86. The latest insights in chronic care

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Effects of a novel noninvasive open ventilation system during constant work rate exercise in COPD

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Exercise intolerance limits daily activities of COPD patients. Noninvasive venitilation improves exercise capacity in severe COPD patients. Formwaster ver-impractical for ambulatory use. This study evaluated a 0.45 kg noninvasive open ventilation (NIOV) system (Breathe Technologies), designed for nasal delivery of compressed O2 with each inhalation.

This was a randomized single-blinded study of 10 men with severe-to-very severe COPD and exercise desaturation. Following a test day in which a cycle ergometer constant work rate (CWR) was established, subjects completed 3 additional days in which 2-3 CWR tests (separated by 1.5 hrs) were performed in random order. Tests were: unencumbered room air, NIOV+air, NIOV+O₂, or O₂ via standard nasal cannula. Data collected included exercise time, $\ensuremath{\text{SpO}_2}$ and transcutaneous (Tc) PCO₂.

Subjects ages were 67±9y, with FEV1/FVC=29±6% and FEV1=30±12% pred. Compared to unencumbered and NIOV+air arms, endurance was prolonged ~75% by nasal cannula O_2 and ~330% by NIOV+ O_2 (Table). The greater endurance in the NIOV+O2 tests was accompanied by higher SpO2 but unaltered TcPCO2.

Responses to CWR exercise

	Room Air	O2 Cannula	NIOV+Air	NIOV+O2	P-value*
Endurance (min)	5.2 (2.3)	9.8 (6.7)	5.4 (2.0)	17.2 (6.5)	P<0.0001
SpO2 (%)**	87.5 (2.2)	92.1 (4.7)	86.9 (3.9)	98.5 (1.1)	P<0.0001
TcPCO2 (mmHg)**	45.7 (7.6)	42.4 (6.5)	44.5 (6.5)	45.3 (6.1)	P=0.3685

Mean (SD), *One-way, repeated-measures ANOVA, **At isotime,

Exercise endurance was dramatically enhanced using the NIOV system+O2. These data suggest that this system is a practical means to improve tolerance of everyday activities in oxygen-dependent severe COPD.

P601

The minimal clinically important difference (MCID) for the six minute walk (6MW) test in COPD in relation to death

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Introduction: The 6MW is used to assess interventions in COPD but existing estimates of the MCID for have been derived from narrow cohorts where a non-blinded intervention, for example pulmonary rehabilitation, have been applied.

Objective: To define the MCID for 6MW distance in an unselected population. Methods: Data from the ECLIPSE cohort were used. Briefly 2112 patients were prospectively followed for 3 years in a multicentre study. We defined an index event as death or first hospitalisation and calculated the change in 6MW (Δ 6MW) in the last 12 month period before the event occurred. If a patient did not have an event the last 12 month change was used. We also related $\Delta 6MW$ to commonly used outcome measures in COPD; FEV1 and St Georges Respiratory Questionnaire (SGRQ-C)

Results: Of the subjects with $\triangle 6$ MW, 94 patients died and 323 were hospitalised. 6MW fell by mean (SD) 29.7 (82.9)m more in those who died than survivors (p<0.001). No significant difference in $\Delta 6MW$ was observed in those who had a first hospitalisation than those who did not. Cox proportional hazard modelling showed that a ∆6MW of more than -30m conferred a hazard ratio of 1.93 (95% CI: 1.29, 2.90; p=0.001) for death. Weak relationships only were observed between $\Delta 6MW$ and ΔFEV_1 or $\Delta SGRQ$.

Conclusions: A fall in 6MW of 30m or more is associated with increased risk of death in patients with COPD and therefore represents a clinically significant MCID for this test. The modest relationships between $\Delta 6MW$ and ΔFEV_1 or $\Delta SGRQ$ suggest that anchor based methods for determining MCID are context dependent. Funded by GSK (SCO104960; NCT00292552).

P602

A longitudinal study evaluating the relationship between exacerbations and directly measured physical activity in outpatient COPD patients

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This longitudinal study was designed to evaluate changes in physical activity during COPD exacerbations. IRB approval was obtained and all patients provided consent before participation. Those with a clinical and spirometric diagnosis of COPD, a history of 2 or more exacerbations in the past year, and no exacerbations in the past 4 weeks were recruited. Physical activity was measured using an actigraph device worn continuously (24 hrs/day) on the wrist. The number of

minutes per 24-hour day at moderate, vigorous, and very vigorous activity levels were recorded as outcomes. Exacerbations were defined by changes in the 14-item. Exacerbations of Chronic Pulmonary Disease Tool (EXACT), which was filled out daily. Patients remained in the study for 6 months or until 4 weeks after the onset of an exacerbation. The study, which commenced in December, 2011, is designed to be event-driven until 20 exacerbations are recorded. To date, 12 patients have been enrolled: 7 males; mean age 61 years, mean FEV1 53%. Seven had EXACT-defined COPD exacerbations (mean change = 15 units) over 1200+ total patient-days of observation. Exacerbation durations ranged from 1 to 11 days. Mean daily physical activity on exacerbation days tended to be lower than on non-exacerbation days: moderate activity, 70 ± 25 (SE) vs. 99 ± 12 minutes (p = 0.19); vigorous activity, 55 ± 12 vs. 74 ± 10 minutes (p = 0.01); and very vigorous activity, 6 ± 4 vs.11 ±3 minutes (p = 0.07). In summary, this longitudinal study suggests that physical activity decreases during COPD exacerbations.

P603

Doctors' awareness of the Gold standard framework (GSF) for palliation in

chronic obstructive pulmonary disease (COPD) <u>M.J. Naveed¹</u>, N. Garner², M. Gautam¹, D.C. Lees¹, H. Burhan², J.F. O'Reilly¹. ¹Aintree Chest Centre, University Hospital Aintree, Liverpool, Merseyside, United Kingdom; ²Respiratory Department, Royal Liverpool University Hospital, Liverpool, Merseyside, United Kingdom

Background: The GSF aims to improve the quality of patient care in the final year of life, to reduce hospitalisation by reducing length of stay, to facilitate rapid discharge and admission avoidance thereby reduce costs and improving cost effectiveness.

Aims: To assess the awareness of the GSF programme in COPD amongst the doctors and nurses working in two University hospitals.

Methods: An anonymous questionnaire was administered to doctors and nurses of various grades from February 2011 to February 2012 in two University hospitals Results: 60 randomly selected doctors (5 consultants, 20 specialist registrars, 20 senior house officers, 15 house officers) and 20 nurses of different grades completed the questionnaire. 39 (49%) healthcare professionals had previous palliative care experience. Only a small proportion (14%) of them understood the GSF. 12 (15%) healthcare professionals were aware of prognostic indicators guidance.

The majority of doctors and nurses (86%) considered COPD a terminal disease and were aware of the potential for palliation depending on the severity of the disease

Conclusions: This survey demonstrates that most doctors and nurses realise the need to consider palliation in severe COPD, though only a minority are aware of the framework designed to facilitate this in clinical practice.

We suggest education and training of healthcare professionals on the GSF to increase awareness and thereby improve the quality of care for COPD patients receiving hospital care in the final year of life. Through organisational change, the GSF may enable better teamwork, leading to more coordinated cross boundary

Reference: National GSF centre overview paper.

P604

Early discharge COPD experience: Reduction of severe exacerbations requiring hospitalisation

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Introduction: Hospital at home schemes for COPD exacerbations are used but evidence to support them with reductions in exacerbations or mortality has not been wholley conclusive

Method: Data 12 months pre & post instigation of an early discharge with admission avoidance service (EDS-AA) was available to COPD exacerbation patients hospitalised at our hospital, providing care to a population of 450000, covering the Bucks (B) & East Berks (EB) area. Currently only patients from EB qualify for care with the EDS-AA team. The EDS-AA team takes patients home within 5 days of admission & offer support for 10 days after. Subsequent to this, patients are offered direct EDS-AA team access, including home visits, telephone advice & self-management strategies

Result: Data was available in 95 COPD patients hospitalised with a severe COPD exacerbation. The mean (range) age was 75 (48-99) years & severity of COPD was classified as GOLD I, II, III & IV in 5%, 33%, 31% & 31% of patients. The mean (range) exacerbation frequency prior to the EDS-AA service was 1 (0-4) in all patients. 64% of exacerbations occurred in patients from the EB group & were discharged with the EDS-AA service. There was a significant reduction in the 12 month exacerbation rate requiring hospitalisation in the EB group (mean difference -0.5, 95% CI -0.8 to -0.2, p=0.003) but not the B group (mean difference 0.0, 95%CI -0.4 to 0.3, p=0.865). Mortality was not different in patients on the EDS-AA service compared to those that were not (13% vs. 9%, p=0.43)

Conclusion: The institution of a specialised EDS-AA service at our hospital was associated with reductions in COPD exacerbations requiring hospitalisation & has significant cost implications.

P605

Factors affecting physical activity in patients with air pollution-related illness compared to patients with COPD

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Background: The survival of chronic obstructive pulmonary disease (COPD) patients has been reported to be associated with physical activity (PA). However, there have been no reports concerning PA in patients with air pollution-related illness (API), who have symptoms of dyspnea similar to COPD patients.

Objective: We investigated the factors affecting PA in patients with API compared with COPD patients.

Methods: The study subjects were 30 patients with API and 38 COPD patients. The MRC dyspnea scale (MRC), pulmonary function, muscle strength, six minute walking test (6MWT), incremental shuttle walking test (ISWT), ADL score, SGRQ, CES-D and PA were measured. PA was assessed using a multisensor accelerometer that records steps and energy expenditure for 7 consecutive days after admission for pulmonary rehabilitation. An analysis was performed to examine the differences between the two groups in order to identify the factors that influence PA in patients with API.

Results: Patients with API had significantly better pulmonary function compared with COPD patients (p<0.001). However, their leg strength, exercise tolerance and QOL were significantly worse (p<0.01), and a higher incidence of depression symptoms were seen in patients with API (p<0.05). On the other hand, the differences of MRC and PA were not significant between the two groups. PA of patients with API was correlated with the MRC, %VC, ISWT and ADL score, while PA of COPD patients was correlated with age, MRC, BMI, 6MWT, ISWT and ADL score. Conclusions: To improve MRC, ISWT and ADL that influence PA, pulmonary rehabilitation as well as other treatments may therefore be useful in treating patients with API.

P606

COPD-mortality, a two years retrospective study

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Chronic Obstructive Pulmonary Disease (COPD) is a disease with increasing prevalence and mortality. In Sweden approximately 3000 individuals die every year as a consequence of COPD.

Aim: To describe the disease and the care of COPD patients during their last two years. The aim was also to find out whether there are gender and/or regional differences with regard to terminal COPD care in Sweden.

Method: Retrospective collection of data from patients records from all patients who died due to COPD in 2003 and 2004, in one urban and one rural area, covering 19% of the total Swedish population. A questionnaire was developed for collection of information.

Results: Out of 822 deaths from COPD, sufficient information was found for 729 (89%) of the patients who died in 2003-2004 with COPD as the underlying cause of death. Median disease duration was 6.0 (range 0-36) years with no difference by gender or area and the diagnosis was based on lung function measurement in 47% of the patients.

Median age at death was 78 (range 52-96) years in women and 80 (51-99) in men (corresponding figures for all who died 2003 in Sweden were, 82.6 and 78.1, respectively). The proportion of current smokers at the time of death was 41% in women and 33% in men (p=0.02).

Most of the patients died at hospital (68%) while 13% died at home. Care days during the two last years were in average 23 days and in 63% of the patients a history of one or more exacerbations were reported.

Conclusions: In Sweden women become 4 years older than men but women with COPD had shorter length of life than had men. This indicates a faster COPD-course in women. The generally high length of life together with short time with COPD diagnosis, indicate that the diagnosis of COPD is made late.

P607

Subjective sensation of dyspnea relates to physical inactivity in COPD Milla Katajisto, Henna Kupiainen, Piritta Rantanen, Ari Lindqvist,

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Background: The importance of physical activity in COPD has been recognised. Physical inactivity relates to exacerbations, hospitalisations and mortality. We dont

know why significant proportion of patients who have severe disease can maintain physical activity, while others turn inactive at early stages of the disease. More information is needed about the factors behind physical activity.

Aim of the study: The aim was to study physical activity in well defined COPD patient cohort. We asked about daily life activity, history in sports and barriers for exercising.

Methods: The study was postal survey of the COPD cohort (N=719) recruited in Helsinki and Turku University Central Hospitals and followed since 2005. Validated questions were chosen to evaluate physical activity, dyspnea, and quality of life

Results: Fifty percent of the participants exercised >2 times a week throughout the year. Participants showed great variation in activity and sport choices. Active patients did not differ from inactive by gender, age, smoking status, somatic co-morbidities, or BMI. Activity correlated significantly with patients' reported dyspnea (r=0.32, p<0.001), quality of life (r =0.25, p<0.001), mobility disability (r =0.37, p<0.001), and bronchial obstruction (r =0.18, p<0.001). Sensation of dyspnea (captured by Medical Research Council dyspnea scale) was significantly stronger among inactive patients.

Conclusion: Co-morbidities did not explain physical inactivity. Even though proportion of inactive patients increased with disease progression, many patients with severe disease exercised. Dyspnea related to physical inactivity. When COPD patient suffers from dyspnea, actions should be taken to promote physical activity.

P608

Increase motivation and efficiecy in cystic fibrosis teenagers using sport

activities, respiratory nuscle training and airway clearance techniques <u>Bogdan Almajan-Guta</u>¹, Claudiu Avram², Alexandra Mihaela Rusu³, Ornela Olivia Cluci³, Mihaela Oravitan², Zoran Popa⁴, Sebastian Gheltofan⁵. ¹Physical Education and Sport Department, University "Politehnica", Timisoara, Romania; ²Physical Therapy Department, West University of Timisoara, Physical Education and Sport Faculty, Timisoara, Romania; ³Physical Rehabilitation, Victor Babes University of Medicine, Timisoara, Romania; ⁴Department of Gynecology, Victor Babes University of Medicine, Timisoara, Romania; ⁵Management in Public Nourishment and tourism, USAMVBT, Timisoara, Romania

Purpose: This study is aiming to demonstrate the efficiency of combined physiotherapy techniques: clearance techniques, respiratory muscle training (RMT) and sport activities, in order to improve clinical outcomes and quality of life in cystic fibrosis teenagers.

Method: This prospective study was conducted in the Romanian Cystic Fibrosis Centre and included a number of 40 patients, aged between 12 and 18 years. We have used classic techniques of clearance in the daily physiotherapy: the active cycle of breathing techniques, autogenic drainage, oscillating PEP, high frequency chest wall oscillation (5 times a week), sport programmes (2-4 times a week) and RMT (3 times a week using TrainAir computer system). We have evaluated at baseline and after 24 months of intervention the quality of life (using CFQOL questionnaire) and functional respiratory parameters FVC, FEV1, FEF25-75%. The statistical processing of data was made using a non-parametric test: the Wilcoxon matched pairs test.

Results: On a long term we noticed a substantial improvement in the clinical outcomes (less acute respiratory hospitalization and medication) and CFQOL scores. We also noticed significant statistical difference (p < 0.05), from initial vs. final evaluation in de functional respiratory parameters.

Conclusions: All cystic fibrosis patients should be encouraged to combine airway clearance techniques with respiratory muscle training and sport activities for better clinical outcomes and quality of life.

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P609

Observation cohort study of outcome of patients referred to a UK regional weaning centre

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Data on referral pattern and outcome of weaning failure patients referred to weaning and rehabilitation centres are limited. We evaluated the outcome of patients between 2006 and 2011 from the clinical database. Of 369 patients referred, 298 were accepted and 194 were eventually admitted to the unit. 63 (32.5%) had neuromuscular disease or chest wall deformity (NMD/CWD), 40 (20.6%) were post surgery, 37 (19.1%) has chronic obstructive pulmonary disease (COPD), 7 (3.6%) had obstructive sleep apnoea/obesity hypoventilation (OSA/OHS) and 47 (24.3%) had other neurological or spinal conditions (Other). 87 (44.9%) were completely weaned from ventilation and 42 (21.7%) were weaned from invasive to non-invasive. Median time from admission to weaning (TTW) was 18 days. 36 (18.6%) remained dependent on tracheostomy ventilation (TV) and 29 (15.0%) died before discharge. This compares with a mortality rate of 25% in the group of patients accepted, but not transferred.

Diagnosis	Ventilator free n (%)	NIV n (%)	TV n (%)	Median TTW (days)	Mortality n (%)
NMD/CWD	21 (33.3)	22 (34.9)	15 (23.8)	20	5 (7.9)
COPD	19 (51.4)	5 (13.5)	2 (5.4)	12	11 (29.7)
Post Surgical	24 (60.0)	4 (10.0)	5 (12.5)	14	7 (17.5)
OSA/OHS	2 (28.6)	3 (42.9)	0 (0.0)	23	2 (28.6)
Other	21 (44.7)	7 (14.9)	13 (27.7)	18	6 (12.8)

Mortality has decreased by 12% compared to previous data (Pilcher et al Thorax 2005). Mortality is lowest in the NMD and other neurological conditions groups. Complete ventilator independence was most common in the COPD and post surgery groups. The data indicates improved survival and weaning success in the group admitted to the LFU compared to those accepted but not transferred.

P610

The impact of COPD care bundles on compliance of care in northwest London

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Background: Chronic Obstructive Pulmonary Disease (COPD) is one of the most common respiratory diseases in the UK, causing around 25,000 deaths a year and with a large portion of patients not receiving ideal care for COPD exacerbations. Care bundles, a sequence of evidence based interventions, have been identified as a way of delivering consistent patient care.

Aims: National Institute for Health Research (NIHR) Collaboration for Applied Health Research and Care (CLAHRC) for Northwest London implemented COPD discharge care bundles across 7 sites over 18 months (beginning in April 2009) to improve compliance to existing evidence based interventions.

Methods: The COPD discharge care bundles initially included smoking cessation, pulmonary rehabilitation, patient information on self-management, inhaler technique training, and follow-up appointment. Each of the sites adapted the bundle according to available resources and local settings. Weekly data on compliance was entered into a web reporting tool.

Results: The results from the data showed that 1052 patients were discharged with the care bundle; 668 of these patients were discharged having received all the elements of the care bundle (63.5% were fully-compliant). The bundle element with the highest overall compliance was smoking cessation with 95.2%, and lowest was recorded with the follow-up appointment at 77.8%. Overtime improvement to overall compliance was seen across all sites.

Conclusions: This study reveals aspects that impact compliance of care with COPD care bundle elements. The findings offer valuable lessons to future sites interested in implementing COPD care bundles and should be considered in order to improve COPD care.

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COPD acute exacerbation care self-audit in public hospitals in Catalonia (MAG-1)

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Aims: To carry out a self-audit to survey the quality of care provided to patients admitted with Chronic Obstructive Pulmonary Disease (COPD) acute exacerbation. Methods: All 48 acute hospitals with chest unit in Catalonia were invited to complete a retrospective clinical self-audit comprising up to 40, 30 or 20 consecutively admitted episodes of COPD exacerbation (according to the size of the hospital measured through the annual COPD discharges: >400 (Group 1), 100-400 (Group 2), <100 (Group 3)). Results are presented as %, median or mean \pm standard deviations. Comparisons between hospitals were performed using one way ANOVA. A p value <0.05 was considered significant.

Results: Data for 910 episodes from 30 hospitals (62,5%) were received (a sample of >70% of discharges). Age 74,9 \pm 9,8, males (83,3%), FEV₁ 41% \pm 15, mean of Charlson Index by age 4,5±2. Median previous year respiratory admissions=2, IQR= 1-3. Mortality: inpatient (4,4%) & 90 days (4,4%). Readmission rate (RR) at 90 days: 23%. Mean length of stay (LOS): 8 days (SD=7). A significant variation was observed between the 3 hospitals groups: 8,1 (SD=6,9) vs 6,9 (SD=4,4) vs 7,8 (SD=6,2) (p=0,05). There were no significant differences in inpatient mortality but there were significant differences in 90 day hospital RR (26% vs 23% vs 16%, p=0,045) and 90 day mortality (4% vs 5% vs 8%, p=0,050). In the discharge report there was information on smoking habit (35%, in smokers' patients), ABG room air (18%) and lung function (52%).

Conclusion: We observed a considerable variation in the care provided between hospitals with a high variability in LOS, 90 day RR and 90 day mortality. The information in discharge report should be improved.

P612

Effect of cough on health-related quality of life in COPD <u>Helene Bellas</u>^{1,2}, Bronwen Connolly³, Surinder Birring⁴, Billie Hurst². ¹Physiotherapy Department, King's College Hospital, London, United Kingdom; ²School of Health Sciences, Queen Margaret University, Edinburgh, United Kingdom; ³National institute of Health Research Comprehensive Biomedical Research Centre, Guy's and St. Thomas' NHS Foundation Trust and King's College, London, United Kingdom; ⁴Department of Asthma, Allergy and Respiratory Science, Division of Asthma, Allergy and Lung Biology, King's College, London, United Kingdom

Background: Current disease-specific health related quality of life (HRQL) measures in COPD focus on symptoms such as breathlessness, fatigue, mastery and social disease aspects. HRQL is known to be affected in idiopathic cough patients and given the reported prevalence of cough in COPD, determining its effect on HRQL is justified.

Aim: Determine the relationship between cough and HRQL in COPD.

Method: Consecutive, unselected participants with COPD were recruited from outpatient clinics. Those who met eligibility criteria completed a set of questionnaires; COPD Assessment Questionnaire (CAT) to determine the presence of cough, The Leicester Cough Questionnaire (LCQ) as a cough-specific HRQL measure and Cough Visual Analogue Scale (VAS) to indicate self-reported cough severitv

Results: Forty participants were recruited. Baseline demographics showed a mean (±SD) age of 65.2 (±11.9) years, mean (±SD) FEV1% predicted of 49.0% (± 18.6) , the majority of the sample was of Caucasian background (80%) and the group was well matched in terms of gender (M:F, 22:18). Median (IQR) CAT cough score (/5) was shown to be 3 (2-3.5), no participant selected 0 which would indicate 'no cough at all'. Mean (±SD) VAS score 50.0 (±27.0). Median (IQR) LCQ scores (/21) were found to be 16 (11.8-18.6), for the group as a whole with the physical domain showing the poorest score of all domains. Median LCQ score decreased with an increasing CAT score. A significant inverse relationship was evident between median LCQ score and VAS (r = - 0.70, p<0.0001).

Conclusions: Cough was prevalent in a cohort of stable COPD patients with moderate to severe disease severity. Furthermore, increasing cough severity is associated with greater impairments in HRQL.

P613

Physical activity and sleep duration following hospitalisation with exacerbation of COPD vs. stable COPD & age matched controls

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Background: Exacerbations are known to reduce physical activity, but little is known about their effect on sleep.

Aim: This study measures physical activity and sleep quantity in patients recovering at home following hospitalisation for a COPD exacerbation and compares them with stable COPD patients and controls.

Methods: We recruited 23 COPD patients immediately following hospital admission for exacerbation (Acute), 34 stable COPD patients (Stable) and 19 age-matched people (Control). Physical activity and sleep duration were measured

Abstract P613 - Table 1 Control Stable p-value Acute Sleep (hr, min) $6hr 32min \pm 55min$ $6hr 50min \pm 1hr 13min$ $5hr 23min \pm 1hr 45min$ 0.001 5hr 32min ± 1hr 38min $4hr 22min \pm 1hr 58min$ $2hr 49min \pm 1hr 51min$ < 0.001 Walking (hr, min) $1hr\,35min\pm51min$ $1hr 53min \pm 1hr 10min$ $1hr 50min \pm 53min$ 0.57 Lying (hr, min) $10hr 17min \pm 1hr 28min$ $13hr 54min \pm 2hr 46min$ < 0.001 Resting (hr, min) $10hr 46min \pm 2hr 1min$ PAL 1.6 ± 0.3 1.5 ± 0.2 1.4 ± 0.2 0.010 5581 ± 3475 3062±3124 Daily step count 8433±2923 < 0.001Step Rate (per min) 20 ± 6 < 0.001 25 ± 6 15 ± 6

using a SenseWear Pro3 armband for 6 consecutive days. Average number of steps, time lying, walking, sleep and resting were calculated per day. Physical activity level (PAL) was calculated by dividing total energy by resting energy

Results: The mean FEV₁ was $54\pm24\%$ pred for the Stable and $39\pm14\%$ pred for the Acute. Activity data are tabulated.

Groups were compared using ANOVA. Acute patients had fewer steps, less walking time, lower step rate and less sleep than Stable and Control. Acute patients slept 1hr 45min less than Stable patients.

Conclusion: Following discharge, exacerbating patients walk less, more slowly and sleep less than stable COPD patients.

P614

Changes in physical activity and sleep duration following hospitalisation with acute exacerbation of COPD

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Background: Exacerbations have a negative impact on physical activities in COPD patients, but little is known about their effect on sleep.

Aim: We investigated daily activities and length of sleep during and 3 months after hospitalisation for a COPD exacerbation.

Methods: We recruited 17 COPD patients immediately following a hospital admission for exacerbation (Acute) and 3 months after discharge (Recovered). Physical activity and sleep duration were measured using a multisensory armband (SenseWear Pro3) for 6 consecutive days. The average number of steps, duration lying, walking, sleep and resting were calculated per day. Physical activity level (PAL) was calculated by dividing total energy expenditure by resting energy expenditure. Step rate was calculated by dividing steps by walking time.

Results: The mean FEV1 at discharge was 39±14% pred. Activity levels are tabulated.

Daily activity

	Acute	Recovered	p-value
Sleep (hr, min)	$5hr 41min \pm 1hr 42min$	$6hr 36min \pm 2hr 2min$	0.04
Walking (hr, min)	$2hr 59min \pm 1 hr 47min$	$3hr 25min \pm 2hr 6min$	0.14
Lying (hr, min)	$1hr 41min \pm 44min$	$1hr 54min \pm 1hr 15min$	0.42
Resting (hr, min)	$13hr 32min \pm 2hr 44min$	$11hr 59min \pm 3hr 25min$	0.01
PAL	1.4±0.2	$1.4{\pm}0.2$	0.53
Daily step count	3353±3308	4747±4888	0.03
Step Rate (per min)	16±6	19±10	0.08

Groups were compared using paired-t test. On recovery patients rested less, slept 55 mins longer (for 6hr 36min) and took more steps than in the acute state. Conclusion: 3 months after hospitalisation COPD patients slept and exercised significantly more and rested less than when first discharged.

P615

Lung aging in morbid obesity and the relationship with pulmonary volumes Eli Maria Pazzianotto-Forti¹, Fabiana Peixoto-Souza¹, Camila Mendes Letícia Baltieri¹, Maria Imaculada Montebello¹, Irineu Rasera-Júnior³ Marcela Barbalho-Moulin². ¹Postgraduate Program of Physiotherapy, Methodist University of Piracicaba (UNIMEP), Piracicaba, SP, Brazil; ²Postgraduate Program of Physiotherapy, Federal University of São Carlos (UFSCar), SP, Brazil; ³Gastroenterology Center and Obesity Surgery, Bariatric Clinic of Piracicaba, Piracicaba, SP, Brazil

Introduction: Few researches focus on the behavior of lung age in relation to morbid obesity.

Objective: The objective of this study was to investigate the influence of morbid obesity in the lung age in women and correlate to anthropometrics and ventilatory variables.

Methods: Cross-sectional study with morbidly obese (BMI ≥ 40kg/m²) and control group consisting of normal weight women with BMI 18.5 to 24.9/m². The subjects performed a pulmonary function test to determine lung age and the results were correlated to lung volumes.

Results: 72 women with morbid obesity (BMI: 45.8±5.4 kg/m²) and a control group of 37 lean women (BMI: 22.7±1.9 kg/m²) were evaluated. The morbidly obese had significantly higher lung age (50.1±6.8 years) than lean women (38.8±11.4 years). There was no difference between chronological age of morbidly obese women (34.9±7.6 years) and lean women (34.6±6.8 years) respectively. There was a negative correlation among forced vital capacity (FVC), forced expiratory volume in one second (FEV1), FEV1/FVC ratio, expiratory reserve volume (ERV) and lung age respectively (r = -0.7565, -0.8769, -0.2723, -0.2417). **Conclusion:** Lung age is increased in morbidly obese and it is associated to

decreased lung volumes. The calculation of lung age can be recommended for the morbidly obese to highlight pulmonary complications of obesity.

P616

Management of acute exacerbations of COPD (AECOPD); experience from a district general hospital in north west England

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Background: Our Trust covers a population of 330,000, with a dedicated nurselead COPD unit supported by a respiratory consultant for advice. Patients with AECOPD are assessed following referral, at 2 and 6 weeks. Home visits are undertaken in the first 2 weeks. The main aims are to prevent hospital admission through patient self management, patient/carer education and early supported discharge. Methods: Patient outcomes from April 2010 to March 2011 were reviewed. Exclusion criteria used were asthma, bronchiectasis, pneumonia, confused patients, uncontrolled diabetes, abnormal ECG and lack of social support.

Results: Of 636 referred, 497 were suitable. The referral source is shown below.

Referral sources		
Self	212	
Hospital wards	198	
GP	41	
COPD clinic	33	
Community	13	

Unsuitability criteria were Not AECOPD (50%), Lack of social support (20%), too poorly (20%), pneumonia/hypoxia/cardiac (10%). Of the 497 (286 F: 211 M) suitable patients (median age 70 y, IQR 63-76), 293 were ex smokers, 175 current smokers and 29 non smokers. There was a lack of relationship between seasons and admissions. 29 (5.8%) patients were admitted, with a mean length of stay of 4.65 days. So 468 readmissions were avoided, thereby saving 2159.82 bed days.

Conclusions: We have shown that within a planned unit with consultant support, COPD patients requiring inpatient management is significantly lower compared to National average (16%). In the current environment of financial austerity we feel that this model of COPD care is effective in saving valuable hospital bed occupancy and also provides management of patients in their own environment by facilitating self education and personalized care.

P617

Transition of care and rehospitalization rates for patients who require home

oxygen therapy following hospitalization Brian Carlin¹, Kim Wiles², Dan Easley². ¹Pulmonary and Critical Care Medicine, Allegheny General Hospital, Pittsburgh, PA, United States; ²Medicine, Klingensmith Heath Care, Ford City, PA, United States

Objective: To evaluate the effects over the past year of a home care based, respiratory therapist centered transition of care program for patients who require home oxygen therapy following hospital admission for an exacerbation.

Method: The Discharge, Assessment and Summary @ Home (D.A.S.H., Klingensmith HealthCare) program was implemented for patients who require supplemental oxygen use following hospital admission for the last year. This data is a summary of the last year of the program. The program consists of face-to-face visits by a respiratory therapist with the patient in the home environment on days 2, 7, and 30 following hospital discharge. Education, behavior modification, skills training, oxygen titration during performance of activities of daily living, clinical assessment, and adherence data collection are key components of the program. Patients who were discharged from the hospital who required supplemental oxygen were enrolled into the program.

Results: 555 patients from 23 different hospitals in the Western Pennsylvania area were enrolled into the program from March 2010 through February 2012. The primary discharge diagnosis was: COPD 69%; CHF 14%; hypoxemia 6%; pneumonia 4%; and other 7%. The overall readmission rate for the entire group was 5%. The 30 day readmission rate for those with COPD was 3% and for those with CHF was 3%.

Conclusions: With the use of this novel respiratory therapist based transition of care program, the 30 day rehospitalization rate (5%) for those patients who required supplemental oxygen on discharge was significantly lower than the historically observed rates (25%) in the Western Pennsylvania area.

P618

Home exercise tolerance assessment in acute exacerbated COPD patientes Beatriz Valeiro, Carme Hernández, Jesús Aibar, Llourdes Llop, Diego A. Rodríguez, Anael Barberán, Josep Roca, Jordi Vilaró. Centre Diagnóstic Respiratori, Hospital Clínic, Barcelona, Spain Unitat d'Atenció Integrada, Hospital Clínic, Barcelona, Spain Unitat d'Atenció Integrada, Hospital Clínic,

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Introduction: Home Hospitalization (HH) is an effective intervention for severe acute exacerbation of COPD (AECOPD). Exercise training after AECOPD treated at HH can be useful to improve functional capacity and quality of live in those patients. Nevertheless, to assess exercise tolerance at home is complex. The modified Glittre ADL-Test is a measure of functional status that we have adapted to patient's home.

Objective: Analyze the modified Glittre ADL-Test as a tool to measure exercise tolerance during an AECOPD at HH.

Method: 17 AECOPD patients, 15 males (median (ICR): 66 (60-84) years, FEV₁ 38% (29-44) predicted) attended at HH accepted to participate and completed 3 visits (V₁: HH discharge, V₂: 10 days post discharge, V₃:1 month post discharge). Outcomes: 1) Modified Glittre ADL-Test: laps (n), VO₂ and VE; 2)COPD Assessment Test; 3) MMRC and London Chest Activities of Daily Living (LCADL); 4) Modified Baecke (V₁ and V₃); 5) Handgrip.

Results: Modified Glittre ADL-Test laps increased (4 vs 5 vs 5,p<0.005), VO₂ per lap (242 vs 229 vs 177 mL/min,p<0.03) and VE per lap decreased (7 vs 7 vs 5 L/min, p<0.01). CAT (18.5 vs 11.5 vs 12, p<0.01), MMRC (2 vs 1.5 vs 1, p<0.01) and Modified Baecke (4 vs 14, p<0.01) also significantly improved between each assessment. There were no differences in Handgrip or LCADL.



Conclusion: Modified Glittre ADL-Test was suitable to measure exercise tolerance following an AECOPD attended at patient's home.

P619

Six minute walking test in chronic respiratory failure: Which reflects the patient clinic status, walking distance or %predicted value? Zuhal Karakurt, <u>Gökay Güngör</u>, Nalan Adigüzel, Rüya Evin Aydin, Merih Kalamanoglu Balci, Raziye Sancar, Suat Solmaz, Özlem Yazicioglu Moçin. *Respiratory Intensive Care Unit, Sureyyapasa Chest Diseases and Thoracic Surgery Training and Research Hospital, Istanbul, Turkey*

Aim: Six minute walking test (6MWT) values are limited for the patients who has been prescribed noninvasive mechanical ventilator due to chronic respiratory failure (CRF). We aimed to answer either walking distance (WD) or % predicted value better reflects the respiratory function of the patients who use home mechanical ventilators (HMV) due to CRF.

Methods: 6MWT is performed in patients during June-December 2011 who were already using HMW due to CRF and followed in our polyclinic.WD,ideal and lower limit of normal WD according to gender,age,BMI and %predicted of ideal values were calculated. Parameters that recorded during standart 6MWT and %predicted values were compared according to arterial blood gas (ABG),spirometry values and concomitant diseases.

Results: Correlation of WD and %predicted values for spirometry and ABG values of 144 patients were shown in Table 1.

Table 1

	6MWT, meter		6MWT, % p	6MWT, % predicted value	
	r	р	r	р	
FEV1, ml	0.29	0.001	0.44	0.001	
FEV1 % predicted	0.05	0.60	0.45	0.001	
FVC, ml	0.20	0.027	0.26	0.003	
FVC % predicted	-0.04	0.63	0.30	0.001	
FEV1/FVC	0.12	0.21	0.26	0.004	
PaCO2	-0.12	0.16	-0.26	0.002	
PaO2/FiO2	0.40	0.001	0.36	0.001	

Patients diagnoses were grouped as COPD,OHS,kyphoscoliosis and parenchymal lung diseases and their 6MWT were compared in Table 2.

Table 2

	COPD, 38	OHS, 52	Kyphoscoliosis, 23	PAH, 31	р
6MWT, m	316 (226-390)	303 (240-362)	420 (318-462)	333 (273-372)	0.002
6MWT % predicted	59 (43-69)	73 (63-82)	71 (56-75)	67 (47-75)	0.001
Ideal 6MWT, m	527 (489-585)	408 (353-491)	605 (566-692)	491 (450-590)	0.001
Lower limit normal	374 (336-432)	262 (210-338)	452 (413-539)	348 (301-437)	0.001

Conclusion: Predicted % values of 6MWT are better correlated with respiratory functions than WD for patients who use HMV due to CRF.