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Dutch Cost Implications of Faricimab in Neovascular Age-Related Macular Degeneration: A Systematic Review of Treatment Interval and Injection Frequency

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Introduction

Neovascular age-related macular degeneration (nAMD) is a leading cause of irreversible vision impairment, particularly in older populations. Its management places a significant burden on patients, caregivers, and healthcare systems.

In the Netherlands, the standard of care begins with off-label bevacizumab, followed by anti-VEGF agents such as aflibercept and ranibizumab for non-responders. While the use of off-label bevacizumab is cost-effective, this pathway does lead to a high number of injections.

Faricimab, a novel bispecific antibody, has the potential to extend treatment intervals and reduce injection frequency, as shown in clinical trials. However, real-world data on injection counts and the associated economic impact for the Dutch healthcare system are lacking.

Objective: To systematically quantify the reduction in injection frequency when switching nAMD patients to faricimab from anti-VEGF agents using real-world evidence, and to analyze the associated budget impact for the Dutch healthcare system

Methods

A systematic review was conducted following PRISMA guidelines, searching PubMed for studies on faricimab in nAMD patients previously treated with anti-VEGFs. A hybrid approach using AI (NotebookLM) and manual verification was used for data extraction and risk of bias assessment.

The primary outcome was the mean number of injections per year. Data from 19 observational studies were synthesized. Mean yearly injections were calculated from the reported mean number of injections or treatment intervals. A random-effects meta-analysis was performed to calculate the pooled mean difference in yearly injections between faricimab and prior anti-VEGF treatment. Missing standard deviations were handled using multiple imputation.

A budget impact analysis was conducted from a Dutch direct medical cost perspective over a one-year time horizon.

- Base-case: Used the pooled mean injection counts from the meta-analysis and a weighted average cost for prior anti-VEGF agents based on the treatment mix in the included studies on the whole Dutch nAMD population.
- Scenario analyses: Modeled the budget impact according to the specific Dutch treatment guidelines for first-, second-, and third-line therapies, adjusting the comparator drug costs and patient populations accordingly.
- Sensitivity analysis: A two-way threshold analysis was performed to identify the drug discount combinations required to achieve cost neutrality between faricimab and other anti-VEGFs.

Results

The review included 19 real-world studies, representing a cohort of 2,231 nAMD patients who switched from a prior anti-VEGF therapy to faricimab. Prior anti-VEGF treatments were off-label bevacizumab, aflibercept, ranibizumab and brolucizumab.

Patients treated with faricimab required a pooled mean of 7.05 (95% CI: 6.50 to 7.61) injections per year. Prior to switching, the same patients required a pooled mean of 9.70 (95% CI: 9.03 to 10.36) injections per year on anti-VEGF therapies. This resulted in a statistically significant pooled mean difference of -2.65 injections per year (95% CI: -3.36 to -1.93) favoring faricimab.

In the base-case, switching to faricimab resulted in a potential annual cost saving of approximately €79 million. This was driven by a reduction in total yearly costs per patient from €10,989 to €8,813.

Replacing first-line bevacizumab with faricimab would increase costs by €124.5 million annually. Using faricimab in second- and third-line settings showed significant savings, ranging from €16 million to €75.1 million per year.

The overall certainty of the evidence for the primary outcome was rated as "Very Low" using the GRADE framework, primarily due to the serious risk of bias in the included observational studies and substantial heterogeneity (I^2 = 96.6%).

Discussion

This is the first study to link a systematic review of real-world evidence directly to a national budget impact analysis. The findings demonstrate that switching nAMD patients to faricimab from other anti-VEGFs leads to a significant reduction in treatment burden, with patients requiring approximately 2 to 3 fewer injections in the first year.

This reduction in injection frequency translates into substantial cost savings for the Dutch healthcare system, particularly when faricimab is positioned in second- and third-line therapy. Savings are driven by reductions in both drug and administration costs.

Key limitations include the generalizability of international data to the unique Dutch context (especially the first-line use of bevacizumab), the assumption that the injection reduction is constant across all scenarios, and the high statistical heterogeneity observed in the meta-analysis. The reliance on public list prices was addressed by a sensitivity analysis.

Switching to faricimab from prior anti-VEGF therapies can reduce the annual treatment burden for nAMD patients. Within the Dutch healthcare context, this can lead to considerable cost savings when faricimab is used in later lines of therapy. These findings provide valuable, quantified evidence for clinicians and policymakers to inform treatment decisions for nAMD patients.

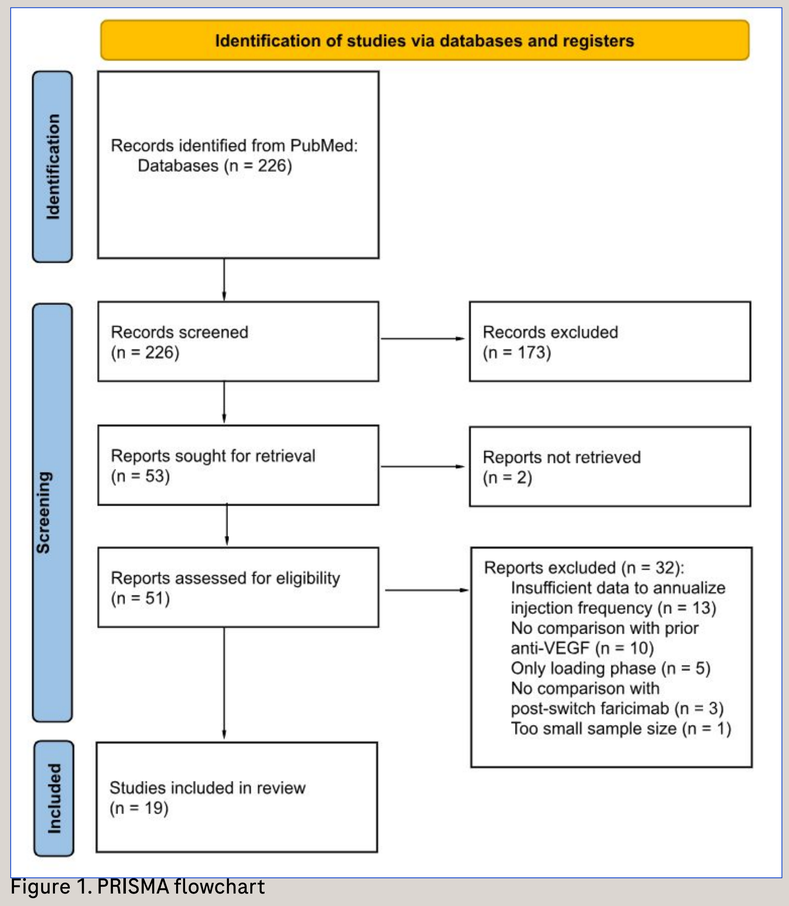

Figure 1. PRISMA flowchart

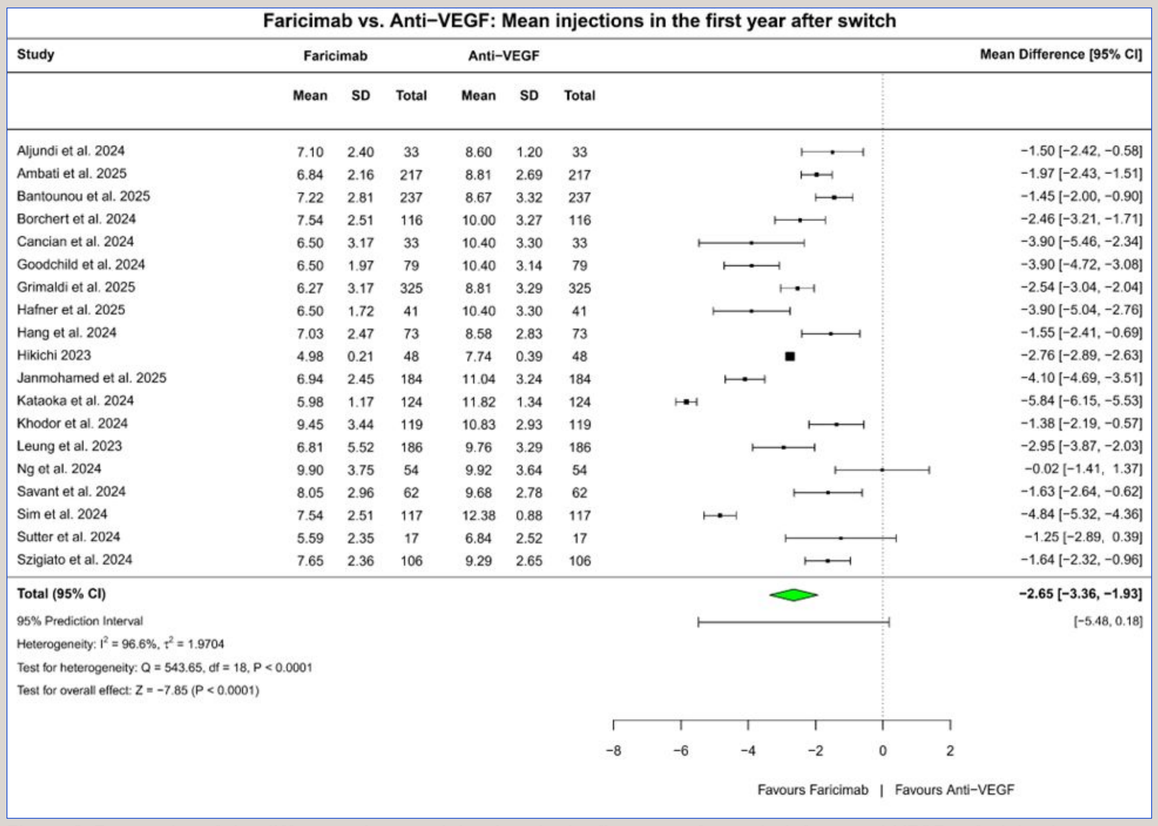

Figure 2. Forest plot of the difference in mean injections in the first year after switch from anti-VEGF to faricimab

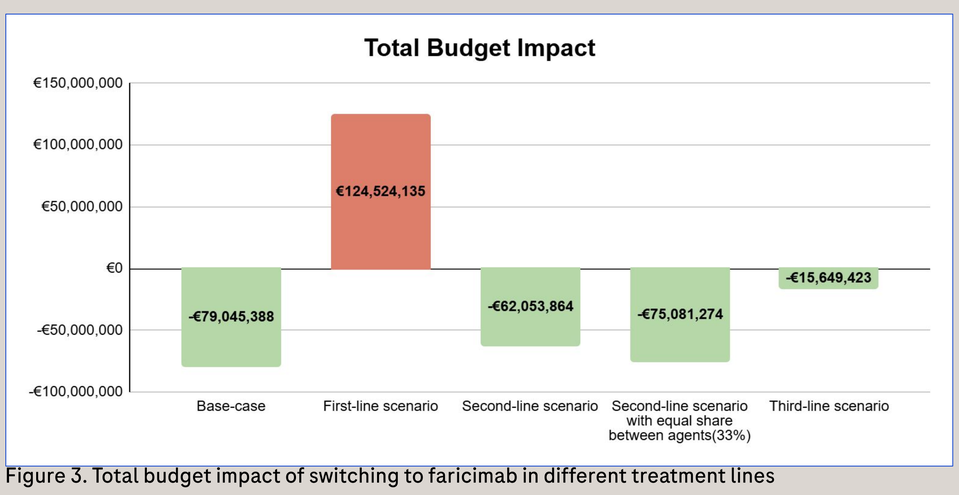

Figure 3. Total budget impact of switching to faricimab in different treatment lines

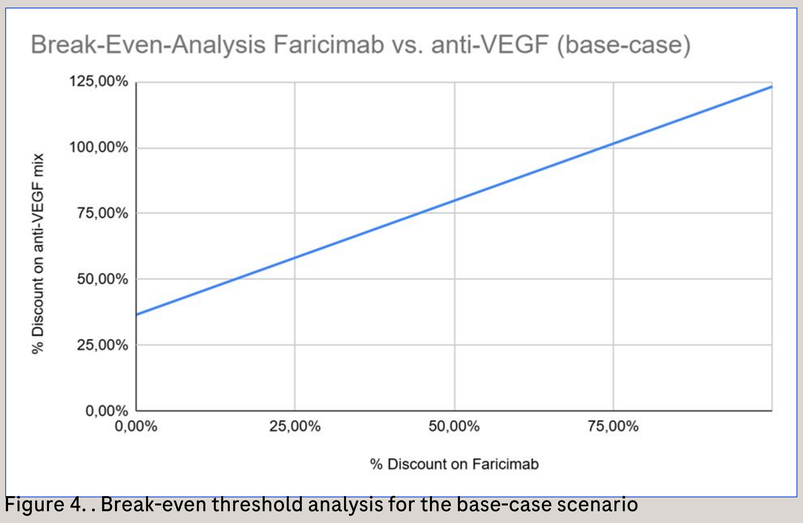

Figure 4. . Break-even threshold analysis for the base-case scenario