Real-World Anti-VEGF Treatment Utilization and Vision Outcomes in Neovascular Age-Related Macular Degeneration: Analysis of the Vestrum Database

Andrew A. Moshfeghi, MD, MBA[1]

Christina Y. Weng, MD, MBA[2], Dilsher S. Dhoot, MD[3], Matthew W. Cheung, PharmD[4], Andrea Gibson, PhD[4], Namrata Saroj, OD[4]

[1]Ophthalmology, Keck Medicine of USC, Los Angeles, CA; [2]Ophthalmology, Baylor College of Medicine, Houston, TX; [3]California Retina Consultants, Santa Barbara, CA; [4]Ocular Therapeutix, Bedford, MA

American Society of Retina Specialists | Montreal, Canada | July 16, 2026

Disclosures (Andrew Moshfeghi, MD)

Financial Disclosures

Consultant: Alcon, Annexon, Apellis, Astellas, Bausch + Lomb, Ocular Therapeutix, Pr3vent, Valitor, Ainsly dba Waldo, Regeneron
Personal Financial Interest: Ocular Therapeutix, Pr3vent, Valitor, Ainsly dba Waldo.

Study Disclosures

Funding was provided by Ocular Therapeutix for the study.

Treatment Burden Remains a Significant Unmet Need in nAMD

14.5M people with nAMD globally[1]

INJECTION BURDEN

90% of patients require injection every 1-3 months[2]

Up to **12 injections/yr** for patients

Up to **12 days off/yr** for caregivers

References: 1. 2024 Retinal Pharmaceuticals Market Report: Neovascular AMD and Other Exudative Diseases. Market Scope; 2024. 2. Reitan G, et al. *Clin Ophthalmol.* 2023;17:1465-1474.
Abbreviations: nAMD, neovascular age-related macular degeneration; yr, year

Real-World Impact of Anti-VEGF Treatment Burden and Non-Adherence Patterns Remain Less Documented in nAMD

- Translating clinical trial efficacy and safety of anti-VEGF therapy for nAMD into real-world practice is challenged by high treatment burden associated with frequent intravitreal injections and regular monitoring[1,2]

- While short-term real-world treatment patterns are well-documented, there is a need to **better understand the long-term incidence of non-persistence** and its impact on vision over time

STUDY PURPOSE **To evaluate the real-world evolution of anti-VEGF treatment persistence and injection frequency for nAMD patients.**

Reference: 1. Ciulla TA, et al. *Ophthalmol Retina*. 2018;2(7):645-653. 2. Holekamp NM, et al. *Am J Ophthalmol*. 2014;157(4):825-833.e1.
Abbreviations: VEGF, vascular endothelial growth factor; nAMD, neovascular age-related macular degeneration

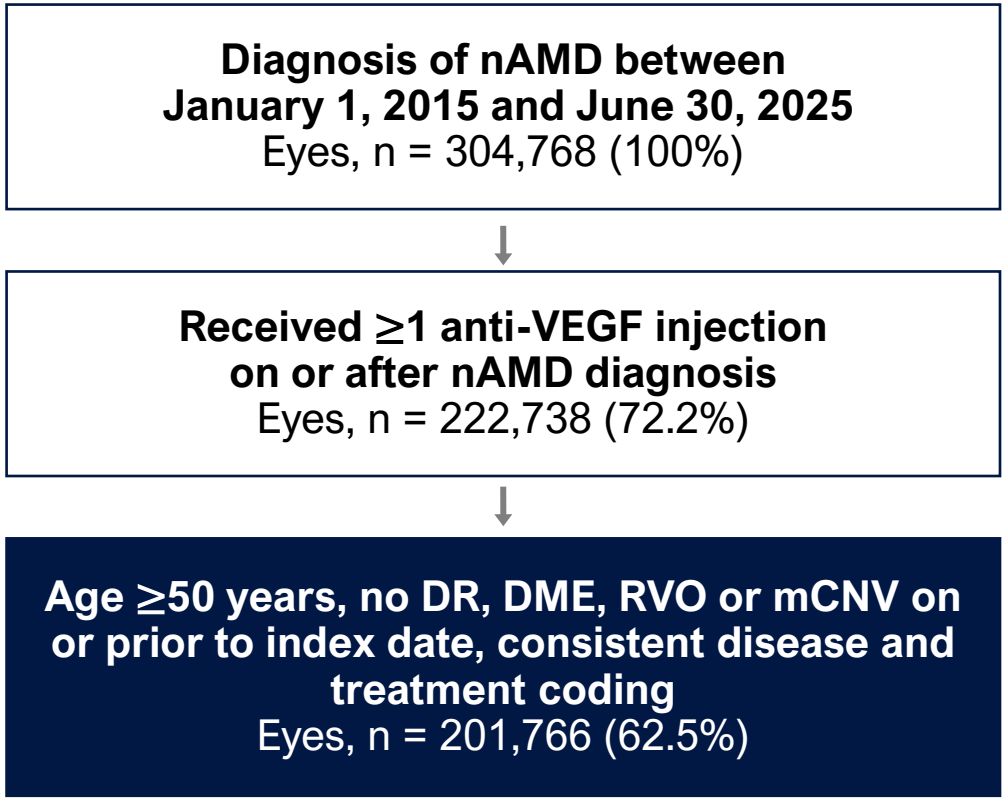
Methods

- Retrospective analysis of the Vestrum Health database
- Patients aged ≥50 years with nAMD treated with intravitreal anti-VEGF injection(s) were included
- Anti-VEGF treatment non-persistence was defined as no injection for >180 days after the previous injection

Limitations

- As a retrospective analysis, findings were subject to incomplete data capture, loss to follow-up over time, and limited insights into treatment patterns (such as reasons for missed visits or discontinuation), which may impact interpretation

Cohort Attrition



Sample size defined as number of eyes.

Reference: Moshfeghi AA, et al. Real-World Anti-VEGF Treatment Utilization and Vision Outcomes in Neovascular Age-Related Macular Degeneration: Analysis of the Vestrum Database. Presented at the Association for Research in Vision and Ophthalmology. Denver, Colorado. May 7, 2026.
Abbreviations: nAMD, neovascular age-related macular degeneration; VEGF, vascular endothelial growth factor; RVO, retinal vein occlusion; DR, diabetic retinopathy; DME, diabetic macular edema; mCNV, myopic choroidal neovascularization

Baseline Demographics and Characteristics

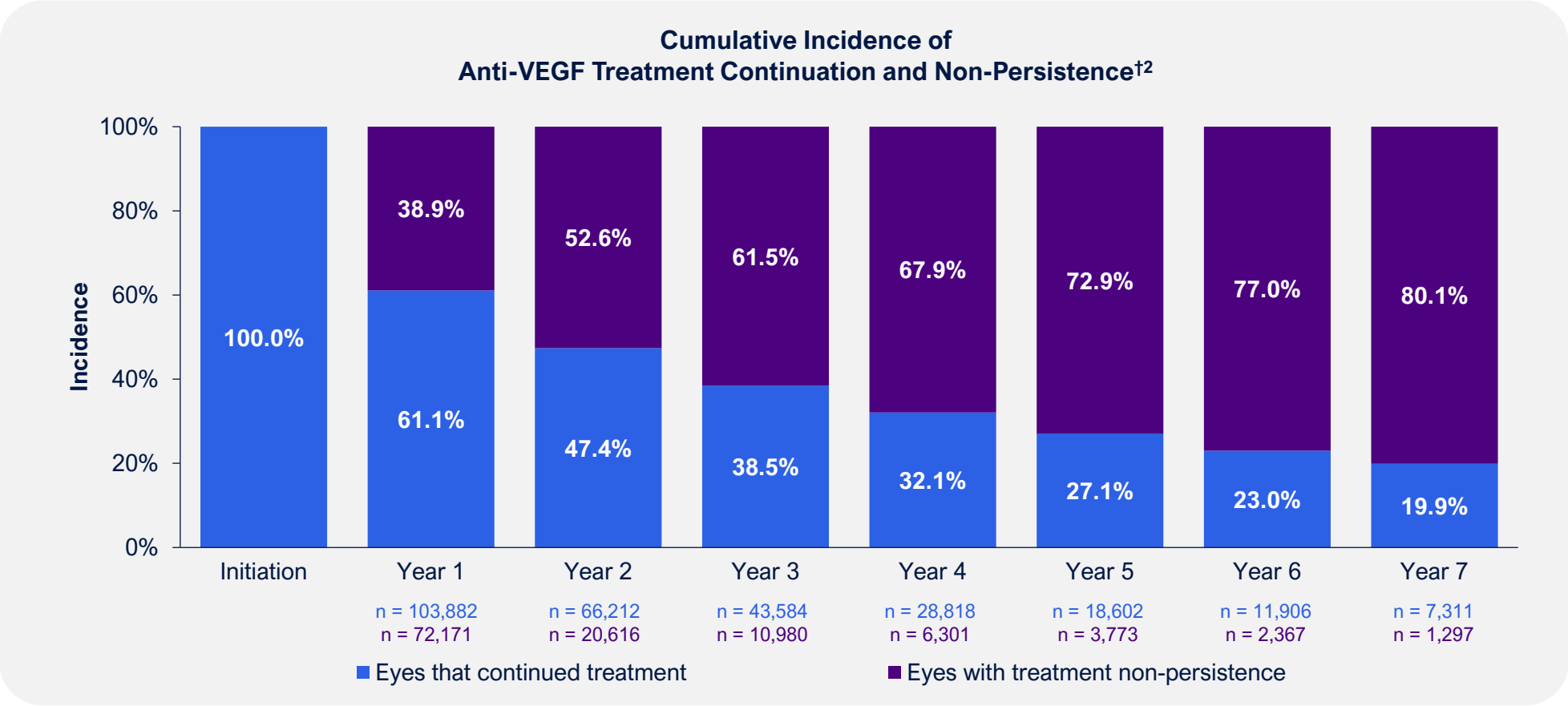
	N
Total study eyes	201,766
Total study patients	158,727
Gender	
Female	125,623 (62.3%)
Male	72,558 (36.0%)
Other/unknown	3,585 (1.8%)
Mean (SD) age, years	80.4 (8.7)
Mean (SD) time from nAMD diagnosis to first treatment, days	18 (73)
Presence of fibrosis in study eye	23,439 (11.6%)
Presence of atrophy in study eye	43,568 (21.6%)
Mean (SD) visual acuity, ETDRS letters Approximate Snellen equivalent	53.7 (23.8) ~20/85
Mean (SD) central retinal thickness, microns	334 (129)
nAMD in fellow eye	
Present, treated	34,171 (16.9%)
Present, not treated	48,216 (23.9%)

Abbreviations: nAMD, neovascular age-related macular degeneration; SD, standard deviation; ETDRS, Early Treatment Diabetic Retinopathy Study

High Real-World Attrition Limits Long-Term Treatment Continuity

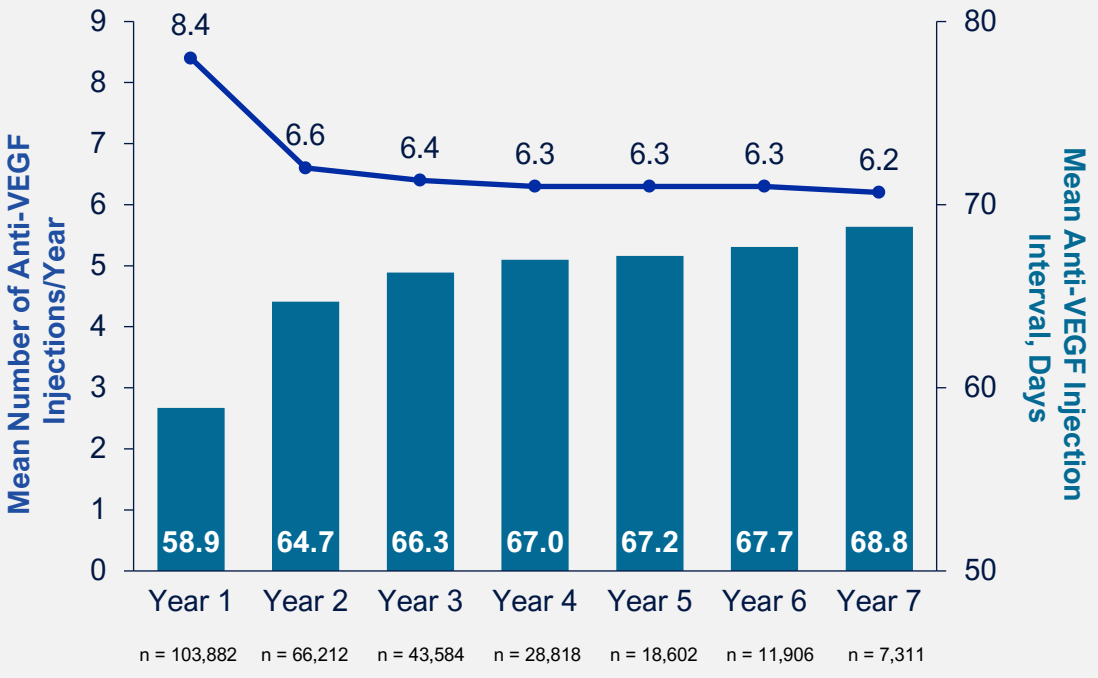
~40% attrition by Year 1 that continued to steepen through Year 7

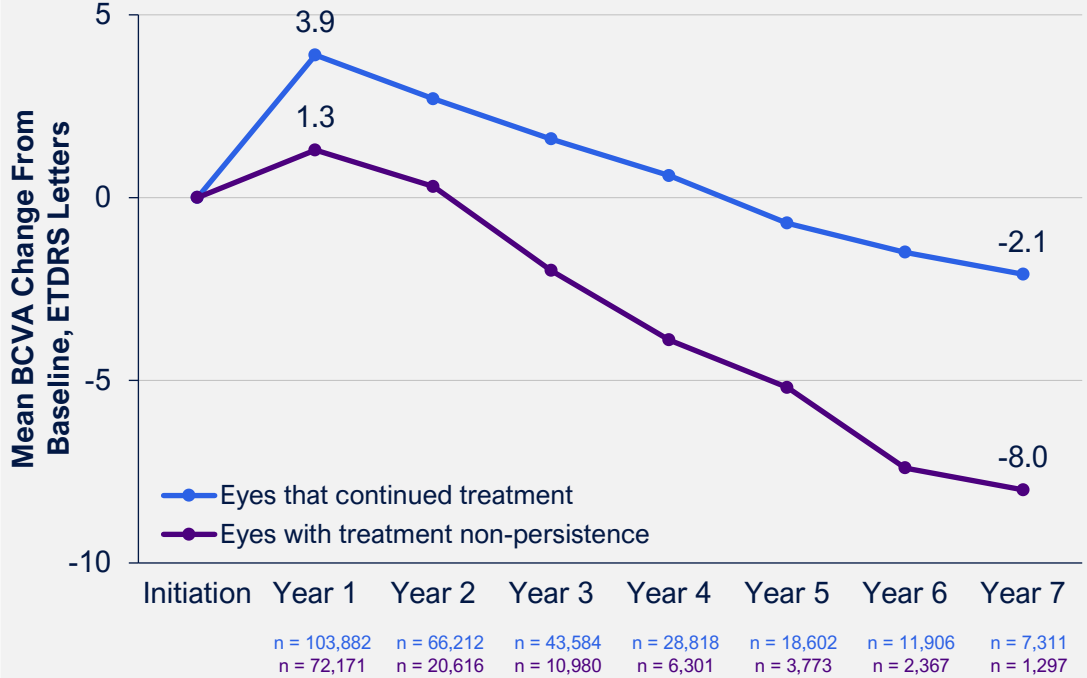
- Median time to non-persistence of treatment was ~21 months (646 days)[1]



Sample size defined as number of eyes.
†Eyes lost-to-follow-up and insufficient follow-up not represented in the data.
Abbreviations: VEGF, vascular endothelial growth factor

Real-World Anti-VEGF Use Shows Fewer Injections Over Time, Driving Gradual Decline for Entire Cohort





Injection Frequency Declines Over Time
Drops from 8.4 at Year 1 to 6.2 by Year 7

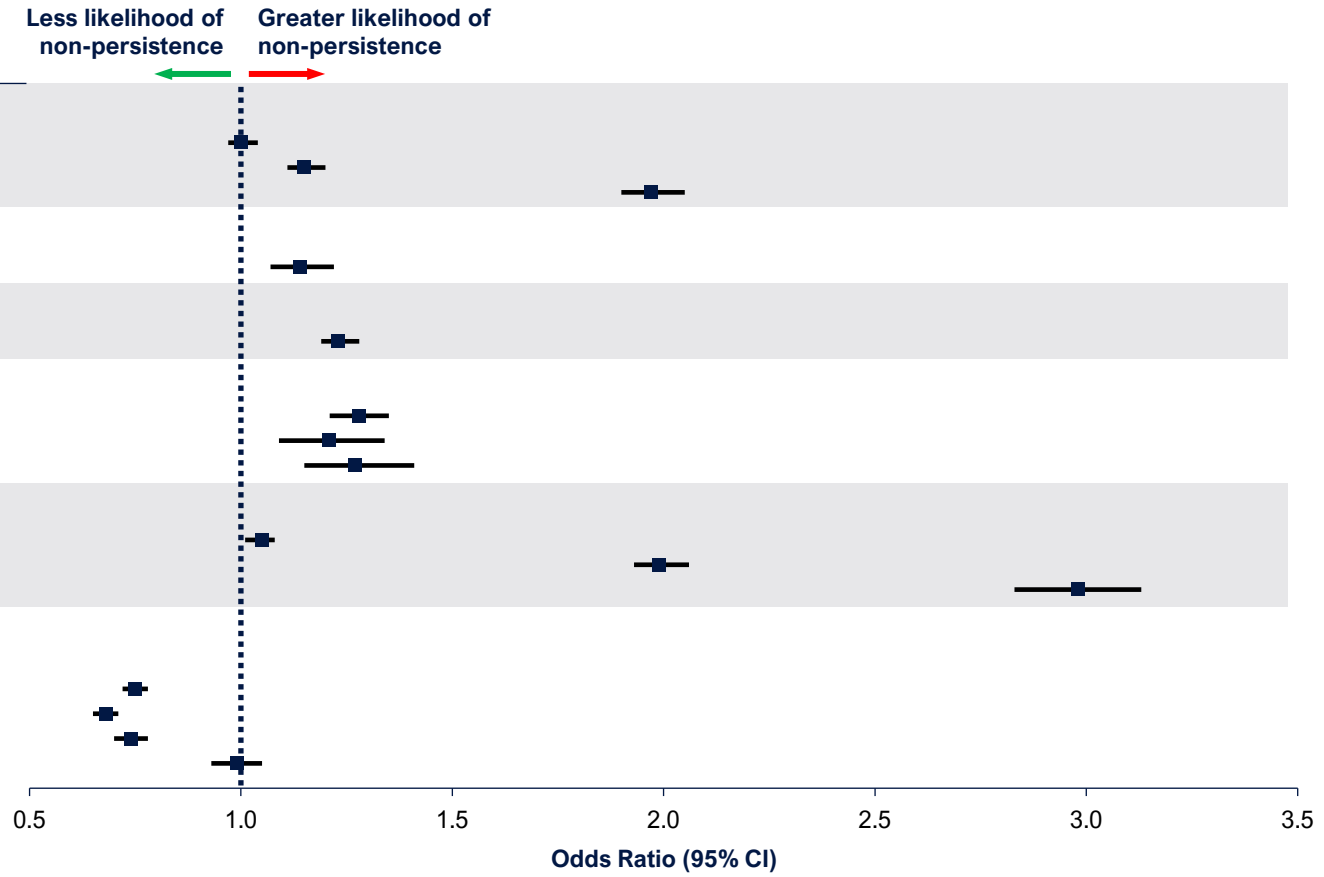
Early Vision Gains Followed by Long-Term Decline Across Entire Cohort
-2.1 and -8.0 letter loss from baseline in persistent and non-persistent eyes at Year 7, respectively

Sample size defined as number of eyes.
Abbreviations: VEGF, vascular endothelial growth factor; BCVA, best-corrected visual acuity; ETDRS, Early Treatment Diabetic Retinopathy Study

Factors Associated with Treatment Non-Persistence within the First Year

- Poor baseline VA, atrophy or fibrosis at baseline, delayed treatment initiation >30 days, and high treatment frequency in follow-up were associated with greater likelihood of anti-VEGF treatment non-persistence
- Moderate VA gains or losses from previous injection were associated with less likelihood of non-persistence

Variable	OR (95% CI)
Baseline visual acuity, ETDRS letters	
≥70	Reference
55-69	1.00 (0.97, 1.04)
35-54	1.15 (1.11, 1.20)
<35	1.97 (1.90, 2.05)
Baseline atrophy*	
No	Reference
Yes	1.14 (1.07, 1.22)
Baseline fibrosis†	
No	Reference
Yes	1.23 (1.19, 1.28)
Time from diagnosis to first treatment	
0-30 days	Reference
31-180 days	1.28 (1.21, 1.35)
181-365 days	1.21 (1.09, 1.34)
366-730 days	1.27 (1.15, 1.41)
Latest treatment interval in follow-up	
>56 days	Reference
43-56 days	1.05 (1.01, 1.08)
29-42 days	1.99 (1.93, 2.06)
≤28 days	2.98 (2.85, 3.13)
Change in visual acuity at follow-up from previous injection	
≥5 letter gain	Reference
1-4 letter gain	0.75 (0.72, 0.78)
1-5 letter loss	0.68 (0.65, 0.71)
6-10 letter loss	0.74 (0.70, 0.78)
>10 letter loss	0.99 (0.93, 1.05)

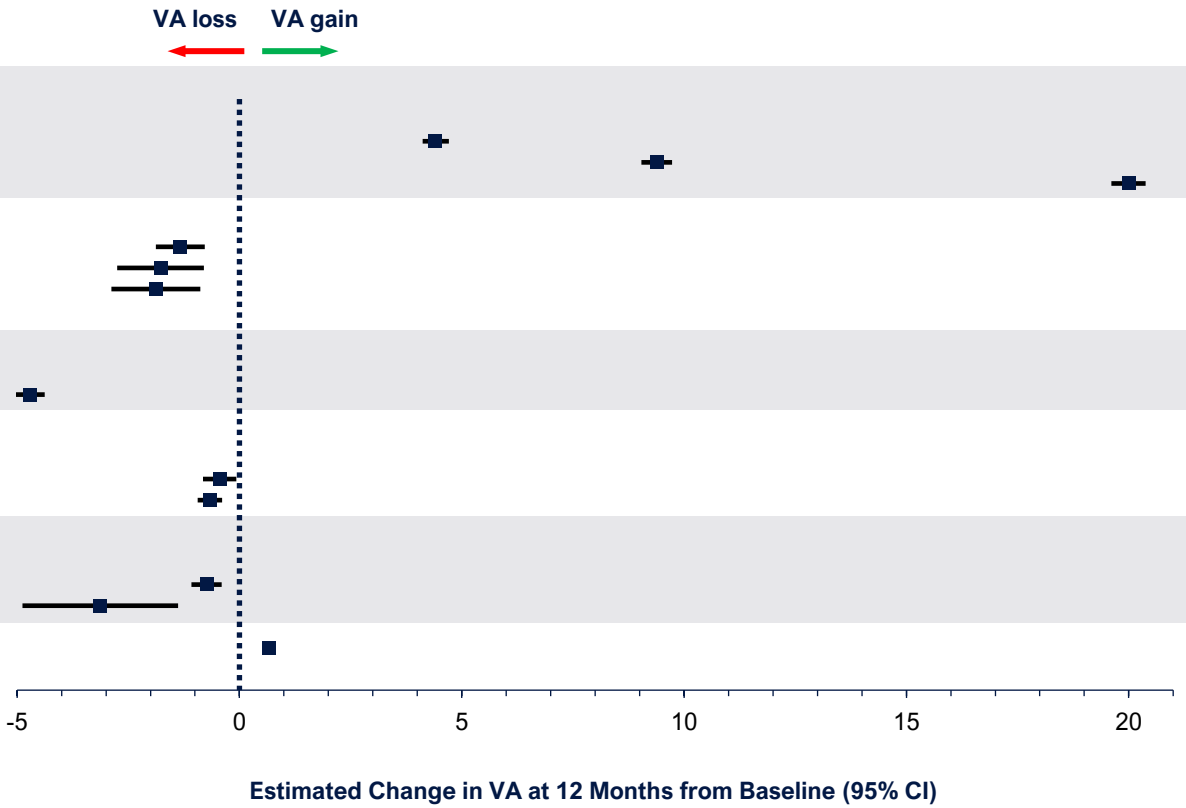


Multivariate logistic regression models to understand factors associated with anti-VEGF treatment discontinuation.
* Presence of atrophy was identified using relevant ICD 10 codes available in the diagnoses field or by analyzing texts available in the exam findings field.
† Presence of fibrosis was identified by analyzing text available in the exam findings field.
Abbreviations: VEGF, vascular endothelial growth factor; VA, visual acuity; BCVA, best-corrected visual acuity; ETDRS, Early Treatment Diabetic Retinopathy Study; OR, odds ratio; CI, confidence interval

Factors Associated with Vision Outcomes at Year 1

- Worse baseline VA was associated with higher VA gain
- Delayed treatment initiation >30 days and presence of fibrosis in the study eye were associated with decreased VA gain
- nAMD or GA in the fellow eye were associated with decreased VA gain
- Increased number of injections was associated with higher VA gains

Variable	VA Change, ETDRS (95% CI)
Baseline visual acuity, ETDRS letters	
≥70	Reference
55-69	4.41 (4.12, 4.71)
35-54	9.39 (9.04, 9.73)
<35	20.0 (19.61, 20.38)
Time from nAMD diagnosis to first treatment	
0-30 days	Reference
31-180 days	-1.33 (-1.88, -0.78)
181-365 days	-1.77 (-2.74, -0.79)
366-730 days	-1.88 (-2.88, -0.88)
Fibrosis during treatment	
No	Reference
Yes	-4.71 (-5.04, -4.38)
Fellow eye nAMD during treatment	
No	Reference
Present - untreated	-0.44 (-0.82, -0.07)
Present - treated	-0.66 (-0.94, -0.39)
Fellow eye GA during treatment	
No	Reference
Present - untreated	-0.74 (-1.08, -0.40)
Present - treated	-3.13 (-4.88, -1.38)
Total injections received	



Multivariate linear regression models to understand factors associated with VA gain.
*Presence of fibrosis was identified by analyzing text available in the exam findings field.
Abbreviations: VA, visual acuity; GA, geographic atrophy; nAMD, neovascular age-related macular degeneration; ETDRS, Early Treatment Diabetic Retinopathy Study; CI, confidence interval

Real-World Attrition and Treatment Gaps Drive Long-Term Vision Loss in nAMD

- Largest drop in anti-VEGF treatment adherence occurring by Year 1 with ~40% attrition
- Declining injection frequency over time is associated with reduced durability of early vision gains long-term
- Delayed treatment initiation was associated with poorer vision outcomes and greater likelihood of non-persistence
- Baseline worse vision, fibrosis and atrophy, and a more frequent treatment interval at the latest follow-up associated with anti-VEGF non-persistence

Suboptimal long-term nAMD vision outcomes driven by poor real-world anti-VEGF adherence emphasizes the urgent need for longer-lasting, more durable therapies.

Abbreviations: nAMD, neovascular age-related macular degeneration; VEGF, vascular endothelial growth factor