as quantitative data alone may fail to capture elements of experience that shape psychological reactions to NIV.

P840
Factors influencing changes in health-related quality of life in patients receiving home non-invasive ventilation

Introduction: Home non-invasive ventilation (NIV) has been found to improve HRQoL in patients with chronic respiratory failure. Aims and objectives: The identification of factors influencing changes in HRQoL in patients on NIV.

Methods: Patients with chronic respiratory failure were established on NIV and were followed for two years. HRQoL was assessed with the SF-36 questionnaire. Factors influencing changes in HRQoL were evaluated, while additional measurements included blood gases, pulmonary function tests, dyspnea, daytime sleepiness, exacerbations and hospitalizations.

Results: A total of 91 patients (35 COPD, 17 restrictive thoracic disorders (RTD), 28 Obstructive Hypoventilation Syndrome (OHS) and 11 neuromuscular disorders (NMD)) completed the study. Apart from patients with NMD, the other three groups presented significant improvements in HRQoL. By the third month significant improvements were observed in the Physical (PCS) (p<0.0001) and Mental Component Summary (MCS) Scores (p<0.0001) of patients with RTD, and in the MCS of OHS (p=0.010) and COPD (p=0.003) patients. The PCS of OHS and COPD patients improved on the sixth month. Improvement of PaO2 was the best predictor of changes in PCS in COPD (R²=0.434, p<0.0001). The hours of ventilator use (R²=0.853, p<0.0001) was the best predictor of changes in PCS, whereas EPAP and the change in MRC (R²=0.846, p=0.001) were the best predictors of changes in MCS in RTD.

Conclusion: HRQoL is significantly improved after three to six months on home NIV, while the total hours of ventilator usage, EPAP and improvement in oxygenation were the best predictors of this change.

P841
Impact of home mechanical ventilation on health-related quality of life in neuromuscular patients
Mediero Gabriel, Chiner Eusebi, Gómez-Merino Elia, Senent Cristina, Ana Camarasa, Sancho Jose Norberto, Andreu Ada Luz. Pneumology, Hospital Universitario San Juan, San Juan, Alicante, Spain.

Background: Severe Respiratory Insufficiency questionnaire (SR1) was developed and validated in spanish to evaluate health-related quality of life (HRQoL) in patients with chronic respiratory failure. Aim: To analyze HRQoL by SR1 in neuromuscular patients (NMP) with home mechanical ventilation (HMV).

Method: SR1. Anthropometric, respiratory function tests (RFT) and ventilation data were analyzed.
Results: 8 ALS, 10 Steinert, 4 MG and 8 others (14 m/16 w), 20% bulbar dysfunction. Evolution time 158±125 m, age 54±12, BMI 28±5. FLMS ≥7 in 30% and MIRS ≥4 in 47%. RPT: FVC%pred 63±21, MIP%pred 58±29. No differences except in age (ALS vs Steinert, 62±7 vs 50±6) and evolution time (ALS vs others, 101±70 vs 274±157 m). Global SRI summary score was 59±18, worst in ALS and Steinert. Results in SRI domains are in Table 1.

Conclusions: NMP in HMV have impaired HRQoL, mainly in ALS and Steinert, mostly in physical functioning and psychological wellbeing domains.

P842
Nasal insufflation of air (TNI) decreases hypoventilation in oxygen dependent patients with COPD
Georg Nilius1, Ulrike Domanski1, Tanja van’t Hog1, Karl-Josef Franke1, Karl-Heinz Ruhle1, Hartmut Schneider2, Alan Schwarz2. 1Pneumology, HLoes-Klinikin Hagen/Ambrock University of Witten/Herdecke, Hagen, Germany; 2Pneumology, John-Hopkins University, Baltimore, United Kingdom

Introduction: Hypercapnic respiratory failure is common in patients with COPD. Recently we demonstrated that delivering high flow air through a nasal cannula (TNI) improved nocturnal ventilation and gas exchange in patients with mild COPD and mild degrees of upper airway obstruction. We now hypothesized that TNI may also improve gas exchange and ventilation in patients with severe COPD and hypercapnic respiratory failure.

Methods: Hypoxemic and hypercapnic individuals with a severe COPD severity (Gold III/IV, mean age 69.4±15.5 years, BMI 25.4±10.3 kg/m²) underwent recording of the respiratory pattern. Subjects were exposed to alternating 1 hour trials of TNI (room air of 20 L/min) and oxygen alone (2 L/min) during wakefulness. Respiratory pattern and arterial blood gases were compared among the two conditions.

Results: The respiratory rate from 20.0±4.3 on TNI to 18.1±4.1 per minute on oxygen alone, (p<0.05). With TNI, the PaCO2 decreased from 58.0±22.5 mmHg (oxygen) to 49.1±11.1 mmHg (p=0.09) without changes in arterial oxygen levels.

Conclusion: Nasal insufflation of air decreases hypoventilation in oxygen dependent patients with COPD. The reduction in respiratory rate and PaCO2 levels suggest that improvements are mediated through a reduction in dead space ventilation.

Grant Support: P50 HL 084945-01.

Abstract printing supported by Chiesi Farmaceutici SpA. Visit Chiesi Farmaceutici SpA at Stand B.40