## P23 EFFECT OF OMALIZUMAB ON ORAL CORTICOSTEROID REQUIREMENTS OF YOUNG CHILDREN WITH SEVERE ASTHMA; RESULTS OF A UK SURVEY

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**Introduction and Objectives** Some children with severe chronic asthma require long-term oral corticosteroids (OCS) to maintain disease control which places them at risk of potentially serious adverse effects. Omalizumab is a recombinant, humanised, monoclonal anti-IgE antibody indicated in the EU for use in patients of ≥6 years of age with inadequately controlled severe allergic asthma. This agent improves disease control in children, adolescents and adults. We conducted an observational survey in UK clinical centres to evaluate whether omalizumab enabled reduction of OCS dose in children with severe, persistent, allergic asthma.

**Methods** Seven UK clinical centres were identified in which children (6 to <12 years of age) with severe persistent allergic asthma were being treated with omalizumab. Lead clinicians at each centre were approached to request their participation and, if they agreed, they were sent a short questionnaire. Participating clinicians provided information on children who had continued treatment with omalizumab beyond the 16-week responder assessment. Information collected included the number of children receiving omalizumab, OCS use, OCS dose at omalizumab initiation, numbers of children stopping, reducing or increasing OCS use, and current OCS doses.

**Results** Information was provided from four sites for 18 children receiving omalizumab, all of whom were on maintenance OCS at baseline. All patients were able to stop or reduce their OCS dose after initiating omalizumab. Four patients (22%) on a mean baseline OCS dose of 8.8 mg/day stopped using OCS altogether. In the remaining fourteen patients (78%) the OCS dose was reduced by a mean of 15.4 mg (from 22.0 mg to 6.5 mg; mean 70.2% reduction). The mean dose reduction across all patients of 77% was achieved in a mean time of 14.6 weeks.

**Conclusions** In this observational survey, all paediatric patients with severe allergic asthma who were commenced on omalizumab were able to stop or reduce OCS use, potentially reducing the risk of OCS-related adverse effects. The reductions in OCS use occurred over a short period, raising the possibility that further reductions in OCS dose might be feasible in some patients over a longer period of time.

## P24 FLUTICASONE PROPIONATE/FORMOTEROL FUMARATE COMBINATION THERAPY HAS A MORE RAPID ONSET OF ACTION THAN FLUTICASONE PROPIONATE/SALMETEROL XINAFOATE IN THE TREATMENT OF ASTHMA: A RANDOMISED CONTROLLED TRIAL

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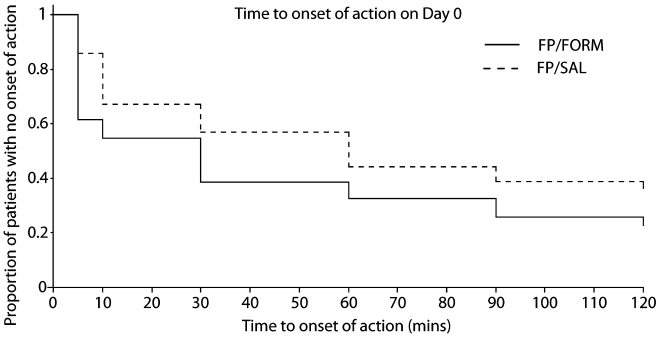
**Introduction and objectives** A new asthma therapy combining fluticasone propionate and formoterol fumarate (FP/FORM) in a single pressurised metered dose inhaler has been shown to have similar efficacy and safety to fluticasone propionate/salmeterol xinafoate (FP/SAL). Secondary endpoint data for this study are presented here.

**Methods** Adults (N = 202) with mild to moderate-severe asthma were randomised 1:1 to 12 weeks of treatment with FP/FORM (100/10 μg or 250/10 μg) or FP/SAL (100/50 μg or 250/50 μg), both twice daily, in an open-label, parallel-group, multicentre study. The starting dose was based on the dose of inhaled corticosteroid the patient received before the study. The primary endpoint was mean morning pre-dose $FEV_1$ at Week 12. Secondary endpoints included time to onset of action. Time to onset of action was defined as the first time point post-dose at which the $FEV_1$ value was at least 12% greater than the pre-dose value (Abstract P24 Figure 1).




FP/FORM = fluticasone propionate/formoterol fumarate; FP/SAL = fluticasone propionate/salmeterol xinafoate

Abstract P24 Figure 1

**Results** FP/FORM time to onset of action was more rapid than FP/SAL (HR: 1.64; 95% CI: 1.28 to 2.10; p<0.001; full analysis population; FP/FORM: n = 101; FP/SAL: n = 100). Onset of action was observed on Day 0 in 78 patients in the FP/FORM group and 64 patients in the FP/SAL group. The probability of onset of action occurring was higher in the FP/FORM group than in the FP/SAL group at each post-dose time point on Days 0, 14, 42 and 84. In total, 72.3% (73/101) patients started on FP/FORM 250/10 μg and 75.2% (76/101) on FP/SAL 250/50 μg. Eight patients (FP/FORM: n = 5; FP/SAL: n = 3) required an increase in dose. Overall, the rate of AEs was comparable (23.8%; 24/101 for both groups). Most AEs were mild or moderate. There were only two severe AEs, both in the FP/FORM group. The frequency of treatment-related AEs was very low in both groups (FP/FORM: n = 1; FP/SAL: n = 1). Clinical laboratory results and vital sign assessments showed no abnormal results. No clinically important ECG changes were observed. Overall, FP/FORM and FP/SAL safety and tolerability profiles were similar.

**Conclusion** FP/FORM improved lung function more rapidly than FP/SAL.

## P25 RELATIONSHIPS BETWEEN AIRWAY HYPER-RESPONSIVENESS, AIRWAY INFLAMMATION AND AIRWAY CALIBRE IN ASTHMATIC SUBJECTS

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**Introduction and Objectives** We wished to examine therelationships between inflammation ($FE_{NO}$),methacholine challenge (AHR) and airway calibre (FEV1%) in a group of mild-to-moderate asthmatics.

**Methods** We searched our patient database forthose individuals with a known diagnosis of asthma who had a methacholine $PC_{20}$≤ 8 mg/ml. Data regarding FEV1%, $FE_{NO}$, skinprick and methacholine$PC_{20}$ were collected and divided into groups based upon AHR: severe (<0.5 mg/ml), moderate (>0.5–2 mg/ml) and mild (>2–8 mg/ml); and $FE_{NO}$: low (<25 ppb), medium (25–50 ppb) and high (>50 ppb).

**Results** We identified 208 who had a known diagnosis of asthma, a methacholine$PC_{20}$ ≤8 mg/ml, as well as $FE_{NO}$ and skin prick testing.

Mean age (SEM) was 41.1 (1). There was an 8.5% difference in FEV1% between groups A and C, (95% CI (2.6% to 14.4%) p=0.002) and a 29% difference for $FE_{NO}$ between groups A and C, (95%CI (2% to 48%) p=0.034). There was a 1.29 doubling dilution difference in methacholine$PC_{20}$ (95%CI (0.26 to 2.33) p= 0.009) between groups D and F. There was no significant difference between FEV1% when grouped by $FE_{NO}$ (See Abstract P25 Table 1). Applying multiple stepwise linear regression showed that $FE_{NO}$ and FEV1% were both significant predictors of methacholine PC20 (p= 0.002, p<0.001). Only methacholine $PC_{20}$ was a significant predictor of $FE_{NO}$ (p=0.002).

Abstract P25 Table 1 FEV1 are Arithmetic Means and 95%CI and skin prick Median and IQR. Methacholine $PC_{20}$ are Geometric Mean and 95% CI

| | Methacholine $PC_{20}$ (mg/ml) | | |
|---|---|---|---|
| Outcome | Group A n= 82 ≤0.5 | Group B n= 60 >0.5–2 | Group C n=66 >2–8 |
| FEV1% | 86.5 (82.9–90.1)* | 90.4 (87.4–93.5) | 95.0 (91.4–98.7)* |
| FENO | 28.1 (23.4–33.8)* | 30.6 (24.9–37.6) | 39.3 (32.8–47.0)* |
| No. +ve Skin Pricks | 3 (2-5) | 3 (2-5) | 3 (1-4) |
| % on ICS | 53% | 51% | 39% |
| Median BDP dose (ug) | 400 | 400 | 400 |
| Outcome | Exhaled Nitric Oxide (FENO) (ppb) | | |
| | Group D n=79 | Group E n=72 | Group F n=57 |
| | ≤25 | >25-50 | >50 |
| FEV1% | 89.9 (86.7–93.1) | 91.5 (87.8–95.3) | 88.9 (85.0–92.9) |
| Methacholine PC20 | 0.99 (0.67–1.47)* | 0.59 (0.39–0.89) | 0.41 (0.26–0.63)* |
| No. +ve skin pricks | 3 (2–4) | 3 (2–4) | 3 (2–5) |
| % on ICS | 41% | 44% | 33% |
| Median BDP dose (µg) | 400 | 400 | 400 |

*Significant difference between groups A versus C or between D versus F p<0.05.

**Conclusion** Our study has highlighted the disconnect between airway inflammation and airway calibre, whilst showing a significant relationship between AHR versus airway calibre and inflammation. Thus, whilst relationships exist between these independent outcomes, the lack of complete concordance highlights the important role that each contributes to the assessment of the asthmatic individual.

## P26 HOME SERIAL SPIROMETRY AS AN ADJUNCT IN THE DIAGNOSIS OF VOCAL CORD DYSFUNCTION

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**Introduction** The diagnosis of vocal cord dysfunction (VCD) is often difficult. Visualisation of the vocal cords using laryngoscopy is the current gold standard method of diagnosis, but may not be diagnostic if carried out when the patient is asymptomatic. An inspiratory flow volume manoeuvre performed during spirometry aids diagnosis, indicating inspiratory flow obstruction when flattened, but is subject to the same problem. Home serial spirometry (HSS), however, may improve diagnostic yield as it can be performed on demand, when the patient experiences symptoms.

**Methods** A retrospective review was performed of all patients referred to a District General Hospital with symptoms suggestive of VCD, between May 2005 and July 2010. Static spirometry was performed by a lung physiologist within the department. Patients were educated to perform HSS using a Jaeger Spiropro@+ handheld spirometer immediately on experiencing symptoms. Results were downloaded when the machine was returned after a 2-week period. Direct visualisation of the vocal cords via laryngoscopy was performed by a respiratory physician.

**Results** 54 patients were investigated for possible VCD. A final diagnosis of VCD was made in 31 (57%) cases. Inspiratory loop flattening on static spirometry was present in 48/54 (88%) patients investigated and 28/31 (90%) confirmed cases of VCD. There was evidence of inspiratory loop flattening on HSS in 28/39 (71.7%) patients. 22/39 (56%) who had laryngoscopy were found to have evidence of VCD. 25 patients had both laryngoscopy and HSS performed: 14 of these had evidence of VCD on both tests. 3 of the positive laryngoscopy results were associated with normal HSS. There were eight cases with flattened inspiratory loops on HSS in patients in whom no abnormality was found on laryngoscopy.

**Conclusion** The nature of laryngoscopy, necessarily performed at one point in time, limits its value in the diagnosis of VCD. HSS is a useful non-invasive test that can increase diagnostic yield in VCD.

## P27 PERSONAL ALLERGEN EXPOSURES ARE INCREASED BY CHANGES IN SLEEP POSITION AND IMPROVED BY TEMPERATURE-CONTROLLED LAMINAR AIRFLOW

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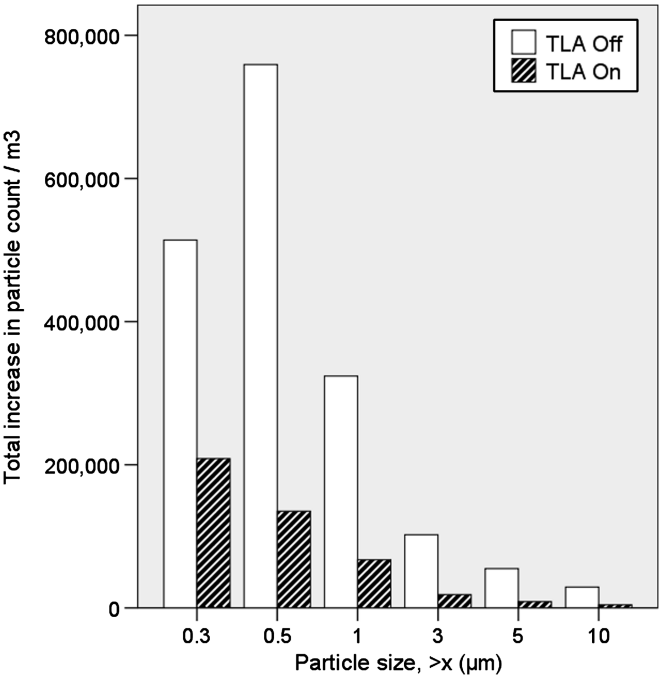
**Introduction and Objectives** Aeroallergens are released directly from bedding into the breathing zone, and contribute importantly to asthma symptoms. Adults change their sleep position between 3 and 45 times per night. The effect of these turns on inhaled particulate exposures is unknown. We aimed to investigate the effects of changing position on breathing zone particulate exposures and the effect of a novel Temperature-controlled Laminar Airflow (TLA) device on reducing such exposures.

**Methods** A simulated bedroom was constructed containing bedding from a cat owner. Five healthy volunteers lay recumbent under an active and an inactive TLA device for 175 min. Volunteers made scheduled turns in bed to simulate normal sleep. Real-time total




Abstract P27 Figure 1