Erenumab is cost-effective for the prevention of episodic and chronic migraine among patients with prior treatment failures in Sweden

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Migraine is a debilitating neurological disease that affects >10% of the general population across the world and is associated with a significant personal, economic and societal burden. Despite lifestyle modifications and the availability of acute and preventive treatment options, migraine remains inadequately treated in a significant number of patients. Erenumab is the only approved fully human monoclonal antibody targeting the calcitonin gene-related peptide (CGRP) receptor for the prevention of migraine in adults with at least 4 monthly migraine days. While the therapeutic benefits of erenumab have been well established in clinical trials, the cost-effectiveness of erenumab needs to be determined. The aim of this study was to evaluate the cost-effectiveness of erenumab versus best supportive care only for the preventive treatment of migraine in Sweden.

**Methods**

**Model design**
- A hybrid decision-tree plus Markov model was developed to evaluate the cost-effectiveness of erenumab as a migraine treatment compared to placebo (both in conjunction with best supportive care) for patients experiencing at least 4 monthly migraine days (MMDs) who have failed at least two prior preventive treatments.
- The model was designed based on inputs from clinical expert consultations, published literature, and previous modelling approaches for preventive treatments of migraine.

**Model inputs**
- Analysis was performed on a combined episodic (25%) and chronic (75%) migraine population from the Swedish societal perspective with a 10-year time horizon.
- Clinical efficacy data were based on results from the four randomized controlled trials of erenumab against placebo (the 295 study, STRIVE, ARISE and LIBERTY trials).
- Utility inputs were derived by mapping Migraine Specific Quality-of-life questionnaire v2.1 scores to EQ-5D. Costs and outcomes were discounted at 3%.

**Model outputs**
- The primary outcomes were costs, migraine days and quality-adjusted life years (QALY). An incremental cost-effectiveness ratio (ICER) was estimated as the cost per QALY gained. The cost per migraine day avoided was also estimated, as well as disaggregated direct and indirect costs.
**Cost-effectiveness Results:**

<table>
<thead>
<tr>
<th></th>
<th>Eren 140</th>
<th>Placebo</th>
<th>Incr.</th>
<th>ICER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Costs</strong></td>
<td>730,666</td>
<td>719,977</td>
<td>10,690</td>
<td></td>
</tr>
<tr>
<td><strong>QALYs</strong></td>
<td>5.4853</td>
<td>5.1772</td>
<td>0.3081</td>
<td>34,696</td>
</tr>
<tr>
<td><strong>Migraine days</strong></td>
<td>1,399</td>
<td>1,648</td>
<td>-249</td>
<td>43/MĐ avoided</td>
</tr>
</tbody>
</table>

**Value drivers (assuming WTP/QALY = SEK 300k):**

- Utility gained: 92,428.52
- Resource use saved: 13,285.70
- Indirect costs saved: 69,483.46
- Extra drug cost incurred: 93,458.88
- Net benefit to society: 81,738.81

**Conclusion**

- From a Swedish societal perspective, erenumab is cost-effective in migraine patients who have failed two or more prior preventive treatments.