THE COST OF PRESSURE: QUANTIFYING THE CONSEQUENCES OF CLINICAL STRAIN IN OPHTHALMOLOGY

Yaneth Gil Rojas, MSc[1], Sebastien Eymere, MSc[2], Luke Nicholson, MD[3], Oliver Cox[4], Marloes Bagijn, PhD[4], Christian Bührer, PhD[4].
[1]Putnam, London, United Kingdom,
[2]Putnam PHMR, Paris, France,
[3]Moorfields Eye Hospital NHS Foundation Trust, London, United Kingdom,
[4]Hoffman La Roche AG, Basel, Switzerland.

#6044

INTRODUCTION

Neovascular age-related macular degeneration (nAMD) is a chronic, vision threatening condition requiring intensive ongoing anti-VEGF injections[1].
As populations age and demand for eye care services increase the intensity of treatment puts strain on healthcare systems[2].
Delays in the diagnosis, initiation of therapy and treatment can increase the risk of irreversible vision loss[3].
UK guidelines recommend initiating anti-VEGF treatment within 14 days of referral and completion of the loading phase within 10 weeks of the first dose[4].
The National Ophthalmology Database Audit suggest these targets are often missed[5].
The extended treatment intervals offered by faricimab may reduce treatment burden and improve care quality[6].

OBJECTIVE

The objective is this study was to quantify the impact of the extended treatment intervals offered by faricimab on: Operational efficiency, timely patient access to services and costs within the context of a capacity constrained retinal service.

METHODS

A microsimulation model was developed to simulate a UK NHS retinal clinic, factoring its scheduling processes, service capacity, and patient demand (see fig 1). The model compared service and cost metrics for two nAMD therapies (faricimab (FAR) and 2 mg aflibercept biosimilar (AFL Bx)) under a range of scenarios (see fig 2).

Key Model Inputs:
- Baseline Patient Cohort: 1500 (60 new patients/year)
- Clinical Capacity: 158 patient slots/week
- Maximum Waiting Time: 2 weeks (Out-of-hour slots utilised if wait limit exceeded)
- Treatment Regimens: Based on pivotal trials data; FAR (TENAYA & LUCERNE), AFL Bx (ARIES)
- Costs: UK list price based (AFL Bx cost anchored to list price of ranibizumab Bx)

Outcomes:
- Service performance (treatment delays and capacity use)
- Care quality (proportion of patients receiving 3 loading doses as per label within 10 weeks)
- Costs (incl. drug, service and per-delayed visit litigation costs)

Scenarios:
- The pairwise comparison directly compared two cohorts; one treated with FAR and the other treated with AFL Bx. The future market comparison assessed contrasting payer strategies; one strategy supporting innovation and prescriber treatment choice and the other limiting choice by mandating AFL Bx.

Sensitivity Analyses:
Sensitivity analyses were performed to assess the robustness of the model including the impact of service strain, distribution of patients per year, clinical capacity allowances, costs multipliers when clinical capacity was exceeded.

Figure 1. Model Schematic

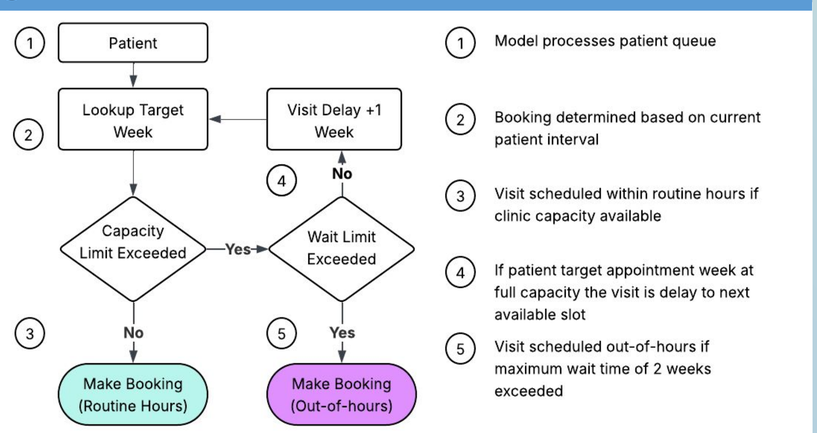
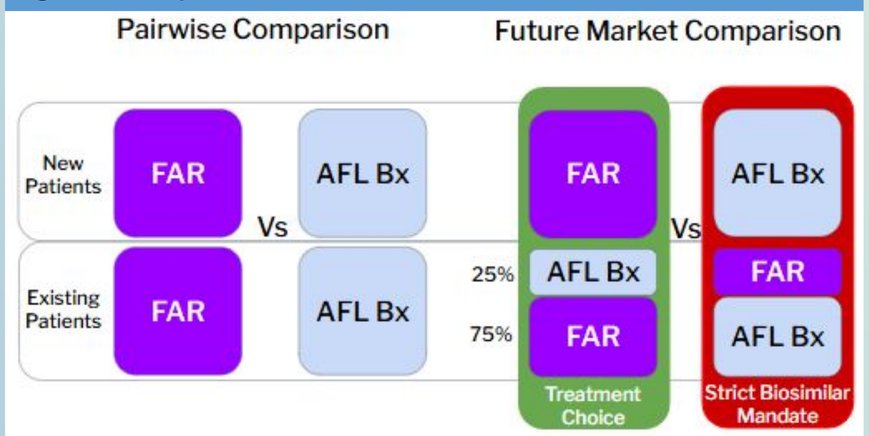


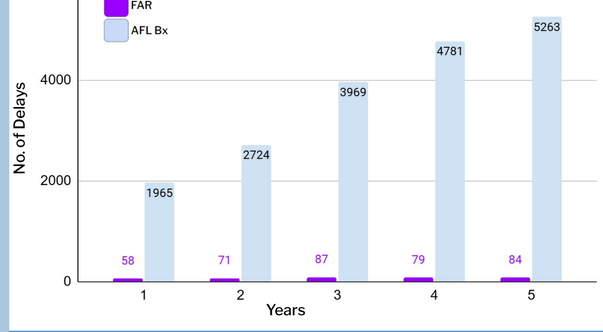
Figure 2. Analytical Scenarios



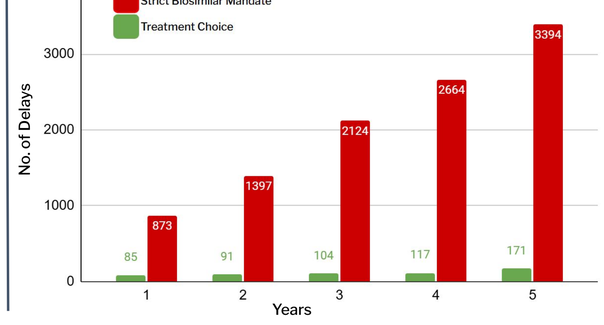
RESULTS

Number of Delays

Pairwise Comparison



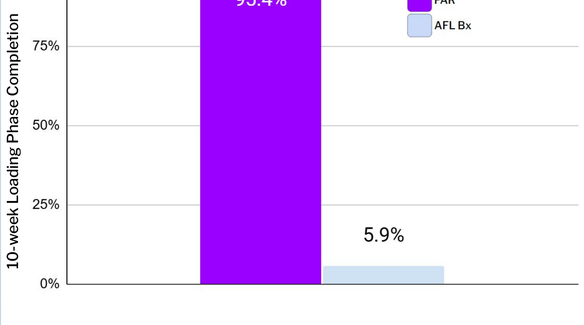
Future Market Comparison



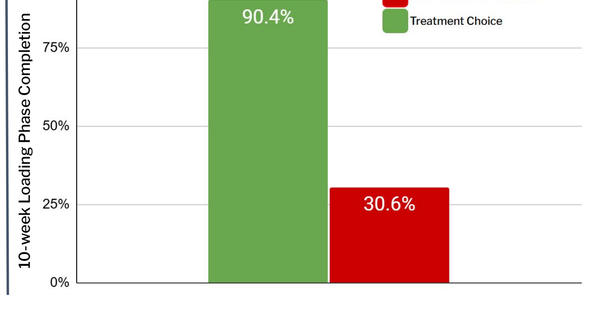
Summary: Faricimab drove significant reductions in delays across both analyses: the direct pairwise comparison and the future market comparison modelling treatment choice.

Ability to Complete Loading Phase in 10-Weeks

Pairwise Comparison



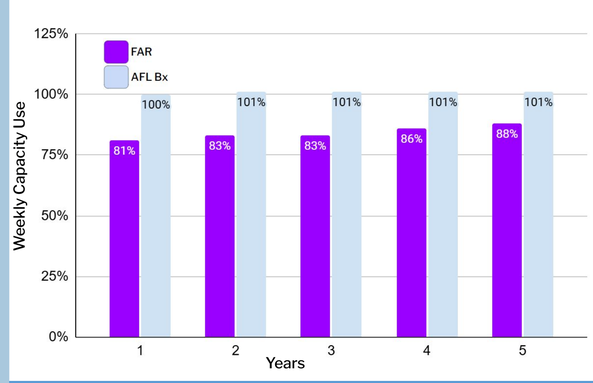
Future Market Comparison



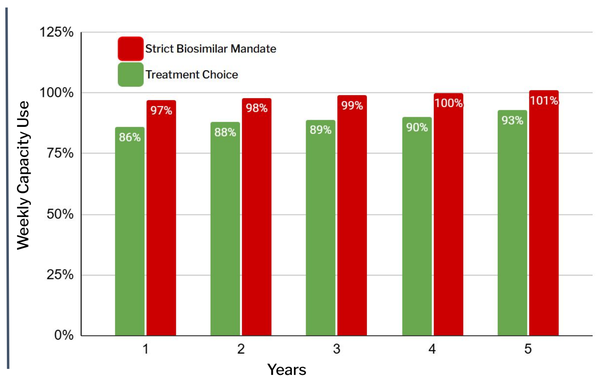
Summary: Loading phase completion, a key quality care metric, was significantly improved by both faricimab (89.5 percentage-point increase) and the 'Treatment Choice' scenario.

Weekly Clinic Capacity Utilisation

Pairwise Comparison



Future Market Comparison



Summary: Notable reductions in weekly capacity utilisation were observed under the faricimab pathway and for the treatment choice scenario.

Overview of Quality, Operational and Cost Results

		Pairwise Comparison			Future Market Comparison		
	Indicator	**FAR**	**Bx**	**Absolute Difference (%)**	**Treatment choice**	**Strict biosimilar mandate**	**Absolute Difference (%)**
Key Quality Standard	**10 Wk Loading Phase Completion**	95.4%	5.9%	+89.5 pp	90.4%	30.6%	59.8pp
Key Operational Indicators	**Injections**	47,012	56,278	-9,266 (-16.5%)	49,900	55,230	-5,330 (-9.6%)
	Out-of-hours Clinic Attendance	48	499	-452 (-90.5%)	68	360	-292 (-81.0%)
	Delayed Visits	441	18,701	-18,260 (-97.5%)	902	10,451	-9,549 (-91.4%)
	Weekly Capacity Use	84.3%	100.9%	-16.6 pp	89.3%	98.9%	-9.5pp
Costs	**Service & Litigation Costs (£)**	8,979,154	19,240,940	-10,261,786 (-53.3%)	9,780,988	16,040,269	-6,259,281 (-39.0%)
	Total Costs (£)	49,268,190	47,149,230	2,118,960 (+4.5%)	47,717,427	47,180,690	536,738 (+1.1%)

CONCLUSION

In capacity-constrained retinal services, the potential for FAR to extend treatment intervals compared to AFL Bx can unlock critical clinical operational capacity. This allows stretched services to:
- Deliver more injections,
- Treat more patients, and
- Increase the proportion completing their loading phase within the crucial 10-week window. Timely completion of this phase is vital for patients to regain vision and achieve optimal long-term outcomes.

Pairwise Comparison: A pairwise comparison showed faricimab reduced delayed visits by 97.6% (441 vs 18,701) and improved loading phase completion from 5.9% to 95.4%. While its drug acquisition costs are higher, these were largely offset by reduced service and litigation costs.

Future Market Comparison: Future market analysis revealed that a policy incorporating longer-acting therapies like faricimab improved operational and quality-of-care metrics compared to a strict biosimilar mandate. These benefits were associated with a negligible 1.1% overall cost increase, highlighting the trade-off between care quality and cost.

These operational efficiencies, creating significant non-drug cost savings, underscore the need for a holistic system cost perspective that values patient care and service sustainability. The results emphasize the importance of clinician treatment choice and the potential pitfalls of restricted treatment access.

REFERENCES

1. Vyawahare H, Shinde P. Age-Related Macular Degeneration: Epidemiology, Pathophysiology, Diagnosis, and Treatment. Cureus. 2022;14(9):e29583.
2. Loewenstein A, et al. Global insights from patients, providers, and staff on challenges and solutions in managing neovascular age-related macular degeneration. Ophthalmology and Therapy. 2025;14(1):211-28.
3. Kim JG, Kim YC, Kang KT. Impact of Delayed Intravitreal Anti-Vascular Endothelial Growth Factor (VEGF) Therapy Due to the Coronavirus Disease Pandemic on the Prognosis of Patients with Neovascular Age-Related Macular Degeneration. J Clin Med. 2022 Apr 21;11(9):2321.
4. National Institute for Health and Care Excellence (NICE). Age-related macular degeneration. https://www.nice.org.uk/guidance/ng82/chapter/recommendations. Accessed 10-Oct-2025
5. The Royal College of Ophthalmologists (RCOphth). National Ophthalmology Database (NOD): Age-related Macular Degeneration (AMD) - Audit Data Set. Accessed 10-Oct-2025
6. Reitan G, et al. Through the Eyes of Patients: Understanding Treatment Burden of Intravitreal Anti-VEGF Injections for nAMD Patients in Norway. Clin Ophthalmol. 2023;17:1465-74.