Time to Treatment Initiation and Vision Outcomes in Treatment-naive Eyes with Macular Edema Following Central Retinal Vein Occlusion Treated With Anti-VEGF Therapy in United States Clinical Practice

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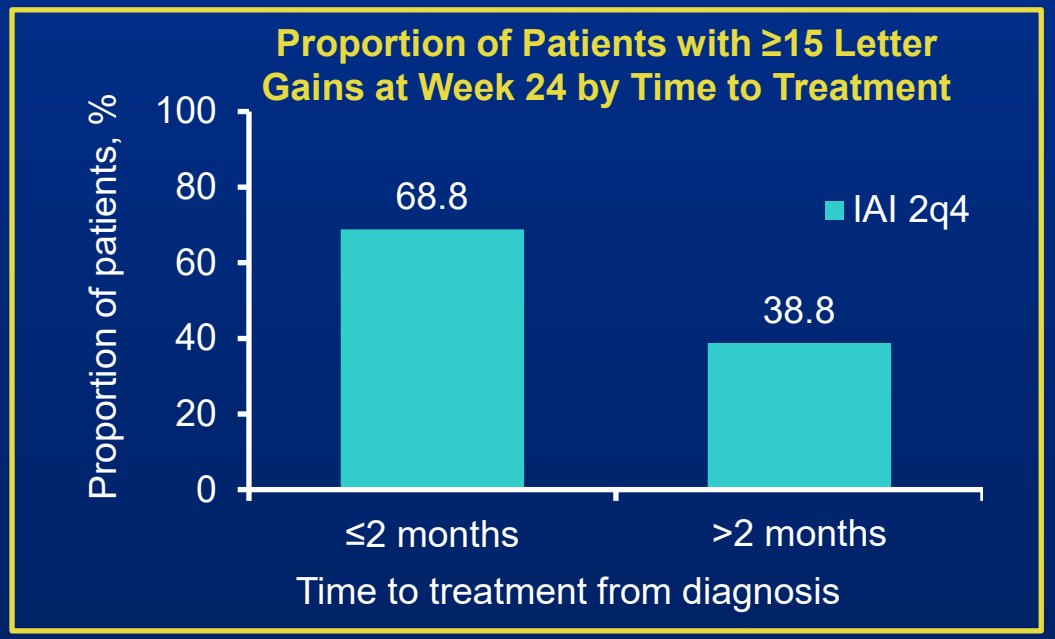
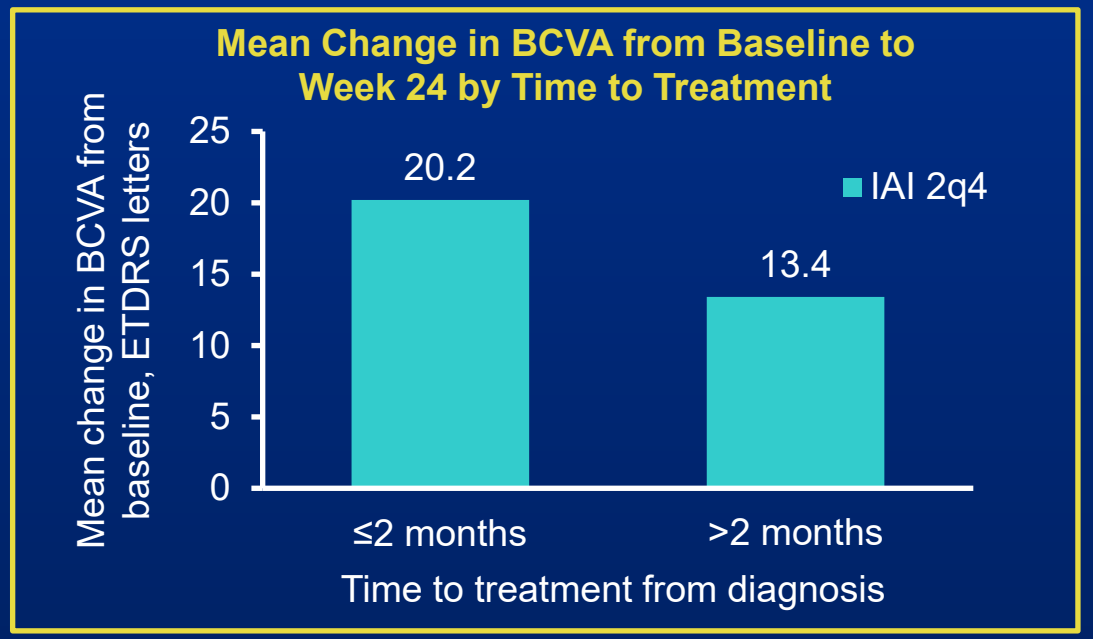
Background

- Macular edema following RVO (MEfRVO) is a major cause of vision loss[1,2]
- Analyses from randomized clinical trials showed that delayed initiation of anti-VEGF treatment negatively impacted vision outcomes in patients with MEfRVO[3-6]
  - A subgroup analysis from COPERNICUS indicated that delays of ≥2 months in treatment initiation can substantially worsen visual outcomes[3]





1. Song P et al. *J Glob Health*. 2019;9:010427. 2. Agata C et al. *Sci Rep*. 2024;14:16974. 3. Boyer D et al. *Ophthalmology*. 2012;119:1024-1032. 4. Korobelnik JF et al. *Ophthalmology*. 2014;121:202-208. 5. Heier JS et al. *Ophthalmology*. 2014;121:1414-1420. 6. Ogura Y et al. *Am J Ophthalmol*. 2014;158(5):1032-1038.

BCVA, best-corrected visual acuity; ETDRS, Early Treatment Diabetic Retinopathy Study; IAI, intravitreal aflibercept injection; RVO, retinal vein occlusion; VEGF, vascular endothelial growth factor.

Purpose

- While these studies emphasize the importance of early treatment initiation, larger, long-term, real-world CRVO cohorts are needed to understand treatment patterns and the relationship between timing of treatment and visual outcomes in routine clinical practice

This study aimed to characterize real-world treatment patterns and visual outcomes associated with timing of initiation of intravitreal anti-VEGF therapy in macular edema following CRVO (MEfCRVO) across US retina practices using the Vestrum database

CRVO, central retinal vein occlusion

Study Design

Eyes with CRVO in the Vestrum database

n=24,596

Eligibility criteria

- Initial treatment with anti-VEGF, between October 1, 2016, and March 31, 2022 (index date[a])
- Age ≥18 years at the index date[a]
- Evidence of CRVO during the year prior to or at the index date[a]
- Evidence of macular edema at or following CRVO diagnosis[b]
- No diagnosis of DME, AMD, or RAO at any point on or prior to the index date
- No diagnosis of severe cataracts at or within 1 year prior to the index date
- **≥12 months follow-up history post index date**

Eligible eyes[c] with MEfCRVO

n=9837

Stratification by time to treatment initiation

At diagnosis	n=6737
Day 1-14	n=1842
Day 15-30	n=558
>30 days	n=700

Main outcome

Mean VA up to 60 months

[a]Index date was defined as the date of initial anti-VEGF treatment. [b]Occurring on or between CRVO diagnosis and the index date, up to 365 days prior to the index date. [c]In patients with bilateral CRVO, 1 eye was randomly selected for inclusion in the analysis.

AMD, age-related macular degeneration; DME, diabetic macular edema; VA, visual acuity; RAO, retinal artery occlusion.

Baseline Characteristics by Time to Treatment of MEfCRVO

	At diagnosis	Day 1-14	Day 15-30	>30 days	Overall
Number of eyes, n (%)	6737 (68)	1842 (19)	558 (6)	700 (7)	9837 (100)
Age, mean (SD), years	72.3 (12.3)	69.1 (13.4)	69 (14.2)	72.1 (12)	71.5 (12.7)
Male, n (%)	3264 (48)	934 (51)	293 (53)	345 (49)	4836 (49)
Insurance type, n (%)					
Private	2354 (35)	872 (47)	267 (48)	272 (39)	3765 (38)
Medicare	619 (9)	97 (5)	20 (4)	64 (9)	800 (8)
Medicare Part B	2105 (31)	454 (25)	132 (24)	208 (30)	2899 (29)
Medicare Advantage	1108 (16)	304 (17)	101 (18)	110 (16)	1623 (16)
Other	551 (8)	115 (6)	38 (7)	46 (7)	750 (8)
VA, mean (SD) at index date,[a] ETDRS letters	41.7 (27.6)	40.8 (27.2)	42.6 (28.2)	49.4 (26.6)	42.1 (27.6)

Baseline characteristics were mostly balanced, but mean VA at Index Date[a] (Treatment Date) was higher in groups with delayed treatment initiation

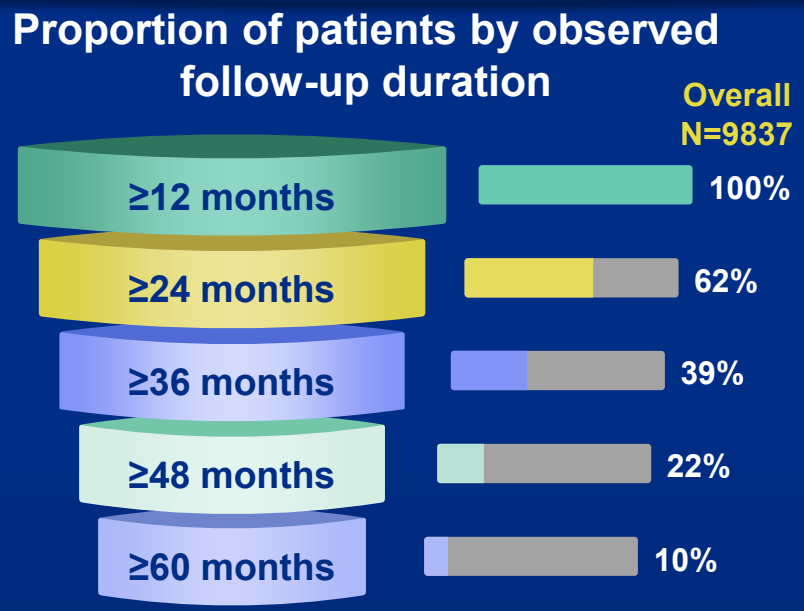
[a]Index date was defined as the date of initial anti-VEGF treatment. VA reported for the subset with VA at diagnosis and on treatment.
SD, standard deviation.

Anti-VEGF Treatment Patterns by Time to Treatment of MEfCRVO

	At diagnosis (n=6737)	Day 1-14 (n=1842)	Day 15-30 (n=558)	>30 days (n=700)	Overall (N=9837)
Time since diagnosis to index date,[a] mean (SD), days	0	8.5 (3.9)	22 (4.6)	106.9 (85.9)	10.4 (35.7)
Number of visits from diagnosis to pre-index date,[a] mean (SD)	0	1 (0.1)	1.1 (0.4)	2.2 (2.1)	0.4 (0.9)
Number of visits during 1-year follow-up from index date,[a,b], mean (SD)	8.3 (2.7)	9 (2.9)	8.7 (3)	8.1 (3)	8.4 (2.8)
Number of anti-VEGF Injections in Year 1, mean (SD)[c]	6.3 (2.4)	6.5 (2.5)	6.2 (2.6)	5.9 (2.4)	6.3 (2.5)
Time between injections in Year 1, mean (SD), days[c]	46 (24.7)	44 (24.2)	45 (24.8)	50 (28.3)	46 (24.9)
Number of injections in Year 2, mean (SD)[d]	5.2 (2.4)	5.3 (2.4)	5.4 (2.6)	5.1 (2.5)	5.3 (2.4)
Time between injections in Year 2, mean (SD), days[d]	60 (40.8)	59 (38.2)	58 (46.7)	63 (51.1)	60 (41.42)

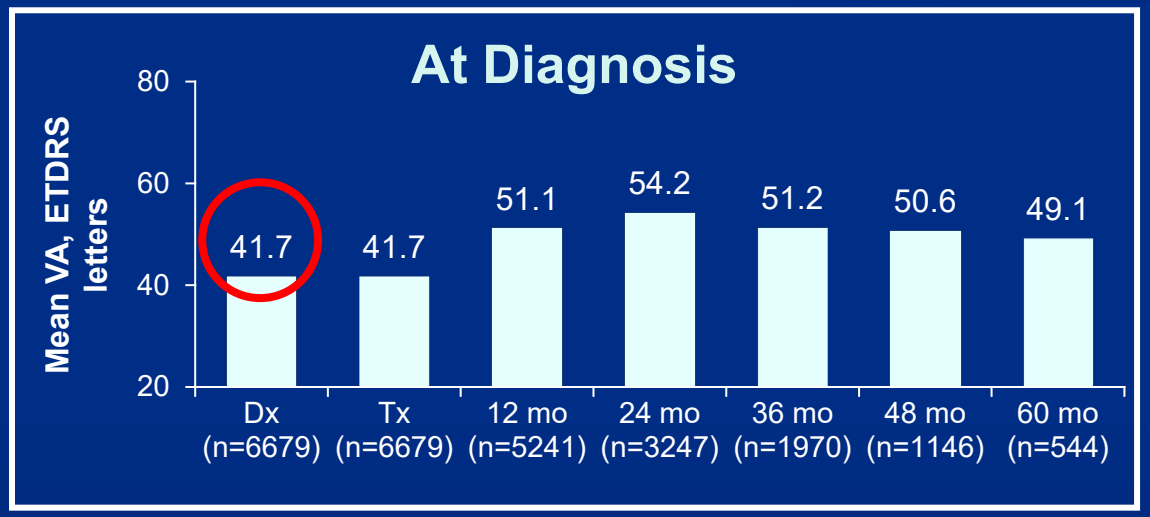
[a]Index date defined as date of initial anti-VEGF treatment. [b]Follow-up time includes index date. [c]Reported for a subset of patients who received at least 2 injections in Year 1.
[d]Reported for a subset of patients who received at least 2 injections in Year 2.

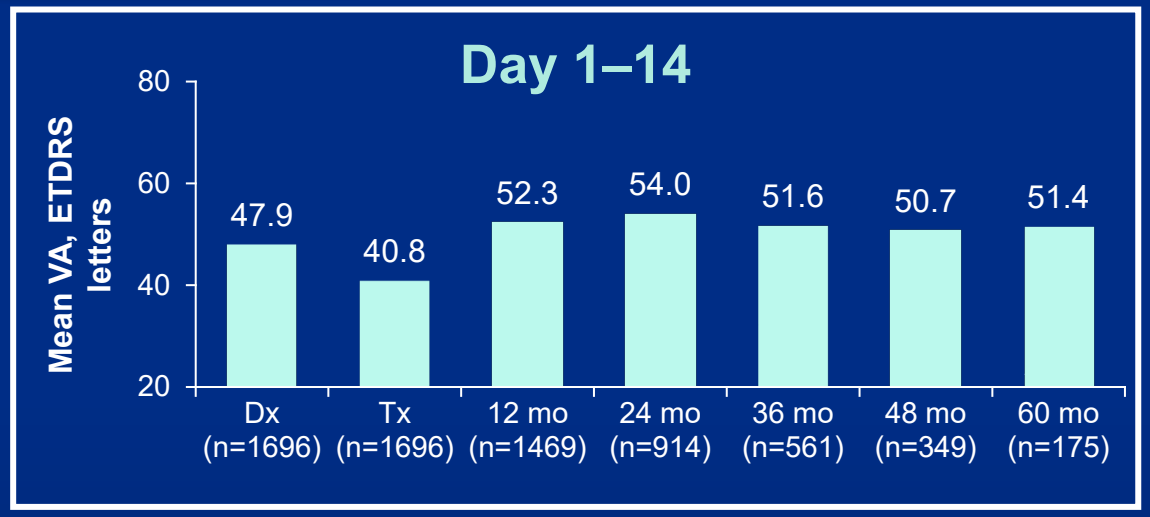
Duration of Follow-Up by Time to Treatment Initiation

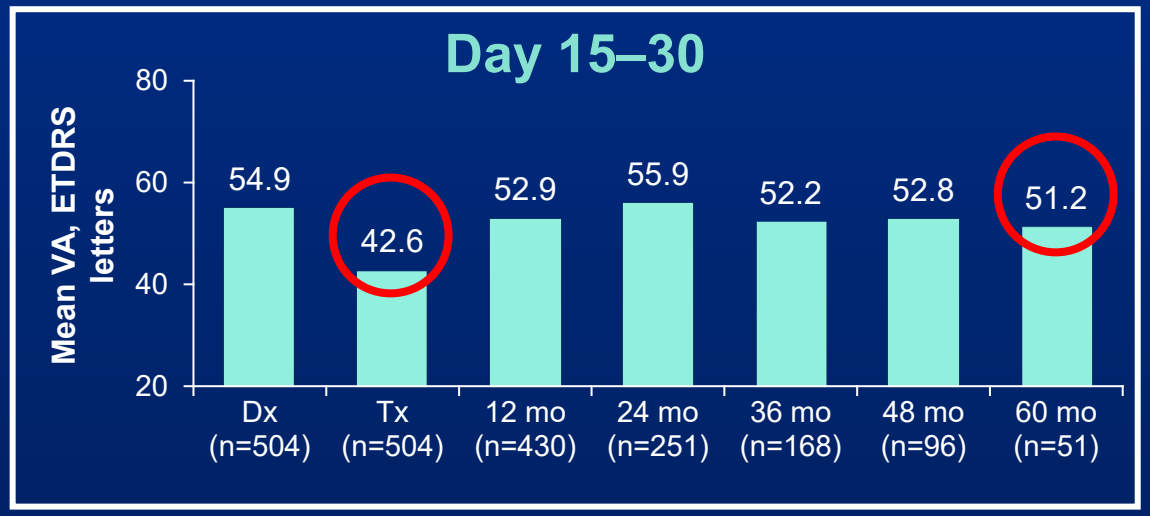


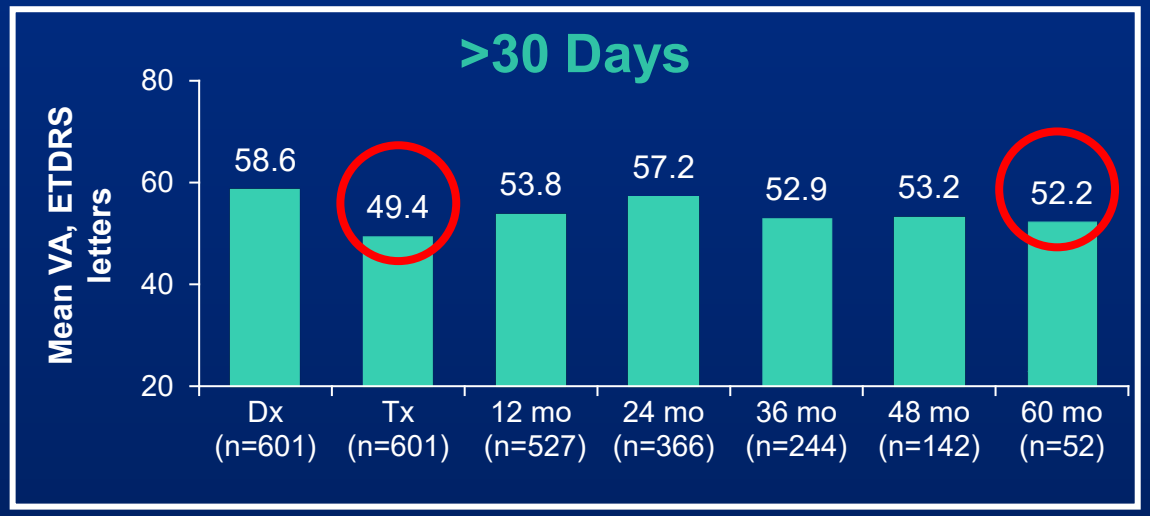
Time to treatment	At Diagnosis n=6737	Day 1–14 n=1842	Day 15–30 n=558	>30 days n=700
Duration of follow-up: ≥12 months	100%	100%	100%	100%
≥24 months	61%	63%	60%	65%
≥36 months	38%	41%	39%	43%
≥48 months	21%	24%	22%	25%
≥60 months	10%	11%	11%	9%

Mean VA Up to 60-month Follow-Up by Time to Treatment Initiation









Analysis included eyes with values at baseline (index treatment date) and Months 6, 12, 18, and 24.
Dx, diagnosis; mo, months; Tx, treatment initiation.

Limitations

- The study was limited to patients from the Vestrum Health database, which includes patients from multiple **retina practices** in the US; findings may not be applicable at other clinical settings in the US or globally
- Detailed data (e.g., treatment history) may not be captured as part of the Vestrum Health database
- Routine clinical assessment for VA was used in the absence of BCVA
- There might be loss to follow-up over time, which may limit the generalizability of the findings

Conclusions

- In this retrospective analysis of the Vestrum Health database, **delaying treatment initiation** following diagnosis of MEfCRVO by ≥15 days had an **adverse effect on vision** outcomes

- These data underscore the importance of **prompt intervention**, as even minimal deferral of 1-14 days may limit achievable visual potential

- Observation may be sufficient for some eyes with very early CRVO and good visual acuity; however, the index analysis supports **early treatment initiation**