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Cost-Effectiveness of Tezepelumab versus dupilumab, mepolizumab and depemokimab in patients with chronic rhinosinusitis with nasal polyps (CRSwNP) in Spain

Alfonso Del Cuvillo Bernal[1], Luis Carlos Fernández Lisón[2], Sara García Gil[3], Ruperto González Pérez[4], Covadonga Torres[5], Laura Contreras-Bernal[5], Carla Garí[6], Neus Vidal-Vilar[6], José Luis Izquierdo Alonso[7,8]

[1]Rhinology and Asthma Unit, Department of Otolaryngology–Head and Neck Surgery, Hospital Universitario de Jerez, Jerez de la Frontera, Cádiz, Spain, [2] Hospital Pharmacy Department, Complejo Hospitalario Universitario de Cáceres, Cáceres, Spain, [3] Department of Pharmacy, Complejo Hospitalario Universitario de Canarias, Santa Cruz de Tenerife, Spain, [4] Severe Asthma Unit, Allergy Department, Hospital Universitario de Canarias, La Laguna, Tenerife, Spain, [5] AstraZeneca Farmacéutica Spain, Madrid, Spain, [6] Outcomes'10 (A ProductLife Group Company), Castellón de la Plana, Spain, [7] Respiratory Medicine, University Hospital of Guadalajara, Guadalajara, Spain, [8] Department of Medicine and Medical Specialties, University of Alcalá, Madrid, Spain.

INTRODUCTION

- CRSwNP is associated with impaired quality of life, increased oral OCS use, and higher healthcare resource utilization, particularly related to surgery[1-3].
- In Spain, CRSwNP prevalence has been estimated at 0.8%, with severe disease reported in 50.6% of diagnosed patients[4].
- Despite available medical and surgical treatment options, many patients remain inadequately controlled, with post-surgical recurrence rates reaching 65.8%[5,6].
- Biologic therapies have emerged as a treatment option for severe uncontrolled CRSwNP.
- Tezepelumab, a biologic treatment for CRSwNP, has demonstrated clinical efficacy, including a 98% reduction in the risk of surgery being indicated versus placebo in the WAYPOINT trial, supporting the evaluation of its economic value[7].

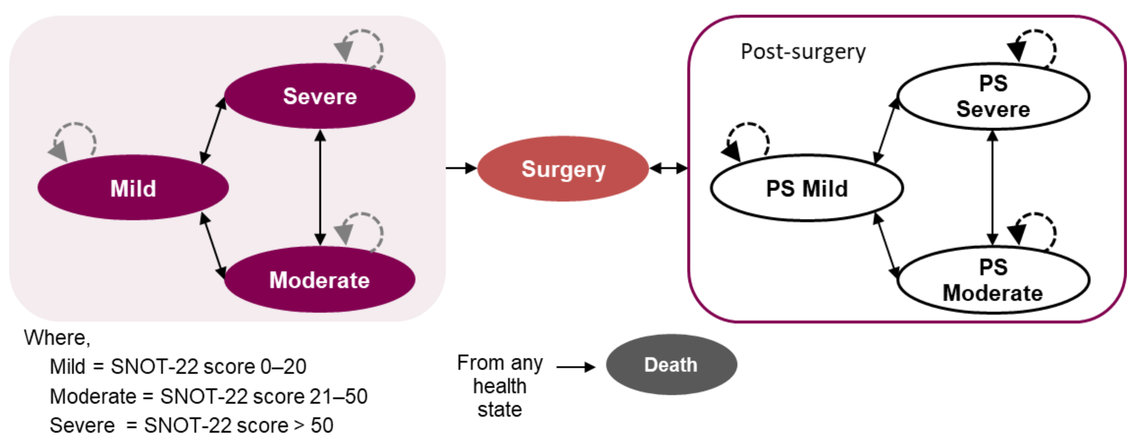
OBJECTIVE

To assess the cost-effectiveness of tezepelumab versus the main reimbursed biologic therapies in Spain for adults with inadequately controlled CRSwNP from the Spanish NHS perspective.

METHODS

- **Model:** Markov cost-effectiveness model from the perspective of the Spanish NHS, with a 20-year time horizon selected considering the baseline age of the population and to limit long-term extrapolation uncertainty, 6-month cycles and a 3% annual discount rate.
- **Health states**: mild, moderate and severe CRSwNP (defined according to SNOT-22 categories), surgery, post-surgery states and death.
- **Population:** biologic-eligible adults with inadequately controlled CRSwNP. Baseline characteristics were derived from the WAYPOINT trial (mean age: 49.7 years; 34.8% female)[7].
- **Comparators:** tezepelumab vs. dupilumab, mepolizumab, and depemokimab*. All treatment options included SoC. *(*included following reimbursement in Spain).*
- **Clinical efficacy:** Tezepelumab estimates from WAYPOINT; comparators from a published Bayesian NMA[8]. Response was assessed at 24 weeks; non-responders switched to standard of care.
- **Utilities:** WAYPOINT EQ-5D[7] values mapped to SNOT-22 states[9]; OCS-related adverse-event disutilities included[10,11].
- **Costs included** drug acquisition, disease management, surgery and OCS-related adverse events (€, 2025)[10-14]. Spanish data were used whenever available and validated by a multidisciplinary expert panel.
- **Outcomes:** total costs, QALYs and ICERs were calculated. A willingness-to-pay threshold of €30,000/QALY was applied. Probabilistic sensitivity analysis (PSA) was conducted using 2,000 iterations. An additional price sensitivity analysis was performed to assess the impact of potential confidential commercial agreements within the Spanish NHS, applying alternative discount scenarios to the list prices of tezepelumab and its comparators.

Markov Model Structure



RESULTS

BASE CASE RESULTS

Tezepelumab was dominant over all comparators, providing higher QALYs and lower total costs, driven by improved disease control, fewer surgical interventions and lower disease-management costs

Outcomes	Tezepelumab	Mepolizumab	Δ vs Mepolizumab	Dupilumab	Δ vs Dupilumab	Depemokimab*	Δ vs Depemokimab*
Costs							
Total costs	**176,453€**	**176,673€**	**- 220€**	**189,850€**	**- 13,397€**	**196,618€**	**- 20,166€**
Drug costs	128,499€	122,750€	5,749€	137,681€	- 9,182€	141,026€	- 12,527€
Health state costs	45,153€	51,121€	- 5,968€	49,367€	- 4,215€	52,790€	- 7,637€
OCS and related comorbidity costs	2,801€	2,801€	- 1€	2,801€	0€	2,802€	- 1€
QALYs							
Total QALYs	**9.93**	**9.46**	**0.46**	**9.61**	**0.32**	**9.31**	**0.62**
By health state							
Mild	6.42	3.50	2.92	4.51	1.91	2.84	3.58
Moderate	2.34	2.31	0.03	1.91	0.43	1.98	0.36
Severe	0.35	0.49	-0.13	0.50	-0.15	0.60	-0.25
Surgery	0.21	0.43	-0.23	0.38	-0.18	0.50	-0.30
Post-surgery Mild	0.45	1.46	-1.02	1.38	-0.93	1.84	-1.40
Post-surgery Moderate	0.57	1.36	-0.79	1.07	-0.50	1.48	-0.92
Post-surgery Severe	0.26	0.58	-0.32	0.52	-0.26	0.73	-0.46
QALY loss							
OCS related comorbidity	0.67	0.67	0.00	0.67	0.00	0.67	0.00
ICER	-	-	**Dominant**	-	**Dominant**	-	**Dominant**

**Included following recent reimbursement in Spain and evaluated using the same model structure and assumptions as the base-case analysis.*

The PSA results were consistent with the base-case findings

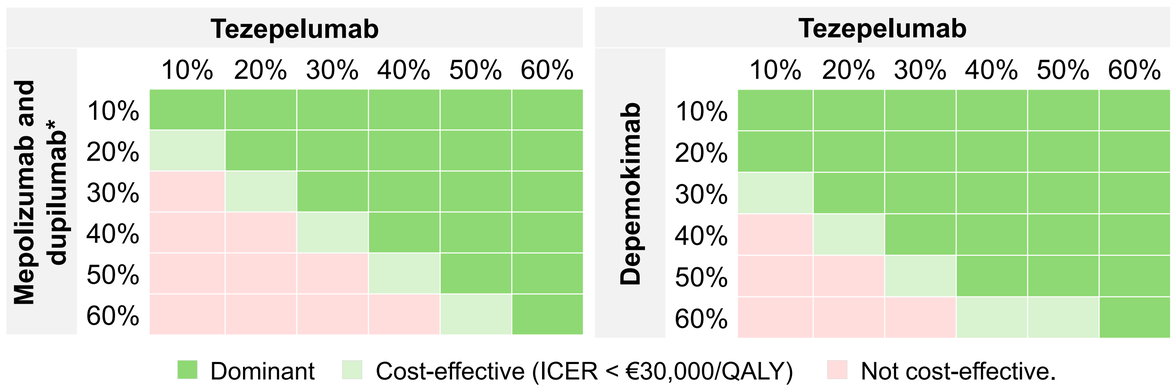
Tezepelumab demonstrated the greatest reduction in cumulative surgeries versus all other biologics over the model time horizon

Comparator	Reduction in cumulative surgeries
Mepolizumab	36.8%
Dupilumab	31.0%
Depemokimab	42.7%

Cumulative surgery reduction over the model time horizon was calculated as: (1 − [cumulative surgeries with tezepelumab / cumulative surgeries with comparator]) × 100. Surgery estimates were based on clinical evidence included in the model.

SCENARIO ANALYSIS OF POTENTIAL PRICE DISCOUNTS

Scenario analyses showed consistent results across plausible ranges



**The results versus mepolizumab and dupilumab are presented jointly in the table, as tezepelumab was either cost-effective or dominant over both comparators under the same pricing scenario.*

Tezepelumab remained dominant across comparable prices

Non-cost-effective outcomes were observed only when competitor discounts were substantially higher than those applied to tezepelumab.

DRIVERS OF VALUE



Tezepelumab increased time spent in mild disease states and reduced the need for surgery, resulting in higher overall QALYs

CONCLUSIONS

- Tezepelumab was dominant versus dupilumab, mepolizumab and depemokimab. Dominance was driven primarily by fewer surgical interventions and lower disease-management costs in adults with severe uncontrolled CRSwNP in Spain.

Abbreviations: CRSwNP, chronic rhinosinusitis with nasal polyps; EQ-5D, EuroQol five-dimensional questionnaire; ICER, incremental cost-effectiveness ratio; NHS, National Health System; NMA, network meta-analysis; OCS, oral corticosteroids; PS, post-surgery; PSA, probabilistic sensitivity analysis; QALYs, quality-adjusted life-years; SNOT-22, 22-item Sino-Nasal Outcome Test; SoC, standard of care.

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