Budget Impact Analysis of Patients With nAMD or DME Who May Require Monthly Dosing With Aflibercept 8 mg

Nimesh A. Patel, MD[1], Eilish McCann, PhD[2], Andreas Kuznik, PhD[2], Jingdong Chao, PhD[2], Xiaomeng Niu, PhD[2], Disha Patel, PhD[2]
[1]Massachusetts Eye and Ear, Boston, Massachusetts; [2]Regeneron Pharmaceuticals, Inc., Tarrytown, New York

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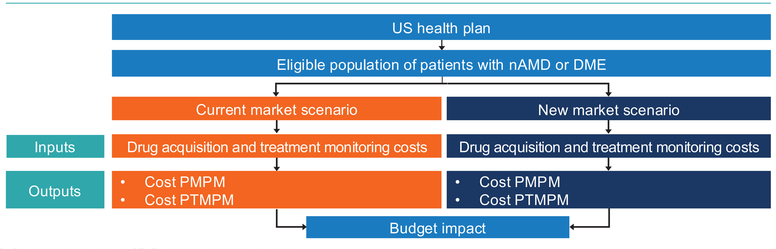
BACKGROUND & PURPOSE

- In the pivotal PULSAR and PHOTON trials, aflibercept 8 mg with extended dosing achieved visual and anatomic improvements comparable to those for aflibercept 2 mg every 8 weeks through Week 96 in patients with neovascular age-related macular degeneration (nAMD) and diabetic macular edema (DME)[1,2]
  - In both trials, patients treated with aflibercept 8 mg who met the prespecified dose regimen modification (DRM) criteria could have their dosing intervals shortened to a minimum of every 8 weeks in Years 1 and 2 or extended to a maximum of every 24 weeks in Year 2
- Exploratory post hoc analyses of PULSAR and PHOTON identified a small subset of patients treated with aflibercept 8 mg on an 8-week dosing interval that would have hypothetically qualified for further shortening to a 4-week dosing interval[3,4]
- A budget impact model (BIM) was developed to estimate the impact of aflibercept 8 mg administered every 4 weeks (8q4) on patients with nAMD or DME in the United States (US) using patient dosing interval data from PULSAR and PHOTON, which represent a conservative cost scenario for patients requiring frequent dosing

METHODS

- A cohort-based BIM was developed from a US payer perspective over a 3-year time horizon in a health plan including 1 million adult patients aged >40 years
  - Eligible patients with nAMD or DME were estimated using epidemiological inputs from literature. The total eligible patient population in the BIM included 24,857 patients with nAMD and 22,401 patients with DME
- The model structure was anchored to DRM-driven dosing pathways observed in PULSAR and PHOTON, in which patients' randomized dosing intervals were modified if the study-specific DRM criteria were met
- Additionally, the BIM compared the current market scenario in which aflibercept 8q4 dosing was not available after 3 initial monthly injections with a new scenario in which aflibercept 8q4 dosing was available (**Figure 1**)
- In exploratory post hoc analyses through Week 96, 10.5% of patients in PULSAR[3] and 4.8% of patients in PHOTON would have met DRM criteria for dosing interval shortening from aflibercept 8 mg every 8 weeks (8q8) to 8q4
  - In the BIM, these proportions were used to estimate the proportions of patients who would qualify for 8q4 dosing in the new market scenario, in which 8q4 dosing after the initial monthly dosing is on label
- Market shares were derived from projections and were input on a per-injection basis, representing the total number of injections sold annually for aflibercept 2 mg, aflibercept 8 mg, ranibizumab, faricimab, brolucizumab, bevacizumab, and for biosimilars for ranibizumab and aflibercept 2 mg
  - For aflibercept 8 mg, the market share in the current scenario was 9.42% in Year 1 and 14.64% in Years 2 and 3 for nAMD, and was 7.00% in Year 1 and 12.22% in Years 2 and 3 for DME
  - No additional uptake of aflibercept 8 mg was assumed following the introduction of aflibercept 8q4 to the market in the new scenario. Therefore, the market share in the new and current scenarios was assumed to be identical
- Direct costs (drug acquisition and treatment monitoring costs) were calculated using the mean number of injections obtained from post hoc analyses of PULSAR and PHOTON and the Centers for Medicare & Medicaid Services average sales price per aflibercept 8-mg injection in November-December 2025 ($2491.05)
  - The mean number of injections for each aflibercept 8-mg dosing regimen incorporated changes in dosing intervals through Year 2. In Year 1 of PULSAR and PHOTON, patients who met DRM criteria for dosing interval shortening to 8q8 remained on this dosing interval through Week 48. In Year 2, patients could have had their dosing intervals extended or shortened in 4-week increments, and therefore may have had dynamic rather than fixed dosing intervals
- Budget impact was estimated as the difference in cost between the current and new market scenarios
- One-way deterministic sensitivity analyses were performed separately for nAMD and DME to identify variables with the highest impact on the BIM outcomes

Figure 1. BIM Design



PMPM, per member per month; PTMPM, per treated member per month.

RESULTS

Distribution of Patients by Aflibercept 8-mg Dosing Regimen in the BIM

- The proportions of patients receiving aflibercept 8q4, 8 mg administered every 12 weeks (8q12), and 8 mg administered every 16 weeks (8q16) in the current and new market scenarios are shown in **Table 1**

Table 1. Distribution of Patients in the BIM by Aflibercept 8-mg Dosing Regimen Based on Data Through Week 96 From PHOTON and PULSAR[1-4]

	Current market scenario		New market scenario	
	nAMD	DME	nAMD	DME
Aflibercept 8q4[a]	0%	0%	10.50%	4.80%
Aflibercept 8q12[a]	49.78%	66.80%	43.80%	63.30%
Aflibercept 8q16[a]	50.22%	33.20%	45.70%	31.90%

[a]In the BIM, patients received 3 initial monthly injections regardless of the dosing regimen.

Estimated Mean Number of Injections With Aflibercept 8 mg in the BIM

- Post hoc analyses showed that patients in PULSAR and PHOTON could have required aflibercept 8q4 dosing for limited time periods[3,4]
  - The estimated mean number of injections per year for each aflibercept 8-mg dosing regimen in the BIM, accounting for anticipated 8q4 dosing for a limited time, is reported in **Table 2**

Table 2. Model-Estimated Number of Injections per Year by Aflibercept 8-mg Dosing Regimen

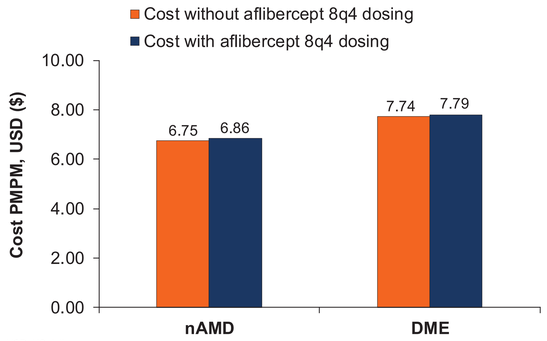
	nAMD			DME		
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
Mean number of injections per year, n[a]						
Aflibercept 8q4	7.62	7.10	7.10	6.53	7.58	7.58
Aflibercept 8q12	6.10	3.60	3.29	6.00	3.50	2.86
Aflibercept 8q16	5.20	3.00	3.29	5.00	2.80	2.86

[a]In the BIM, patients received 3 initial monthly injections regardless of the dosing regimen.

Cost PMPM of Aflibercept 8q4 Dosing Implementation

- Implementation of aflibercept 8q4 dosing was estimated to have a negligible impact on cost PMPM over a 3-year time horizon (**Figure 2**)
  - Based on the BIM for nAMD, implementing aflibercept 8q4 dosing was estimated to increase total PMPM cost by $0.11, corresponding to a 1.7% budget increase
  - Implementing aflibercept 8q4 dosing in the BIM for DME increased total PMPM cost by $0.05, corresponding to a 0.7% budget increase

Figure 2. Cost PMPM With and Without Aflibercept 8q4 Dosing Incorporated Into the BIM for nAMD and DME

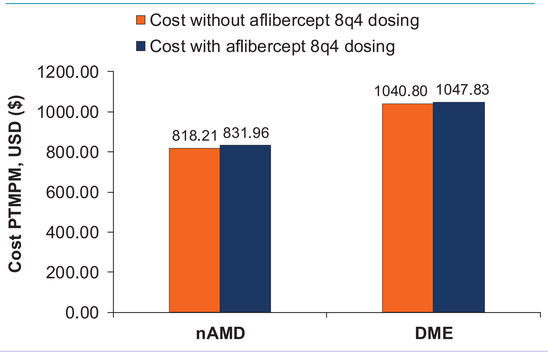


USD, US dollars.

Cost PTMPM of Aflibercept 8q4 Dosing Implementation

- Implementation of aflibercept 8q4 dosing was estimated to have a minimal impact on cost PTMPM over a 3-year time horizon (**Figure 3**)
  - Based on the BIM for nAMD, implementing aflibercept 8q4 dosing was estimated to increase total PTMPM cost by $13.75, corresponding to a 1.7% budget increase
  - In the BIM for DME, implementing aflibercept 8q4 dosing was estimated to increase total PTMPM cost by $7.03, corresponding to a budget increase of 0.7%

Figure 3. Cost PTMPM With and Without Aflibercept 8q4 Dosing Incorporated Into the BIM for nAMD and DME



Sensitivity Analysis

- Deterministic sensitivity analyses for nAMD and DME identified Year 1 distribution of patients across aflibercept 8-mg regimens to have the largest impact on the budget, followed by disease prevalence and the mean number of injections
  - Treatment monitoring inputs, including frequency of optical coherence tomography testing and office visits, had moderate impact on the budget

Limitations

- Robust and recent data for the prevalence and incidence of nAMD and DME are lacking in literature, limiting the epidemiological inputs for the model
- Data from PULSAR and PHOTON through Week 96 were utilized in the model, which may limit longer-term applicability of findings from this analysis
- Model-estimated dosing intervals and injection frequencies may be limited by differences in management of patients with nAMD or DME in clinical trials versus clinical practice

CONCLUSIONS

- A BIM was developed based on dosing interval data from patients treated with aflibercept 8 mg with nAMD or DME in PULSAR and PHOTON, respectively, to estimate the budget impact of aflibercept 8q4 dosing from a US payer perspective
- Implementation of aflibercept 8q4 dosing after initial monthly dosing was estimated to have minimal impact on cost PMPM and cost PTMPM in both nAMD and DME

REFERENCES

1. Korobelnik J-F et al. *Ophthalmology.* 2026;133:39-50.
2. Do DV et al. *Ophthalmology*. 2026;133:577-588.
3. Sivaprasad S et al. Presented at: Association for Research in Vision and Ophthalmology; May 6, 2024; Seattle, WA.
4. Chaudhry N et al. Presented at: Retina World Congress; May 10, 2024; Fort Lauderdale, FL.

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