

Cost-Effectiveness Analysis of Erenumab (AIMOVIG®) for the Preventive Treatment of Migraine in Spain



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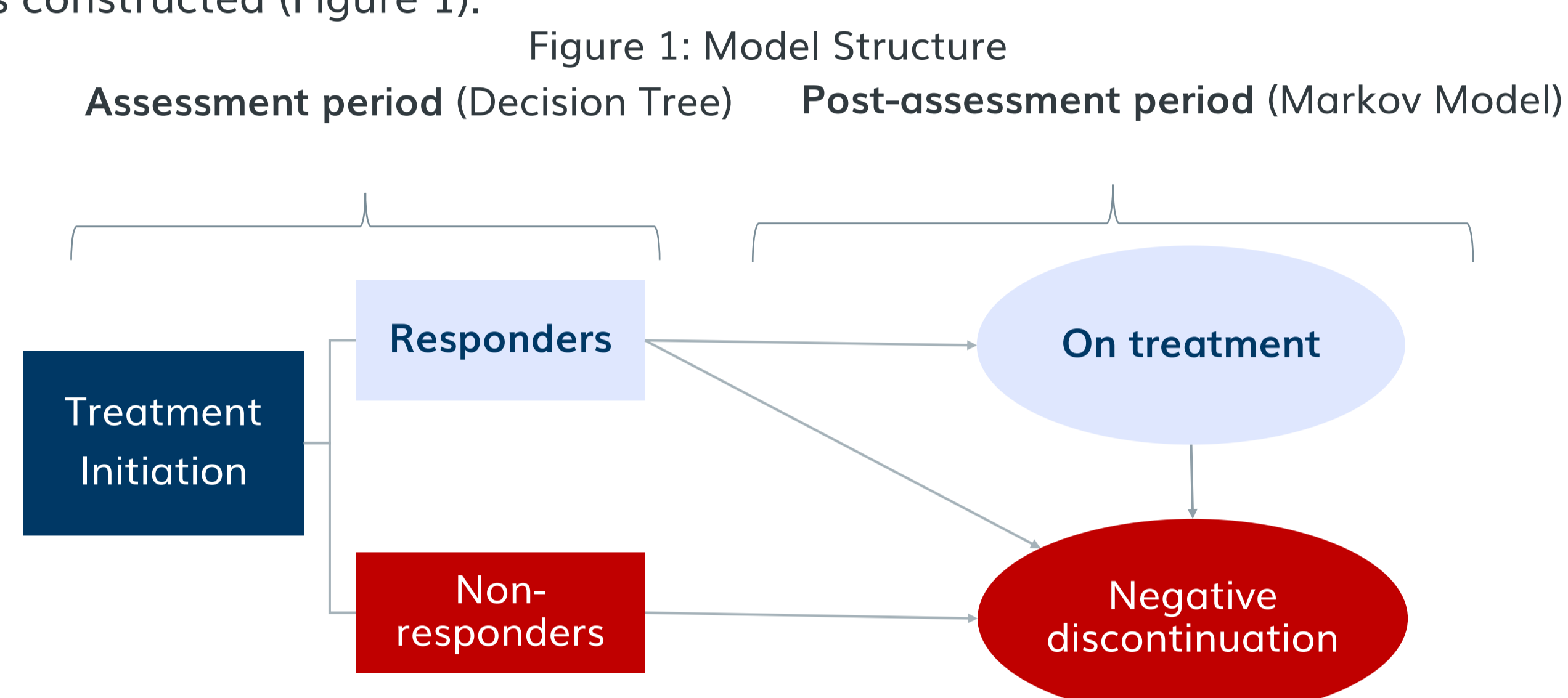
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Introduction and Objective

Migraine is a complex neurological disorder characterized by the presentation of moderate-severe and recurrent headache attacks lasting from 4 to 72 hours. It is estimated that migraine affects 12.6% of the Spanish adult population¹. People with migraine have a reduced quality of life compared to healthy population, both in physical and emotional dimensions². Daily activities are limited in all patients, and 61% reported being very or extremely limited during migraine attacks. Recently, erenumab has been approved for the prophylaxis of episodic and chronic migraine as the first monoclonal antibody that target the calcitonin gene-related peptide (CGRP) pathway of migraine pathogenesis. The objective of this analysis is to assess the cost-effectiveness of erenumab 140 mg versus topiramate and placebo for the prophylactic treatment of episodic migraine and chronic migraine from a Spanish Health System perspective.

Methods

- A Markov model with a 10-year time horizon based on responder patients was constructed (Figure 1).



- Patients included in the model were adults (mean age of 41 years and 80.5% female) who had 4 or more monthly migraine days (MMD), with one or more prior preventive treatment failures.
- A responder was defined as having a minimum 50% reduction in the number of MMDs At 10-years (Table 1).
- The model includes discontinuation probabilities along the time horizon (Table 1).

Table 1: Odds Ratio and Discontinuation

ODDS RATIO VS ERENUMAB 140 MG				
EPISODIC Migraine			CHRONIC Migraine	
Treatment	OR	CI	OR	CI
Placebo	-	-	3.53 ⁴	2.11-5.89 ⁴
Topiramate	2.76 ⁷	2.06-3.71 ⁷	-	-
DISCONTINUATION				
EPISODIC Migraine		CHRONIC Migraine		
Treatment	Discontinuation	Discontinuation		
Erenumab	5.52 % ⁴	1.06 % ⁴		
Placebo	-	0.71 % ³		
Topiramate	35.57 % ⁷	-		

- Resources use were consulted to an expert panel and unitary costs were obtained from official data sources³⁻⁶. Clinical outcomes, and discontinuation rates were obtained from the erenumab clinical trials (NCT02066415⁶, STRIVE⁷, ARISE⁸, LIBERTY⁹ and HER-MES¹⁰) (Table 1). Mean utilities per MMD were determined based on pooled analysis from erenumab clinical trials⁶⁻⁷. Costs and utilities per MMD range are reported in Table 2.
- Both health-care payer and societal perspectives were included.
- Efficiency score was cost per quality-adjusted life year (QALY) gained and cost per MMD avoided.
- A deterministic and probabilistic sensitivity analysis was performed to validate the robustness of the model.

Table 2: Utilities and Costs

	Without migraine (0 MMD)	Low frequency (1-3 MMD)	Intermediate frequency (4-7 MMD)	High frequency (8-14 MMD)	Chronic migraine (15+ MMD)
Utilities	0,8476	0,8300-0,7948	0,7772-0,7243	0,7067-0,6011	0,5835-0,3582
Cost per health state	0€	227€-238€	361€-377€	464€-496€	766€-835€

Conclusions and Recommendations

Erenumab is cost-effective versus placebo and topiramate as a preventive treatment for chronic and episodic migraine (>4 MMD) in patients with 1 or more prior preventive treatment failures from the Spanish Healthcare System perspective, considering the commonly accepted willingness to pay threshold. Therefore, the reimbursement of erenumab for this patient population would be an efficient use of National Health System resources.

Results

- Mean MMD at the end of the first year and percentage of patients who discontinued treatment are lower for erenumab compared to topiramate and placebo (Figure 2 and 3)
- At 10 years, patients treated with erenumab achieved a reduction of between 359-552 migraine days (MDs) for chronic migraine and 172-198 MDs for episodic migraine.
- Total QALYs were 4.66/5.85 for placebo, 4.92/5.88 for topiramate and 5.40/6.11 for erenumab for chronic and episodic migraine, respectively (Table 3).
- Erenumab showed an incremental cost per patient of 2.895€ vs placebo and 4.224€ vs topiramate for chronic migraine patients; and an incremental cost of 4.800€ vs placebo and 4.948€ vs topiramate for episodic migraine, from the health-care perspective (Table 3).
- Incremental cost per MD avoided with erenumab was below 30€ in all scenarios.
- Incremental cost-utility ratios (ICERs) of erenumab were lower than the commonly accepted Spanish cost-effectiveness threshold (30,000€¹¹) for all perspectives.
- Probabilistic sensitivity analysis confirmed the results (Figure 4).

Table 3 : Cost-effectiveness results

Comparators	Total Cost	Total QALYs	Incremental (Ere. vs comparator)	ICER
Chronic Migraine (≥15 MMD)				
Erenumab	29,092€	5.3983	-	-
Placebo	26,197€	4.6627	2.895€	3,936€
Episodic Migraine (0-14 MMD)				
Erenumab	29,092€	5.3983	-	-
Topiramate	24,868 €	4.9215	4,224€	3,936€

Figure 2: Mean MMDs by treatment (first year)

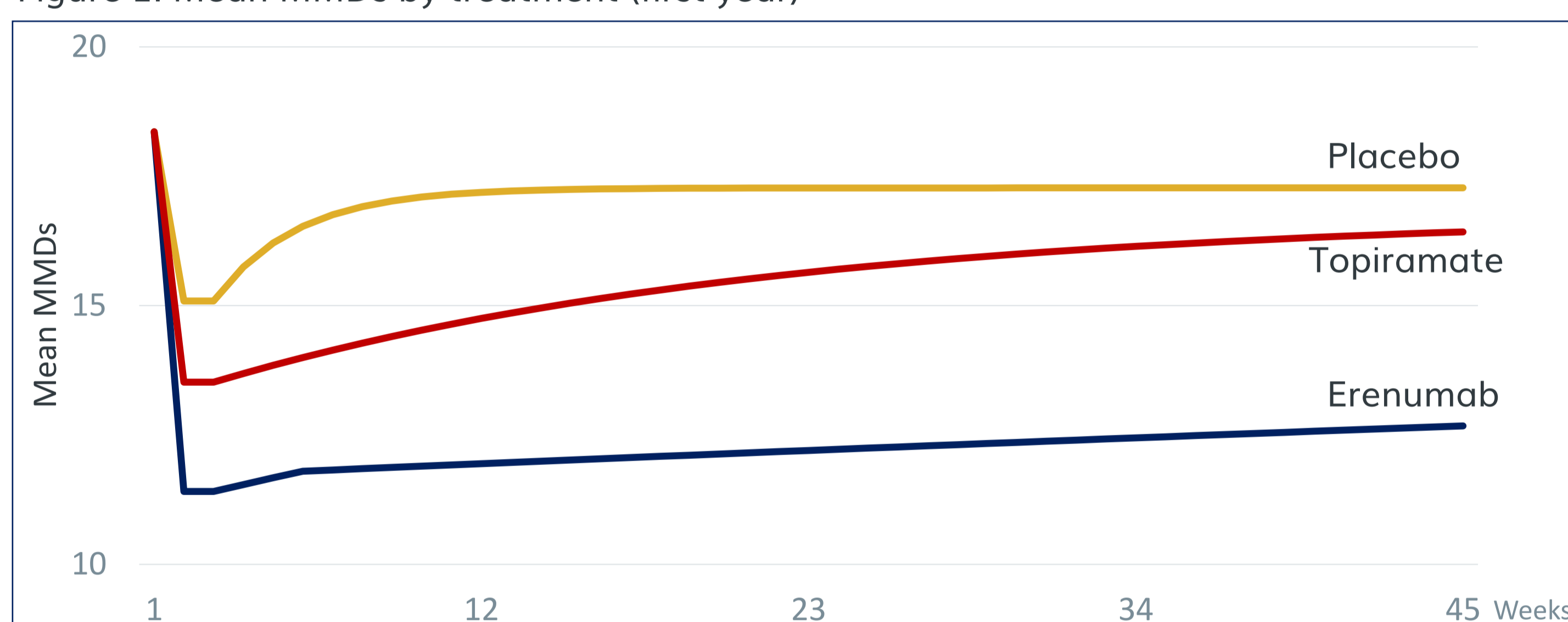


Figure 3: Proportion on treatment over time (first 15 years)

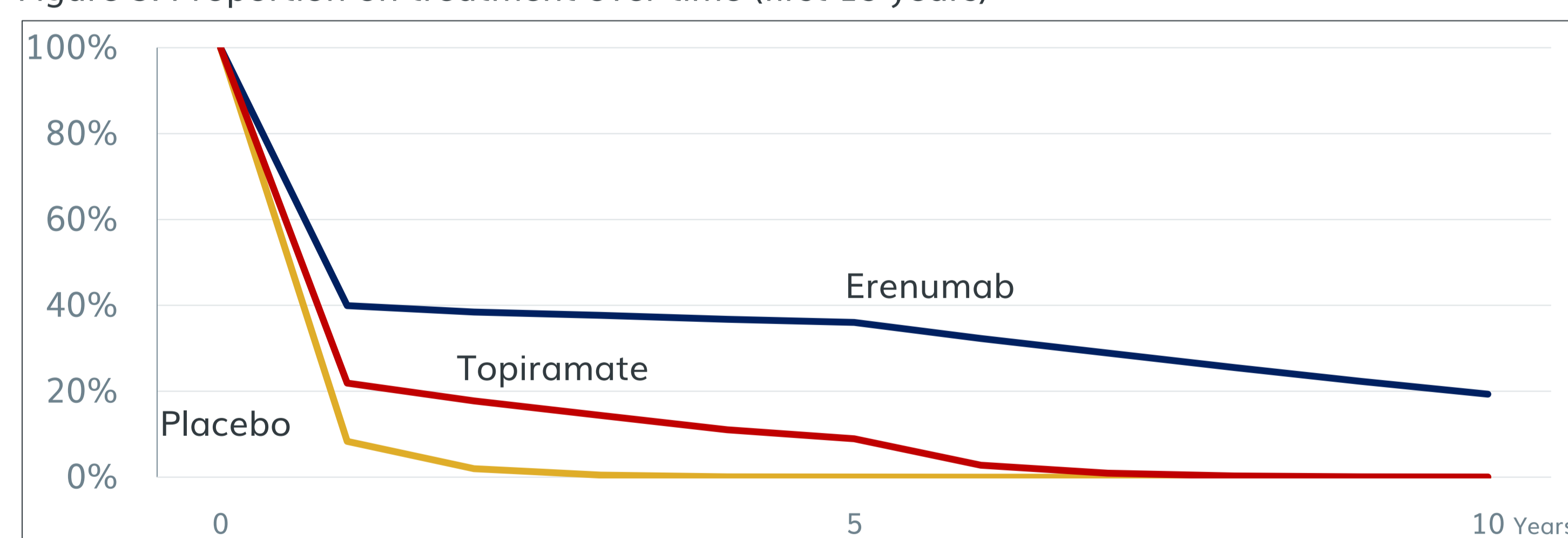


Figure 4: Cost-Effectiveness Plane Topiramato and Placebo

