Cost-effectiveness Analysis of Zavegepant in Acute Migraine Treatment

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Background

- Migraine is a common neurological condition affecting over 37 million people in the U.S.[1] The annual healthcare costs associated with migraines are estimated to be $56.31 billion.[2]
- Recently, calcitonin gene-related peptide (CGRP) receptor antagonists (gepants), including rimegepant (approved in 2020) and zavegepant (approved in 2023), have emerged as effective acute migraine treatments, with zavegepant being the first non-oral gepant.

Objectives

To evaluate the cost-effectiveness of zavegepant compared with rimegepant for the acute treatment of migraine in adults, using a U.S. payer perspective.

Methods

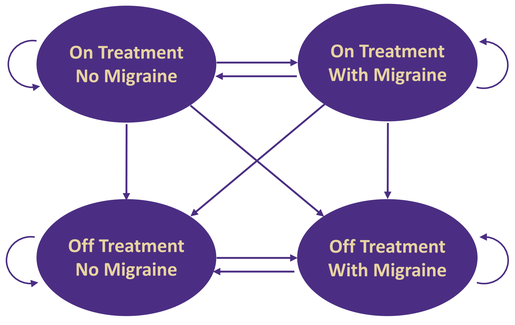

Figure 1: Model schematic

- A four-state Markov model with a 48-hour cycle length and a two-year time horizon was developed to simulate migraine treatment outcomes.
- Transition probabilities between states were derived from clinical trials,[1,3,4,5] and utility values of the four health states were derived from published literature.[6,7]
- Costs, including drug costs and non-drug healthcare costs, were derived from IBM® Micromedex® RED BOOK® and published literature.[8] Costs were measured in 2024 dollars.
- Both costs and health outcomes were discounted at 0.02% per 48 hours.

Table 1: Target population

Baseline Characteristics	Value
Mean age, years (SD)	40.3 (12.1)
Female, %	85%
Migraine days per month at baseline (SD)	4.6 (1.8)

Table 2: Model inputs

Transition probabilities	
Rimegepant	
On treatment, no migraine to on treatment, with migraine	0.2861
On treatment, no migraine to off treatment, no migraine	0.0017
On treatment, no migraine to off treatment, with migraine	0.0017
On treatment, with migraine to on treatment, no migraine	0.1200
On treatment, with migraine to off treatment, no migraine	0.0017
On treatment, with migraine to off treatment, with migraine	0.0017
Off treatment, no migraine to off treatment, with migraine	0.3067
Off treatment, with migraine to off treatment, no migraine	0.0543
Zavegepant	
On treatment, no migraine to on treatment, with migraine	0.2861
On treatment, no migraine to off treatment, no migraine	0.0023
On treatment, no migraine to off treatment, with migraine	0.0023
On treatment, with migraine to on treatment, no migraine	0.1350
On treatment, with migraine to off treatment, no migraine	0.0023
On treatment, with migraine to off treatment, with migraine	0.0023
Off treatment, no migraine to off treatment, with migraine	0.3067
Off treatment, with migraine to off treatment, no migraine	0.0543
Utilities	
On treatment, no migraine	0.96
On treatment, with migraine	0.77
Off treatment, no migraine	0.96
Off treatment, with migraine	0.72
Costs	
Drug costs (per cycle)	
Rimegepant	$91.16
Zavegepant	$133.83
Health care utilization costs (per cycle)	
Provider office visits	$9.8
Emergency department visits	$8.08
Hospitalization	$28.08

Results

Table 3: Base-case results

	Zavegepant	Rimegepant	Incremental Results
Costs	$4,129	$3,014	$1,115
Life-Years	1.940	1.940	0.000
QALYs	1.498	1.481	0.016
ICER			**$67,941**

The incremental cost-effectiveness ratio (ICER) for zavegepant versus rimegepant was $67,941 per QALY gained, below the willingness-to-pay (WTP) threshold of $100,000 per QALY, indicating that compared to rimegepant. zavegepant was cost-effective

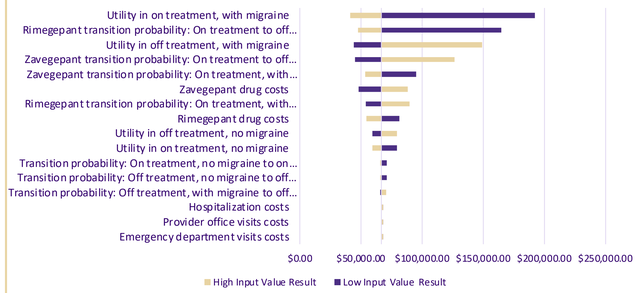

Figure 2: Tornado plot

- The model was most sensitive to utility value of "on treatment, with migraine" state and rimegepant's transition probability from on treatment to off treatment (discontinuation rate).
- At lower WTP thresholds, rimegepant had a higher probability of being cost-effective. When the WTP threshold exceeded approximately $80,000/QALY, zavegepant became the more cost-effective option.
- As the WTP threshold increased, the expected value of perfect information also rose.
- Reducing uncertainty in transition probabilities at a threshold of $100,000 per QALY would provide the greatest value, while reducing uncertainty in costs and utility inputs would not add meaningful value to the study.

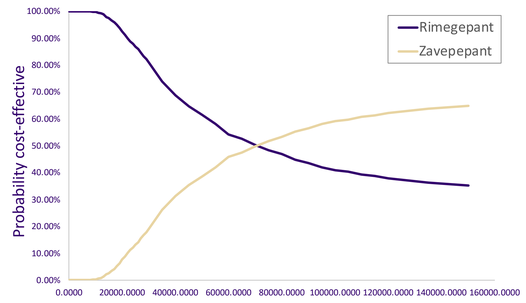

Figure 3: Cost-effectiveness acceptability curve

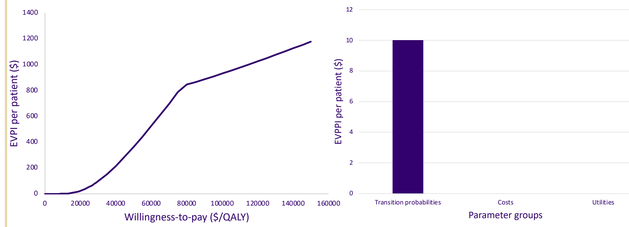

Figure 4: Expected value of perfect information and expected value of partial perfect information

Conclusion

Zavegepant is cost-effective compared with rimegepant for acute treatment of migraine under the WTP threshold of $100,000 per QALY gained.

References

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