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10-year Cost-effectiveness Analyses of Fremanezumab Compared to Erenumab as Preventive Treatment in Episodic Migraine for Patients With Inadequate Response to Prior Preventive Treatments

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CONCLUSIONS

- **Based on current pricing and randomized controlled trial results, fremanezumab treatment is cost effective versus erenumab for the preventive treatment of episodic migraine (EM)**
- **Sensitivity analysis indicates that pharmacy acquisition costs, discontinuation of treatment, migraine-related costs, and clinical efficacy (ie, reduction in migraine days) are key cost drivers or cost-offsetting factors**

INTRODUCTION

- Migraine affects >1 billion people worldwide[1]
- Fremanezumab is a fully humanized monoclonal antibody (IgG2Δa) that selectively targets calcitonin gene-related peptide (CGRP), which is implicated in migraine pathophysiology[2,3]
- The FOCUS study (ClinicalTrials.gov Identifier: NCT03308968) of fremanezumab was the first and largest study of a migraine preventive treatment in a population of adults with difficult-to-treat migraine and documented inadequate response to 2 to 4 classes of migraine preventive medications[4]
- A previously published cost-effectiveness analysis reported that the CGRP receptor-targeting monoclonal antibody erenumab was not cost effective for the preventive treatment of EM, when excluding indirect considered from the US payer perspective[5]

OBJECTIVE

- To evaluate the cost effectiveness of fremanezumab versus erenumab for the prevention of EM in patients with an inadequate response to 2 to 4 classes of prior preventive treatments

METHODS

Study Design

- A semi-Markov cost-effectiveness model (CEM) was developed with a 4-week cycle and 10-year analysis time horizon. Costs and benefits were discounted at 3.0% annual rates
- Treatment efficacies were incorporated as reductions in mean migraine days (MDs)/28 days versus placebo
  - Patient cohorts were distributed among MD categories (0-28 MDs/28 days) based on mean MD levels
- The initial mean MDs/28 days was assumed to be 9.30, and the base-case inputs for mean MD reduction versus placebo at 12 weeks were 3.15 days for fremanezumab and 1.83 days for erenumab
- Discontinuation rates of 3.71%/4-week cycle were used for both fremanezumab and erenumab[6]; patients discontinuing returned to the mean MDs/28 days value for placebo
- Analyses were performed on an EM population with 2 to 4 prior treatment failures
  - For this study, EM was defined as patients with 4 to 14 MDs/28 days at the start of the study

Study Assessments

- The CEM estimated costs (fremanezumab and erenumab acquisition costs, and MD-related direct costs) and health-related quality of life (MD-based and treatment status–based utilities); costs were evaluated from the US health care private payer perspective
- Outcome measures were costs, reduction in MDs, and quality-adjusted life-years (QALYs)
  - Migraine-related costs and utilities were assigned based on mean MDs and distributed based on patient-level data analyses. In the base case, indirect costs associated with work productivity losses due to migraine were not included
  - Only background mortality was modeled
- The incremental cost-effectiveness ratios (ICERs) were reported as cost/QALYs gained between fremanezumab and erenumab. Fremanezumab and erenumab (140-mg dosing) MDs/28-day reductions versus placebo were sourced from a network meta-analysis

RESULTS

Base-case 10-year Analysis

- Fremanezumab dominates erenumab (less costly, more effective), with an average incremental cost savings of $936.96/patient, incremental QALYs of 0.037/patient, and a reduction in MDs (based on the average of the fremanezumab monthly and quarterly doses) of 33.3 MDs/patient (**Table 1**)

Table 1. Summary of Base-case CEM Results for Patients With EM and 2 to 4 Prior Treatment Failures

	Fremanezumab	Erenumab 140 mg
Total costs	$42,515.16	$43,452.13
Incremental total costs (fremanezumab vs comparator)		$(936.96)
Incremental QALYs (fremanezumab vs comparator)		0.03703
Cost/QALYs ICER (fremanezumab vs comparator)		Dominates
Incremental MDs (fremanezumab vs comparator)[a]		(33.3)

CEM, cost-effectiveness model; EM, episodic migraine; QALY, quality-adjusted life-year; ICER, incremental cost-effectiveness ratio; MD, migraine day.
[a]Reduction in MDs for fremanezumab was based on the average of the monthly and quarterly doses.

- Including indirect costs associated with work productivity losses due to migraine, fremanezumab still dominates erenumab, with an average incremental cost savings of $1,795/patient

Sensitivity Analyses

One-way sensitivity analysis

- Fremanezumab treatment acquisition costs and discontinuation were 2 of the 3 most impactful factors, with ranges of $5,355 and $3,909, respectively. Erenumab treatment discontinuation was the second most impactful factor, with a range of $4,280

Probabilistic sensitivity analysis

- In the probabilistic sensitivity analysis, fremanezumab was found to be dominant versus erenumab in 75.6% of the simulations, with average cost savings of $975 and 0.037 average incremental QALYs

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Disclosures

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