EFFECTIVENESS OF FLUTICASONE-PROPIONATE/SALMETEROL VS FLUTICASONE-PROPIONATE/FORMOTEROL IN UK PATIENTS WITH ASTHMA

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Abstract

Background:
Randomised controlled trials suggested that efficacy of fluticasone-propionate/salmeterol (FP/SAL) is not significantly different from fluticasone-propionate/formoterol (FP/FOR). FP/FOR had a lower plume velocity and longer plume duration than FP/SAL, which may be helpful in overcoming poor inhaler technique. In addition, it contains a fast-acting long-acting β-agonist (LABA), formoterol, which might encourage better real life patient adherence.

Aim:
To evaluate non-inferiority in effectiveness (in terms of no severe exacerbations {asthma-related inpatient or emergency room attendance, or acute courses of oral corticosteroids}) in patients with asthma changing from FP/SAL to FP/FOR at the same inhaled corticosteroid (ICS) dose.

Methods:
A historic, observational study using Optimum Patient Care Research Database comprising of 1 year before (baseline) and 1 year after (outcome) first prescription for FP/FOR. Patients (aged 12-80 years), with diagnostic code and/or ≥2 prescriptions for asthma therapy, ≥1 FP/SAL prescription during baseline period and ≥2 FP/FOR prescriptions (including first prescription) during outcome period were included. Patients with other chronic respiratory disease, maintenance oral steroid therapy during baseline, or multiple ICS/LABA combination therapies were excluded. Summary statistics of demographics and disease characteristics were evaluated. Primary outcome was to evaluate non-inferiority in effectiveness (no severe exacerbations) of FP/FOR vs FP/SAL using conditional logistic regression. The secondary outcomes included comparison of baseline vs outcome composite asthma proxy control [defined as absence of severe exacerbations and/or lower respiratory tract (LRTI) consultations leading to prescription for antibiotics], ICS and Short-acting beta agonist (SABA) daily dose (average number of prescriptions over outcome year), adherence to ICS and consultations. ICS doses: Beclomethasone-equivalent (BDP-eqv). Comparative statistics were carried out using either Wilcoxon signed rank test, Marginal homogeneity test or McNemar's test as appropriate. Statistically significant results were defined as $p<0.05$.

Results:
A total 153 patients changing from FP/SAL to FP/FOR (with mean age 52 years; 47.7% non-smokers; mean 76.9% predicted PEF; mean BMI 29.5; mean ICS dose [BDP-eqv] prescribed at first FP/FOR prescription 1505 ug). Comorbidities based on diagnostic codes any time prior to first FP/FOR prescription included hypertension (32%), ischaemic heart disease (14%) and osteoporosis (12%).

FP/FOR is non-inferior to FP/SAL in terms of "no severe exacerbations". The lower confidence limit of 95% confidence interval of the mean difference for FP/FOR was -4.5%, more than the lower limit of the non-inferiority limit of -12.5% for FP/SAL. Patients changing from FP/SAL to FP/FOR had

comparable outcome vs baseline characteristics including severe exacerbations, composite proxy asthma control and SABA daily doses. Higher median [IQR] ICS daily dose (BDP-eqv) were prescribed during outcome (1150.7 µg [658,2137]) vs baseline (1068.5 µg [658,1808]). Patients who changed from FP/SAL to FP/FOR had lower number of asthma consultations (with or without prescription of oral steroids) in outcome (mean outcome 1.4 vs mean baseline 1.8; p = 0.001).

Patient characteristics		**Patients changing from FP/SAL to FP/FOR (N = 153)**		**p-value**
		Baseline (FP/SAL)	**Outcome (FP/FOR)**	
Severe exacerbations	0, n (%)	116 (75.8)	121 (79.1)	0.218‡
	1, n (%)	24 (15.7)	24 (15.7)	
	2+, n (%)	13 (8.5)	8 (5.2)	
Composite proxy asthma control	Yes, n (%)	86 (56.2)	81 (52.9)	0.603†
LRTI consultations resulting in script for antibiotics	0, n (%)	91 (59.5)	83 (54.2)	0.398‡
	1, n (%)	35 (22.9)	41 (26.8)	
	2+, n (%)	27 (17.6)	29 (19.0)	
SABA daily dose (µg)	Mean (SD)	2.3 (2.2)	2.3 (2)	0.957*
Adherence to ICS	Mean (SD)	86.7 (39.1)	90.3 (35.4)	0.027*
	0-70%, n (%)	51 (33.3)	41 (26.8)	0.006†
	71-100%, n (%)	55 (35.9)	46 (30.1)	
	101-120%, n (%)	24 (15.7)	38 (24.8)	
	121+%, n (%)	23 (15.0)	28 (18.3)	

‡Marginal Homogeneity test; †McNemar Test; *Wilcoxon Signed Rank Test

Table: Comparison key characteristics of outcome vs baseline of patients changing from FP/SAL to FP/FOR

Conclusions:
FP/FOR is non-inferior FP/SAL in terms of preventing severe exacerbations. Adherence was greater with FP/FOR (outcome) as compared to FP/SAL (baseline) with a numerically lower number of exacerbations is associated with FP/FOR.