Outcomes in Diabetic Macular Edema (DME) in Patients Who Used Systemic Dipeptidyl Peptidase-4 (DPP-4) Inhibitors in the VISTA and VIVID trials

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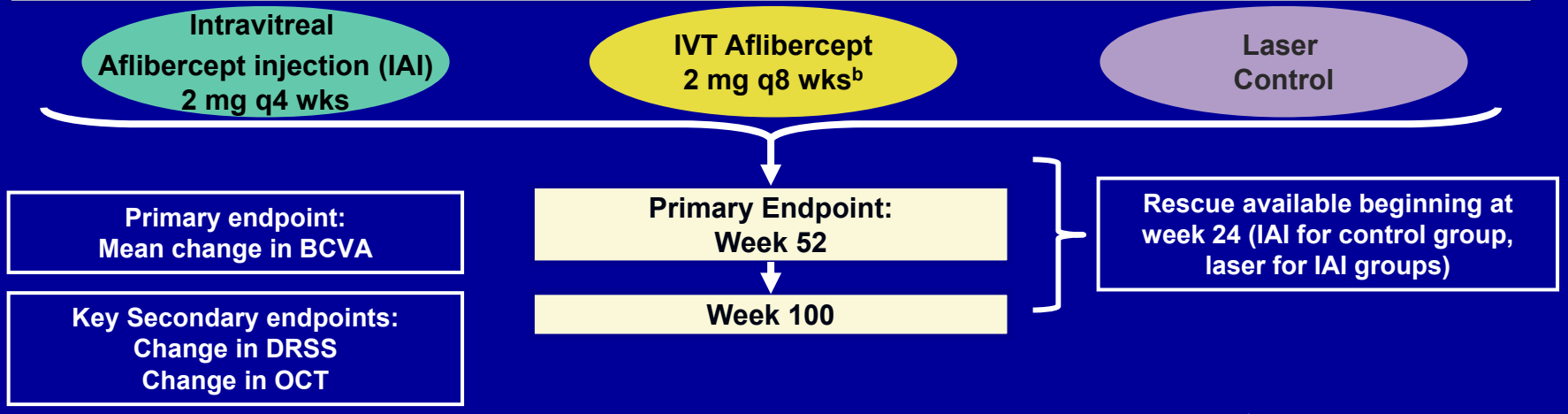
On behalf of the VIVID and VISTA study investigators

Disclosures

Ehsan Rahimy was a paid consultant for Allergan through the Fostering Innovative Retina Stars (FIRST) program at the time of this study.

Background

Randomized, multicenter, double-masked trials in patients with clinically significant DME with central involvement and ETDRS BCVA 20/40 to 20/320
Randomized and Treated N=404 (VIVID) N=461 (VISTA[a])



[a]The VISTA and VIVID studies were funded by Regeneron Pharmaceuticals, Inc., Tarrytown, NY, and Bayer Healthcare, Berlin, Germany VISTA; [b]Following 5 initial monthly doses

- IAI given q4 weeks or q8 weeks (following 5 monthly doses) significantly improved visual and anatomic outcomes over laser at week 52. These improvements were sustained through week 100 with both IAI regimens.
- In an integrated safety analysis, the most frequent serious ocular adverse event at week 100 was cataract (2.4%, 1.0%, and 0.3% for 2q4, 2q8, and control).

BCVA, best-corrected visual acuity; DME; diabetic macular edema; DRSS, Diabetic Retinopathy Severity Score; ETDRS, Early Treatment Diabetic Retinopathy Study; IAI, intravitreal aflibercept injection; OCT, optical coherence tomography; q4 wks, every 4 weeks; q8 wks, every 8 weeks

Background

- Recent evidence suggests that systemic DPP-4 inhibitor use in diabetics may be protective against the progression of DR[1]
- This post-hoc analysis examined whether DME patients taking systemic DPP-4 inhibitors differed in baseline characteristics and/or treatment outcomes in the VISTA and VIVID studies

[1]Chung YR, Park SW, Kim JW, Kim JH, Lee K. Protective effects of dipeptidyl peptidase-4 inhibitors on progression of diabetic retinopathy in patients with type 2 diabetes. *Retina.* 2016;36(12):2357-2363

DME; diabetic macular edema; DPP-4, dipeptidyl peptidase-4; DR, diabetic retinopathy

Methods

- Post-hoc analysis of integrated data from VISTA and VIVID
- Patients were categorized into two groups according to reported concomitant medication use at baseline:
  - Patients taking a DPP-4 inhibitor (+ DPP-4 inhibitor group)
  - Patients NOT taking a DPP-4 inhibitor (- DPP-4 inhibitor group)
- Analyses of baseline characteristics and treatment outcomes were conducted within each treatment group (laser, IAI 2q4, IAI 2q8)
- In patients receiving rescue treatment, data were censored from the time rescue treatment was given

DPP-4, dipeptidyl peptidase-4; DR, diabetic retinopathy; IAI, intravitreal aflibercept injection; 2q4, 2 mg every 4 weeks; 2q8, 2 mg every 8 weeks

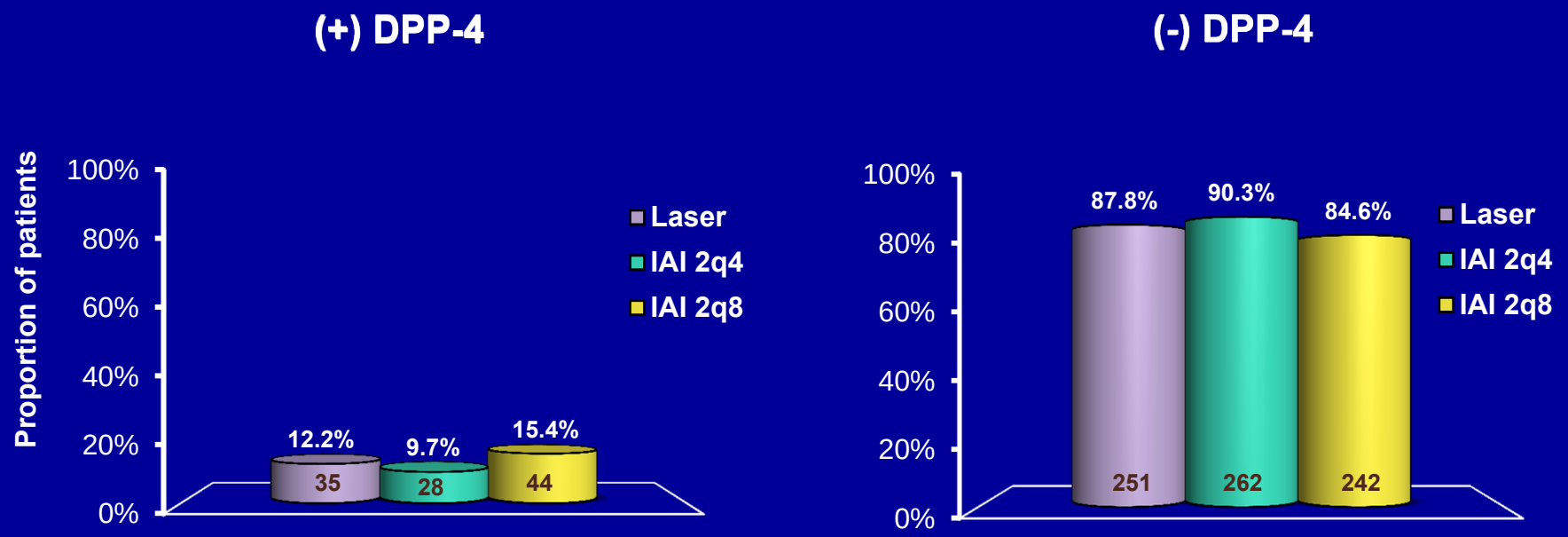
Methods

DPP-4 inhibitors included in this analysis

1. Januvia (sitagliptin)
2. Onglyza (saxagliptin)
3. Tradjenta (linagliptin)
4. Nesina (alogliptin)
5. Janumet (combination of sitagliptin and metformin)
6. Jentadueto (combination of linagliptin and metformin)
7. Kazano (combination of alogliptin and metformin)
8. Komboglyze (combination of saxagliptin and metformin)
9. Oseni (combination of alogliptin and pioglitazone)
10. Juvisync (combination of sitagliptin and simvastatin)

DPP-4, dipeptidyl peptidase-4

Proportion of Patients by Baseline Concomitant Medication Class



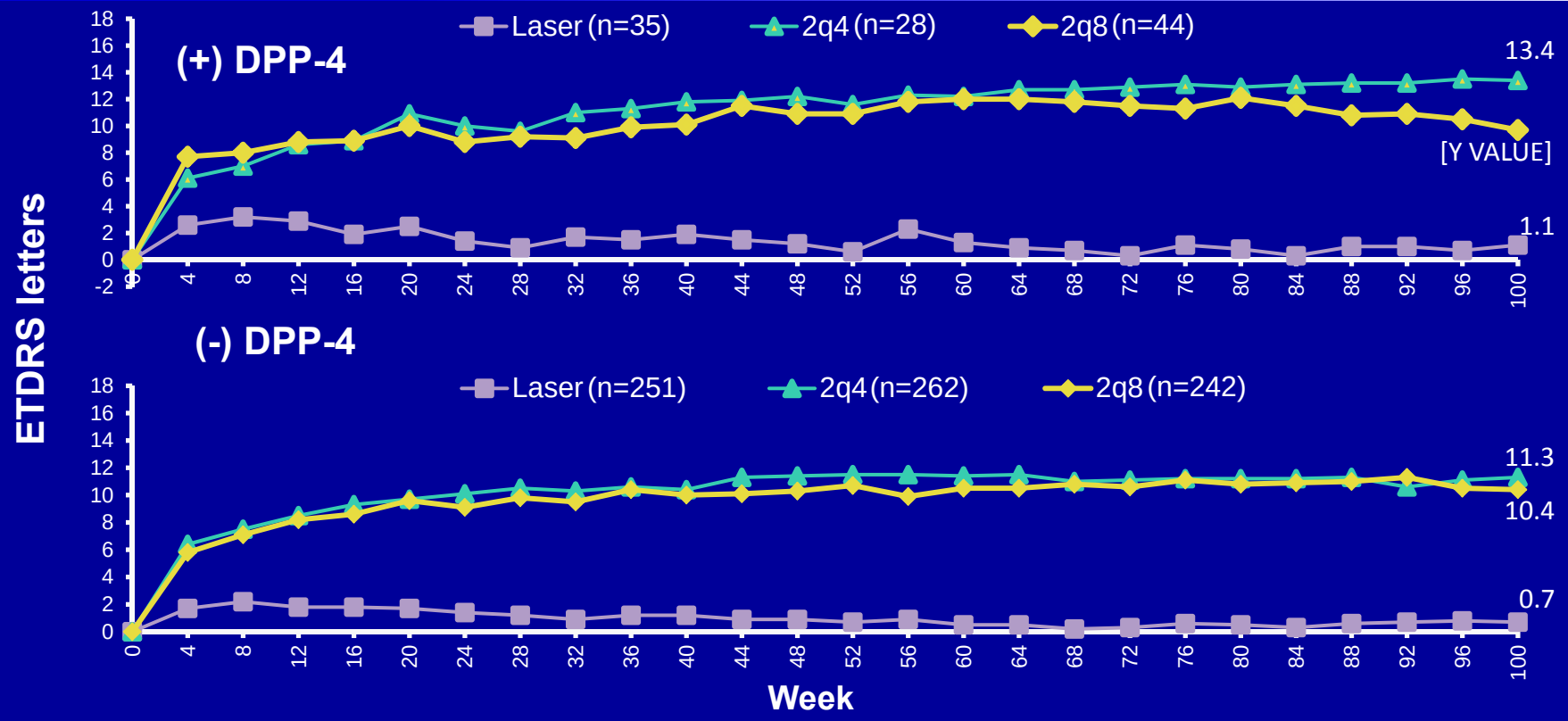
DPP-4, dipeptidyl peptidase-4; IAI, intravitreal aflibercept; 2q4, 2 mg every 4 weeks; 2q8, 2 mg every 8 weeks

Baseline Characteristics

	(+) DPP-4			(-) DPP-4		
	Laser	IAI 2q4	IAI 2q8	Laser	IAI 2q4	IAI 2q8
N (full analysis set)	35	28	44	251	262	242
BCVA, ETDRS Letters, mean (SD)	62.3 (9.6)	59.5 (10.9)	62.0 (8.4)	60.0 (10.9)	59.8 (10.8)	58.6 (11.4)
CRT, µm, mean (SD)	502.5 (117.9)	507.8 (146.7)	476.6 (117.8)	510.7 (159.7)	491.6 (151.2)	501.4 (157.2)
DRSS Score, n (%)						
Low Risk (DRSS≤43)	11 (31.4)	11 (39.3)	17 (38.6)	97 (38.6)	85 (32.4)	80 (33.1)
Moderate Risk (DRSS=47)	5 (14.3)	4 (14.3)	8 (18.2)	45 (17.9)	40 (15.3)	51 (21.1)
High Risk (DRSS≥53)	19 (54.3)	13 (46.4)	19 (43.2)	109 (43.4)	137 (52.3)	111 (45.9)

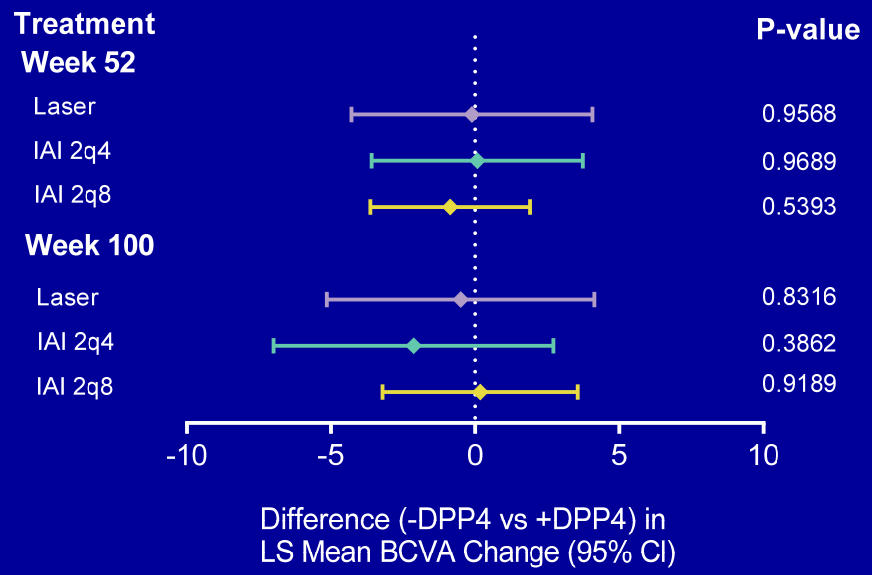
Integrated VISTA & VIVID. BCVA, best-corrected visual acuity; CRT; central retinal thickness; DPP-4, dipeptidyl peptidase-4; DRSS, Diabetic Retinopathy Severity Score; ETDRS, Early Treatment Diabetic Retinopathy Study; IAI, intravitreal aflibercept; SD, standard deviation; 2q4, 2 mg every 4 weeks; 2q8, 2 mg every 8 weeks

Mean BCVA Change



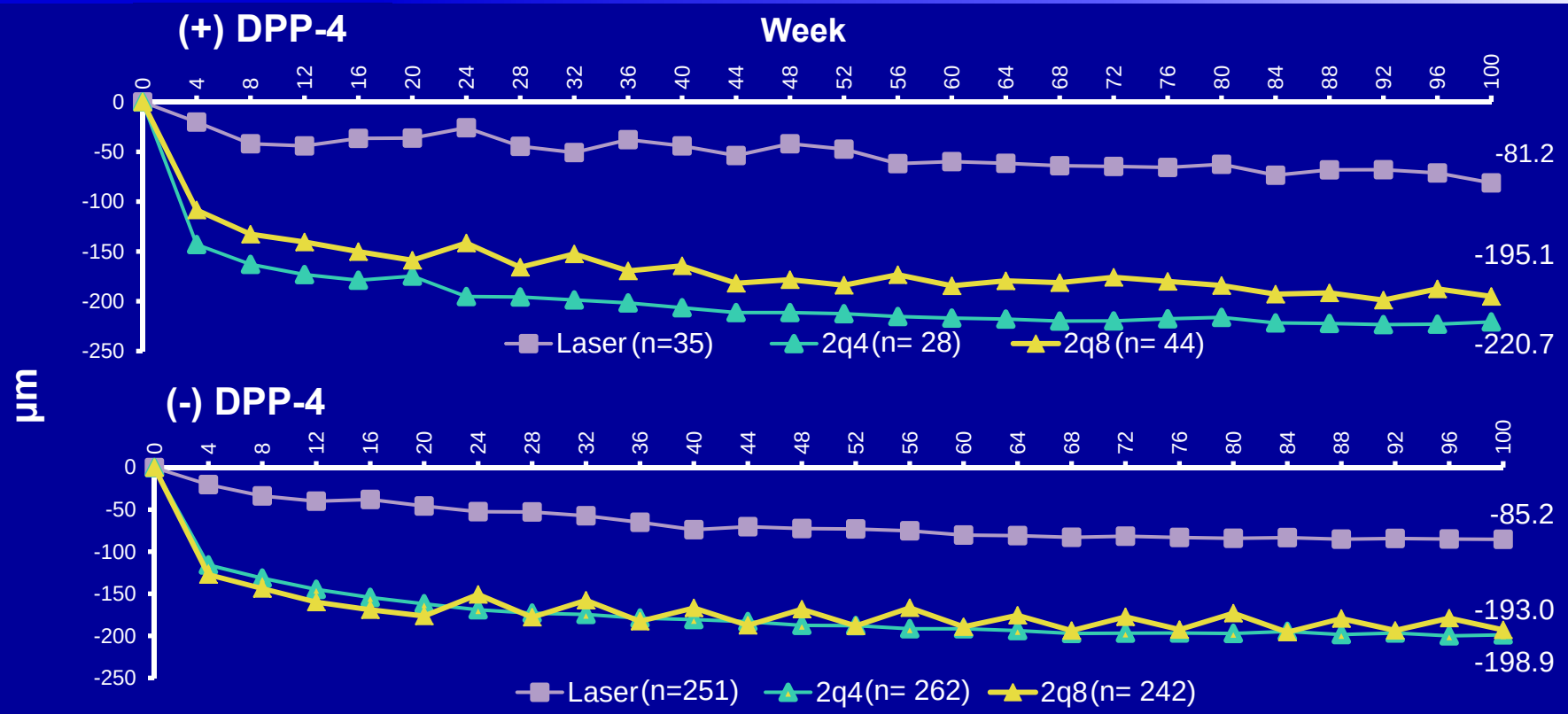
BCVA, best-corrected visual acuity; DPP-4, dipeptidyl peptidase-4; ETDRS, Early Treatment Diabetic Retinopathy Study; 2q4, 2 mg every 4 weeks; 2q8, 2 mg every 8 weeks

Difference (-DPP4 vs +DPP4) in BCVA Change



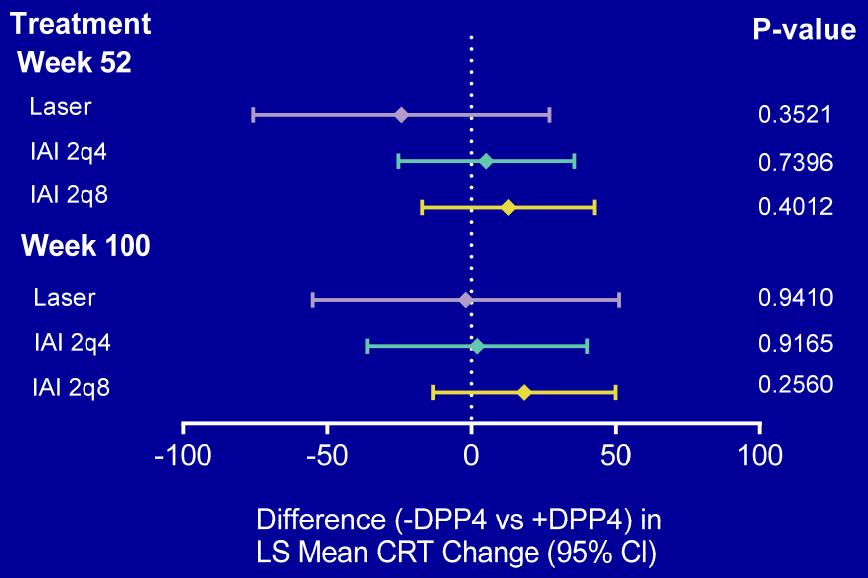
BCVA, best-corrected visual acuity; CI, confidence interval; DPP-4, dipeptidyl peptidase-4; IAI, intravitreal aflibercept; LS, least square; 2q4, 2 mg every 4 weeks; 2q8, 2 mg every 8 weeks

Mean CRT Change



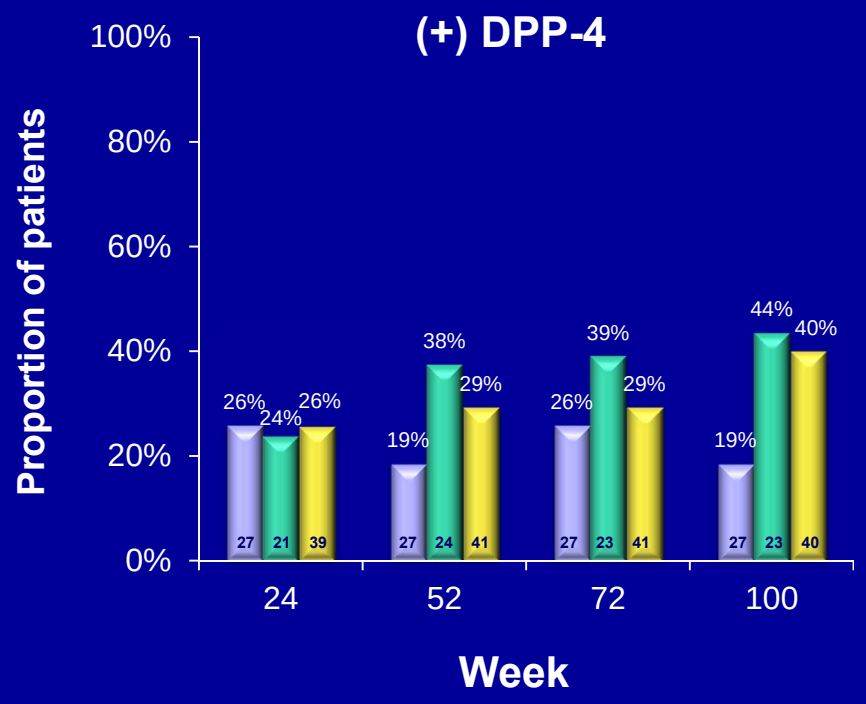
CRT, central retinal thickness; DPP-4, dipeptidyl peptidase-4; 2q4, 2 mg every 4 weeks; 2q8, 2 mg every 8 weeks

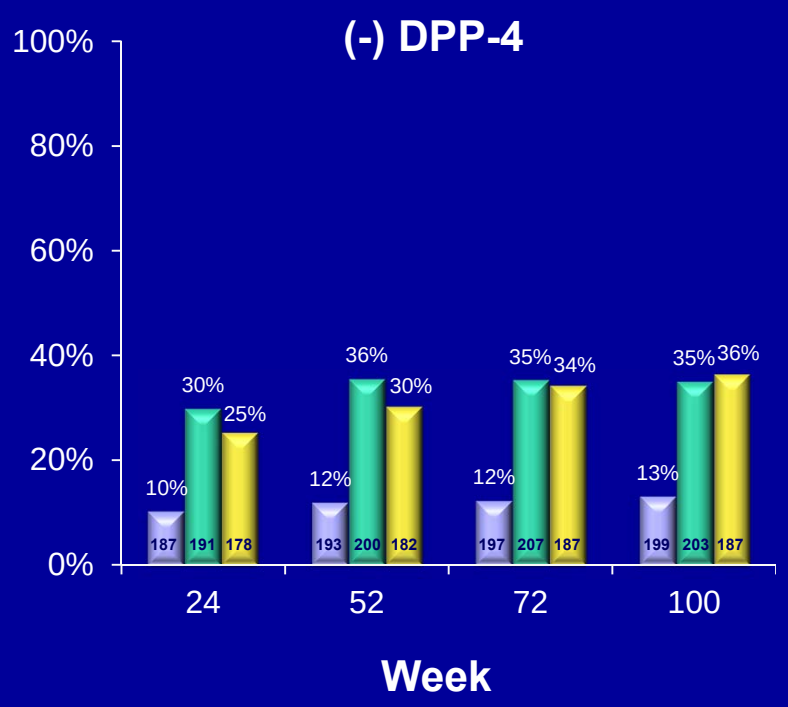
Difference (-DPP4 vs +DPP4) in CRT Change



CI, confidence interval; CRT, central retinal thickness; DPP-4, dipeptidyl peptidase-4; IAI, intravitreal aflibercept; LS, least square; 2q4, 2 mg every 4 weeks; 2q8, 2 mg every 8 weeks

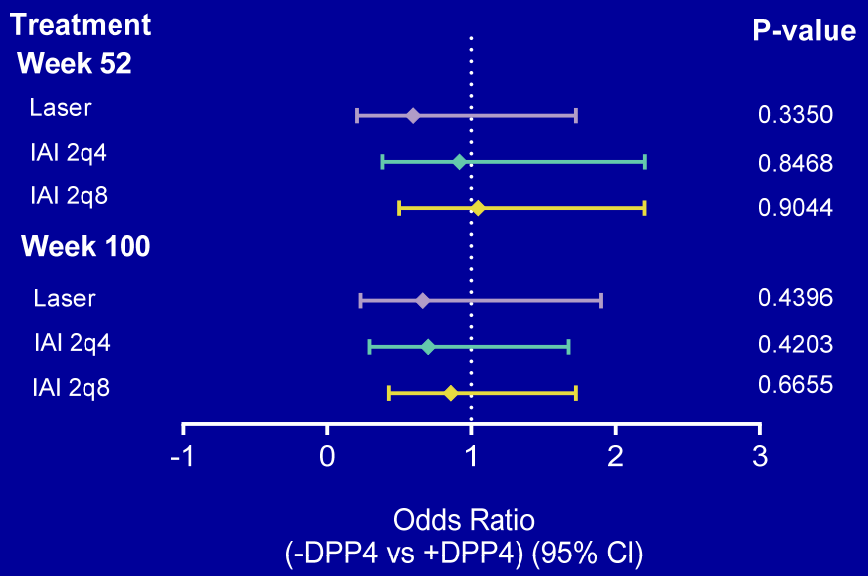
≥ 2-Step DRSS Score Improvement





DPP-4, dipeptidyl peptidase-4; DRSS, Diabetic Retinopathy Severity Score

Odds Ratio (-DPP4 vs +DPP4) for ≥ 2-Step DRSS Score Improvement



CI, confidence interval; DPP-4, dipeptidyl peptidase-4; DRSS, Diabetic Retinopathy Severity Score; IAI, intravitreal aflibercept; 2q4, 2 mg every 4 weeks; 2q8, 2 mg every 8 weeks

Conclusions

- At baseline, 12.2%, 9.7%, and 15.4% of patients in laser, IAI 2q4, and IAI 2q8 groups were on DPP-4 inhibitors
- Baseline characteristics and BCVA, CRT, and DRSS outcomes in the baseline (+) DPP-4 inhibitor group do not appear to differ significantly from those patients not on DPP-4 inhibitors

BCVA, best-corrected visual acuity; CRT, central retinal thickness; DPP-4, dipeptidyl peptidase-4; DRSS, Diabetic Retinopathy Severity Score; IAI, intravitreal aflibercept; 2q4, 2 mg every 4 weeks; 2q8, 2 mg every 8 weeks