

## **Modelling peripheral blood eosinophils to identify response to budesonide in COPD: a post-hoc analysis**

M Bafadhel,<sup>1</sup> S Peterson,<sup>2</sup> M De Blas,<sup>3</sup> P Calverley,<sup>4</sup> S Rennard,<sup>3</sup> K Richter,<sup>5</sup> M Fagerås<sup>5</sup>

*<sup>1</sup>Respiratory Medicine Unit, Nuffield Department of Medicine, University of Oxford, Oxford, UK; <sup>2</sup>StatMind, Lund, Sweden; <sup>3</sup>AstraZeneca, Cambridge, UK; <sup>4</sup>School of Ageing and Chronic Disease, University of Liverpool, Liverpool, UK; <sup>5</sup>AstraZeneca, Mölndal, Sweden*

### **Background**

Recent post-hoc analyses investigated if peripheral blood eosinophil (PBE) count can identify response to ICS in COPD patients utilising arbitrary pre-specified cut-offs.

### **Objectives**

To mathematically model relationship between PBE counts, annual exacerbation rate (ER), quality of life (SGRQ) and lung function with budesonide (BUD).

### **Methods**

All AstraZeneca randomised double-blind double-dummy parallel-group trials of BUD/formoterol (BUD/FORM) in COPD with documented PBE levels were identified. Participants had clinical diagnosis of COPD, age  $\geq 40$  years, pack-year history  $\geq 10$ , and  $\geq 1$  exacerbation in prior year.

### **Results**

Three trials were included (NCT00206167, NCT00206154, NCT00419744; n=4880). After excluding lower BUD/FORM dose, 3420 patients (male n [%] 2224 [65.0%]) with mean (range) age of 63 (40–90) years were studied (BUD/FORM n=1459; FORM alone n=1181; placebo n=780). Mean annual ERs were 0.69 (BUD/FORM), 0.97 (FORM) and 0.98 (placebo). There was a BUD treatment interaction effect on ER reduction and odds of achieving SGRQ improvement ( $\geq 4$ -point) and FEV<sub>1</sub> increase ( $\geq 100$ mL) at end of treatment by PBE level. At PBE cut offs of  $\leq 0.2$  vs  $> 0.2 \times 10^9/L$  this was 25 vs 44% (p=0.045), -4 vs 38% (p=0.036) and 0 vs 37% (p=0.074), for ER, SGRQ improvement and FEV<sub>1</sub> increase respectively. ER ratio relative to PBE levels shown in figure.

### **Conclusion**

PBE level identifies patients who benefit from ICS therapy, with a direct relationship between magnitude of benefit and PBE levels.

**[Word count: 1802/1810 characters including spaces in abstract title/body (NB:figure accounts for 277 characters)]**

Supported by AstraZeneca.

Figure.

