Impact of Baseline Best-corrected Visual Acuity on Visual and Anatomic Outcomes Among Patients With Retinal Vein Occlusion: Post Hoc Analysis of the Phase 3 QUASAR Trial

Sumit Sharma, MD, on behalf of the *QUASAR* study investigators

Cole Eye Institute, Cleveland Clinic Foundation, Cleveland, Ohio

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Background and Objective

- In the QUASAR trial, patients treated with aflibercept 8 mg achieved noninferior BCVA gains and comparable reductions in CRT with fewer injections versus aflibercept 2 mg through Week 36, overall and across RVO subtypes (BRVO or CRVO/HRVO)[1]
- Understanding factors that may impact visual and anatomic outcomes can help guide treatment decisions and manage physician and patient expectations

This post hoc analysis evaluated the impact of baseline BCVA on visual and anatomic outcomes in patients with macular edema secondary to BRVO or CRVO/HRVO after treatment with aflibercept 8 mg versus 2 mg in QUASAR

BCVA, best-corrected visual acuity; BRVO, branched retinal vein occlusion; CRT, central retinal thickness; CRVO, central retinal vein occlusion; HRVO, hemiretinal vein occlusion; RVO, retinal vein occlusion.

1. Hariprasad SM. Presented at: American Society of Retina Specialists Annual Meeting; July 30–August 2, 2025; Long Beach, CA.

QUASAR: Study Design

A multicenter, randomized, double-masked, phase 3 study in patients with treatment-naive macular edema secondary to RVO
Randomized at baseline 1 (2q4) : 1 (8q8/3) : 1 (8q8/5)

2q4
Aflibercept 2 mg initiated with 9 monthly injections, followed by T&E[a]
n=301

8q8/3
Aflibercept 8 mg initiated with 3 monthly injections, followed by Q8 and T&E[a]
n=293

8q8/5
Aflibercept 8 mg initiated with 5 monthly injections, followed by Q8 and T&E[a]
n=298

Primary endpoint
Mean change in BCVA (noninferiority)

	Day 1	W4	W8	W12	W16	W20	W24	W28	W32	W36
2q4	X	X	X	X	X	X	X	X	X	T&E
8q8/3	X	X	X	o	X	o[b]	X	o[c]	X	T&E
8q8/5	X	X	X	X	X	o	X	o[c]	X	o[d]

DRM for interval shortening

Dosing interval shortened by 4 weeks beginning at Week 16 for 8q8/3, Week 24 for 8q8/5, or Week 40 for 2q4 if both the following criteria were met at a dosing visit:

- BCVA loss of >5 letters from the reference visit[d], AND
- >50-µm increase in CRT from the reference visit[d]

DRM for interval extension

Dosing interval extended by 4 weeks starting at Week 32 for 8q8/3 and 2q4 and at Week 40 for 8q8/5 if both the following criteria were met at a dosing visit:

- BCVA loss of <5 letters from the reference visit[d], AND
- CRT <320 µm on Heidelberg (or <300 µm on Cirrus or Topcon SD-OCT)

The primary efficacy endpoint was change from baseline in BCVA at Week 36, with a non-inferiority margin of 4 letters. Stippled boxes = initial treatment phase; X = active injection; o = sham injection.
Note: Table does not reflect all dosing options once a patient's dosing interval is shortened. [a]With opportunity for extension per DRM. [b]Active injection for patients meeting DRM criteria at Week 16. [c]Active injection for patients meeting DRM criteria from Week 16 for 8q8/3 or Week 24 for 8q8/5. [d]Reference is Week 12 visit for 8q8/3 and Week 20 visit for 8q8/5 and 2q4 (denoted by green boxes on table).
2q4, aflibercept 2 mg every 4 weeks; 8q8/3, aflibercept 8 mg every 8 weeks after 3 initial injections at 4-week intervals; 8q8/5, aflibercept 8 mg every 8 weeks after 5 initial injections at 4-week intervals; DRM, dose regimen modification; Q8, every 8 weeks; SD-OCT, spectral-domain optical coherence tomography; T&E, treat and extend; W, week.

Methods

- A tertile analysis by baseline BCVA was conducted post hoc to evaluate visual and anatomic outcomes through Week 36 following treatment with aflibercept 8 mg or 2 mg in patients with BRVO or CRVO/HRVO from the QUASAR trial
- Patients were grouped by baseline BCVA as follows:

BRVO

T1: ≤55 ETDRS letters	**T2: >55 to ≤65 ETDRS letters**	**T3: >65 ETDRS letters**

CRVO/HRVO

T1: ≤47 ETDRS letters	**T2: >47 to ≤59 ETDRS letters**	**T3: >59 ETDRS letters**

- Data were summarized descriptively

ETDRS, Early Treatment Diabetic Retinopathy Study; T, tertile.

Visual and Anatomic Outcomes by Baseline BCVA Tertiles in Patients With BRVO

Baseline Demographics and Disease Characteristics by Baseline BCVA

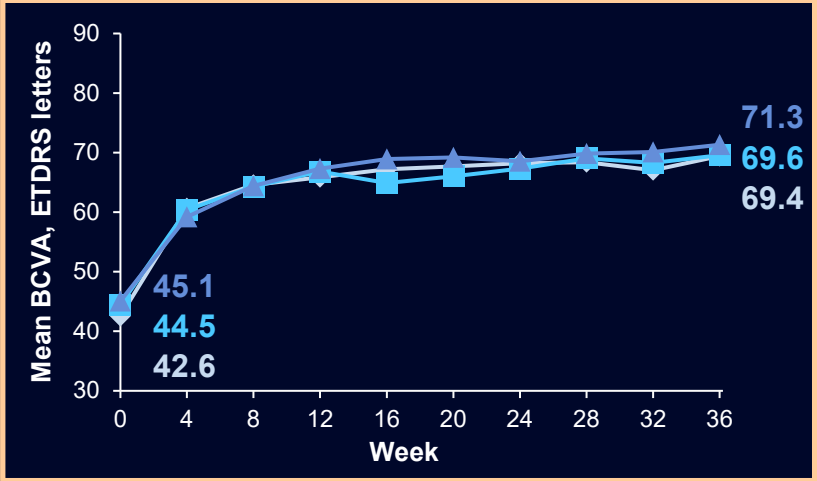
	T1: ≤55 ETDRS letters			T2: >55 to ≤65 ETDRS letters			T3: >65 ETDRS letters		
	2q4 (n=54)	8q8/3 (n=50)	8q8/5 (n=53)	2q4 (n=44)	8q8/3 (n=48)	8q8/5 (n=56)	2q4 (n=51)	8q8/3 (n=61)	8q8/5 (n=50)
Age, mean (SD), years	66.9 (10.6)	67.0 (10.8)	67.6 (11.0)	65.9 (9.6)	65.7 (10.4)	65.2 (12.0)	61.9 (11.4)	63.3 (10.8)	61.9 (11.0)
Female, n (%)	28 (51.9)	28 (56.0)	34 (64.2)	25 (56.8)	26 (54.2)	30 (53.6)	25 (49.0)	29 (47.5)	23 (46.0)
Race, n (%)									
White	30 (55.6)	26 (52.0)	30 (56.6)	20 (45.5)	22 (45.8)	23 (41.1)	31 (60.8)	39 (63.9)	32 (64.0)
Asian	24 (44.4)	19 (38.0)	20 (37.7)	19 (43.2)	20 (41.7)	30 (53.6)	18 (35.3)	18 (29.5)	13 (26.0)
Other[a]	0	0	1 (1.9)	1 (2.3)	1 (2.1)	1 (1.8)	0	1 (1.6)	3 (6.0)
Not reported	0	5 (10.0)	2 (3.8)	4 (9.1)	5 (10.4)	2 (3.6)	2 (3.9)	3 (4.9)	2 (4.0)
Hispanic or Latino, n (%)	5 (9.3)	4 (8.0)	2 (3.8)	2 (4.5)	5 (10.4)	3 (5.4)	4 (7.8)	2 (3.3)	3 (6.0)
History of hypertension, n (%)	31 (57.4)	32 (64.0)	32 (60.4)	30 (68.2)	32 (66.7)	39 (69.6)	27 (52.9)	40 (65.6)	32 (64.0)
BCVA, mean (SD), ETDRS letters	42.6 (9.9)	44.5 (7.9)	45.1 (8.1)	61.1 (3.0)	59.9 (3.0)	61.0 (3.2)	69.6 (2.1)	69.2 (2.2)	70.0 (2.3)
CRT, mean (SD), µm	647.1 (183.6)	623.1 (171.8)	603.9 (191.6)	526.6 (136.3)	556.1 (157.1)	518.1 (143.9)	475.0 (131.2)	482.2 (153.9)	498.7 (122.8)
Total area of macular ischemia,[b] mean (SD), mm^2	6.9 (3.9)	6.8 (3.4)	6.7 (3.5)	6.3 (3.6)	5.8 (3.7)	5.6 (3.9)	4.8 (3.6)	4.5 (3.7)	5.7 (4.5)

FAS.
[a]Includes patients who were Black or African American, Native Hawaiian or other Pacific Islander, or multiracial. [b]Based on FA, not considering the foveal avascular zone.
FA, fluorescein angiography; FAS, full analysis set.

Mean BCVA Through Week 36 by Baseline BCVA

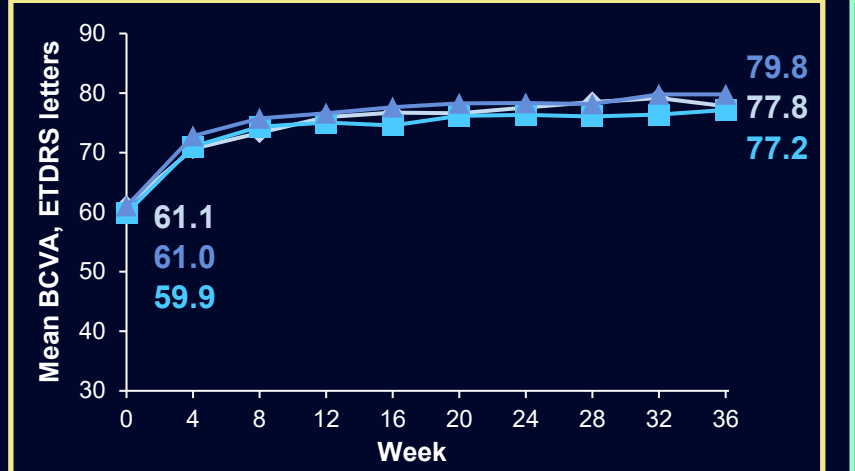
quasar BRVO

T1: ≤55 ETDRS letters



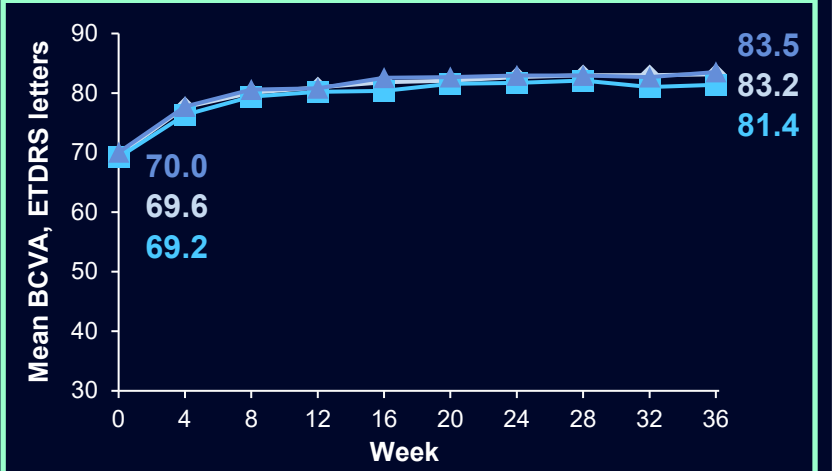
	Mean number of injections[a]	Mean change in BCVA at Week 36, ETDRS letters
2q4 (n=54)	8.9	+27.2
8q8/3 (n=50)	6.0	+24.8
8q8/5 (n=53)	6.9	+25.8

T2: >55 to ≤65 ETDRS letters



	Mean number of injections[a]	Mean change in BCVA at Week 36, ETDRS letters
2q4 (n=44)	8.9	+16.7
8q8/3 (n=48)	6.1	+17.3
8q8/5 (n=56)	7.0	+18.9

T3: >65 ETDRS letters



	Mean number of injections[a]	Mean change in BCVA at Week 36, ETDRS letters
2q4 (n=51)	8.7	+13.6
8q8/3 (n=61)	6.1	+12.1
8q8/5 (n=50)	6.9	+13.5

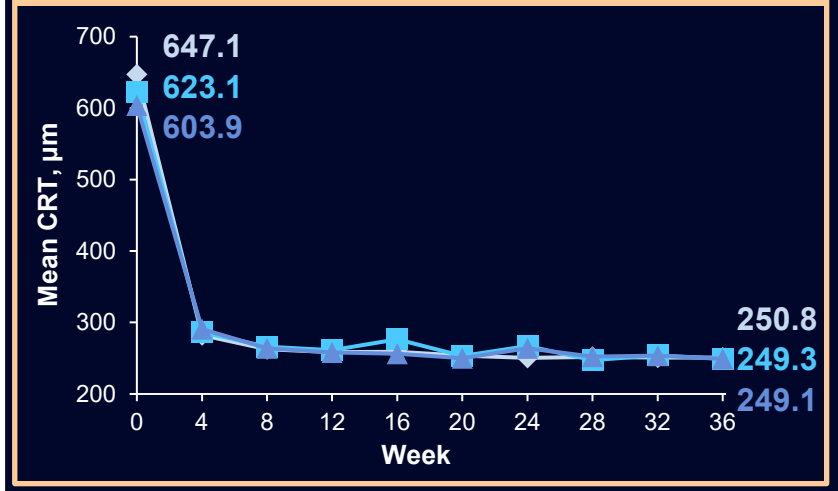
In BRVO, aflibercept 8 mg achieved robust improvements in BCVA through Week 36 with fewer injections than aflibercept 2 mg across baseline BCVA tertiles

FAS, observed cases excluding intercurrent events.
[a]Patients who completed the Week 36 visit.

Mean CRT Through Week 36 by Baseline BCVA

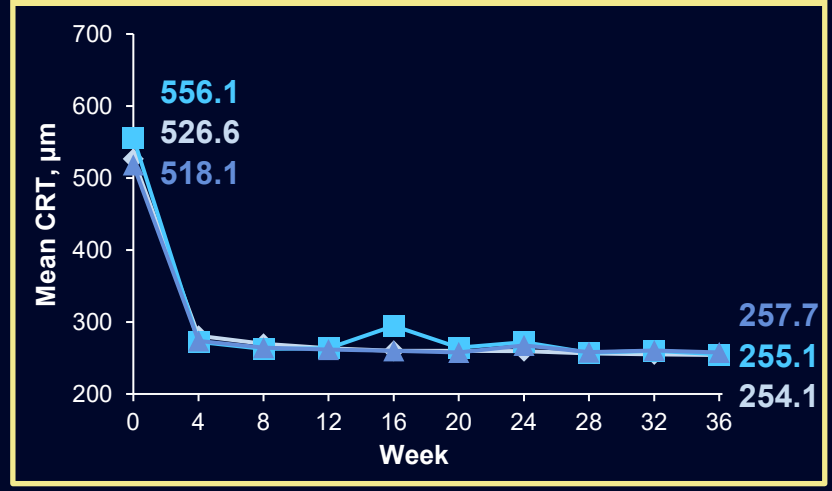
quasar BRVO

T1: ≤55 ETDRS letters



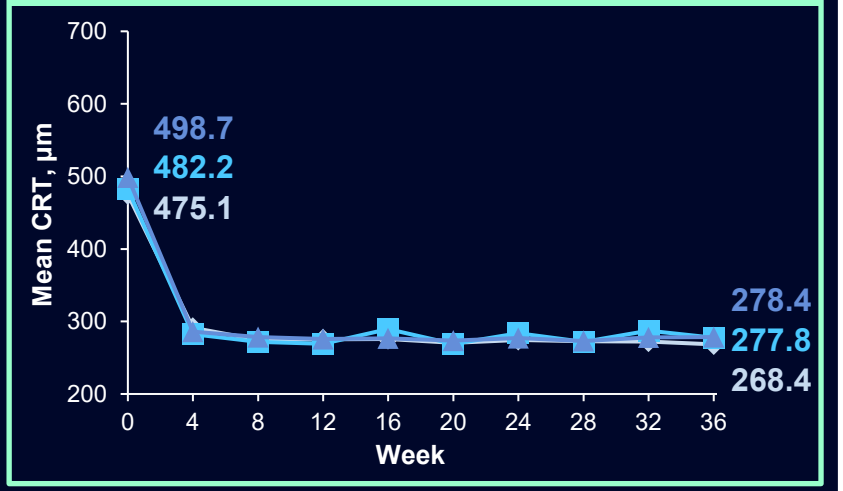
	Mean number of injections[a]	Mean change in CRT at Week 36, µm
2q4 (n=54)	8.9	–400.4
8q8/3 (n=50)	6.0	–361.1
8q8/5 (n=53)	6.9	–355.3

T2: >55 to ≤65 ETDRS letters



	Mean number of injections[a]	Mean change in CRT at Week 36, µm
2q4 (n=44)	8.9	–279.0
8q8/3 (n=48)	6.1	–301.0
8q8/5 (n=56)	7.0	–265.7

T3: >65 ETDRS letters

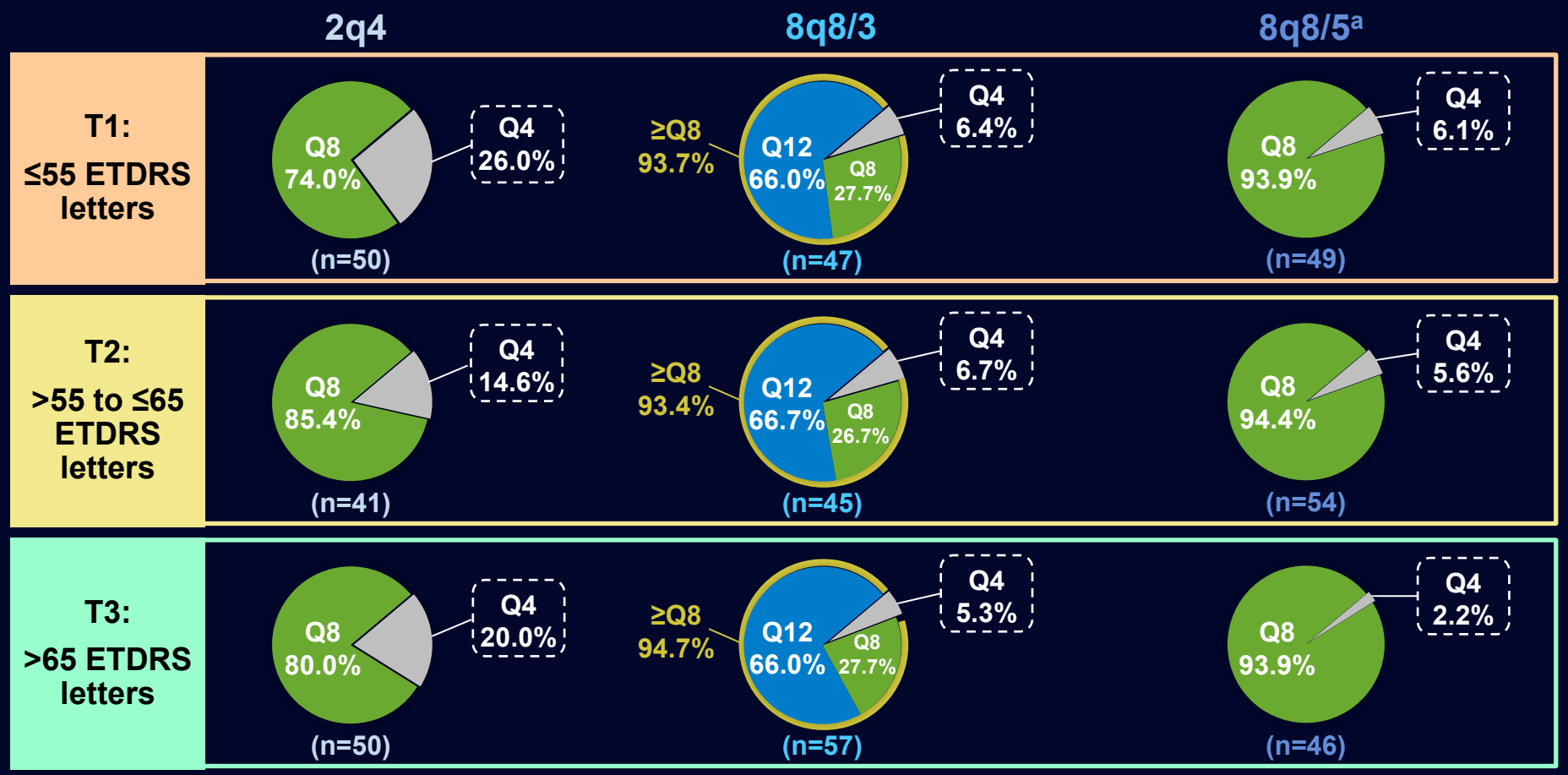


	Mean number of injections[a]	Mean change in CRT at Week 36, µm
2q4 (n=51)	8.7	–200.2
8q8/3 (n=61)	6.1	–213.3
8q8/5 (n=50)	6.9	–232.4

In BRVO, aflibercept 8 mg achieved robust CRT reductions through Week 36 with fewer injections than aflibercept 2 mg across baseline BCVA tertiles

FAS, observed cases excluding intercurrent events.
[a]Patients who completed the Week 36 visit.

Last Assigned Dosing Interval at Week 36 by Baseline BCVA



At Week 36, most patients treated with aflibercept 8 mg achieved a last assigned dosing interval of ≥Q8, and fewer patients required Q4 dosing versus 2 mg across baseline BCVA tertiles

Patients who completed the Week 36 visit. Values may not add up to 100% because of rounding.
[a]Per study design, dosing interval extension was not possible in the 8q8/5 group until Week 40.
Q4, every 4 weeks; Q12, every 12 weeks.

Visual and Anatomic Outcomes by Baseline BCVA Tertiles in Patients With CRVO/HRVO

Baseline Demographics and Disease Characteristics by Baseline BCVA

quasar
CRVO/ HRVO

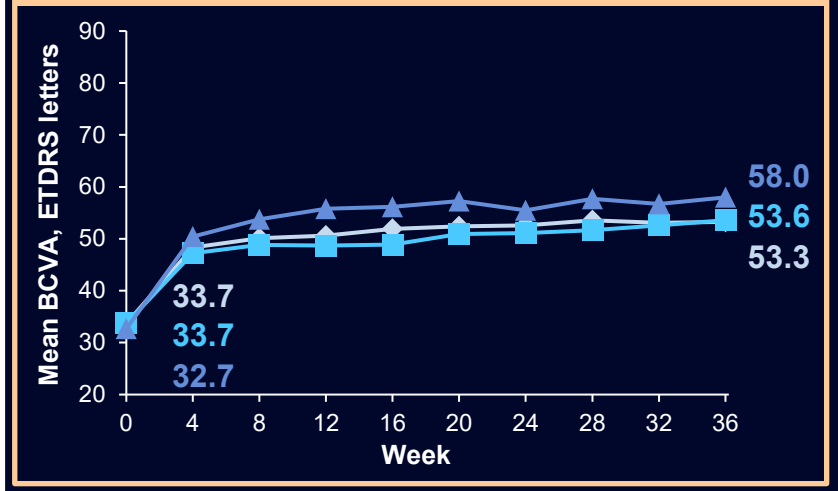
	T1: ≤47 ETDRS letters			T2: >47 to ≤59 ETDRS letters			T3: >59 ETDRS letters		
	2q4 (n=54)	8q8/3 (n=45)	8q8/5 (n=42)	2q4 (n=44)	8q8/3 (n=43)	8q8/5 (n=53)	2q4 (n=54)	8q8/3 (n=46)	8q8/5 (n=44)
Age, mean (SD), years	68.4 (12.9)	69.1 (12.5)	69.3 (10.7)	66.4 (10.5)	65.2 (13.1)	67.4 (12.8)	66.0 (13.7)	65.6 (11.6)	63.5 (9.8)
Female, n (%)	26 (48.1)	23 (51.1)	20 (47.6)	20 (45.5)	15 (34.9)	25 (47.2)	20 (37.0)	15 (32.6)	14 (31.8)
Race, n (%)									
White	39 (72.2)	27 (60.0)	31 (73.8)	25 (56.8)	26 (60.5)	32 (60.4)	33 (61.1)	33 (71.7)	29 (65.9)
Asian	12 (22.2)	10 (22.2)	7 (16.7)	15 (34.1)	14 (32.6)	17 (32.1)	13 (24.1)	10 (21.7)	10 (22.7)
Other[a]	2 (3.7)	3 (6.7)	2 (4.8)	2 (4.5)	1 (2.3)	2 (3.8)	4 (7.4)	1 (2.2)	4 (9.1)
Not reported	1 (1.9)	5 (11.1)	2 (4.8)	2 (4.5)	2 (4.7)	2 (3.8)	4 (7.4)	2 (4.3)	1 (2.3)
Hispanic or Latino, n (%)	2 (3.7)	6 (13.3)	3 (7.1)	6 (13.6)	4 (9.3)	1 (1.9)	3 (5.6)	4 (8.7)	2 (4.5)
History of hypertension, n (%)	35 (64.8)	32 (71.1)	33 (78.6)	28 (63.6)	25 (58.1)	27 (50.9)	36 (66.7)	31 (67.4)	33 (75.0)
BCVA, mean (SD), ETDRS letters	33.7 (7.9)	33.7 (8.1)	32.7 (7.0)	54.3 (3.1)	53.1 (3.1)	54.3 (3.5)	65.6 (4.0)	66.7 (4.2)	67.1 (3.8)
CRT, mean (SD), µm	914.4 (287.7)	895.4 (278.7)	837.3 (251.4)	730.5 (195.8)	700.4 (213.5)	679.5 (198.2)	598.9 (166.3)	560.6 (142.2)	554.8 (183.0)
Total area of macular ischemia,[b] mean (SD), mm^2	4.0 (7.3)	6.1 (7.4)	5.0 (7.7)	2.3 (4.3)	2.9 (5.3)	2.7 (4.4)	1.3 (2.6)	2.2 (3.4)	1.6 (3.3)

FAS.
[a]Includes patients who were Black or African American, American Indian or Alaska Native, or multiracial. [b]Based on FA, not considering the foveal avascular zone.

Mean BCVA Through Week 36 by Baseline BCVA

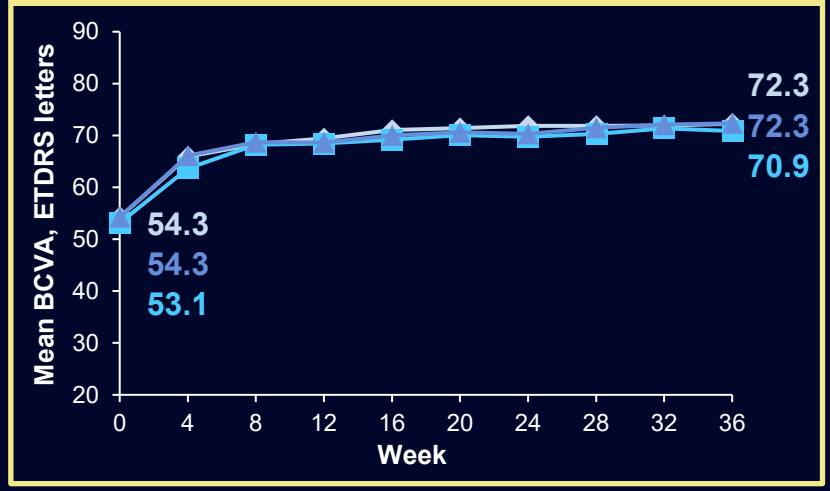
quasar
CRVO/ HRVO

T1: ≤47 ETDRS letters



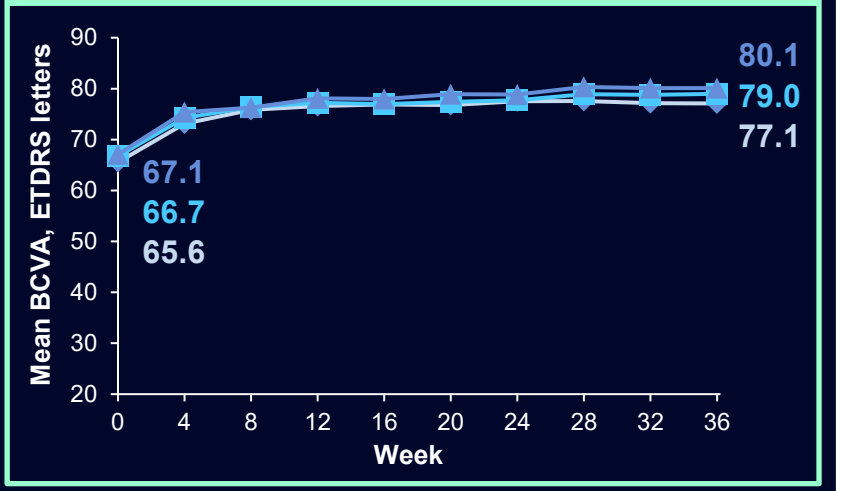
	Mean number of injections[a]	Mean change in BCVA at Week 36, ETDRS letters
2q4 (n=54)	8.7	+19.6
8q8/3 (n=45)	6.1	+19.9
8q8/5 (n=42)	6.9	+25.9

T2: >47 to ≤59 ETDRS letters



	Mean number of injections[a]	Mean change in BCVA at Week 36, ETDRS letters
2q4 (n=44)	8.6	+17.9
8q8/3 (n=43)	6.1	+17.6
8q8/5 (n=53)	7.0	+17.8

T3: >59 ETDRS letters



	Mean number of injections[a]	Mean change in BCVA at Week 36, ETDRS letters
2q4 (n=54)	8.9	+11.6
8q8/3 (n=46)	6.1	+12.5
8q8/5 (n=44)	6.9	+12.9

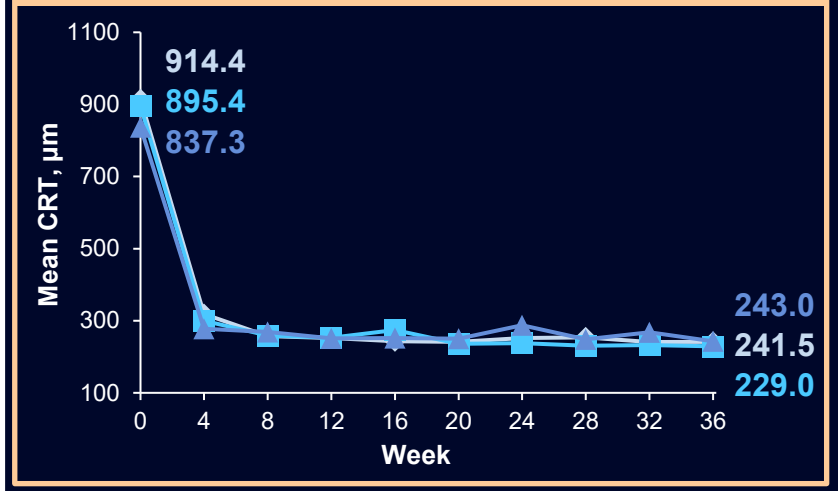
In CRVO/HRVO, aflibercept 8 mg achieved robust improvements in BCVA through Week 36 with fewer injections than aflibercept 2 mg across baseline BCVA tertiles

FAS, observed cases excluding intercurrent events.
[a]Patients who completed the Week 36 visit.

Mean CRT Through Week 36 by Baseline BCVA

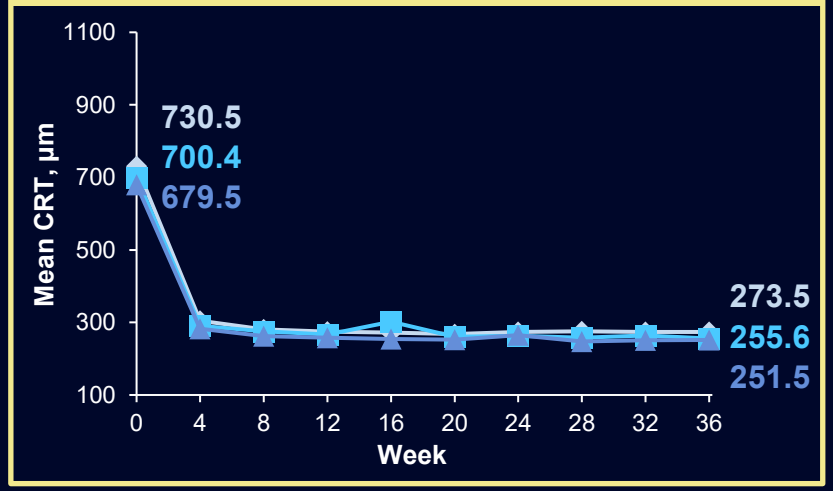
quasar CRVO/HRVO

T1: ≤47 ETDRS letters



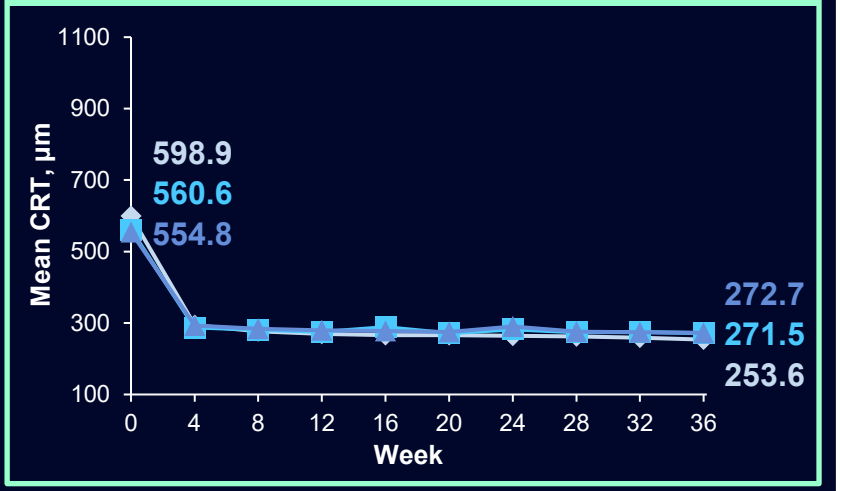
	Mean number of injections[a]	Mean change in CRT at Week 36, µm
2q4 (n=54)	8.7	–688.0
8q8/3 (n=45)	6.1	–665.2
8q8/5 (n=42)	6.9	–593.2

T2: >47 to ≤59 ETDRS letters



	Mean number of injections[a]	Mean change in CRT at Week 36, µm
2q4 (n=44)	8.6	–468.6
8q8/3 (n=43)	6.1	–449.0
8q8/5 (n=53)	7.0	–440.3

T3: >59 ETDRS letters



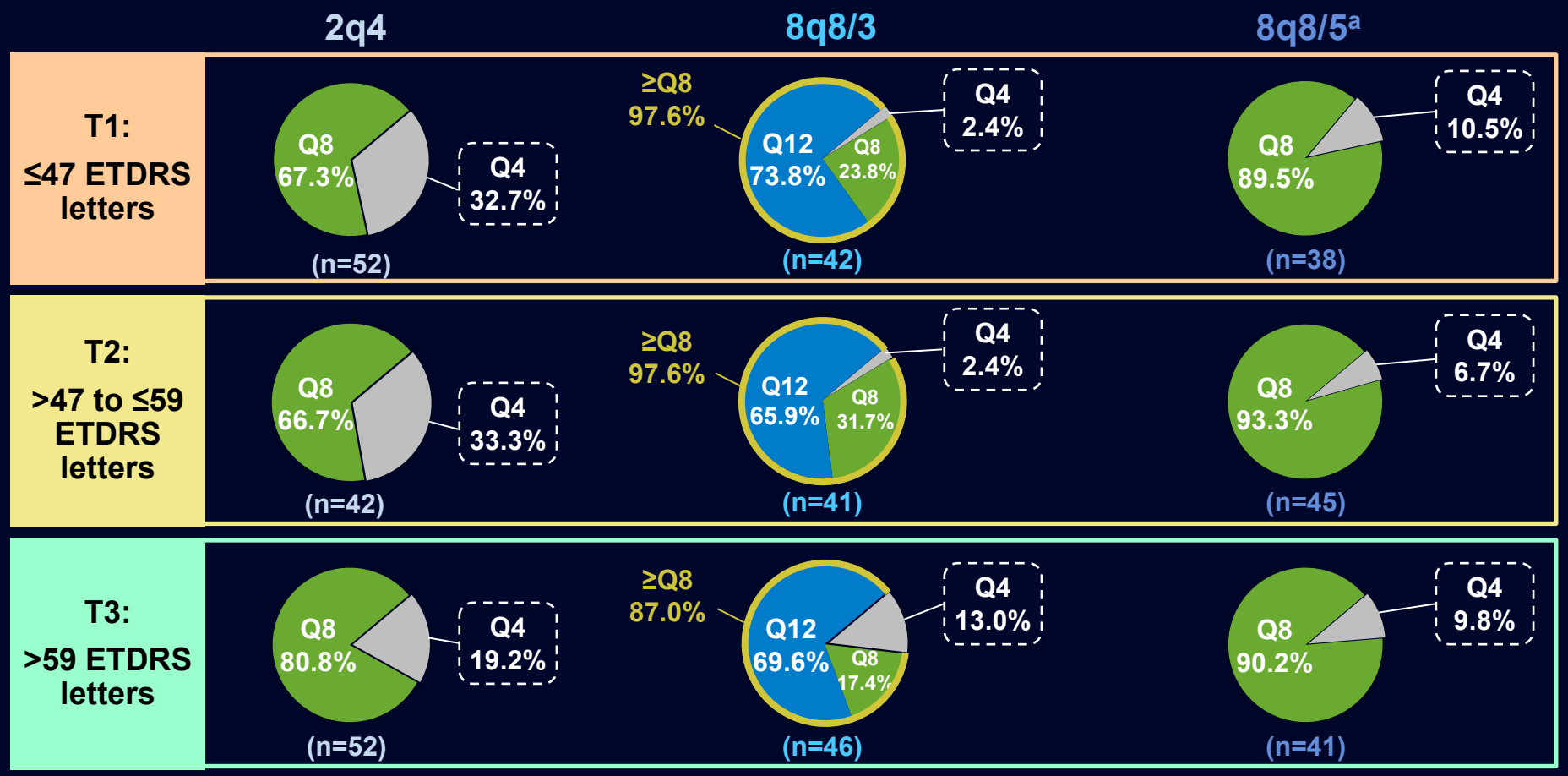
	Mean number of injections[a]	Mean change in CRT at Week 36, µm
2q4 (n=54)	8.9	–345.4
8q8/3 (n=46)	6.1	–292.1
8q8/5 (n=44)	6.9	–265.3

In CRVO/HRVO, aflibercept 8 mg achieved robust CRT reductions through Week 36 with fewer injections than aflibercept 2 mg across baseline BCVA tertiles

FAS, observed cases excluding intercurrent events.
[a]Patients who completed the Week 36 visit.

Last Assigned Dosing Interval at Week 36 by Baseline BCVA

quasar
CRVO/ HRVO



At Week 36, most patients treated with aflibercept 8 mg achieved a last assigned dosing interval of ≥Q8, and fewer patients required Q4 dosing versus 2 mg across baseline BCVA tertiles

Patients who completed the Week 36 visit. Values may not add up to 100% because of rounding.
[a]Per study design, dosing interval extension was not possible in the 8q8/5 group until Week 40.
Q4, every 4 weeks; Q12, every 12 weeks.

Conclusions

- In patients with BRVO or CRVO/HRVO, aflibercept 8 mg achieved robust gains in BCVA and reductions in CRT with fewer injections versus aflibercept 2 mg through Week 36, regardless of baseline BCVA
- Patients with lower BCVA achieved greater visual gains, however their final BCVA was lower than those who started with better vision.
- The majority of patients with BRVO or CRVO/HRVO treated with aflibercept 8 mg achieved extended dosing intervals regardless of baseline BCVA, with 93%-95% and 87%-98%, respectively, having a last assigned interval of ≥Q8 at Week 36
  - Substantially fewer patients treated with aflibercept 8 mg had a last assigned dosing interval of Q4 versus those treated with aflibercept 2 mg at Week 36