



# THE COST-EFFECTIVENESS OF TEMPERATURE-CONTROLLED LAMINAR AIRFLOW IN UNCONTROLLED SEVERE ASTHMA

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## INTRODUCTION

Current guidelines for patients with uncontrolled severe asthma already on maximal inhaled treatments recommend addition of biologics in preference to oral steroids. Temperature-controlled Laminar Airflow (TLA), now recommended by Swedish authorities, is an effective, safe and cost-attractive alternative (1). A recent study (2) in patients with severe asthma failed to show effect on exacerbations and cost-effectiveness, mainly driven by a smaller response among the less symptomatic patients. The objective of this post-hoc study was to investigate the effect of TLA over placebo (PBO) on severe exacerbations and cost-effectiveness in the more symptomatic patients.

## METHODS

The one-year placebo-controlled, double-blind trial (2), including 216 patients with ACQ data, was re-analysed for effects on exacerbation rates and cost-effectiveness by baseline markers of asthma control. To define the more symptomatic patients, ACQ>3 and EQ5D-VAS≤65 (approximate median values) were used as cut-points. Negative binomial regression was used for analysis of severe exacerbations and Mixed Model for Repeat Measures (MMRM) was used for EQ5D-5L utility data.

## CONCLUSIONS

The magnitude of treatment effect for TLA is much more pronounced in more symptomatic severe asthma patients and TLA is shown to be cost-effective in this sub-group population.

## RESULTS

The ACQ>3 (N=93) and EQ5D-VAS≤65 (N=137) sub-groups showed a trend for greater treatment effects with a 33% (p=0.083) and 31% (0.073) reduction, respectively, in severe exacerbations in favour of TLA. Total AQLQ improved 0.31 (p=0.085) and 0.33 (p=0.034) score units with AQLQ and EQ5D-VAS, respectively, as covariates. These results are consistent with another 12-month study (3). The difference in overall quality-of-life (EQ5D-5L) scores between TLA and placebo in more symptomatic patients was significant (0.10, p=0.046) (Figure 1) resulting in an incremental cost-effectiveness ratio (ICER) of around £20,000, which is within the NICE-acceptable range (<£30,000 per Quality-Adjusted Life-Year (QALY) gained) (Figure 2).

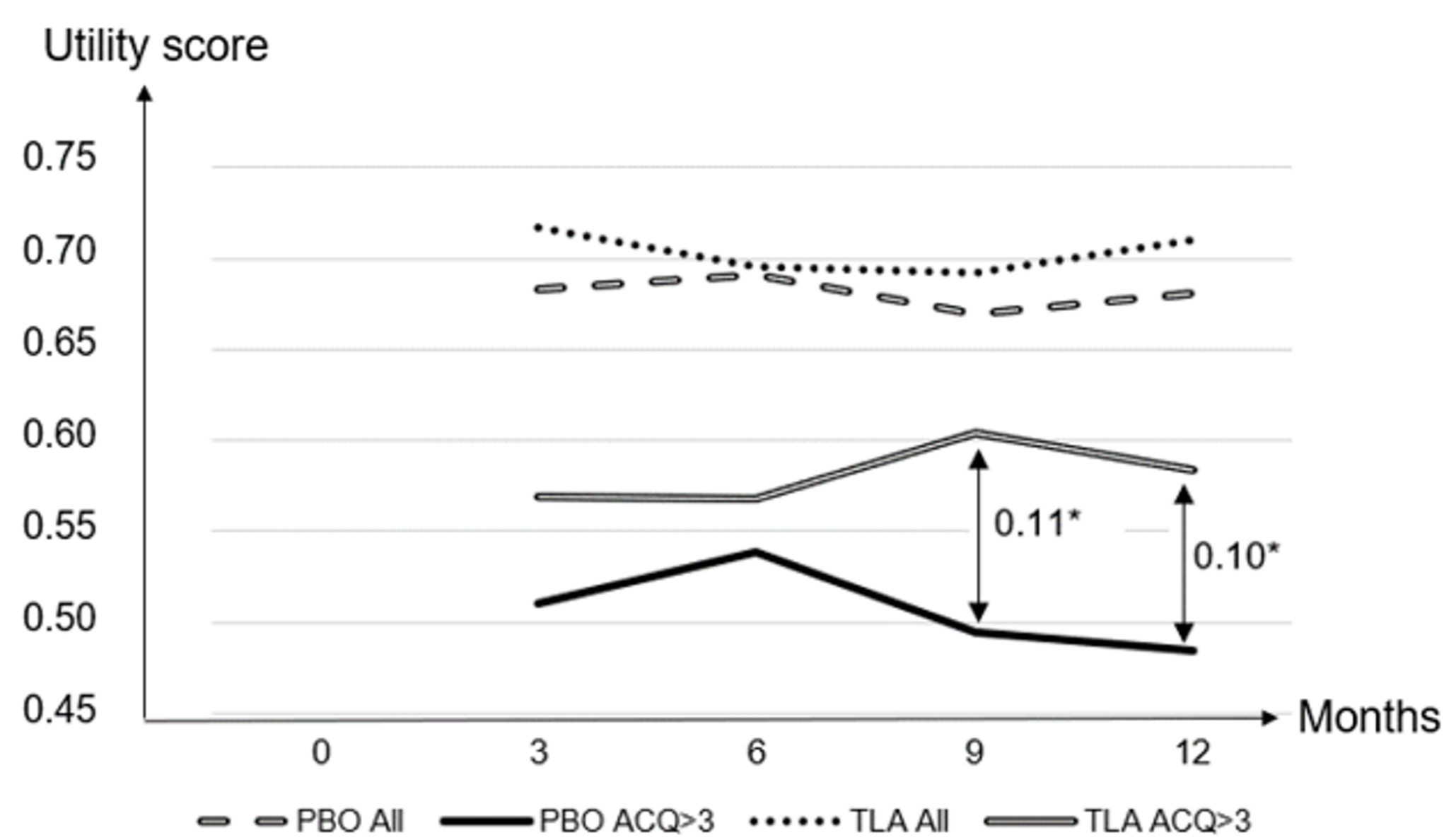


Figure 1. Utility scores by timepoint from the full study and the sub-group ACQ>3: MMRM analyses using baseline values as covariate.

Delta cost	Delta QALY											Utility				
	0.04	0.05	0.06	0.07	0.08	0.09	0.1	0.11	0.12	0.13	0.14	0.15				
£ 1,800	45,000	36,000	30,000	25,714	22,500	20,000	18,000	16,364	15,000	13,846	12,857	12,000				
£ 1,900	47,500	38,000	31,667	27,143	23,750	21,111	19,000	17,273	15,833	14,615	13,571	12,667				
£ 2,000	50,000	40,000	33,333	28,571	25,000	22,222	20,000	18,182	16,667	15,385	14,286	13,333				
£ 2,100	52,500	42,000	35,000	30,000	26,250	23,333	21,000	19,091	17,500	16,154	15,000	14,000				
£ 2,200	55,000	44,000	36,667	31,429	27,500	24,444	22,000	20,000	18,333	16,923	15,714	14,667				
£ 2,300	57,500	46,000	38,333	32,857	28,750	25,556	23,000	20,909	19,167	17,692	16,429	15,333				
£ 2,400	60,000	48,000	40,000	34,286	30,000	26,667	24,000	21,818	20,000	18,462	17,143	16,000				
£ 2,500	62,500	50,000	41,667	35,714	31,250	27,778	25,000	22,727	20,833	19,231	17,857	16,667				
£ 2,600	65,000	52,000	43,333	37,143	32,500	28,889	26,000	23,636	21,667	20,000	18,571	17,333				
£ 2,700	67,500	54,000	45,000	38,571	33,750	30,000	27,000	24,545	22,500	20,769	19,286	18,000				
£ 2,800	70,000	56,000	46,667	40,000	35,000	31,111	28,000	25,455	23,333	21,538	20,000	18,667				
£ 2,900	72,500	58,000	48,333	41,429	36,250	32,222	29,000	26,364	24,167	22,308	20,714	19,333				
£ 3,000	75,000	60,000	50,000	42,857	37,500	33,333	30,000	27,273	25,000	23,077	21,429	20,000				

Figure 2. Cost-effectiveness grid over the incremental cost-effectiveness ratio (ICER) estimates for TLA. The utility scores for TLA at 9 and 12 months are shown on the Delta QALY-axis (rectangle) and the TLA price is shown on the Delta cost-axis (rectangle), resulting in a cost-effectiveness (ICER) for TLA of about 17 000-22 000 £.

## References

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