Cost-Utility Analysis of Eptinezumab versus Erenumab for Episodic Migraine Headaches in the United States

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INTRODUCTION

Migraine headache is a prevalent neurological disorders in the United States (US) and the second largest cause of disability worldwide.[1]

Migraine is associated with severe headaches lasting 4 to 72 hours accompanied by nausea and/or light and sound sensitivity.[2]

Episodic migraine (EM) is defined as experiencing less than 15 migraine days per month.[2]

Eptinezumab is an FDA approved monoclonal antibody that binds to calcitonin-gene related peptides (CGRP) ligands approved for migraine prevention in 2020.[3]

According to the clinical trials, eptinezumab is able to reduce monthly migraine frequency significantly in both episodic migraine (EM) and chronic migraine (CM) patients with mild adverse effects.[3,4]

OBJECTIVES

To evaluate the cost-effectiveness of CGRP monoclonal antibodies as preventive treatments for migraines in patients with episodic migraine (EM)

METHODS

A hybrid decision-Markov model was constructed to assess the cost-effectiveness of eptinezumab, erenumab, and no preventative treatment (NPT) as preventive treatment among EM patients from the US healthcare payer's perspective.

Eptinezumab and Erenumab price was based on Veteran Affairs (VA) Federal Supply Schedule (FSS) pricing

Probabilities and utility scores were based on published literature

Outcomes included total costs, quality-adjusted life years (QALYs), and incremental cost-effectiveness ratio (ICER)

Sensitivity analyses: Torando diagram and probabilistic sensitivity analysis (PSA)

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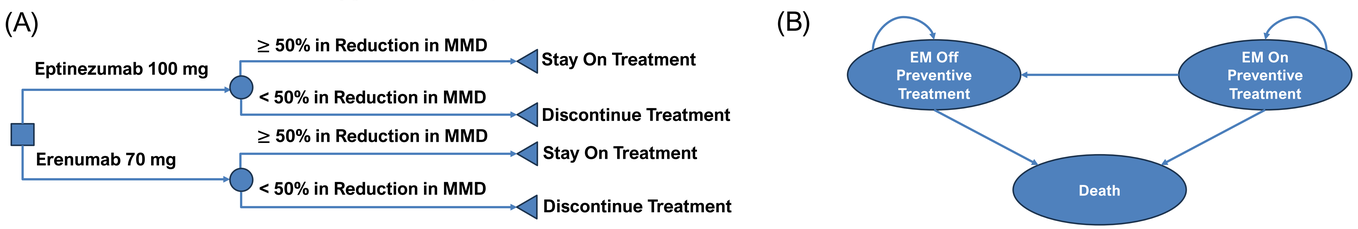
MODEL

Figure 1. Model schema of eptinezumab and erenumab in patients who failed prior preventive therapies. (A) The decision tree model simulates the patient's MMD for six months after therapy initiation (B) Markov model schema



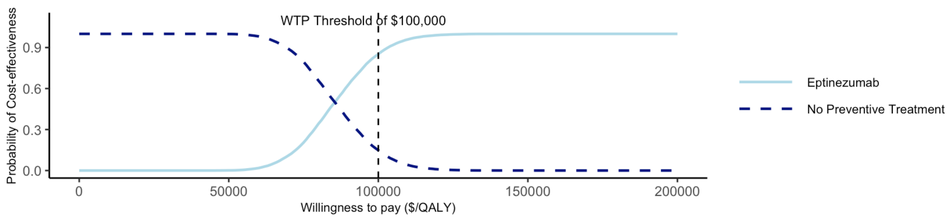
RESULTS

Table 1. Deterministic base-case results

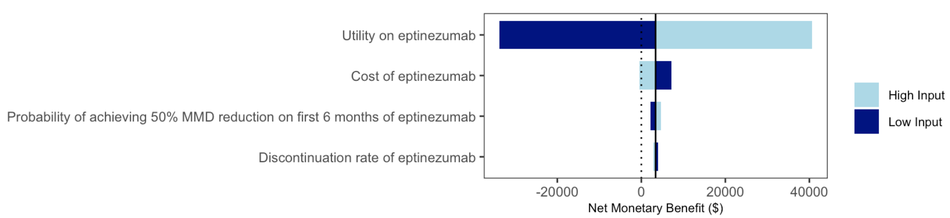
Strategy	Total Costs ($)	Total QALYs	ICER compared to NPT ($ per QALY gained)
Eptinezumab	66,927	5.659	85,962
Erenumab	61,754	5.525	144,183
NPT	46,038	5.416	

NPT: No Preventive Treatment

Figure 2. Base-case Sensitivity Analyses



(a) Cost-effectiveness acceptability curve



(b) Tornado diagram of the net monetary benefit changes between eptinezumab and NPT

DISCUSSION

Eptinezumab and NPT are on the cost-effectiveness frontier

Erenumab is excluded since it has a lower total QALYs than eptinezumab and a higher ICER than eptinezumab

Eptinezumab has a ICER of $85,962 per QALY gained (95% credible interval: $85,726.02 - $86,247.50)

In the PSA, eptinezumab was cost-effective in 85.2% of the simulations at a WTP threshold of $100,000 per QALY gained compared to NPT

CONCLUSIONS

Eptinezumab was cost-effective at a WTP threshold that was greater than $100K per additional QALY gained compared to NPT, and erenumab was not a cost-effective option for prevention of episodic migraine

Policymakers deciding whether to pay for eptinezumab may want to consider other factors, such as the route of administration, medication adherence, and patient preference

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