Budget impact analysis of Faricimab for treating patients with Diabetes Macular Edema or Neovascular Age-Related Macular Degeneration in Panama

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Introduction

The severe eye conditions of diabetic macular edema (DME) and neovascular age-related macular degeneration (nAMD) can lead to irreversible vision loss if not treated [1,2]. In Panama, these conditions affect a significant proportion of the population, and the current treatment options can be expensive and burdensome. Recently, a new treatment called faricimab has been approved, which offers a more convenient dosing schedule and has shown promising results in clinical trials [3-5]. Therefore, it is crucial to assess the potential impact on a budget for integrating faricimab into the healthcare system of Panama, ensuring that patients receive the best care possible.

This study aims to present the findings of a budget impact analysis (BIA) of using faricimab to treat DME and nAMD patients in Panama. The study also aimed to evaluate the potential economic impact of introducing this new treatment option into the healthcare system of Panama. The results of this BIA can provide valuable insights into the financial implications of implementing faricimab as a new treatment for these debilitating eye conditions in Panama.

Methods

This BIA aims to evaluate the financial implications of implementing faricimab as a treatment for patients with DME or nAMD in Panama. To estimate the number of DME patients, the model used variables such as the distribution of the population aged 18-64 and > 65 years, the prevalence of diabetes, the proportion of DME in diabetic patients, and the proportion of patients diagnosed and eligible for anti-VEGF therapy. Based on these factors, the model predicts that in 2023, 12 232 DME patients in Panama will be eligible for treatment with faricimab, of which 48 % will have bilateral disease. In addition, the model estimated an annual growth rate of new patients requiring therapy at 6.4 %.

For nAMD patients, the model considered variables such as the population > 50 years, the proportion of patients who probably have nAMD, the ratio of patients diagnosed, and patients eligible for anti-vascular endothelial growth factor (anti-VEGF) therapy. The model estimated that 1 234 nAMD patients would qualify for faricimab treatment in 2023, with 36 % assumed to have bilateral disease. The model also projected an annual growth rate of new patients needing therapy to be 11 %.

Table 1 presents the number of patients and eyes eligible for faricimab treatment from 2023 to 2026 for both DME and nAMD patients in Panama. The model assumes that in 2023, no patients will receive faricimab, 88 % will receive bevacizumab, and 12 % will receive aflibercept. The model also predicts that faricimab's market share will increase by 3 % per year from 2024 to 2026 at the expense of the bevacizumab market. The analysis is from the perspective of a third-party payer, and the model costs are in USD 2022.

Results

Table 3 shows the number of patients per comparator who would receive treatment for DME in Panama in the current scenario without faricimab and in the plan with faricimab. Likewise, Table 4 has the same results for patients with nAMD. The budgetary impact of including 3 % of patients with DME and nAMD in Panama each year generates a saving of $ 97,963 to the country's health system in just three years (Fig. 1). This saving would be $ 16,144 in the first year $ 32,566 in the second year, and $49,253 in the third year. As the number of patients receiving treatment with faricimab increases, there is a more significant saving for the health system.

Table 1. The number of patients and eyes with DME or nAMD candidates for anti-VEGF treatment in Panama between 2023 and 2026.

Year	DME		nAMD	
	# of patients	# of eyes	# of patients	# of eyes
2023	12,232	18,104	1,234	1,679
2024	12,342	18,266	1,246	1,694
2025	12,449	18,424	1,256	1,708
2026	12,552	18,576	1,267	1,723

Table 2. The number of anti-VEGF injections in the first year and from the second year, and the drug dose in each injection in patients with DME / nAMD.

Anti-VEFG Therapy	Dose per injection (mg)	# of injections per year			
		DME		nAMD	
		Year 1	Year 2+	Year 1	Year 2+
Faricimab	6.00	8.4	4.9	6.79	4.69
Aflibercept	2.00	9.4	5.0	8.00	5.63
Bevacizumab	1.25	9.9	5.5	10.06	8.44
Ranibizumab	0.50	9.5	5.4	9.13	7.14

Table 2 presents the dosage per injection (in mg) and the annual number of injections required for faricimab and anti-VEGF comparators for both DME and nAMD. The information is based on data reported by clinical trials of faricimab [1-3] and a meta-analysis of anti-VEGF [5]. Additionally, the BIA compares the total costs of faricimab treatment over three years with those of anti-VEGF comparators.

Table 3. Patients per comparator who would receive treatment for DME in Panama in a scenario without and with faricimab.

	The base year (2023)	2024	2025	2026
	Scenario without Faricimab			
Faricimab	0	0	0	0
Aflibercept	1,468	1,481	1,494	1,506
Bevacizumab	10,765	10,861	10,955	11,045
Total	12,232	12,342	12,449	12,552
	Scenario with Faricimab			
Faricimab	0	370	747	1,130
Aflibercept	1,468	1,481	1,494	1,506
Bevacizumab	10,765	10,491	10,208	9,916
Total	12,232	12,342	12,449	12,552

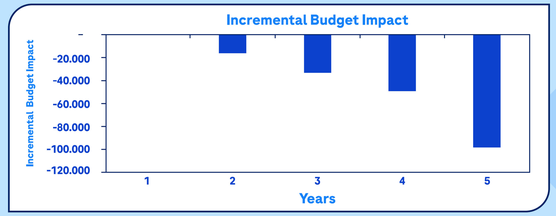

Figure 1. The incremental budget impact of faricimab for treating DME and nAMD in Panama, with a market share that increases by 3% each year for faricimab.

Table 4. Patients per comparator who would receive treatment for nAMD in Panama in a scenario without and with faricimab.

	The base year (2023)	2024	2025	2026
	Scenario without Faricimab			
Faricimab	0	0	0	0
Aflibercept	62	62	63	63
Bevacizumab	1,173	1,183	1,193	1,203
Total	1,234	1,246	1,256	1,267
	Scenario with Faricimab			
Faricimab	0	37	75	114
Aflibercept	62	62	63	63
Bevacizumab	1,173	1,146	1,118	1,089
Total	1,234	1,246	1,256	1,267

Discussion

By introducing faricimab for treating DME and nAMD in Panama, the country's healthcare system could save $ 97,963 over three years. This result would be achieved by gradually increasing the proportion of patients receiving faricimab by 3 % each year, resulting in a 9 % market share after three years, equivalent to 1 244 out of the nearly 14 000 patients expected to require treatment for DME and nAMD by 2026. The cost-saving advantage of faricimab stems from its requirement for fewer doses compared to its comparators, which reduces the expenses incurred through application costs and outpatient visits (Table 2).

This increase in market share would only come at the expense of bevacizumab. This drug is being used off-label for DME treatment in the private sector of Panama despite a warning issued by the National Direction of Pharmacy and Drugs in April 2013, which disapproved its usage for DME treatment. In addition, bevacizumab has been linked to adverse events such as necrotizing fascitis [8]. In the public sector the use of laser was not considered as an option as despite it could be more cheaper, the effectiveness of is inferior than any of the anti-VEGF, leading to a more number of disabilities due to lack of vision, increasing the social security expenditure on it.

The main drawback of this economic model is that it does not account for the costs of adverse events associated with bevacizumab, assuming they do not occur. However, studies have described several adverse events, including subconjunctival hemorrhages, vitreous hemorrhages, and endophthalmitis [9]. On the other hand, the strength of this economic model lies in the estimation of healthcare resources cost by a group of expert retinal ophthalmologists who attend to patients with DME and nAMD in Panama.

Conclusion

It is introducing faricimab to treat DME and nAMD in Panama by reducing the market share of bevacizumab, resulting in cost savings for the country's healthcare system. This result is because faricimab requires fewer doses, eliminating the expenses related to application costs and outpatient visits associated with these drugs.

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