Title: Real-world effectiveness and cost-effectiveness of asthma step-up options: A UK comparison of extrafine hydrofluoroalkane-beclometasone and combination therapy

Background: Guidelines suggest increasing inhaled corticosteroid (ICS) dose or adding long-acting B2-agonist (LABA) in uncontrolled asthma. We compared real-life effectiveness of extrafine hydrofluoroalkane-beclometasone (EF HFA-BDP) and ICS/LABA step-up options. Methods: Retrospective study using Optimum Patient Care and Clinical Practice Research Databases. Asthma patients (≥12 yrs) stepped-up from ICS to (i) higher dose ICS as EF HFA-BDP (ii) ICS/LABA as fixed-dose combination (FDC) or separate inhalers (free combination: FC). EF HFA-BDP matched to FDC (n=3036:3036) and FC (n=3232:6464). Outcomes: severe exacerbations (ATS/ERS definition), asthma control (no severe exacerbations, lower respiratory infection + antibiotics, or out-patient attendance) over 1 yr. Difference in respiratory-related healthcare cost and proportion achieving asthma control modelled using generalized linear models. Results: EF HFA-BDP and FDC had comparable adjusted odds of asthma control (OR (95% CI): 0.99[0.88, 1.12]; FDC = 1.00), and exacerbation rates (RR (95% CI): 1.04[0.91–1.20]). From 1000 bootstrapped samples, probability was 44% of EF HFA-BDP being dominant (less costly, more effective) and 56% of EF HFA-BDP being less costly and less effective. Compared with FC, EF HFA-BDP patients had greater odds of asthma control (EF HFA-BDP: 1.25 (1.13, 1.38); FC = 1.00) and lower exacerbation rates (0.79[0.70–0.88]). There was 100% probability of EF HFA-BDP being dominant. Conclusions:
Stepping-up from ICS as increased EF HFA-BDP was associated with improved control at lower cost compared with FC and similar control at reduced cost for FDC.