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10-year Cost-effectiveness Analyses of Response-based Fremanezumab Use in Migraine Patients With Inadequate Response to Prior Preventive Treatments

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CONCLUSIONS

- **Based on current pricing and randomized controlled trial results, fremanezumab treatment, when discontinued at 12 weeks for non-responders, is cost effective versus no treatment**
- **In addition, when the placebo effect is accounted for in the responder analysis, fremanezumab is cost saving and more efficacious than no treatment**

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]
- Cost-effectiveness models of anti-CGRP monoclonal antibodies may incorporate responder analyses, which estimate the impact of treatment discontinuation among patients who do not meet response criteria at certain time points

OBJECTIVE

- To evaluate the cost effectiveness of fremanezumab for preventive treatment of chronic migraine (CM) and episodic migraine (EM) in patients with inadequate response to 2 to 4 prior preventive treatment classes, accounting for cessation of fremanezumab treatment for non-responders

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
- Analyses were performed on a combined CM (67%)/EM (33%) population. CM/EM patients not achieving 30%/50% reductions, respectively, in MDs/28 days at 12 weeks (non-responders) stopped treatment
- Fremanezumab MDs/28-day reductions versus placebo and 12-week response/non-response rates were sourced from a network meta-analysis that included the FOCUS trial
- Patient decision discontinuation rates of 3.71%/4-week cycle were used[5]; patients discontinuing treatment returned to the mean MDs/28 days value for placebo
- Base-case inputs are shown in **Table 1**

Study Assessments

- The CEM estimated costs (fremanezumab acquisition costs and MD-related direct costs) and health-related quality of life (MD-based and treatment status–based utilities); indirect costs were not included; 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. Only background mortality was modeled
- The incremental cost-effectiveness ratios (ICERs) were reported as cost/QALY gained between fremanezumab and no treatment
  - In the base-case analysis, fremanezumab was compared with constant no-treatment MD profiles
  - Fremanezumab was also compared with randomized controlled trial–sourced placebo-arm MD profiles

Table 1. Base-case Inputs for CEM With Responder-based Analysis: CM 67% and EM 33%, 2 to 4 Prior Treatment Failures

CM	30% response at 12 weeks	50% response at 12 weeks
Responders at 12 weeks (fremanezumab/placebo)	48.96%/21.52%	–
Initial MDs/28 days		
Responders	16.07	–
Non-responders	18.17	–
Reduction in MDs for fremanezumab vs placebo at 12 weeks		
Responders	0.67	–
Non-responders	0.99	–
EM		
Responders (fremanezumab/placebo)	–	48.45%/15.32%
Initial MDs/28 days		
Responders	–	9.07
Non-responders	–	9.50
Reduction in MDs for fremanezumab vs placebo at 12 weeks		
Responders	–	0.33
Non-responders	–	1.26

CEM, cost-effectiveness model; CM, chronic migraine; EM, episodic migraine; MD, migraine day.

RESULTS

Base-case 10-year Analysis

Table 2. Summary of CEM Results for Responder-based Analysis, CM 67% and EM 33%, 2 to 4 Prior Treatment Failures

	Fremanezumab	Placebo
Total costs		
With placebo effect	$44,395.23	$46,193.15
No placebo effect	$54,414.25	$51,415.90
Incremental total costs (fremanezumab vs comparator)		
With placebo effect	–	$(1,797.92)
No placebo effect	–	$2,998.35
Incremental QALYs (fremanezumab vs comparator)		
With placebo effect	–	0.41187
No placebo effect	–	0.22036
Cost/QALY ICER (fremanezumab vs comparator)		
With placebo effect	–	Dominates
No placebo effect	–	$13,606.34
Incremental MDs (fremanezumab vs comparator)		
With placebo effect	–	(353.9)
No placebo effect	–	(161.5)

CEM, cost-effectiveness model; CM, chronic migraine; EM, episodic migraine; QALY, quality-adjusted life-year; ICER, incremental cost-effectiveness ratio; MD, migraine day.

- With the placebo effect considered, fremanezumab dominates no treatment (less costly, more effective): average incremental cost savings, $1,798/patient; reduction in MDs, 353.9 MDs (**Table 2**)
- With no placebo effect, fremanezumab resulted in a cost/QALY ICER of $13,606; average incremental costs, $2,998/patient; reduction in MDs, 161.5 MDs (**Table 2**)
- Without the placebo effect, fremanezumab responders who discontinued treatment returned to baseline MDs. With the placebo effect, fremanezumab responders who discontinued treatment transitioned to the placebo responder MDs

Sensitivity Analyses

Probabilistic sensitivity analysis

- In the probabilistic sensitivity analysis, fremanezumab was found to dominate placebo (no treatment), with average incremental cost savings of $1,793/patient and average incremental QALYs of 0.415

References

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Disclosures

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