## ABSTRACTS

### Real-Time Asthma Outreach Reduces Excessive Short-acting β2-Agonist Use: A Randomized Study.

*Zeiger RS, Schatz M, Li Q, Solari PG, Zazzali JL, Chen W.*
J Allergy Clin Immunol Pract. 2014 Jul-Aug;2(4):445-456

**Background:** Excessive use of short-acting β2-agonists (SABA) indicates impaired asthma control.
**Objective:** To determine whether real-time outreach to excessive SABA users reduces SABA canister dispensings.
**Methods:** After real-time determination of a seventh SABA canister dispensing in the prior 12 months by using informational pharmacy technology, 12 to 56 year old patients with physician-coded asthma and inhaled corticosteroid dispensing were block randomized by prior asthma specialist care and medication step-care level into intervention (n = 1001) and control groups (n = 998). Intervention included real-time letter notification to patients and an electronic message to their physician with management suggestions, including facilitated allergy referral for patients without prior asthma specialist care. The control group received this organization's standard asthma care management without research contact. Frequency of the seventh SABA canister dispensing in the follow-up year was the primary outcome.
**Results:** Compared with controls, intervention patients reached 7 SABA canister dispensings less frequently (50.7% vs 57.1%; risk ratio 0.89 [95% CI, 0.82-0.97]; P = .007) and later (hazard ratio 0.80 [95% CI, 0.71-0.91; P < .001). SABA canister dispensings (mean ± SD) were less in intervention (7.5 ± 4.9 canisters) than controls (8.6 ± 5.3 canisters) (rate ratio 0.87 [95% CI, 0.82-0.93]; P < .001). The intervention reduced the risk of ≥7 SABA canister dispensings in patients without specialist care compared with patients with specialist care in the prior 3 years (P < .001) (P = .04 for interaction by prior specialist care). Visits to allergists were more frequent for intervention patients (30.9%) than for control patients (16.8%) (risk ratio 1.83 [95% CI, 1.54-2.16]; P < .001). Asthma exacerbations were unaffected.
**Conclusions:** A novel administrative-based asthma outreach program improves markers of asthma impairment in patients without prior asthma specialist care and is adaptable to managed care organizations with electronic medical records.

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### Role of budesonide/formoterol maintenance and reliever therapy: a pragmatic study.

*Boonsawat W[1], Thinkhamrop B.*
*Asian Pac J Allergy Immunol. 2014 Jun;32(2):160-5.*

**Background:** Many studies have demonstrated the efficacy of budesonide/formoterol (BUD/FORM) for Maintenance and Reliever Therapy (SMART®) for asthma control. However, there are concerns regarding its over-use and effectiveness.
**Objective:** To examine asthma control and over-use of BUD/FORM in real-life situations.
**Methods:** This study was a hospital-based cross-sectional and multi-center design. Patients were enrolled if they were >12 years old, had persistent asthma, had received BUD/FORM SMART for 3 months or longer, and smoked less than 10 pack-year.
**Results:** Of the 792 patients who used BUD/FORM for a mean of 28.2 months, all used BUD/FORM as maintenance and only 22.2% of the patients required BUD/FORM to relieve symptoms. The average inhaled corticosteroid dose used was 355.3±154.9μg/day (95% CI:

344.5 to 366.1). In 792 patients, constituting 2,376 person-months of observations, there was only one patient who used more than 12 puffs/ day of BUD/FORM for 3 days, with a rate of 0.015 days per patient per year (95%CI: 0.003 to 0.044), without reporting any adverse events. The percentage of asthma control according to the Asthma Control Test score of 20 or greater was 86.5% (95% CI: 84.1 to 88.9). Overall, the rates per patient per year of emergency room (ER) visits and hospital admissions were 0.18 and 0.21, respectively.
**Conclusions:** BUD/FORM SMART is effective in real-life clinical practice. On average, patients who received a low dose steroid in the form of BUD/FORM, had a satisfactorily high proportion of asthma control and had a low rate of ER visits and hospitalization. BUD/FORM maintenance and reliever therapy seems to be promising as a treatment approach for persistent asthma in every day clinical practice.

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**The prevalence of obstructive sleep apnea in patients with difficult-to-treat asthma.**

*Guven SF, Dursun AB, Ciftci B, Erkekol FO, Kurt OK.*
*Asian Pac J Allergy Immunol. 2014 Jun;32(2):153-9.*

**Objectives:** Obstructive sleep apnea (OSA) occurs more commonly in asthma patients than in the general population and can complicate asthma management. The aim of this study was to evaluate the presence of OSA in patients with difficult-to-treat asthma (DTA) and to investigate the sleep quality in these patients.
**Methods**: Patients with DTA were recruited from the adult allergy clinic of a tertiary care hospital. After completing the Sleep Questionnaire and Epworth Sleepiness Scale, all participants underwent overnight polysomnography. The demographic and asthma severity assessments included the following measures: the age at diagnosis, duration of illness, smoking and atopy status, results of pulmonary function tests, number of asthma control medications used, and number of hospitalizations and emergency room visits because of asthma and analgesic hypersensitivity according to apnea-hypopnea index (AHI) scores.
**Results**: We analyzed 47 (M:9/F:38) DTA patients with a mean age of 48.74±9.45 years. The mean duration of asthma was 9.17±6.5 years. Twenty-four (51.1%) patients were atopic. The analgesic hypersensitivity rate was 27.7%. Fourteen patients (29.8%) were former smokers and 2 patients were current smokers. Sleep quality was impaired in all patients. Thirty-five patients (74.5%) had OSA, 11 of whom had mild OSA, and 24 patients had moderate-severe OSA. The presence of OSA was not statistically correlated with asthma characteristics.
**Conclusion**: The study showed that there is a remarkably high prevalence of OSA in DTA. Although no statistically significant relationship between the presence of OSA and clinical asthma characteristics was identified, all DTA patients should be assessed for OSA.

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**Symptoms and impact of symptoms on function and health in patients with chronic obstructive pulmonary disease and chronic heart failure in primary health care.**

*Theander K, Hasselgren M, Luhr K, Eckerblad J, Unosson M, Karlsson I.*
*Int J Chron Obstruct Pulmon Dis. 2014 Jul 18;9:785-94.*

**Background:** Patients with chronic obstructive pulmonary disease (COPD) and chronic heart failure (CHF) seem to have several symptoms in common that impact health. However, methodological differences make this difficult to compare.

**Aim**: Comparisons of symptoms, impact of symptoms on function and health between patients with COPD and CHF in primary health care (PHC).
**Method:** The study is cross sectional, including patients with COPD (n=437) and CHF (n=388), registered in the patient administrative systems of PHC. The patients received specific questionnaires - the Memorial Symptom Assessment Scale, the Medical Research Council dyspnea scale, and the Fatigue Impact Scale - by mail and additional questions about psychological and physical health.
**Results**: The mean age was 70±10 years and 78±10 years for patients with COPD and CHF respectively (P=0.001). Patients with COPD (n=273) experienced more symptoms (11±7.5) than the CHF patients (n=211) (10±7.6). The most prevalent symptoms for patients with COPD were dyspnea, cough, and lack of energy. For patients with CHF, the most prevalent symptoms were dyspnea, lack of energy, and difficulty sleeping. Experience of dyspnea, cough, dry mouth, feeling irritable, worrying, and problems with sexual interest or activity were more common in patients with COPD while the experience of swelling of arms or legs was more common among patients with CHF. When controlling for background characteristics, there were no differences regarding feeling irritable, worrying, and sexual problems. There were no differences in impact of symptoms or health.
**Conclusion**: Patients with COPD and CHF seem to experience similar symptoms. There were no differences in how the patients perceived their functioning according to their cardinal symptoms; dyspnea and fatigue, and health. An intervention for both groups of patients to optimize the management of symptoms and improve function is probably more relevant in PHC than focusing on separate diagnosis groups.

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**Non-invasive positive pressure ventilation for the treatment of severe stable chronic obstructive pulmonary disease: a prospective, multicentre, randomised, controlled clinical trial.**

*Köhnlein T, Windisch W, Köhler D, Drabik A, Geiseler J, Hartl S, Karg O, Laier-Groeneveld G, Nava S, Schönhofer B, Schucher B, Wegscheider K, Criée CP, Welte T.*
*Lancet Respir Med. 2014 Jul 24. pii: S2213-2600(14)70153-5.*
**Background:** Evidence is weak for the ability of long-term non-invasive positive pressure ventilation (NPPV) to improve survival in patients with stable hypercapnic chronic obstructive pulmonary disease (COPD). Previous prospective studies did not target a reduction in hypercapnia when adjusting ventilator settings. This study investigated the effect of long-term NPPV, targeted to markedly reduce hypercapnia, on survival in patients with advanced, stable hypercapnic COPD.
**Methods:** This investigator-initiated, prospective, multicentre, randomised, controlled clinical trial enrolled patients with stable GOLD stage IV COPD and a partial carbon dioxide pressure ($PaCO_2$) of 7 kPa (51·9 mm Hg) or higher and pH higher than 7·35. NPPV was targeted to reduce baseline $PaCO_2$ by at least 20% or to achieve $PaCO_2$ values lower than 6·5 kPa (48·1 mm Hg). Patients were randomly assigned (in a 1:1 ratio) via a computer-generated randomisation sequence with a block size of four, to continue optimised standard treatment (control group) or to receive additional NPPV for at least 12 months (intervention group). The primary outcome was 1-year all-cause mortality. Analysis was by intention to treat. The intervention was unblinded, but outcome assessment was blinded to treatment assignment. This study is registered with ClinicalTrials.gov, number NCT00710541.
**Findings:** Patients were recruited from 36 respiratory units in Germany and Austria, starting on Oct 29, 2004, and terminated with a record of the vital status on July 31, 2011. 195 patients were randomly assigned to the NPPV group (n=102) or to the control group (n=93). All patients

from the control group and the NPPV group were included in the primary analysis. 1-year mortality was 12% (12 of 102 patients) in the intervention group and 33% (31 of 93 patients) in the control group; hazard ratio 0·24 (95% CI 0·11-0·49; p=0·0004). 14 (14%) patients reported facial skin rash, which could be managed by changing the type of the mask. No other intervention-related adverse events were reported.
**Interpretation**: The addition of long-term NPPV to standard treatment improves survival of patients with hypercapnic, stable COPD when NPPV is targeted to greatly reduce hypercapnia.

## Outcome of ultrasound-guided small-bore catheter drainage in exudative pleural effusions.

*Kiranantawat N, Sungsiri J, Geater SL.*
*J Med Assoc Thai. 2014 May;97(5):548-53.*

**Objective:** To evaluate the outcome and safety of ultrasound-guided percutaneous catheter drainage of exudative pleural effusion.
**Material and method:** The present study was a retrospective analysis of 412 pleural effusions from 373 patients that underwent ultrasound-guided small-bore catheter drainage in exudative pleural effusions between 2004 and 2009.
**Results:** The two most common causes for drainage were parapneumonic effusion or empyema (52.2%) and malignant effusion (30.3%), while the remains were trauma, iatrogenic, and others. Overall clinical success rate was 76.5%. The success rate was lower among malignant pleural effusion (p = 0.003). Causes of effusion were the only independent predictors related to success. Only five (1.2%) patients developed complication during the procedure. Seventy-five of 412 effusions (15.8%) developed complication during the period of drainage; the majority were drain blockage (9%) and accidental dislodgment (4.1%).
**Conclusion:** Ultrasound-guided small-bore catheter drainage was a safe and efficient procedure for exudative pleural effusions.

## Comparison of high-resolution computed tomography findings between Pseudomonas aeruginosa pneumonia and Cytomegalovirus pneumonia.

*Omeri AK[1], Okada F, Takata S, Ono A, Nakayama T, Ando Y, Sato H, Hiramatsu K, Mori H.*
*Eur Radiol. 2014 Jul 22*

**Objective:** To compare pulmonary high-resolution CT (HRCT) findings in patients with Pseudomonas aeruginosa pneumonia to HRCT findings in patients with Cytomegalovirus (CMV) pneumonia.
**Methods**: We studied 124 patients (77 men, 47 women; age range, 20-89 years; mean age, 65.4 years) with P. aeruginosa pneumonia and 44 patients (22 men, 22 women; age range, 36-86 years; mean age, 63.2 years) with CMV pneumonia.
**Results**: CT findings of consolidation ($p < 0.005$), bronchial wall thickening ($p < 0.001$), cavity ($p < 0.05$), and pleural effusion ($p < 0.001$) were significantly more frequent in patients with P. aeruginosa pneumonia than in those with CMV pneumonia. Centrilobular nodules, a crazy-paving appearance, and nodules were significantly more frequent in patients with CMV pneumonia than in those with P. aeruginosa pneumonia (all $p < 0.001$).

**Conclusion**: Pulmonary HRCT findings, such as bronchial wall thickening, crazy-paving appearance, and nodules may be useful in distinguishing between P. aeruginosa pneumonia and CMV pneumonia.

### Surgical Lung Biopsy in Adult Respiratory Distress Syndrome: A Meta-Analysis.

*Libby LJ, Gelbman BD, Altorki NK, Christos PJ, Libby DM.*
*Ann Thorac Surg. 2014 Jul 25. pii: S0003-4975(14)01081-9.*

**Background:** Adult respiratory distress syndrome (ARDS) has a high mortality rate and consumes considerable health care resources. It is not clear whether specimens obtained from open lung biopsy (OLB) in ARDS provide a specific diagnosis, alter therapy, or affect outcome. This meta-analysis attempts to determine whether OLB is safe, provides a specific diagnosis, changes therapy, or affects survival.
**Methods**: A computerized search was performed of Medline and PubMed from January 1988 to December 2012 of English language studies of acute respiratory failure and diffuse pulmonary infiltrates that evaluated OLB in primarily adult mechanically ventilated patients. Of 194 abstracts retrieved, 64 articles were reviewed; 130 articles were excluded because they did not evaluate OLB. After applying the selection criteria, 24 articles were included.
**Results**: OLB in ARDS provided a specific diagnosis in 84% of patients and altered management in 73%. Hospital mortality was 43%. The complication rate for OLB in ARDS was 22%, but death from OLB was rare.
**Conclusions**: OLB in ARDS is a potentially productive procedure that provides a specific diagnosis and leads to a change in management in high proportions of patients. ARDS has a high mortality rate, which OLB does not appear to increase. Owing to a lack of randomized controlled trials, a survival advantage of OLB in ARDS could not be demonstrated.