Cost-Effectiveness of Faricimab in Patients with Neovascular Age-Related Macular Degeneration in Canada

### Introduction
- Faricimab is a bispecific antibody targeting VEGF-A and VEGF-B for the treatment of neovascular age-related macular degeneration (nAMD).
- In the TENAYA and LUCERNE trials (2-year long Phase III trials), patients treated with individualized dosing of faricimab followed by a Treat & Extend (T&E) regime required less frequent treatments compared to aflibercept given every eight weeks (QRW) and achieved similar vision gains.
- However, clinical practice in nAMD in Canada is typically characterized by T&E regimens. This research aims to assess the cost-effectiveness of faricimab vs. anti-VEGF treatments applied in such regimens.  

### Methods
- A Markov cohort model based on the NICE guideline review was developed in Excel to estimate bilateral visual acuity changes linked to quality of life, injection frequency and associated costs from a Canadian payer as well as a societal perspective.
- Transition probabilities and injection frequency were informed by the TENAYA and LUCERNE trials for faricimab and a network meta-analysis for comparisons. Deterministic and probabilistic sensitivity analyses were performed for costs and key model parameters.
- Time horizon was 25 years to reflect a lifetime horizon.
- Utility for visual acuity states was modelled using Cook-Murray et al. (2009) including administration and related disutilities.
- Drug prices were based on publicly available list prices in Canada.

### Results
- In the deterministic base case, Faricimab reduced the number of injections by 37%, 21%, 28% and 40% vs. ranibizumab, aflibercept, brolucizumab and bevacizumab respectively using T&E.
- From a payer perspective, faricimab generated lower costs vs. ranibizumab, aflibercept and bevacizumab of CAD 76,496, 29,117 and 38,235 as higher costs of CAD 71,971, 47,971 and 89,528 for brolucizumab. From a societal perspective, faricimab was cost saving vs. all anti-VEGF treatments including bevacizumab.
- Faricimab was associated with a mean QALY gain of 0.03, 0.05, 0.06 and 0.05 accordingly, driven by vision gains and disutilities.
- The ICUR vs. bevacizumab was 226,373 while the IER per injection avoided was 222. Sensitivity analyses were consistent with the base case.

### Conclusions
- The results indicate that faricimab dominates ranibizumab, aflibercept and brolucizumab administered in T&E regimes that are typically used in clinical practice.
- From a societal perspective, faricimab is cost saving and thus dominates bevacizumab by cutting injection visits and related costs in half. Savings were mostly driven by a reduced caregiver burden.
- Faricimab offers an innovative option reducing the treatment burden for patients and caregivers, leading to more efficient use of healthcare resources and longer term cost savings.
- The results also indicate that societal costs such as informal care represent a substantial economic burden and should be considered when evaluating novel therapeutic options in ophthalmology.

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### Figures

#### 1. Model Structure (Vision Related Health States)

**Visual acuity (VA) related health states and transitions for both eyes**

- **nAMD:**
  - Year 1: patients can be stable or move up 2 HS and down 2 HS
  - Year 2: patients can be stable or move up and down 1 HS
  - Year 3+: patients can be stable or move down up to 2 HS

#### 2. Model Structure (Treatment Related Health States)

**Treatment related health states and transitions for both eyes**

#### 3. Mean Reduction of Administrations of Faricimab vs. Treat & Extend Regimens

<table>
<thead>
<tr>
<th>Reduction of Administrations (%)</th>
<th>Ranibizumab</th>
<th>Afiblercept</th>
<th>Brolucizumab</th>
<th>Bevacizumab</th>
</tr>
</thead>
<tbody>
<tr>
<td>91%</td>
<td>74%</td>
<td>89%</td>
<td>94%</td>
<td></td>
</tr>
</tbody>
</table>

Faricimab requires less frequent injections in the vast majority of simulations.

#### 4. Incremental Cost-Effectiveness Plane for Faricimab vs. Treat & Extend Regimens – Payer Perspective

**No Disease**
- 1st year on tx
- 2nd year on tx
- 3+ years on tx
- Off-tx

**Disease Pre-treatment:**
- Note: Dashed lines indicate health states and transitions that only a fellow eye can experience

#### 5. Breakdown of Deterministic Total Costs – Societal vs. Payer Perspective

<table>
<thead>
<tr>
<th>Inc. costs ($)</th>
<th>Faricimab vs. aflibercept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug cost</td>
<td>+39%</td>
</tr>
<tr>
<td>Administration cost</td>
<td>+33%</td>
</tr>
<tr>
<td>Costs of visual impairment</td>
<td>+32%</td>
</tr>
<tr>
<td>Informal care costs</td>
<td>+61%</td>
</tr>
<tr>
<td>Travel costs</td>
<td></td>
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</table>

**Faricimab provides more QALYs in ... % of simulations**

#### 6. Deterministic Sensitivity Analysis – Societal Perspective

**Inc. costs ($)**
- Faricimab vs. bevacizumab

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### References
2. CADTH: Promotion of Health Care Technology. Canadian Institute for Health Technologies, August 2022. Version 3.4.2
5. NICE guideline [NG82], Published: 23 January 2018, Appendix J: Health Economics.
6. NICE Technology appraisal guidance [TA800], Published: 29 June 2022, Committee papers.
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### Financial Disclosures
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