

Cost-Effectiveness Analysis of Glycopyrronium Bromide in the Treatment of Chronic Obstructive Pulmonary Disease in Spain

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Introduction

- Chronic obstructive pulmonary disease (COPD) is characterized by airflow limitation that is not fully reversible. Chronic disabling symptoms such as COPD exacerbations have a negative impact on health-related quality of life¹.
- Pharmaceutical intervention can ease symptoms, reduce exacerbations and slow the progression of the disease¹.
- Glycopyrronium bromide is an anti-muscarinic agent, indicated for the long-term once-daily maintenance bronchodilator treatment of COPD^{2,3}.

Objective

To assess the cost-effectiveness and cost-utility of glycopyrronium bromide versus tiotropium bromide in COPD patients, from the Spanish National Health System perspective.

Methods

- A Markov model was developed where the progression of a COPD patient cohort was simulated for a 5-year time horizon (3 months-cycle duration).
- The health states included were defined according to the severity of COPD measured by the GOLD scale: mild, moderate, severe, very severe and death. Three additional sub-states: without exacerbation, mild and severe exacerbation were considered (Figure 1).
- The effectiveness of treatment options and utilities for each health state were taken from the literature^{2,3}.

- Only direct healthcare costs were considered. Disease management and exacerbation costs were obtained from the literature⁴ (Table 1).
- Drug costs were calculated based on ex-factory prices⁵ with mandatory 7.5% rebate⁶ (Table 1).
- All costs were updated to €2012. A 3% annual discount rate on costs and health outcomes was applied⁷.
- Incremental ratios in terms of cost per life-year gained (LYG) and cost per quality-adjusted life-year gained (QALY) of the most effective therapy versus the comparator were calculated.
- One-way and probabilistic sensitivity analyses (SA) were performed.

Figure 1: Model Structure

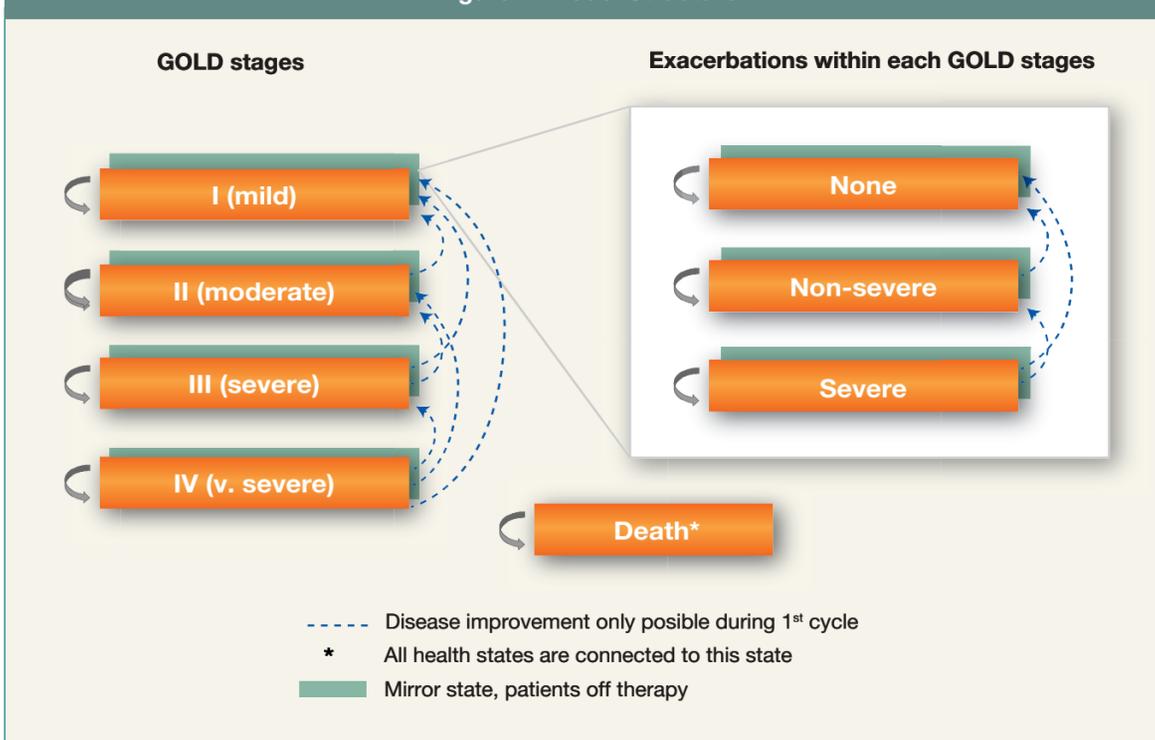


Table 1: Aggregate costs (€ 2012) of resources consumed and drug costs

Concept	Cost
Exacerbations	
Non- severe	€32.81 ⁴
Severe	€844.43 ⁴
Maintenance therapy (direct costs)	
Mild COPD	€169.99 ⁴
Moderate COPD	€169.99 ⁴
Severe COPD	€232.06 ⁴
Very severe COPD	€323.34 ⁴
Drug cost (daily price)	
Glycopyrronium bromide	€0.94 ^{5,6,7}
Tiotropium bromide	€1.04 ^{5,6,7}

Results

- At 5 years, glycopyrronium bromide accounted a total cost of €2,225.18 compared to €2,374.81 for tiotropium bromide. Glycopyrronium bromide yielded higher health benefits (4,321 LYG and 3,388 QALY) than tiotropium bromide (4,315 LYG and 3,377 QALY).
- In all one-way SA performed, glycopyrronium bromide remained as a dominant strategy (Figure 2).
- In PSA glycopyrronium bromide was the dominant strategy in 100% of simulations (Figure 3).

Figure 2: One-way SA results. Cost-utility ratio for glycopyrronium bromide vs. tiotropium bromide

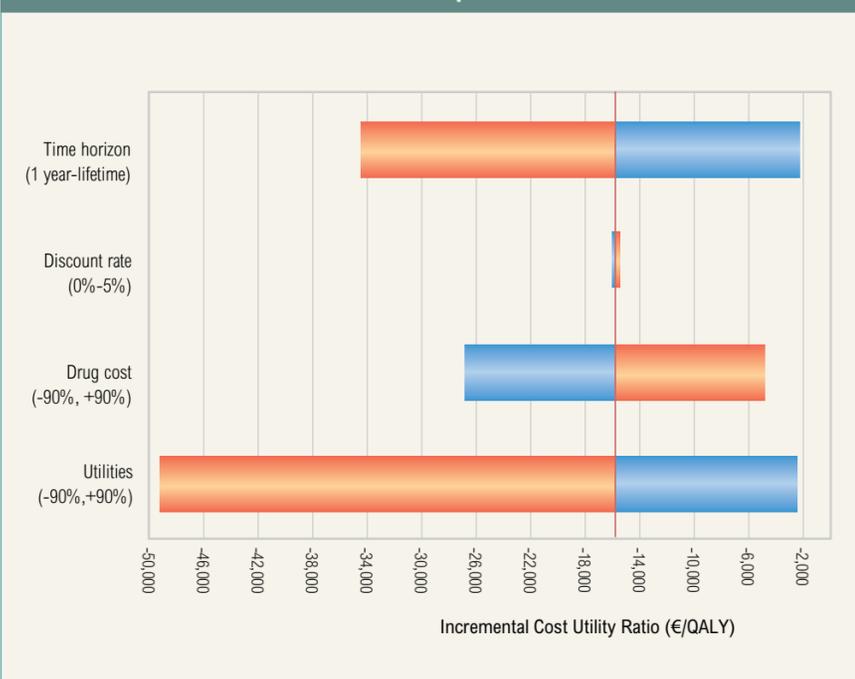
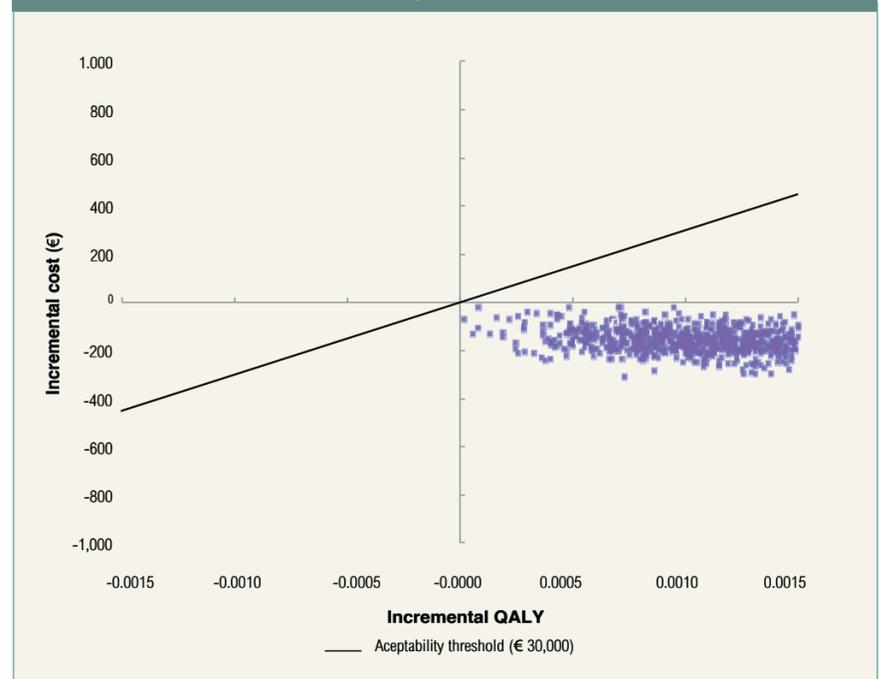


Figure 3: Cost-effectiveness plane, glycopyrronium bromide vs. tiotropium bromide



Conclusions

Glycopyrronium bromide therapy in COPD patients is associated to less costs and higher health benefits than tiotropium bromide in Spain.

References

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