243. Advanced experience with long-term noninvasive ventilation and late-breaking abstracts

P2062

A randomised controlled trial comparing stepwise *versus* immediate withdrawal from non-invasive ventilation in chronic obstructive pulmonary disease patients recovering from acute hypercapnic respiratory failure

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Background: COPD patients who suffer from exacerbation with acute hypercapnic respiratory failure (AHcRF) benefit from non-invasive ventilation (NIV). The best withdrawal method of NIV is not known.
Aim and objectives: To compare the success rate of withdrawal in NIV between stepwise withdrawal and immediate withdrawal in COPD patients with AHcRF.
Method: This was a prospective, single-centre, open-labelled randomised study comparing stepwise and immediate withdrawal of NIV. The primary end-point was the success rate of NIV withdrawal. The secondary end-points were hospital length of stay and duration of NIV use.
Results: Sixty patients were randomised: 35 patients to the stepwise withdrawal group and 25 patients to the immediate withdrawal group. There was no statistically significant difference in the success rate of withdrawal of NIV and length of stay after randomisation, with the success rate of 74.3% and 56% in stepwise and immediate withdrawal group respectively ($p = 0.139$). There was statistically significant difference in the duration of NIV with median duration of 5 days and 3 days in stepwise and immediate withdrawal group respectively ($p = 0.001$). The post-hoc analysis showed the use of LAMA, higher inhaled steroid dosage and higher arterial pH value on randomisation were the factors associated with success in withdrawal in the immediate group.
Conclusion: Our study showed no significant difference in the success rate and length of stay between stepwise withdrawal and immediate withdrawal of NIV. Duration of NIV was significantly shorter in the immediate withdrawal group.

P2063

Automatic tailoring of positive end-expiratory pressure (PEEP) by forced oscillation technique (FOT) during non-invasive ventilation: Effects of posture and exertion in COPD

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Expiratory Flow Limitation (EFL) promotes the development of intrinsic PEEP (PEEPi). EFL can be detected by FOT at 5 Hz from the difference between inspiratory and expiratory reactance (ΔXrs) during quiet breathing (ERJ 2004;23:232) and CPAP (ERJ 2006;27: 983). This non-invasive measurement has been incorporated in a mechanical ventilator (Synchrony, Philips/Respironics, USA) resulting in a prototype that continuously measures ΔXrs and automatically adjusts PEEP to the minimum pressure able to abolish EFL (PEEPopt).
The aim of this study was to measure PEEPopt in a group of COPD patients and to evaluate its alterations with changes in posture and during a six minute walking test (6MWT).
Eleven COPD patients (GOLD stage 2-4, BMI 30±10, FEV1%pred 48±12, FEV1/FVC 56±8) were initiated to nasal BiPAP with automatic PEEP adjustment. After adaptation, ventilation was applied for 10 minutes in the seated and supine positions and during a 6MWT. Data were recorded in the last minute for each condition.
At PEEP=2cmH2O, 8 patients showed EFL in the seated position, 10 in the supine and 9 in the last minute of the 6MWT. The average PEEPopt is reported in figure.
In mild to severe COPD, the development of EFL is greatly affected by posture and exertion and this results in major adjustments in the PEEP required to counteract PEEPi within the same patient.

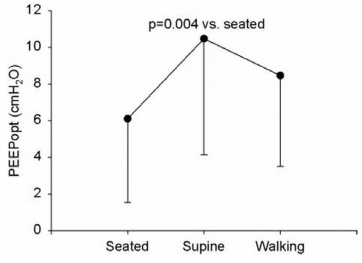

Figure 1

P2064

Impact of intelligent volume assured pressure support on sleep quality, compliance and gas exchange in patients with stable hypercapnic COPD

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Introduction: Noninvasive positive pressure ventilation (NPPV) using the technique of high-intensity-NPPV (HI-NPPV) has been shown to treat hypoventilation in stable hypercapnic COPD patients with an overall good sleep quality (SQ). iVAPS (intelligent volume assured pressure support) using target alveolar ventilation is a hybrid mode of NPPV. Its impact on SQ still needs to be addressed. The aim of the study was to compare SQ and gas exchange using iVAPS and HI-NPPV in hospital and at home.
Methods: In a randomized crossover design patients used iVAPS and HI-NPPV. Objective and subjective SQ as well as comfort with NPPV were assessed by polysomnography and questionnaires. Blood gas measurements were performed in hospital and at home (Figure 1).

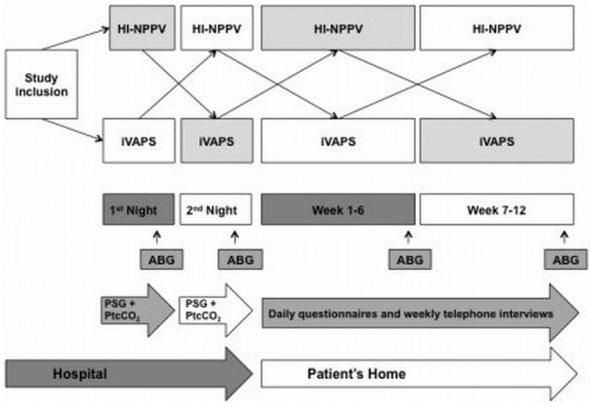

Figure 1

Results: 14 patients were included. Beside applied pressure being rated more disturbing with iVAPS, there was no further difference with regard to SQ in hospital. At home, patients reported more restful sleep using iVAPS. There was no difference in daily usage (6.2±1.6 vs. 6.5±1.3h, p=0.27). PaCO2 in hospital was lower during iVAPS (41±8mmHg vs. 44±7 mmHg; p=0.04), whereas no difference was found at home (43±7 vs. 44±10mmHg; p=0.37).
Conclusion: NPPV using iVAPS and HI-NPPV revealed no differences in SQ in hospital. At home, patients reported more restful sleep during iVAPS without differences in comfort with NPPV and daily usage.

P2065

How to assess sensorium in hypercapnic encephalopathy during NIV?

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Aims: To compare the clinical usefulness of two different tools, *Glasgow Coma Scale* (GCS) and *Kelly-Matthay score* (KMS), for the neurological assessment of hypercapnic encephalopathy (HE) during NIV.
Methods: We prospectively analysed 101 consecutive patients [age, mean (DS), 76.6 (8.41) yrs; COPD 61.4%; CWD 22.8%; CHF 9.9%; Neuromuscular disorders 5.9%) with HE [GCS, median (IQR 25-75), 9 (6-11); KMS 4 (3-5)] due to acute respiratory failure [(pH 7.23 (0.08); PaO_2/FiO_2 174 (64), $PaCO_2$ 87.6 (20.3) mmHg] submitted to NIV in our RIICU in the yrs 2008-2010.
Primary end-point: Capability of earlier GCS/KMS changes (2-hours) to predict NIV failure; *Secondary end-points:* 1) sensitivity of GCS/KMS to the earlier (2-hours) and later (24-hours) changes of arterial blood gases (ABG) under NIV; 2) pulmonary and extra-pulmonary determinants of GCS/KMS at baseline.
Results: Earlier changes in KMS (>20%) predicted NIV failure (p=0.026) while this is not the case for GCS. Earlier changes in pH and $PaCO_2$ were significantly correlated with those in KMS ($p<0.01$) but not with those in GCS, while later changes in ABG significantly correlated with those in both scores ($p<0.0001$). According to a multivariate analysis, both GCS and KMS showed a significant association with pulmonary (baseline pH) and extra-pulmonary determinants

[non-respiratory component of *APACHE III score*, mean systemic arterial blood pressure, comorbidities ("acute" for GCS, "acute" for KMS)].
Conclusions: The use of KMS resulted in greater clinical usefulness (correlation with outcome and with earlier ABG changes) than that of GCS to assess and monitor sensorium status in HE patients during NIV. Both scores are influenced by pulmonary and extra-pulmonary factors.

P2066
Respiratory events during long term noninvasive positive pressure ventilation in children: Clinical implications and detection of events
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Objective: The aims of the study were (1) to describe the respiratory events during noninvasive positive pressure ventilation (NPPV) and, (2) to analyze the clinical consequences.
Method: Nocturnal polygraphic (PG) recordings were performed in stable patients. Respiratory events were scored using the SomnoNIV Group definitions [1]. The consequences of an event i.e. a fall of $\geq$ 3% of pulse oximetry (SpO_2) and/or a $\geq$ 30% decrease in pulse rate amplitude (respiratory autonomic micro-arousals: RAM) were described.
Results: PG tracings of 27 patients (13 boys, age range 1-18) were analysed: neuromuscular disease (n=7), obstructive sleep apnea (n=8) and lung disease (n=12). Unintentional leaks, partial or total upper airway obstruction without reduction of ventilatory drive, a decrease in ventilatory drive, mixed events, and patient ventilator asynchronies were observed in 61%; 37%; 28%; 7%; 53% of the patients, respectively. These events were associated with a decrease of SpO_2 in 21%; 37%; 18%; 4%; 12% of the patients respectively, and with a RAM in 38%; 27%; 8%; 3%; 32% of the patients respectively. The mean number of type of events per patient was 1.8±1.1. For a given patient, there was a predominant event representing 87±10% of total time with respiratory events. The median duration spend in respiratory event was 39% (range 0.7 to 92%) of total recording time. Of the patients with a minimal nocturnal SpO_2 >90% and a $PtcCO_2$ <50mmHg, 12 (44%) had at least one respiratory event.
Conclusion: Respiratory events are common in stable children treated with long term NPPV and can be associated with desaturations and/or RAM.
1. Gonzalez J et al. Thorax 2011.

P2067
Polysomnographic criteria to assess the efficacy of noninvasive ventilation in chronic respiratory failure
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Aim: We performed successive polysomnographies (PSG) under spontaneous breathing (SB) and under noninvasive ventilation (NIV) in order to assess the improvements of ventilation and sleep in patients with severe chronic respiratory failure.
Methods: 12 patients indicated to domiciliary NIV because of chronic respiratory failure (neuromuscular disease (n=4), obesity-hypoventilation syndrome (n=6) or thoracic deformation (n=2)) have performed a PSG under SB at day 1, another PSG with the newly implemented NIV at day 2 and therefore a third PSG under NIV two weeks after (day 15). NIV titration was performed according to local protocols, based on nocturnal oxymetries and morning arterial blood gas assessments.
Results: As compared to SB, the oxymetric parameters significantly improved during the first night under NIV. PtcCO2 values, early-morning and diurnal arterial blood gases slightly improved during the first night under NIV but the differences were statistically significant only at day 15. We observed a rapid increase of time spent in REM sleep (9.1±2.1 vs 15.2±2.4% of total sleep time, p=0.0148), a reduction of obstructive apnea index, (28.4±8.6 vs 9.7±4.2, p=0.0175) and the micro-arousal index (40.1±8.5 vs 25.7±1.9, p=0.0258). Heart rate and cardiac variability were significantly reduced under NIV. Patient-ventilator asynchronisms were low in all patients except two and did not significantly vary between day 2 and day 15.
Conclusion: NIV efficacy is associated with a rapid and objective improvement of sleep quality, in parallel with a slower improvement of diurnal and nocturnal hypercapnia. Cardiac variability may be also a pertinent parameter to evaluate these patients.

P2068
Volume assured pressure support ventilation for chronic ventilatory failure in COPD
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Introduction & methods: Non-invasive ventilation (NIV) is used to treat chronic ventilatory failure complicating chronic obstructive pulmonary disease (COPD). This randomised prospective study compared the effectiveness of a volume assured pressure support ventilator (VAPS - iVAPS, Resmed) with a pressure controlled ventilator (PCV - NIPPY 3, B&D Electromedical) in this patient group.
Results: Forty subjects (19 male) were recruited with these demographics (mean & standard deviation): age 66.9 (8.2) years; BMI 28.2 (7.0); smoking 46.5 (31.3) pack years; FEV1 27 (10.2) % predicted. They were randomised 20 to each treatment limb and at baseline there were no differences between the two groups.

Outcomes pre-treatment and at 1-month (p values compared to pre-treatment values)

		Pre-treatment	1 Month	P value
Mean overnight oxygen saturations (%)	PCV	84.4	89.65	0.04
	VAPS	85.9	90.53	0.02
Daytime PaCO2 (kPa)	PCV	8.13	7.05	0.001
	VAPS	8.15	6.67	0.003
Daytime PaO2 (kPa)	PCV	7.05	7.87	0.279
	VAPS	6.49	7.86	0.02
Shuttle walk test (m)	PCV	138	165	0.097
	VAPS	115	145	0.02

Mean hours of use between VAPS and PCV were not significantly different [6.0 (±2.7) vs 5.9 (±2.4) hours respectively).There was a trend towards shorter time to initiate VAPS compared to PCV (3.4 vs 4.7 days respectively, p=0.071). During the trial period 2 patients from each arm died.
Conclusion: In patients with COPD and chronic ventilatory failure, VAPS achieves similar improvements in overnight oximetry and daytime $PaCO_2$ compared to PCV. VAPS is a well tolerated and effective treatment for chronic ventilatory failure in this patient group. A longitudinal trial investigating survival may now be warranted.

P2069
Effect of transnasal "high-flow oxygen insufflation" in patients with severe COPD
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Introduction: Long-term oxygen therapy is one of the established treatment strategies. Nasal insufflation of warm, humidified air at a high flow rate is a new and simplified method in non-invasive ventilation.
Until now, no data on the safety, effects and efficacy of in COPD patients are available. Our multicenter, controlled study has been approved by the national ethic committees.
Aim: It was designed to examine the safety and effects of high flow therapy in patients with COPD °IV and to assess possible changes in efficiency in ventilation and parameters of the lung function.
Method: Patients with COPD °IV with indication for LTOT are enrolled. The following inclusion criteria have to be met: age 30-80, stable disease for 14 days, Hb>100g/l, and no current participation in another study.
Results: So far 38 subjects were recruited: 32 males, 6 female, age 67.5±6,64 yr, FEV1 14-49% predicted. Oxygen supplementation was performed in 10 min intervals each with an augmentation of 0.5-1 L/min until a pO2 >60mmHg was achieved. Using [TNI], oxygen was mixed with warm and humidified air at a constant flow rate of 15 L/min. Concerning safety high flow delivery was well tolerated in all patients and no significant differences were found for several spirometric parameters tested. Furthermore a highly significant decrease of CO2 in arterial blood after short-term treatment could be measured (- 2,87 mmHg; p=0,0001) compared to conventional oxygen administration.
Conclusion: In conclusion, we can postulate that short-term treatment with high flow [TNI] seems to be safe in patients with COPD °IV with a reduced oxygen demand. Further trials have to be enrolled for longer periods to prove efficiency.

P2070
Uptake of NIV treatment in MND is dependent upon caregiver variables
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There is robust evidence that NIV relieves respiratory symptoms and improves quality of life in MND. Nevertheless, about a third of those who would benefit

from NIV decline the treatment. It is important to understand why the most effective treatment available for MND patients [1] is refused. To investigate this phenomenon, we undertook a cross-sectional quantitative analysis of 27 patient and caregiver dyads offered ventilatory support based on physiological markers, including forced vital capacity and nocturnal pulse oximetry. The analyses indicated that there were no differences between the patients who went on to accept NIV treatment (n=17) and those who declined (n=10) in terms of age, sex, MND symptomatology (ALS-FRS-R, ALSAQ-40, MND Dyspnoea Rating Scale, daytime sleepiness) and psychological measures (hopelessness, anxiety and depression). The similarity of the scores in the two groups is such that we are confident that we do not simply have a power issue. In view of assertions that uptake of NIV treatment increases caregiver burden, which suggests caregiver input in NIV treatment, we also analysed caregiving variables. There were no differences in general physical or mental health but caregivers who supported NIV treatment were significantly more emotionally stable and less anxious, and in terms of coping style more resilient, more committed and more in control. A regression analysis forcing MND symptoms to enter before caregiving variables still indicated that resilience: commitment alone explained 24% of the variance. We will discuss these findings, and implications for clinicians.

Reference:

[1] Heiman-Patterson TD, Millar RG. NIPPV: A treatment for ALS whose time has come. Neurol 2006; 67: 736-7.

P2071

Triple 0 – A new respiratory syndrome?

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Introduction: There is a growing number of patients needing nocturnal ventilatory support, presenting with Obesity-Hypoventilation Syndrome (OHS), Chronic Obstructive Pulmonary Disease (COPD) and Obstructive Sleep Apnea (OSA). As these three comorbidities seem so prevalent together and, as these patients, in the light of their demographic characteristics and ventilatory needs, seem different from those with only one or two of the pathologies, a new respiratory syndrome can be emerging-The Triple O Syndrome (TOS).

Objective: To characterize TOS patients and compare their demographic characteristics and ventilatory needs with OHS patients.

Materials and methods: Forty-four patients with obesity (BMI> 30 kg/m^2), COPD (FEV1/FVC < 70) and OSA (AHI> 5/h) were included. Exclusion criteria were pulmonary diseases others than COPD, α-1-AT deficit, bronchiectasis, Cheyne-Stokes Breathing, Complex OSA and Central Sleep Apnea. These patients were compared to 46 OHS patients. Both groups started ventilatory support between 2009 and 2011.

Results: TOS patients: mean age 69.4±9.1 years, 84.1% were male, mean BMI 35.8±4.5 kg/m^2, mean Epworth 11.4±4.8, mean FEV1 57.9%±19.5% predicted, median AHI 36.3/h, median PaCO2 47.2 mmHg, median IPAP 18.0 cmH20, median EPAP 10.0 cmH20, median RR 14 cycles per minute, 23.3% needed oxygen complement.

When compared to OHS patients, TOS patients were older, leaner, the percentage of male gender was higher, had less severe OSA and lower RR when adapted to ventilatory support.

Conclusions: Triple O patients seem to be an individualized group, with different demographic characteristics when compared to OHS patients. The ventilatory needs were similar between both groups, but the RR and the mask used, mainly nasal, in TOS patients.

P2072

Adherence and tolerance of an auto-CPAP (APAP) device specially designed for *occidental way of life* and bedroom: Beyond technology, medical appearance is obsolete

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Observance up than 3 hr/night, only is required in France to allocate reimbursement of CPAP treatment for Sleep Apnoeas Syndrome. But control of hypertension requires up than 4hr/night. Breas i-Sleep, or Fisher&Pakell ICON are clearly designed to look as a clock or a radio-alarm-clock without external electric tranformer.

Aim: Definite if such CPAP device is associated with a mean sleep use up than 4hr30, achieving 3 sleep's cycles. Data collection [confort, residual AHI, therapeutic Pressure, etc.]

Methods: Two *HomeCare HealthCare Providers* (no financial or material conflict of interest), Non6comparative observational study. We collect use's duration of a non-randomized cohort of consecutive OSA patients, all ventilated by ICON, APAP mode, 4/16 cmH20, no ramp with optimal subjective comfort humidification setting.

Results: 108 consecutive symptomatic OSA patients (IAH > 30/hr), evaluation time: 5 months delay treatment, ♂ 61%, 65±16 y/o; residual AHI = 4,8±3,8/hr and P95% = 9,3±3,76 cmH2O. Observance 342±42 min; confort's evaluation through a modified Analogic Visual Scale (AVS) 7,4±1,2; Design's evaluation through a modified AVS 8,7±4,3.

Conclusions: A pretty bedroom designed CPAP device is associated with a therapeutic duration up than 5hr30. An affective-based customer societal approach of such treatment seems relevant to enhance patient adherence. Comparative studies are required to comfort this monocentric and limited non comparative descriptive study

Acknowledgements: Mrs Baucher M, Mbar®, Safond M, SOS-Oxygène®; Hesbert R, *Fisher&Paykell,France.*

P2073

Our experience in home mechanical ventilation

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Home mechanical ventilation (HMV) increases survival of patients with chronic respiratory failure. National center in Serbia for HMV in neuromuscular patients was established in 2007.

Aim: We aimed to evaluate our practice

Method: We retrospectively analyzed clinical history of patients receiving HMV in our center from 2007-2012.

Results: 126 patients were started on HMV (71 M/55 F) mean age 46±20 years. Most of the patients were treated with non invasive ventilation. Twelve percent of patients were ventilated invasively via tracheostomy. Three patients were converted from invasive to noninvasive ventilation. Most frequent diagnosis was motor neuron disease (MND) 78, mean FCV% 33±15, followed by Duchenne Muscular dystrophy (DMD) 33, mean FCV% 16,6±8,7 and spinal muscular atrophy (SMA) 15. Overall survival was 59% of patients. In MND group, mean survival was10 months, and all dystrophy patients are still in follow up.

Conclusion: In our country HMV in last years is increasingly used but its prevalence is still low compared with other countries.

P2074

Thoracoabdominal contribution to tidal volume after an impatient cardiac rehabilitation program associated to continuous positive airway pressure

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Background: Continuous positive airway pressure (CPAP) is an important strategy for improvement of gas exchange and breathing working in post operative of coronary artery bypass grafting surgery (CABG). However, it's unknown the breathing pattern (BP) behaviour after inpatient cardiac rehabilitation (CR) program associated to noninvasive ventilation (NIV) during exercises.

Aim: To evaluate the BP of post-CABG patients engaged in CR associated to NIV.

Methods: Nineteen patients submitted to twice-daily supervised postoperative exercise protocol, which consisted of respiratory exercises and early mobilization (upper and lower limbs exercises and ambulation) with NIV (CPAP= 58,6±8,4yrs) between 9-10 cmH_2O and without (CG= 58±5,7yrs) were evaluated. BP was assessed by respiratory inductive plethysmography (Lifeshirt system) and analysed by inspiratory (ViVol) and expiratory tidal volume (VeVol); inspiratory, expiratory and total time and thoracoabdominal coordination measures (%RCi and %RCe-percent rib cage inspiratory and expiratory contribution to tidal volume ratio, respectively) in rest sitting position at discharge time. Unpaired Student t test was applied for intergroup analysis ($p<0,05$).

Results: CPAP group presented lower values of %RCi (65±24 versus 84±12) and %RCe (64±24 versus 84±12) compared to CG. No others differences were observed.

Conclusion: These results suggest that patients engaged in CR associated to CPAP presents reduction of upper rib cage motion, which could be associated to better distribution of ventilation and decrease of breathing cost energy and accessory muscles activity. FAPESP SUPPORT (2009/54194-5).

P2075

Mulitidisciplinary MND clinics – Should every hospital have one?

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Motor neuron disease (MND) is best managed by a multi-disciplinary team, including a respiratory physician to assess for respiratory failure, for which non-invasive ventilation (NIV) is indicated. East Kent Hospitals University Foundation Trust has recently developed a regional neurology centre and has well established domiciliary ventilation services. The multi-disciplinary MND team was developed in 2008.

Aim: To review the management of MND in East Kent and the changes since the establishment of a multi-disciplinary MND team.
Methods: A retrospective analysis of the clinical notes of all patients diagnosed with MND over the last 10 years.
Results: Total number of patients with a diagnosis of MND was 65. 3 had familial disease (4.6%).

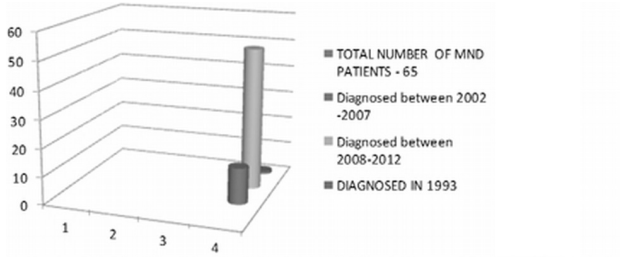

Figure 1 – Total number of patients and their distribution spread between the periods 2002 – 2007 and 2008 – 2011

Table 1 shows the demographics and differences between the two groups in various parameters. The mean survival in the patients on NIV was better than those not on NIV (17months vs. 12 months).

MND PATIENTS	Mean age at diagnosis	Gender (M:F)	Mean time from symptoms to diagnosis	Commenced on NIV	PEG
GROUP A (n = 13)	69	6:7	21 months	5	4
GROUP B (n=51)	71	33:18	13 months	26	8

Conclusion: The number of patients managed by the East Kent team has increased 5fold since 2008. This perhaps reflects the need for teams closer to home, which leads to better access to specialist intervention including NIV which improves survival. The mean time from symptom to diagnosis has also reduced since the introduction of a multi-disciplinary team, as has the earlier need for PEG. Further analysis may identify the contributing factors.

P2076
The individual does not feel an air hunger during the control apparatus of mechanical ventilation of his lungs
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The purpose of the research is to compare sensations on the chemical stimuli in natural breathing (NB) and in voluntary-controlled mechanical lungs ventilation (vcMLV). The individual controls the mechanical ventilation device by a certain movement of his hand and deliberately chooses the speed of air flow into his lungs, the respiratory volume and the rhythm of mechanical ventilation. 9 healthy adult males performed Read CO2 rebreathing tests. The inspiratory pneumotachogram and the capnogram were registered. Sensation of an air hunger was rated on three point original scale at each 30 seconds. During rebreathing tests, the ventilation of lungs was increased proportionally to the growth PETCO2. The tests were terminated when PETCO2 achieved 54±4 Torr. In NB conditions, the ventilation was 35±6 l/min. During vcMLV, the ventilation was higher ($P<0.05$), and reached 56±12 l/min. Any individual has not reported on occurrence of sensation of an air hunger either in natural breathing or in conditions of controlled mechanical ventilation. Purposeful self-controlled of mechanical lungs ventilation allows, as expected, to functionally divide the voluntary and the automatic efferent outputs; under these conditions, the integrity of afferentation in the respiratory system seems to be preserved. These results may be grounds for the assumption that an adult individual's implementation of the regulation of respiratory movements is the same way as other voluntary movements, such as cycling or maintaining a vertical posture.

P2077
Decannulation and NIV in tracheotomized and chronically ventilated patients
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While non-invasive ventilation (NIV) is a recommended technique for weaning intubated patients after acute hypercapnic respiratory failure, little evidence exists for NIV as a technique for weaning tracheotomized patients undergoing prolonged invasive ventilation (IV).

Methods: We prospectively studied a group of tracheotomized and chronically ventilated patients admitted to a weaning centre who could be suitable to decannulation and conversion to NIV because of absence of airway stenosis, normal swallowing function, preserved cough mechanism but unable to sustain a spontaneous breathing for more than 16 hours without increasing $PaCO_2$. Data collected for follow-up were: demographic, functional, severity score (SAPSII), need to re-tracheotomy, survival, hospital admissions/year, maintenance of adequate gas exchange. The Fisher exact test and the log-rank test have been employed for statistical analysis.
Results: 176 patients with tracheotomy and prolonged IV were evaluated; 26 patients (14 men) met the criteria and were decannulated and converted to NIV (16 obstr. 10 restr.). Mean age was 67.46 years, mean SAPSII score was 26.8, mean follow-up time was 24.8 months; 12 patients had at least 1 new episode of exacerbation, in 5 cases requiring ICU admission, and 2 patients needed re-tracheotomy. Two years-mortality rate was 26%. Age and severity score turned out to be statistically significant predictors of survival.
Conclusions: Long-term maintenance of tracheotomy and invasive ventilation makes the patient more fragile and difficult to manage in the domiciliary setting. Decannulation and conversion from IV to NIV is a safe and feasible technique and should be attempted in selected hypercapnic patients.

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Use of home non-invasive ventilation (NIV) in patients with ankylosing spondylitis (AS)
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Background: Ventilatory impairment is a recognised extra-articular manifestation of AS. To our knowledge there are no published data describing home NIV in this condition.
Aims and objectives: Retrospective assessment of home NIV in AS patients at a tertiary UK ventilatory support centre to determine i) indications for NIV, ii) physiological response to treatment and iii) compliance and survival.
Methods: Case records of patients referred for consideration of NIV between 1993 and 2011 were retrospectively reviewed and information regarding the indication for NIV, demographics, co-morbidities, arterial blood gas analysis, pulmonary function, mean overnight oxygen saturation (SpO2), compliance and survival recorded.
Results: The case notes of 18 patients (15 male, 64*m*9.2 yrs) were reviewed. Most commenced NIV in the context of acute respiratory decompensation (n=11; 61%). The most frequent indication for NIV was hypercapnia ($PaCO_2 \geq 6.5$, n=14; 78%). NIV led to a sustained decrease in $PaCO_2$ from the baseline ($p<0.05$) and rise in the mean overnight oxygen saturation ($p<0.05$). Twelve patients have died (68%) with the median time to death from starting NIV of 31 months (range 1-98). The median duration of treatment was 33 months (range 1-99).

Physiological response	Baseline ±SD	Follow up (8 weeks) ±SD	Most recent review (range 0.1-8.3 years) ±SD
Mean PaO2 (kPa)	7.8±1.0 (n=18)	8.8±1.2 (n=14)	8.0±1.4 (n=14)
Mean PaCO2 (kPa)	8.1±1.8 (n=18)	6.7±0.74 (n=14)	6.8±1.8 (n=14)
Mean nocturnal SpO2 (%)	83±8.6 (n=18)	93±3.2 (n=15)	92±3.5 (n=14)
Mean compliance (hours)		6.8±3.0 (n=15)	6.0±2.9 (n=13)

Conclusion: AS patients demonstrated good compliance with NIV, which was associated with a sustained improvement in physiological parameters.

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Home mechanical ventilation the Netherlands; an overview
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Background: Home Mechanical Ventilation (HMV) is well known as a cost-effective treatment which significantly improves quality of life. In this abstract we give an overview of the development of HMV in the Netherlands.
Methods: Since 1991 we have been collecting data regarding all patients treated with HMV the Netherlands.
Results: Over the last 20 years, the number of Dutch patients treated with HMV increased from 200 to 2000. There is a significant growth in number of patients treated with non-invasive ventilation. Mask and mouth-piece ventilation in combination with the progress in technical abilities of the equipment, allows patients to use the non-invasive ventilation up to 24 hours a day. Patients were divided in four categories: neuromuscular disease (NMD), thoracic cage restriction (TCR), lung disease and obstructive or central sleep apnea syndrome. Patients with NMD have always been and still remain the largest category in the Netherlands. The rise in NMD is especialy due to patients with ALS; almost 100 patients with ALS started HMV last year. The 2nd largest group includes patients with TCR. Patients with

Obesity hypoventilation syndrome (OHS) are primarily responsible for the growth in this group. Patients with obstructive lung disease are a fairly stable group. Of all patients on HMV 83% lives at home.
Conclusion: Most patients on HMV are currently treated non-invasively. The growth of these patients is specifically seen in patients with ALS or OHS. Despite this enormous rise of patients treated with HMV, 83% of the patients still live at home.

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Home NIV for patients with stable COPD
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Background: Non invasive ventilation (NIV) is shown to be effective in the treatment of acute respiratory failure in patients with chronic obstructive pulmonary disease (COPD) and as treatment at home in patients with chronic respiratory failure due to e.g. neuromuscular disease. Previous studies in patients with COPD have shown conflicting results of home NIV.
Aim: Audit of home NIV treatment initiated due to repeated admissions with NIV treated acute hypercapnic respiratory failure (AHRF).
Method: Retrospective study of acutely NIV treated patients in our dept. of lung medicine. Frequency and duration of hospital admissions respectively 12 and 6 months before and 6 months after the initiation of home NIV were compared.
Results: Figure shows a significant reduction in number of admissions 6 months after initiation of home NIV compared to 12 (avg 2,4 to 0,75 (p=0,05)) and 6 months before initiation (avg. 4 to 0.75 (p=0,0046))

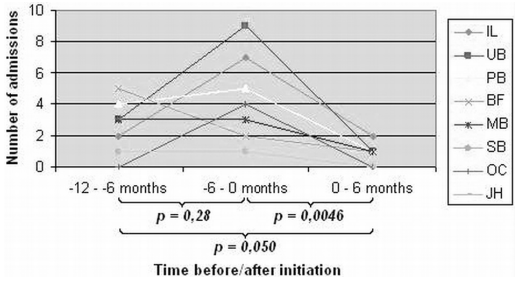

Figure 1. Frequency of admissions to a pulmonary ward before and after initiation of home NIV.

Conclusion: The study shows that home NIV is effective to reduce admissions with respiratory problems in a highly selected group of COPD patients with previous repeated AHRF and need of acute NIV treatment.