

**Title: Cost-utility analysis of eptinezumab versus erenumab for episodic migraine headaches in the United States.**

**Date: 07 April 2024**

**Methods**

A hybrid decision-Markov model was constructed to perform a value assessment of eptinezumab compared to erenumab for episodic migraine headaches from the United States (US) healthcare payer’s perspective. The decision tree modeled episodic migraine headache reduction (>50% or <50%) for 6 months after therapy initiation. Subjects would enter the three-state Markov model in either the “Preventative Treatment” state or the “Off preventative treatment” state; Death was the absorbing state. The Markov model had a time horizon of 10 years with monthly cycles and Simpson 1/3 cycle correction.

Probabilities and utility scores were based on published literature. Medication costs (eptinezumab and erenumab) were based on the US Department of Veterans Affairs (VA) Federal Supply Schedule (FSS) prices or national contract, whichever cost was lower. Cost for office-based visits, emergency department visits, and inpatient hospitalizations were based on the Agency for Healthcare Research and Quality (AHRQ) Medical Expenditure Panel Survey (MEPS) data from 2021. Male and female survival rates were based on US Life Tables from 2021.

Probabilistic sensitivity analysis was performed to test the robustness of the model’s conclusions. Probability and utility score parameters were assigned a beta distribution, and cost parameters were assigned a gamma distribution. A cost-effectiveness acceptability curve was created to evaluate the probability of each strategy’s cost-effectiveness across a willingness-to-pay threshold between \$0 and \$300,000 per additional QALY gained.

**Results**

In the base-case results, the total costs for eptinezumab and erenumab were \$3459 and \$1491, respectively (**Table 1**). The total QALYs for eptinezumab and erenumab were 5.93 and 5.83, respectively. The base-case incremental costs-effectiveness ratio was \$19,126 per additional QALY gained.

**Table 1. Deterministic base-case results.**

Strategy	Total Costs (\$)	Total QALYs	Incremental Costs (\$)	Incremental QALYs	ICER
EPTI	\$36,282	5.99	\$21,080	0.10	\$210,800
EREN	\$15,202	5.89			

QALY, quality-adjusted life years  
ICER, incremental cost-effectiveness ratio

In the probabilistic sensitivity analysis, the total costs for eptinezumab and erenumab were \$26,259 (95% CrI: \$16,821, \$42,367) and \$15,135 (95% CrI: \$12,050, \$21,312), respectively

(**Table 2**). The total QALYs for eptinezumab and erenumab were 6.00 (95% CrI: 5.80, 6.21) and 5.89 (95% CrI: 5.74, 6.06), respectively. The ICER was \$19,753 per additional QALY gained.

**Table 2. Probabilistic sensitivity analysis results with 95% credible interval (10,000 Monte Carlo simulations).**

Strategy	Total Costs (\$)	95% CrI	Total QALYs	95% CrI	Incremental Costs (\$)	Incremental QALYs	ICER
EPTI	26259	16,821, 42,367	6.00	5.80, 6.21	11124	0.11	101846
EREN	15135	12,050, 21,312	5.89	5.74, 6.06			

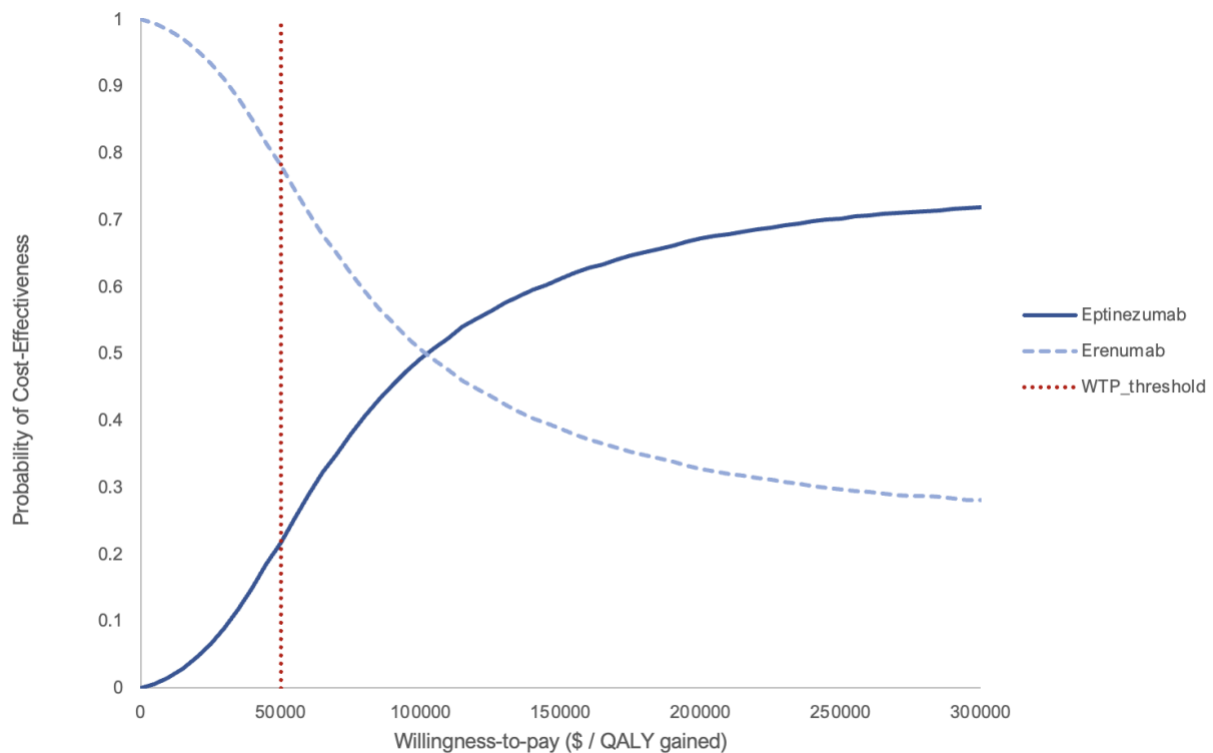
CrI, credible interval

QALY, quality-adjusted life years

ICER, incremental cost-effectiveness ratio

In the cost-effectiveness acceptability curve, erenumab is more cost-effective when the WTP threshold is less than \$105,000 per additional QALY gained (**Figure 2**). However, eptinezumab was more cost-effective when the WTP threshold was greater than \$105,000 per additional QALY gained.

**Figure 2. Cost-effectiveness acceptability curve.**



## Conclusions

Eptinezumab was cost-effective at a WTP threshold that was greater than \$105,000 per additional QALY gained. Policy makers deciding whether to pay for either eptinezumab or erenumab may want to consider other factors such as route of administration.