EE305 Cost-effectiveness analysis of biologics for the treatment of chronic rhinosinusitis with nasal polyps(CRSwNP) in the United Kingdom

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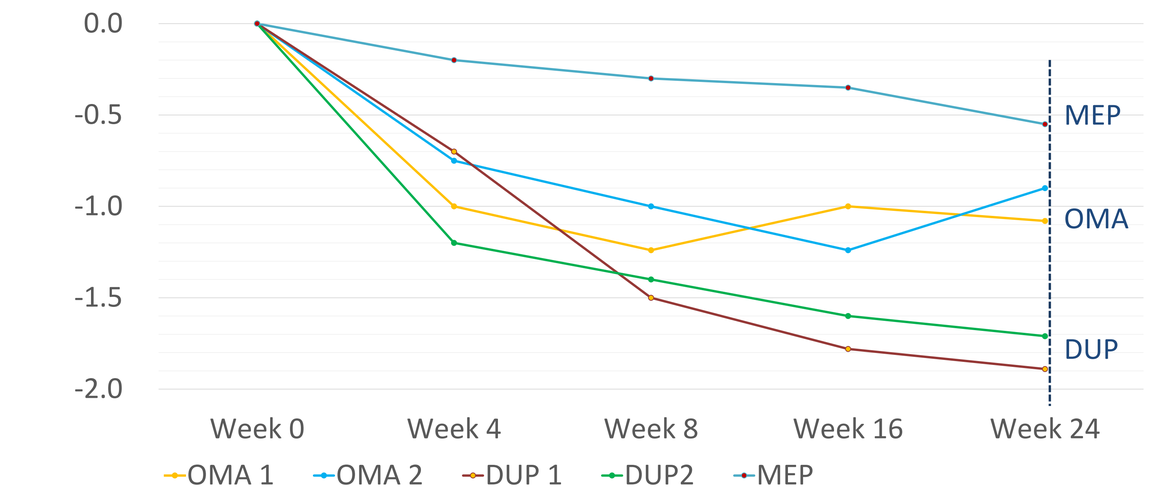
INTRODUCTION

- Chronic rhinosinusitis with nasal polyps (CRSwNP) is a debilitating inflammatory disease characterized by persistent sinonasal symptoms, including nasal obstruction, discharge, facial pressure, and olfactory dysfunction.
- Patients often require long-term treatment, and nasal polyp recurrence is common.
- Biologic therapies control underlying type 2 inflammation by inhibiting mediators such as IgE, IL-4, IL-5 and IL-13 and may be used in patients with inadequate response to initial treatments.
- Despite the need for long-term disease control, access to biologic therapies remains limited in many healthcare systems, including the UK, primarily due to high treatment costs and uncertain cost-effectiveness.
- While biologics such as dupilumab have demonstrated superior clinical efficacy over corticosteroids, reimbursement decisions are often driven by cost-effectiveness considerations.

OBJECTIVES

- Following EMA approval of CT-P39 (Omlyclo), the first omalizumab biosimilar, in May 2025, its lower cost warrants reassessment of cost-effectiveness in CRSwNP.
- The objective of this study is to evaluate the cost-effectiveness of omalizumab, including its biosimilar, versus dupilumab and mepolizumab for CRSwNP from the UK perspective.

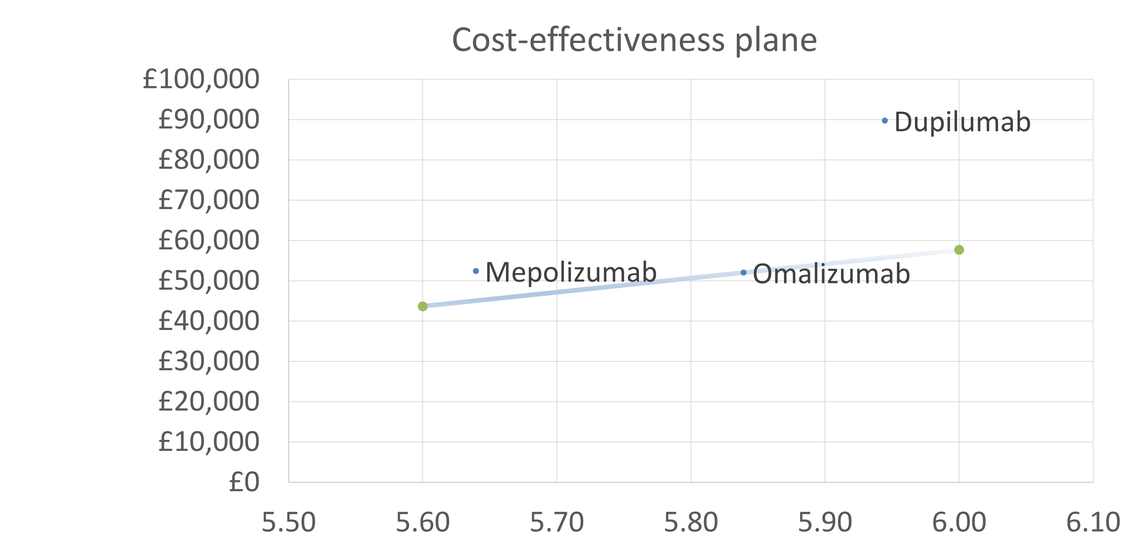
Figure 1. Comparative clinical efficacy- Mean change from baseline in nasal polyp score(NPS)



METHODS

- A cost-effectiveness model using quality-adjusted life-years(QALYs) was constructed using a Markov analysis from a public-payer perspective over a 10-year time horizon.
- A willingness-to-pay threshold of £20,000 was used to determine cost-effectiveness. Comparators included dupilumab, mepolizumab, and CT-P39.
- There is no head-to-head trial that compares the efficacy of three molecules, thus a network-meta-analysis was used.

Figure 3. Cost-effectiveness Plane



WTP threshold at £ 20,000

Table 1. Reimbursement Status of Biologics in Europe

Region	EU5						BENELUX			Nordic				Eastern Europe		Asia
Drug	DE	FR	IT	ES	UK	PT	BE	NL	LU	SE	FI	NO	DK	CZ	SK	TR
Omalizumab	🟢	🔴	🟢	🟡	🔴	🔴	🟢	🟢	🟢	🔴	🔴	🔴	🔴	🔴	🔴	🔴
Dupilumab	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	🟢	🟢	🟢	🟢	🔴	🔴
Mepolizumab	🟢	🟢	🟢	🟢	🔴	🟢	🟢	🟢	🟢	🔴	🟢	🟢	🟢	🔴	🔴	🔴

🟢 Reimbursed 🟡 See Comments 🔴 Not Reimbursed

ES: Only Omlyclo (not Xolair) is reimbursed for CRSwNP in Spain under the following criteria
1) Has had a minimum of Endoscopic Sinus Surgery (ESS). 2) Has an IgE level of <200IU/ml 3) Body weight is <90kg
UK: who have had at least 1 sinus surgery and who have a SNOT-22 score of at least 50.

Figure 2. Annual Cost of biologics for the treatment of CRSwNP in the UK[3]

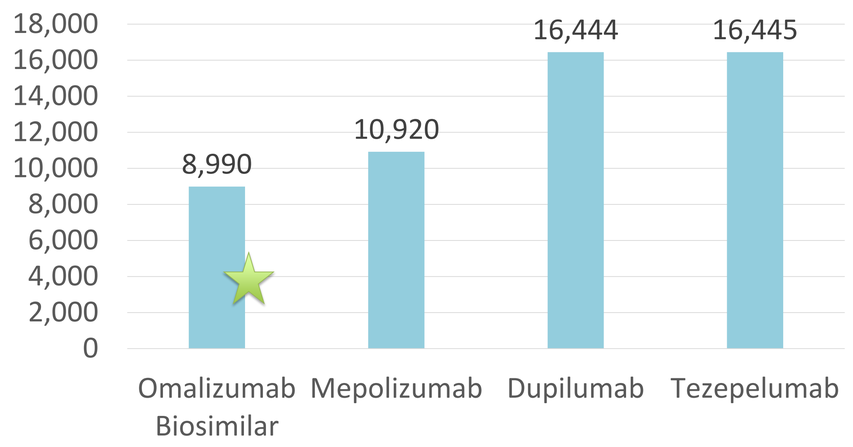


Table 2. Cost and QALYs of CRSwNP biologic treatments over 10 year horizon

Treatment	Total Cost	Total QALY	Incremental Cost	Incremental QALY	ICER (£/QALY)
Omalizumab	£ 52,042	5.84			
Dupilumab	£ 89,744	5.94	£ 37,702.61 Higher Cost	0.11 Higher QALY	£ 357,981
Mepolizumab	£ 52,425	5.64	£ 383.46 Higher Costs	0.20 Lower QALY	Dominated

RESULTS

- CT-P39 was the most cost-effective biologic for CRSwNP.
- Over a 10-year horizon, total costs and QALYs were £52,042 and 5.84 for omalizumab biosimilar, £89,744 and 5.94 for dupilumab, and £52,425 and 5.64 for mepolizumab, respectively.
- Using omalizumab biosimilar as the reference strategy, dupilumab generated slightly higher QALYs at substantially higher cost, resulting in an ICER of £357,981 per QALY gained. Mepolizumab was dominated by omalizumab biosimilar.
- In probabilistic sensitivity analysis, dupilumab had only a 24% probability of being cost-effective versus omalizumab biosimilar at a willingness-to-pay threshold of £100,000 per QALY.

CONCLUSIONS

- **Despite the availability of highly efficacious biologics, their high cost limits patient access in real-world settings.**
- **CT-P39, a more cost-effective alternative, may facilitate broader access to biologic therapy and help address unmet treatment needs in CRSwNP, particularly in settings with restricted reimbursement.**

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