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Cost-effectiveness analysis of etrasimod compared with biologic therapies for patients with moderate-to-severe active ulcerative colitis experienced to previous advanced therapies in Spain

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Introduction

- In Spain, 3,611 cases of inflammatory bowel disease were detected during 2017, being 8.1 cases/100,000 inhabitants-year the estimated incidence for ulcerative colitis (UC)[1].
- Etrasimod (2 mg/day, oral) is a novel alternative for moderate-to-severe active UC, which has proved to be effective in ELEVATE UC12 and UC52 trials[2,3].

Objective

This cost-effectiveness analysis compared etrasimod vs. most frequently used biologics in Spain[4], for patients with moderate-to-severe active UC experienced to advanced therapies (AT), from the perspective of the Spanish national health system.

Methods

- A model simulated the treatment phases (Figure 1) to estimate costs and quality-adjusted life years (QALYs), both yearly discounted (3%).
- All model inputs derived from scientific literature and were validated by national experts. The patients' characteristics proceeded from etrasimod trials[2,3]. Rates of efficacy, safety, and loss of response of etrasimod, adalimumab, ustekinumab, intravenous (IV) vedolizumab and subcutaneous (SC) vedolizumab were obtained from a Bayesian network meta-analysis[5,6].
- After loss of response, a loop of subsequent AT in perpetuity was applied. Total costs included drugs acquisition (authorized posology and dose intensifications when required, both based on the European Public Assessment Reports)[7,8], IV administration (€77.16)[9], adverse events (€5,964.49 per serious infection)[9] and management of UC (Table 1).

Figure 1. Hybrid model schematic representation.

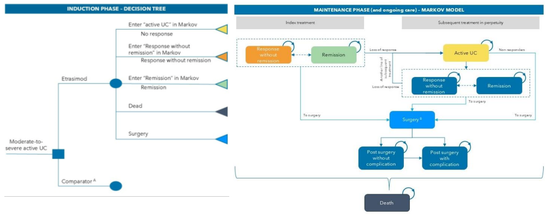


Table 1. Costs and utility values associated with the modeled health states.

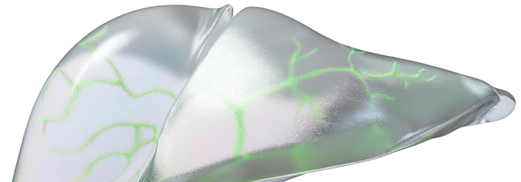
	Active UC	Response W/O Remission	Remission	Surgery [A]	Post-surgery W/O complications	Post-surgery W complications
Cost (€, 2025)	€4,471 [10,11]	€1,801 [10,11]	€762 [10,11]	€4,448 [10]	€1,101 [10,11]	€6,428 [10,11]
Utility value	0.78 [2,3]	0.82 [2,3]	0.89 [2,3]	0.74 [14]	0.90 [14]	0.71 [14]

[A] Annual surgery rate in UC was 0.34%[11] (urgent: 38.2%; elective: 61.8%)[12], early and late complications occurred in 18.4%[13] and 46% (for 6.5 years)[15].

- Concomitant treatment with azathioprine (35% patients, biologics only), mercaptopurine (15% patients, biologics only), mesalazine (40% patients), prednisone (20% patients) and beclomethasone (10% patients) were considered[8,16].
- Age and sex-specific mortality in Spain[17], and the excess mortality associated with colectomy was considered (relative risk: 1.3)[18].
- A probabilistic sensitivity analysis (PSA) tested the results' robustness.

Bibliography:

Scan the QR code to see the references.
Also available at: https://forms.office.com/e/QZUmrwndHt.



Results

- Etrasimod yielded more QALYs compared to each biologic and produced cost-savings in all pairwise comparisons (etrasimod was a dominant alternative) except for IV vedolizumab (etrasimod was a cost-effective alternative) (Table 2).

Table 2. Base case and PSA results per AT-experienced patient with moderate-to-severe active UC during lifetime.

	Etrasimod (ETR)	Adalimumab	Adalimumab (biosimilar)	Ustekinumab	Vedolizumab (IV)	Vedolizumab (SC)
Total QALYs	18.407	18.394	18.394	18.388	18.240	18.236
Total Costs [€]	€ 596,254	€ 613,994	€ 610,273	€ 632.484	€ 593,559	€ 619.896
Δ QALYs	Reference	+ 0.013	+ 0.013	+ 0.018	+ 0.166	+ 0.171
Δ Costs [€]	Reference	- € 17,740	- € 14,019	- € 36,230	+ € 2,695	- € 23,642
ICER [€ / QALY]	Reference	ETR Dominant	ETR Dominant	ETR Dominant	€ 16,212	ETR Dominant
PSA: Δ QALYs	Reference	+ 0.061	+ 0.061	+ 0.075	+ 0.154	+ 0.140
PSA: Δ Costs [€]	Reference	- € 23,675	- € 17,493	- € 48,952	- € 22,292	- € 70,902
PSA: ICER [€ / QALY]	Reference	ETR Dominant	ETR Dominant	ETR Dominant	ETR Dominant	ETR Dominant
PSA: % cost-effective (WTP = €27,000 / QALY) [19]	Reference	96.7%	88.9%	99.9%	58.5%	88.9%

- Etrasimod was cost-effective compared to IV vedolizumab (Incremental Cost-Effectiveness Ratio [ICER] = €16,212/QALY), and dominant compared with all remaining biologics (yields more QALYs and cost-savings).
- PSA revealed that etrasimod was dominant compared to each biologic (average of Monte Carlo simulations). Under a willingness to pay (WTP) threshold of €27,000/QALY[19], etrasimod was cost-effective in a minimum of 58.5% - 99.9% of simulations.

Conclusions

Etrasimod represents a cost-effective alternative for AT-experienced patients with moderate-to-severe active UC compared with biologics available in Spain.

Declaration of Interest:

IRL, FMN, AJLV and EMB have received fees for their scientific advice and contribution to the publication. AC and ALJ are employees of Pfizer SLU. ACG and IO are employees of Pharmacoeconomics & Outcomes Research Iberia (PORIB), a consultant company specializing in health economics and outcomes research, which has received fees from Pfizer SLU for conducting the present study.
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