Real-World Treatment Outcomes With Anti-VEGF Therapy in Patients With Retinal Vein Occlusion in the UK

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Disclosures

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- PA: Employee: Roche Products Ltd.
- IS: Employee: F. Hoffmann-La Roche Ltd.
- LPP, GCC: Employee: Genentech, Inc.

Study and Product Disclosures

- This study was a noninterventional, retrospective, secondary data use study, leveraging data from Medisoft electronic health records. The study was considered exempt from institutional review board review as the research involved only the collection of existing data, which had been de-identified and are unable to be traced
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Treatment Patterns May Contribute to Outcomes in Patients With RVO

Suboptimal vision outcomes in **clinical practice** with **standard-of-care anti-VEGF injections** in RVO may, in part, **reflect fewer injections** received in clinical practice[1-3]

There are also **limited data** on **long-term outcomes** up to 5 years of treatment of RVO

What are the anti–VEGF treatment patterns and long-term visual acuity outcomes in patients with macular edema secondary to RVO?

Real-world outcomes in patients being treated in routine clinical practice in the UK

Study Design: Retrospective Observational Study

- **Medisoft electronic health record** data from **2013 to 2023**
- Contributed by **16 UK National Health Service trusts**

Study Eyes: Inclusion Criteria

- ✓ **Macular edema secondary** to **BRVO**, **CRVO**, or **HRVO**
- ✓ **Treatment naïve** to **anti-VEGFs**, **intravitreal steroids**, **vitrectomy**, **laser therapy**
- ✓ **≥ 1 intravitreal anti-VEGF injection** on or after diagnosis
- ✓ **VA** measured at **index injection**
- ✓ **≥ 3 months follow-up** after **index injection**

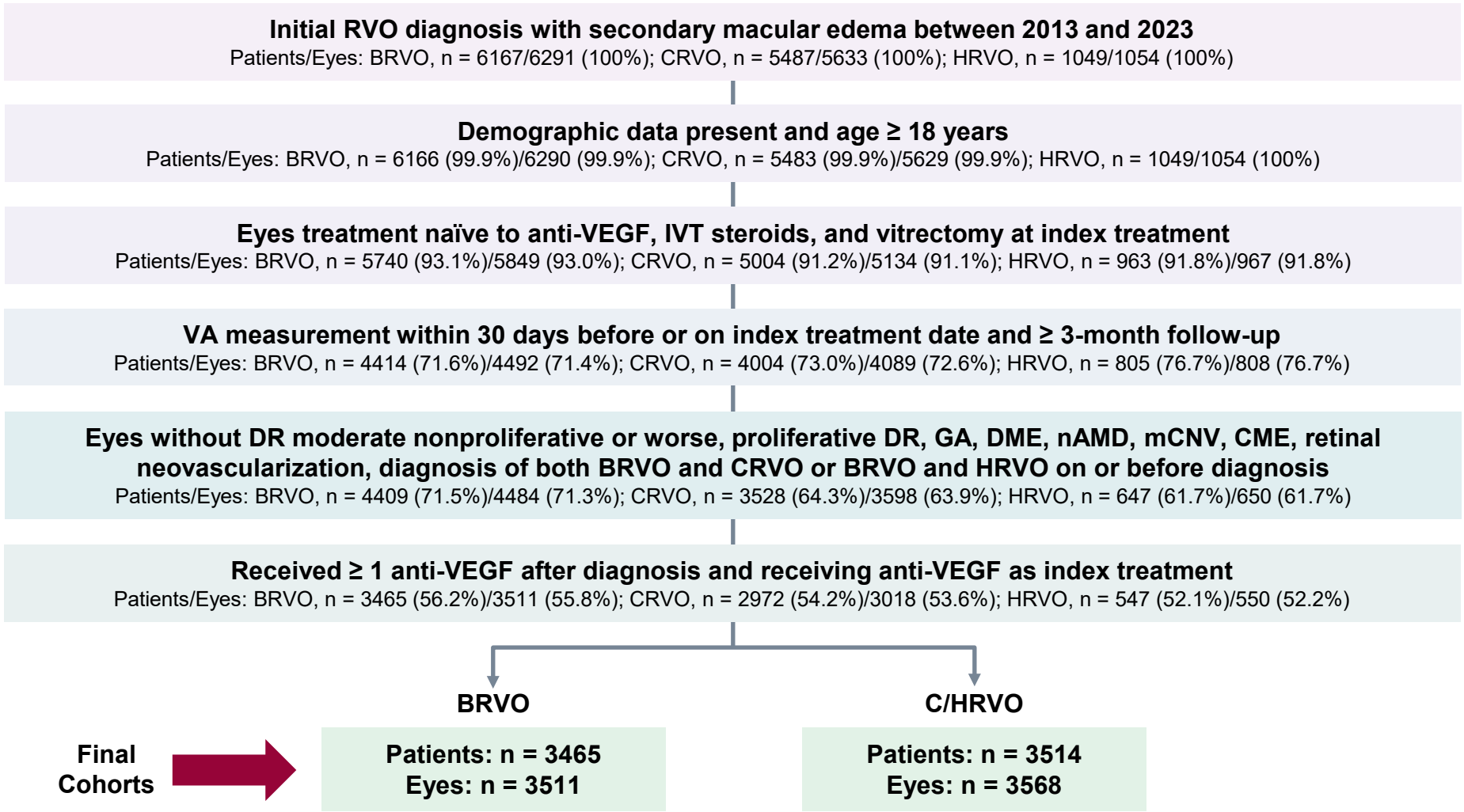
Data Analyses

- **Observation period: Up to 60 months** after index injection
- **Treatment patterns** and **VA** outcomes were **evaluated descriptively**
- **CRVO** and **HRVO** eyes were **analyzed together**

BRVO, branch retinal vein occlusion; CRVO, central retinal vein occlusion; HRVO, hemiretinal vein occlusion; RVO, retinal vein occlusion; VA, visual acuity; VEGF, vascular endothelial growth factor.

1. Flaxel CJ et al. *Ophthalmology.* 2020;127(2):288-320. 2. Nicholson L et al. *Eye.* 2022;36(5):909-912. 3. Ciulla T et al. *Br J Ophthalmol.* 2021;105(12):1696-1704.

BRVO and C/HRVO Final Cohorts



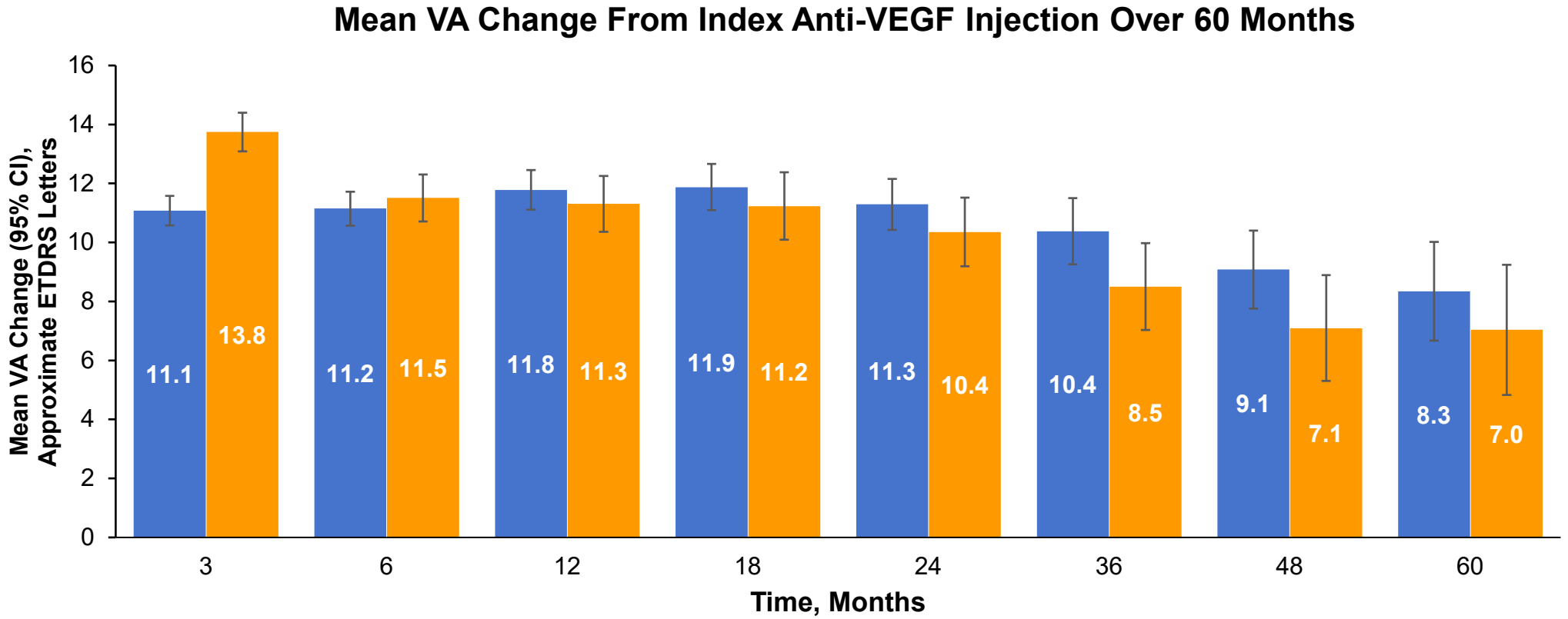
BRVO, branch retinal vein occlusion; CME, cystoid macular edema; CRVO, central retinal vein occlusion; C/HRVO, central/hemiretinal vein occlusion; DME, diabetic macular edema; DR, diabetic retinopathy; GA, geographic atrophy; HRVO, hemiretinal vein occlusion; IVT, intravitreal; mCNV, myopic choroidal neovascularization; nAMD, neovascular age-related macular edema; RVO, retinal vein occlusion; VA, visual acuity; VEGF, vascular endothelial growth factor.

Baseline Demographics and Clinical Characteristics

Baseline Characteristics (Patient-Level)	BRVO, n = 3465	C/HRVO, n = 3514
Age at index date, mean years (SD)	71.5 (12.2)	73.6 (12.4)
Sex, n (%)		
Female	1852 (53.5)	1671 (47.6)
Race, n (%)		
White	2846 (82.1)	2979 (84.8)
Asian	89 (2.6)	75 (2.1)
Black	20 (0.6)	27 (0.8)
Other/Mixed	27 (0.8)	26 (0.7)
Not stated	483 (13.9)	407 (11.6)
IMD decile, n (%)		
1–4	1080 (31.2)	1184 (33.7)
5–10	2367 (68.3)	2306 (65.6)
Not stated	18 (0.5)	24 (0.7)
Eye Characteristics (Eye-Level)	**BRVO, n = 3511**	**C/HRVO, n = 3568**
Phakic lens status, n (%)	2619 (74.6)	2752 (77.1)
Duration since diagnosis at index treatment, days (SD)	27.3 (110.8)	24.9 (116.8)
VA at index treatment (analysis groups), n (%)		
≤ 35 ETDRS letter score	564 (16.1)	1494 (41.9)
≥ 70 ETDRS letter score	908 (25.9)	412 (11.6)
≥ 85 ETDRS letter score	61 (1.7)	22 (0.6)

IMD decile of 1 reflects most deprived, 10 reflects least deprived.
BRVO, branch retinal vein occlusion; C/HRVO, central/hemiretinal vein occlusion; ETDRS, Early Treatment Diabetic Retinopathy Study; IMD, index of multiple deprivation; SD, standard deviation; VA, visual acuity.

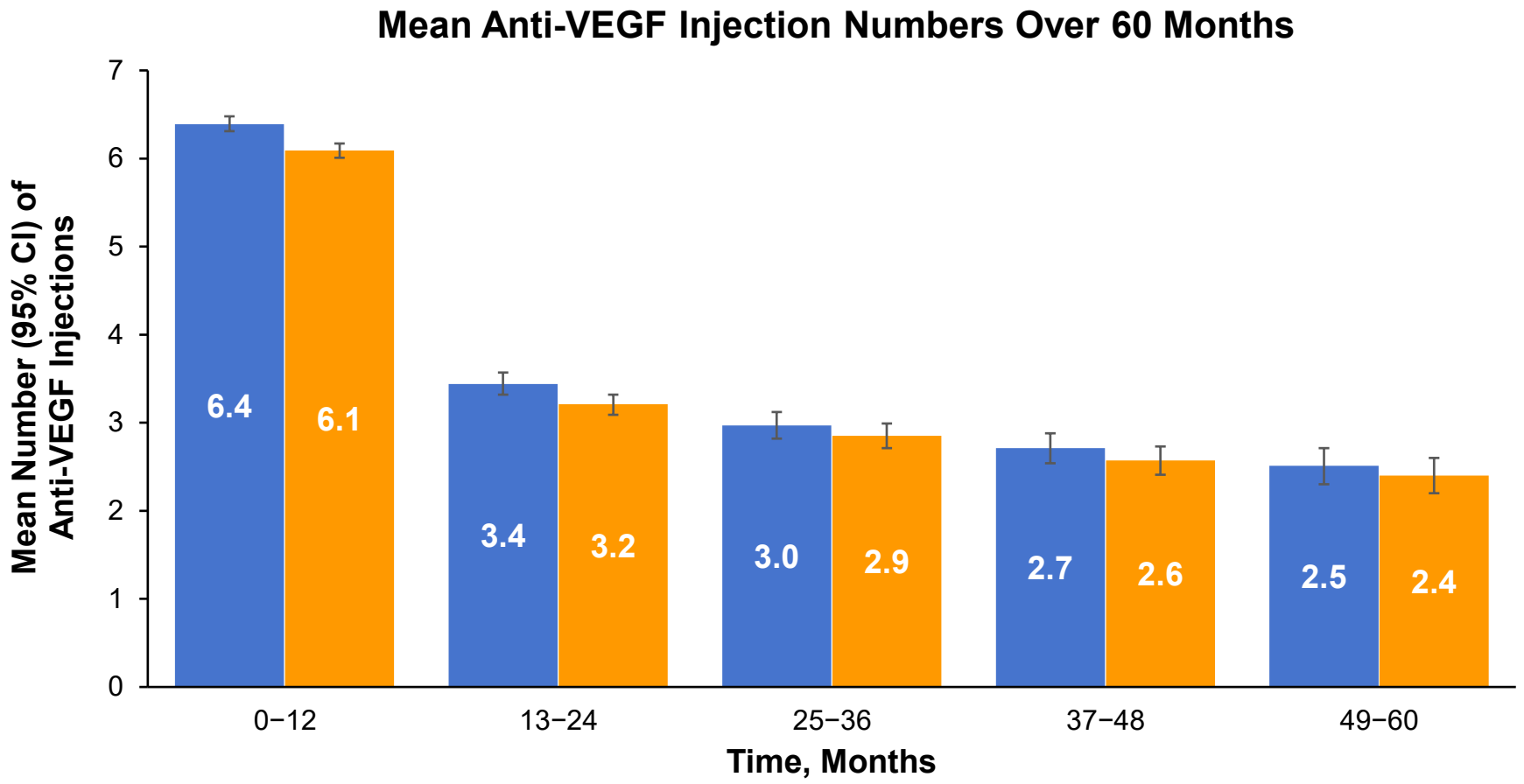
On Average, VA Gains Were Observed After Index Anti-VEGF Injection in BRVO and C/HRVO Eyes; VA Gains Were Lower With Longer Follow-Up



BRVO	n	3052	2642	2137	1723	1654	1058	769	497
	Baseline VA	55.4	55.8	56.1	56.4	56.4	56.9	58.0	58.0
C/HRVO	n	3127	2587	2091	1642	1651	1065	734	498
	Baseline VA	39.7	40.2	40.9	41.5	41.5	42.6	43.7	43.8

VA measurements were collected within ± 30 (up to 18 months) or ± 60 (from 24 to 60 months) days from date of interest to increase likelihood of collecting a measurement for each eye. The reading closest to the date of interest was used in eyes with 2 readings within the buffer window. BRVO, branch retinal vein occlusion; C/HRVO, central/hemiretinal vein occlusion; CI, confidence interval; ETDRS, Early Treatment Diabetic Retinopathy Study; VA, visual acuity; VEGF, vascular endothelial growth factor.

Number of Anti-VEGF Injections Was Highest in the First Year and Lower in Years 2–5 in BRVO and C/HRVO Eyes

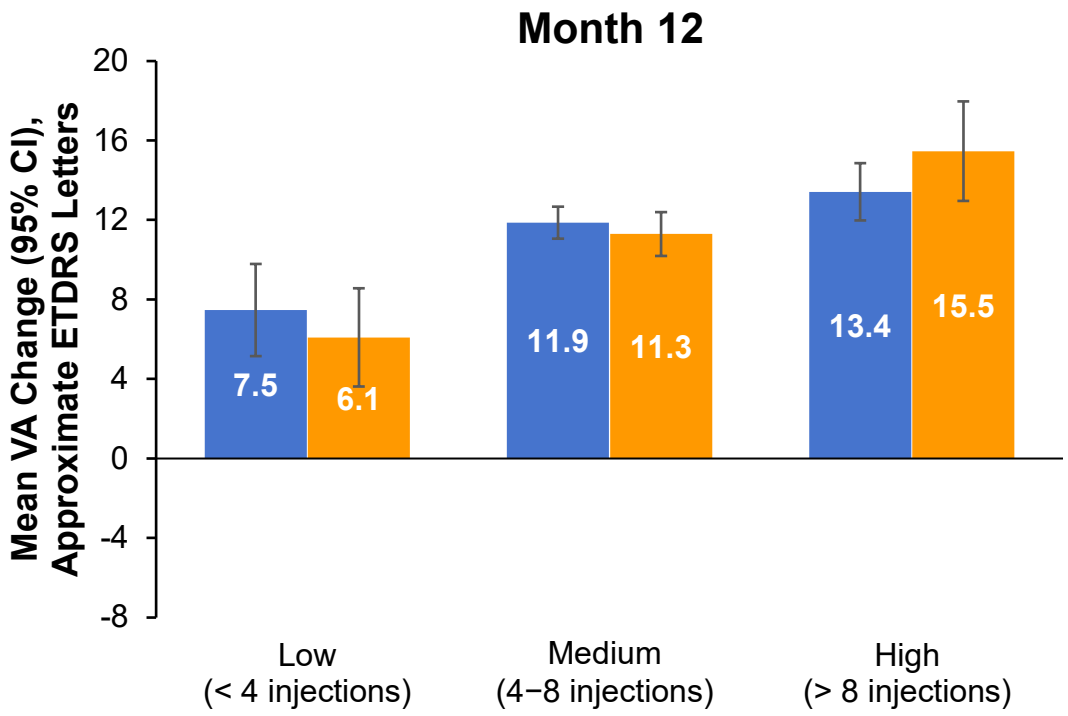


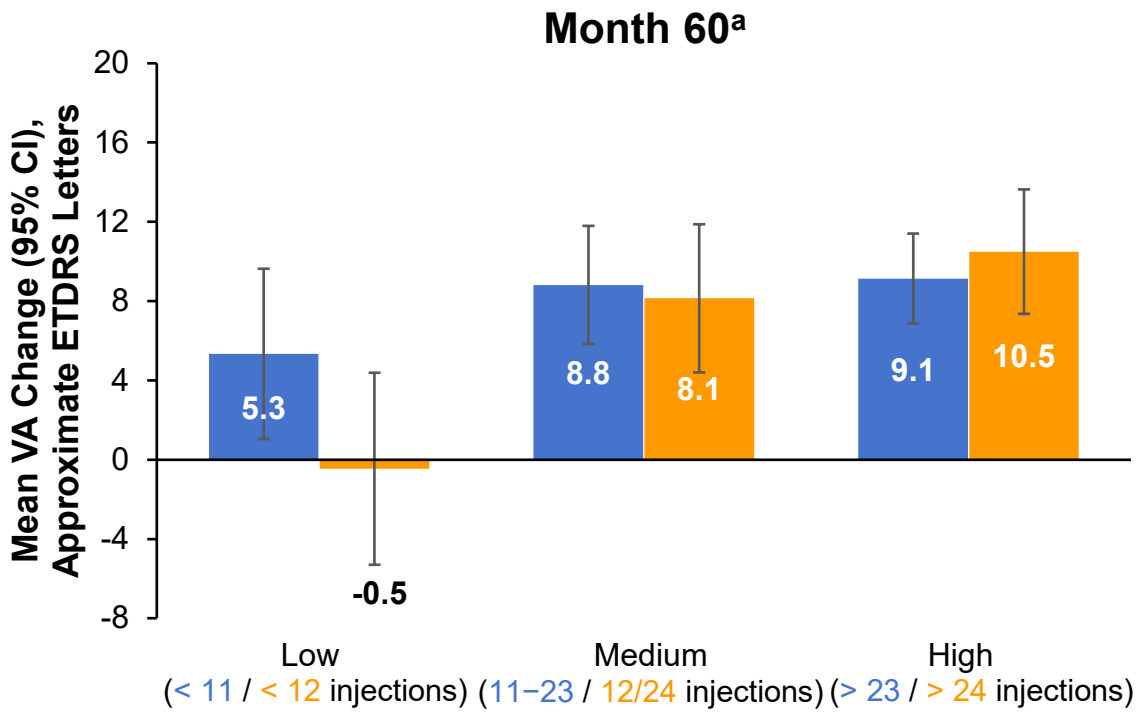
BRVO	n	2856	2007	1369	1012	673
C/HRVO	n	2879	2055	1420	993	679

BRVO, branch retinal vein occlusion; C/HRVO, central/hemiretinal vein occlusion; CI, confidence interval; VEGF, vascular endothelial growth factor.

VA Change From Index Injection to Months 12 and 60 Was Lower in BRVO and C/HRVO Eyes With Low vs High Injection Numbers

Mean VA Change From Index Anti-VEGF Injection Over 60 Months





BRVO	n	202	1474	461
C/HRVO	n	237	1553	301

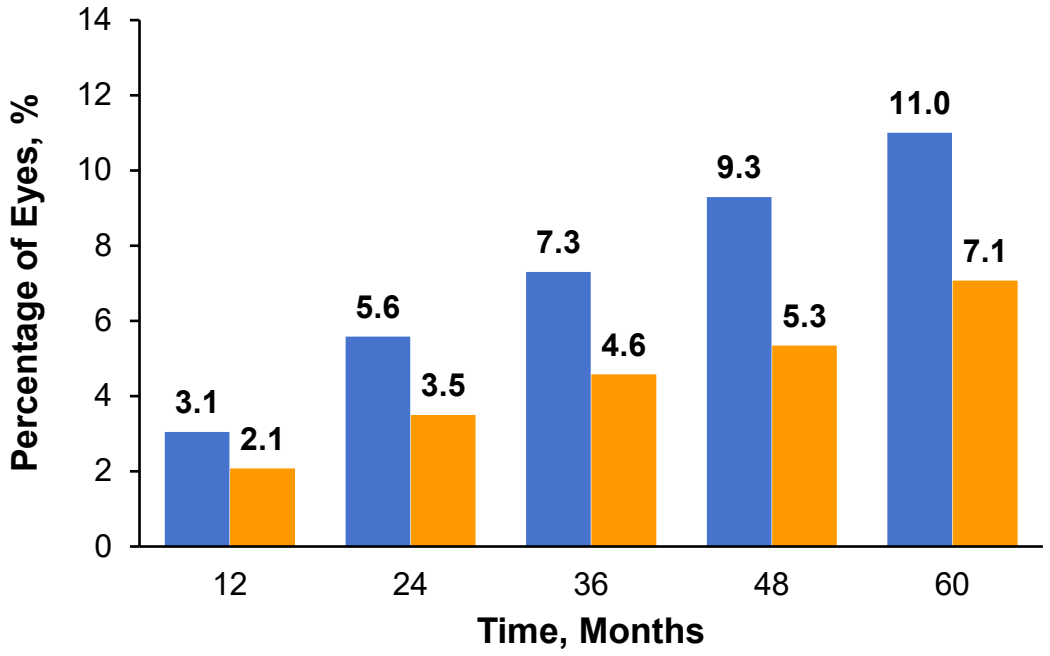
BRVO	n	90	167	240
C/HRVO	n	117	187	194

[a] Injection number cut-offs were different between BRVO (low: < 11; median: 11–13; high: > 23) and C/HRVO (low: < 12; median: 12–24; high: > 24).
VA measurements were collected within ± 30 (up to 18 months) or ± 60 (from 24 to 60 months) days from date of interest to increase likelihood of collecting a measurement for each eye. The reading closest to the date of interest was used in eyes with 2 readings within the buffer window. Categories for injection counts over 60 months are based on tertiles. BRVO, branch retinal vein occlusion; C/HRVO, central/hemiretinal vein occlusion; CI, confidence interval; ETDRS, Early Treatment Diabetic Retinopathy Study; VA, visual acuity; VEGF, vascular endothelial growth factor.

Intravitreal Steroids and Macular Laser Treatments Were More Common Among BRVO and C/HRVO Eyes With Longer Follow-Up

Percentage of Eyes Receiving Treatment Over 60 Months

Intravitreal Steroids



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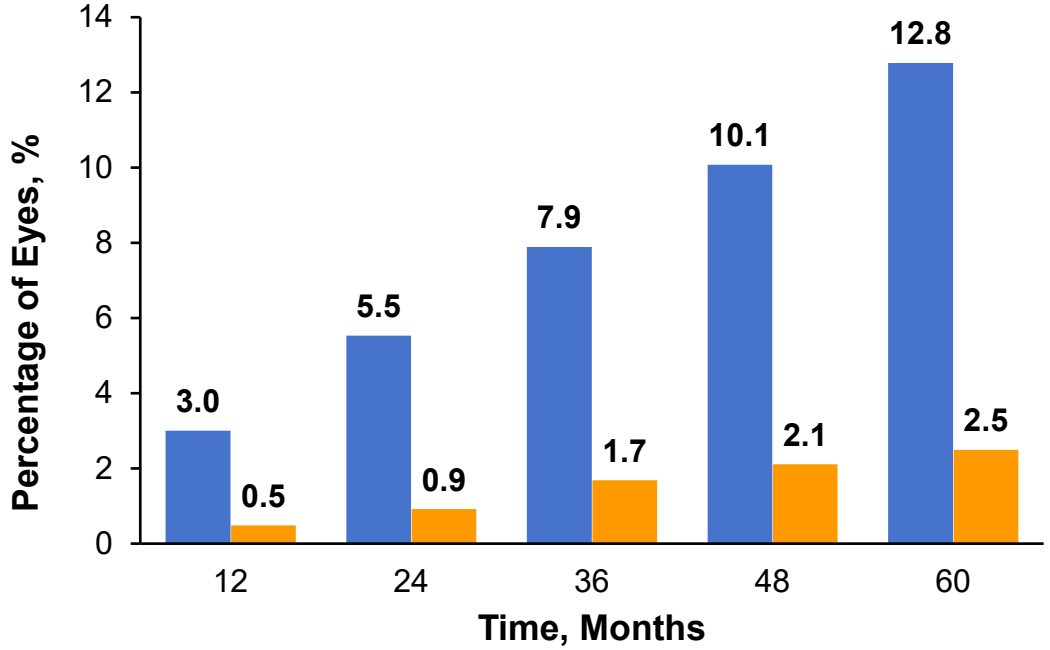
Macular Laser



BRVO	n	2856	2007	1369	1012	673
C/HRVO	n	2879	2055	1420	993	679

BRVO, branch retinal vein occlusion; C/HRVO, central/hemiretinal vein occlusion.

Conclusions

These data from the United Kingdom over **60 months** show that, on average, **anti-VEGF injections improve vision** in eyes with macular edema secondary to **RVO**, but eyes may require **long-term treatment** to **maintain baseline** or **any improvement** in **vision**

With **longer follow-up**:

- **VA gains** and the average number of **anti-VEGF injections** were **lower**
- **Intravitreal steroid** and **macular laser** use were **higher**

Greater vision improvements were observed among eyes with a **high vs low number of injections**

Study Limitations

- **Limited generalizability** beyond the United Kingdom
- **Missing data** (eg, due to loss to follow-up)
- **Anatomic outcomes** were not available for assessment

Study Strengths

In contrast to highly selected clinical trial participants, this analysis reflects the **long-term visual outcomes** of **heterogeneous real-world RVO patients** treated with **anti-VEGF therapy**

These data highlight a need for more durable treatments and long-term monitoring to maintain vision in eyes with RVO

RVO, retinal vein occlusion; VA, visual acuity; VEGF, vascular endothelial growth factor.