

Supporting information

Table S1. Changes to baseline OAD by baseline characteristics

	Baseline category	Baseline N	Switch		Add-on	
			N (%)	p-value [†]	N (%)	p-value [†]
All patients		1474	204 (13.8)		319 (21.6)	
Age, years	<54	478	95 (19.9)	0.0001	121 (25.3)	0.0001
	≥54 to <66	471	69 (14.6)		117 (24.8)	
	≥66	525	40 (7.6)		81 (15.4)	
Sex	Male	915	133 (14.5)	0.3512	216 (23.6)	0.0191
	Female	559	71 (12.7)		103 (18.4)	
BMI, ‡ kg/m ²	<23.79	485	54 (11.1)	0.0808	97 (20.0)	0.1744
	≥23.79 to <27.55	492	71 (14.4)		101 (20.5)	
	≥27.55	494	79 (16.0)		121 (24.5)	
HbA1c, ‡ %	<7	454	35 (7.7)	0.0001	40 (8.8)	0.0001
	≥7 to <8.2	494	51 (10.3)		88 (17.8)	
	≥8.2	481	110 (22.9)		181 (37.6)	
Diabetes complications	No	1279	165 (12.9)	0.0102	257 (20.1)	0.0004
	Yes	195	39 (20.0)		62 (31.8)	
CVD	No	1383	195 (14.1)	0.3458	301 (21.8)	0.7926
	Yes	91	9 (9.9)		18 (19.8)	
Dyslipidemia	No	619	97 (15.7)	0.0927	146 (23.6)	0.1246
	Yes	855	107 (12.5)		173 (20.2)	
Hypertension	No	721	130 (18.0)	0.0001	170 (23.6)	0.0875
	Yes	753	74 (9.8)		149 (19.8)	
Other comorbidities [§]	No	1006	154 (15.3)	0.0186	240 (23.9)	0.0022

	Yes	468	50 (10.7)		79 (16.9)	
Diabetes specialist	No	840	74 (8.8)	0.0001	176 (21.0)	0.4824
	Yes	634	130 (20.5)		143 (22.6)	
Cardiologist	No	1169	173 (14.8)	0.0402	258 (22.1)	0.4823
	Yes	305	31 (10.2)		61 (20.0)	

BMI, body mass index; CVD, cardiovascular disease; HbA1c, hemoglobin A1c; OAD, oral antidiabetic drug

†Calculated using Fisher's exact test and Chi-square test for pairwise and multiple comparison, respectively

‡For patients with available data

§Most common comorbidities were liver disease, cerebrovascular disease, atrial fibrillation, chronic kidney disease and peptic ulcer disease, excluding those categorized as diabetes complications, CVD, dyslipidemia and hypertension

Table S2. Individualized target attainment rate by baseline characteristic

	Baseline category	HbA1c (%)		Individualized target HbA1c (%)	Target attainment								
		N	Mean (SD)		p-value [†]	6 months		12 months		18 months		24 months	
						n/N (%)	P-value [‡]	n/N (%)	P-value [‡]	n/N (%)	P-value [‡]	n/N (%)	P-value [‡]
All patients [§]		1429	8.08 (1.83)		6.51 (0.52)	455/1270 (35.8)		444/1186 (37.4)		412/1122 (36.7)		381/1068 (35.7)	
Age, years	<54	452	8.63 (2.05)	0.0001	6.58 (0.63)	141/395 (35.7)	0.4062	134/364 (36.8)	0.6201	123/337 (36.5)	0.5430	97/309 (31.4)	0.0113
	≥54, <66	460	8.15 (1.91)		6.49 (0.45)	138/411 (33.6)		141/391 (36.1)		131/376 (34.8)		120/362 (33.1)	
	≥66	517	7.54 (1.34)		6.46 (0.44)	176/464 (37.9)		169/431 (39.2)		158/409 (38.6)		164/397 (41.3)	
Sex	Male	878	8.25 (1.90)	0.0001	6.54 (0.56)	277/776 (35.7)	0.9046	261/717 (36.4)	0.3904	238/671 (35.5)	0.3123	234/633 (37.0)	0.2988
	Female	551	7.82 (1.69)		6.46 (0.43)	178/494 (36.0)		183/469 (39.0)		174/451 (38.6)		147/435 (33.8)	
BMI, kg/m ²	<23.79	468	8.11 (2.04)	0.3826	6.51 (0.51)	161/418 (38.5)	0.2513	154/382 (40.3)	0.2673	138/364 (37.9)	0.0304	138/348 (39.7)	0.0710
	≥23.79 to <27.55	481	7.99 (1.68)		6.48 (0.45)	153/428 (35.7)		137/395 (34.7)		117/372 (31.5)		113/360 (31.4)	
	≥27.55	477	8.15 (1.77)		6.54 (0.58)	139/421 (33.0)		151/406 (37.2)		155/383 (40.5)		128/357 (35.9)	
HbA1c, %	<7	454	6.58 (0.28)	0.0001	6.17 (0.25)	133/389 (34.2)	0.6427	122/355 (34.4)	0.2506	117/345 (33.9)	0.1711	108/333 (32.4)	0.2369
	≥7 to <8.2	494	7.42 (0.33)		6.54 (0.37)	163/438 (37.2)		162/424 (38.2)		148/401 (36.9)		148/385 (38.4)	
	≥8.2	481	10.19 (1.67)		6.77 (0.49)	148/405 (36.5)		149/370 (40.3)		140/343 (40.8)		117/320 (36.6)	
Diabetes complications	No	1236	7.98 (1.77)	0.0001	6.47 (0.50)	389/1104 (35.2)	0.2602	382/1035 (36.9)	0.3238	356/982 (36.3)	0.4000	325/933 (34.8)	0.1492
	Yes	193	8.78 (2.07)		6.73 (0.55)	66/166 (39.8)		62/151 (41.1)		56/140 (40.0)		56/135 (41.5)	
CVD	No	1338	8.12 (1.85)	0.0002	6.51 (0.52)	433/1185 (36.5)	0.0603	416/1109 (37.5)	0.9034	386/1051 (36.7)	1.0000	362/999 (36.2)	0.1548
	Yes	91	7.5 (1.46)		6.43 (0.43)	22/85 (25.9)		28/77 (36.4)		26/71 (36.6)		19/69 (27.5)	

	Baseline category	N	HbA1c (%)		Individualized target HbA1c (%)	Target attainment							
			Baseline			6 months		12 months		18 months		24 months	
			Mean (SD)	p-value [†]		Mean (SD)	n/N (%)	P-value [‡]	n/N (%)	P-value [‡]	n/N (%)	P-value [‡]	n/N (%)
Dyslipidemia	No	591	8.34 (1.93)	0.0001	6.57 (0.57)	208/527 (39.5)	0.0241	197/488 (40.4)	0.0879	168/462 (36.4)	0.8505	162/442 (36.7)	0.6040
	Yes	838	7.9 (1.74)		6.46 (0.47)	247/743 (33.2)		247/698 (35.4)		244/660 (37.0)		219/626 (35.0)	
Hypertension	No	694	8.43 (1.99)	0.0001	6.57 (0.59)	212/614 (34.5)	0.3798	185/567 (32.6)	0.0012	168/540 (31.1)	0.0002	162/508 (31.9)	0.0151
	Yes	735	7.76 (1.61)		6.45 (0.42)	243/656 (37.0)		259/619 (41.8)		244/582 (41.9)		219/560 (39.1)	
Other comorbidities [¶]	No	973	8.21 (1.91)	0.0001	6.53 (0.55)	296/855 (34.6)	0.2122	292/803 (36.4)	0.2759	264/764 (34.6)	0.0286	252/720 (35.0)	0.5397
	Yes	456	7.81 (1.61)		6.46 (0.43)	159/415 (38.3)		152/383 (39.7)		148/358 (41.3)		129/348 (37.1)	
Diabetes specialist	No	813	7.88 (1.77)	0.0001	6.41 (0.44)	226/718 (31.5)	0.0003	227/668 (34.0)	0.0054	216/631 (34.2)	0.0531	206/597 (34.5)	0.4030
	Yes	616	8.35 (1.89)		6.64 (0.57)	229/552 (41.5)		217/518 (41.9)		196/491 (39.9)		175/471 (37.2)	
Cardiologist	No	1128	8.18 (1.85)	0.0001	6.56 (0.53)	382/1007 (37.9)	0.0024	370/934 (39.6)	0.0033	338/889 (38.0)	0.0796	308/838 (36.8)	0.1630
	Yes	301	7.73 (1.74)		6.32 (0.40)	73/263 (27.8)		74/252 (29.4)		74/233 (31.8)		73/230 (31.7)	

ANOVA, analysis of variance; BMI, body mass index; CVD, cardiovascular disease; HbA1c, hemoglobin A1c

[†]Calculated using Welch's test and one-way ANOVA for pairwise and multiple comparison, respectively

[‡]Calculated using Fisher's exact test and Chi-square test for pairwise and multiple comparison, respectively

[§]Patients with available HbA1c data were included in this analysis.

[¶]Most common comorbidities were liver disease, cerebrovascular disease, atrial fibrillation, chronic kidney disease and peptic ulcer disease, excluding those categorized as diabetes complications, CVD, dyslipidemia and hypertension

Table S3. Glycemic control by treatment regimen at each time point

		HbA1c (%), mean (SD)				HbA1c <target [†] , n/N (%)			
		6 months	12 months	18 months	24 months	6 months	12 months	18 months	24 months
All patients		6.78 (0.99)	6.72 (0.89)	6.71 (0.84)	6.73 (0.85)	455/1270 (35.8)	444/1186 (37.4)	412/1122 (36.7)	381/1068 (35.7)
1 OAD	Subtotal	6.68 (0.86)	6.63 (0.83)	6.60 (0.73)	6.64 (0.73)	377/1021 (36.9)	326/866 (37.6)	286/760 (37.6)	243/692 (35.1)
	DPP-4i	6.65 (0.82)	6.62 (0.82)	6.60 (0.69)	6.62 (0.69)	219/586 (37.4)	188/508 (37.0)	155/447 (34.7)	139/413 (33.7)
	SGLT2i	6.68 (0.93)	6.63 (0.82)	6.61 (0.81)	6.63 (0.81)	74/202 (36.6)	57/161 (35.4)	58/143 (40.6)	48/125 (38.4)
	Metformin	6.76 (0.86)	6.76 (0.84)	6.63 (0.66)	6.70 (0.67)	60/160 (37.5)	50/133 (37.6)	45/113 (39.8)	31/101 (30.7)
	Others	6.69 (1.04)	6.48 (0.88)	6.55 (0.93)	6.60 (0.97)	24/73 (32.9)	31/64 (48.4)	28/57 (49.1)	25/53 (47.2)
2 OADs	Subtotal	7.20 (1.09)	6.92 (0.91)	6.91 (0.83)	6.85 (0.78)	44/163 (27.0)	71/206 (34.5)	73/225 (32.4)	73/217 (33.6)
	DPP-4i+Metformin	7.17 (1.00)	7.01 (1.10)	6.91 (0.77)	6.82 (0.77)	19/62 (30.6)	28/85 (32.9)	30/92 (32.6)	35/86 (40.7)
	DPP-4i+SGLT2i	6.95 (0.71)	6.74 (0.73)	6.90 (0.81)	6.76 (0.74)	9/34 (26.5)	18/51 (35.3)	19/66 (28.8)	21/71 (29.6)
	SGLT2i+Metformin	7.47 (1.53)	6.88 (0.79)	6.85 (0.83)	6.91 (0.78)	7/31 (22.6)	15/36 (41.7)	15/36 (41.7)	10/33 (30.3)
	DPP-4i+other OAD	7.43 (1.17)	6.99 (0.79)	6.84 (0.91)	7.06 (0.97)	6/26 (23.1)	9/25 (36.0)	7/20 (35.0)	6/19 (31.6)

	Metformin+other OAD	6.66 (0.49)	7.28 (0.62)	7.55 (0.37)	7.58 (0.62)	2/5 (40.0)	0/4 (0.0)	0/4 (0.0)	0/4 (0.0)
	SGLT2i+other OAD	7.28 (0.61)	7.33 (0.90)	7.44 (1.90)	7.00 (0.28)	1/4 (25.0)	1/3 (33.3)	2/5 (40.0)	1/2 (50.0)
	Other combination	6.20 (-)	6.40 (0.00)	6.70 (0.71)	6.50 (0.14)	0/1 (0.0)	0/2 (0.0)	0/2 (0.0)	0/2 (0.0)
≥3 OADs		7.51 (1.29)	7.45 (1.32)	7.20 (1.06)	7.13 (1.09)	7/24 (29.2)	15/46 (32.6)	15/62 (24.2)	25/79 (31.6)
Any injectables		8.42 (2.77)	7.32 (1.28)	7.09 (1.08)	7.02 (1.56)	7/14 (50.0)	7/19 (36.8)	8/19 (42.1)	8/18 (44.4)
Unknown/ withdrawn		6.69 (1.07)	6.47 (0.72)	6.64 (1.31)	6.73 (1.35)	20/48 (41.7)	25/49 (51.0)	30/56 (53.6)	32/62 (51.6)

[†]Target HbA1c was set by a physician at baseline

DPP-4i, dipeptidyl peptidase-4 inhibitor; HbA1c, hemoglobin A1c; OAD, oral antidiabetic drug; SGLT2i, sodium-glucose cotransporter-2 inhibitor

Table S4. Achievement of HbA1c <7.0% by baseline characteristics

	Baseline category	Baseline HbA1c (%)		HbA1c <7.0%								
		N	Mean (SD)	p-value [†]	6 months		12 months		18 months		24 months	
					n/N (%)	p-value [‡]	n/N (%)	p-value [‡]	n/N (%)	p-value [‡]	n/N (%)	p-value [‡]
All patients [§]		1429	8.08 (1.83)		893/1270 (70.3)		862/1186 (72.7)		803/1122 (71.6)		753/1068 (70.5)	
Age, years	<54	452	8.63 (2.05)	0.0001	258/395 (65.3)	0.0008	239/364 (65.7)	0.0003	221/337 (65.6)	0.0002	185/309 (59.9)	0.0001
	≥54, <66	460	8.15 (1.91)		280/411 (68.1)		285/391 (72.9)		260/376 (69.1)		261/362 (72.1)	
	≥66	517	7.54 (1.34)		355/464 (76.5)		338/431 (78.4)		322/409 (78.7)		307/397 (77.3)	
Sex	Male	878	8.25 (1.90)	0.0001	532/776 (68.6)	0.0892	511/717 (71.3)	0.1832	453/671 (67.5)	0.0003	417/633 (65.9)	0.0001
	Female	551	7.82 (1.69)		361/494 (73.1)		351/469 (74.8)		350/451 (77.6)		336/435 (77.2)	
BMI, kg/m ²	<23.79	468	8.11 (2.04)	0.3826	305/418 (73.0)	0.2742	287/382 (75.1)	0.4022	262/364 (72.0)	0.9771	260/348 (74.7)	0.0967
	≥23.79, <27.55	481	7.99 (1.68)		299/428 (69.9)		283/395 (71.6)		266/372 (71.5)		248/360 (68.9)	
	≥27.55	477	8.15 (1.77)		286/421 (67.9)		289/406 (71.2)		273/383 (71.3)		242/357 (67.8)	
HbA1c, %	<7	454	6.58 (0.28)	0.0001	367/389 (94.3)	0.0001	335/355 (94.4)	0.0001	313/345 (90.7)	0.0001	300/333 (90.1)	0.0001

	Baseline category	Baseline HbA1c (%)			HbA1c <7.0%							
		N	Mean (SD)	p-value [†]	6 months		12 months		18 months		24 months	
					n/N (%)	p-value [‡]	n/N (%)	p-value [‡]	n/N (%)	p-value [‡]	n/N (%)	p-value [‡]
	≥7, <8.2	494	7.42 (0.33)		320/438 (73.1)		311/424 (73.3)		295/401 (73.6)		261/385 (67.8)	
	≥8.2	481	10.19 (1.67)		184/405 (45.4)		190/370 (51.4)		178/343 (51.9)		171/320 (53.4)	
Diabetes complications	No	1236	7.98 (1.77)	0.0001	795/1104 (72.0)	0.0010	767/1035 (74.1)	0.0060	717/982 (73.0)	0.0066	671/933 (71.9)	0.0113
	Yes	193	8.78 (2.07)		98/166 (59.0)		95/151 (62.9)		86/140 (61.4)		82/135 (60.7)	
CVD	No	1338	8.12 (1.85)	0.0002	827/1185 (69.8)	0.1408	800/1109 (72.1)	0.1147	746/1051 (71.0)	0.1033	703/999 (70.4)	0.7858
	Yes	91	7.5 (1.46)		66/85 (77.6)		62/77 (80.5)		57/71 (80.3)		50/69 (72.5)	
Dyslipidemia	No	591	8.34 (1.93)	0.0001	353/527 (67.0)	0.0293	336/488 (68.9)	0.0143	312/462 (67.5)	0.0129	297/442 (67.2)	0.0484
	Yes	838	7.9 (1.74)		540/743 (72.7)		526/698 (75.4)		491/660 (74.4)		456/626 (72.8)	
Hypertension	No	694	8.43 (1.99)	0.0001	387/614 (63.0)	0.0001	365/567 (64.4)	0.0001	343/540 (63.5)	0.0001	330/508 (65.0)	0.0002
	Yes	735	7.76 (1.61)		506/656 (77.1)		497/619 (80.3)		460/582 (79.0)		423/560 (75.5)	

	Baseline category	Baseline HbA1c (%)		HbA1c <7.0%								
		N	Mean (SD)	6 months		12 months		18 months		24 months		
				p-value [†]	n/N (%)	p-value [‡]	n/N (%)	p-value [‡]	n/N (%)	p-value [‡]	n/N (%)	p-value [‡]
Other comorbidities [¶]	No	973	8.21 (1.91)	0.0001	583/855 (68.2)	0.0184	568/803 (70.7)	0.0308	528/764 (69.1)	0.0085	500/720 (69.4)	0.2837
	Yes	456	7.81 (1.61)		310/415 (74.7)		294/383 (76.8)		275/358 (76.8)		253/348 (72.7)	
Diabetes specialist	No	813	7.88 (1.77)	0.0001	528/718 (73.5)	0.0044	506/668 (75.7)	0.0085	470/631 (74.5)	0.0163	435/597 (72.9)	0.0588
	Yes	616	8.35 (1.89)		365/552 (66.1)		356/518 (68.7)		333/491 (67.8)		318/471 (67.5)	
Cardiologist	No	1128	8.18 (1.85)	0.0001	695/1007 (69.0)	0.0490	667/934 (71.4)	0.0668	618/889 (69.5)	0.0026	578/838 (69.0)	0.0411
	Yes	301	7.73 (1.74)		198/263 (75.3)		195/252 (77.4)		185/233 (79.4)		175/230 (76.1)	

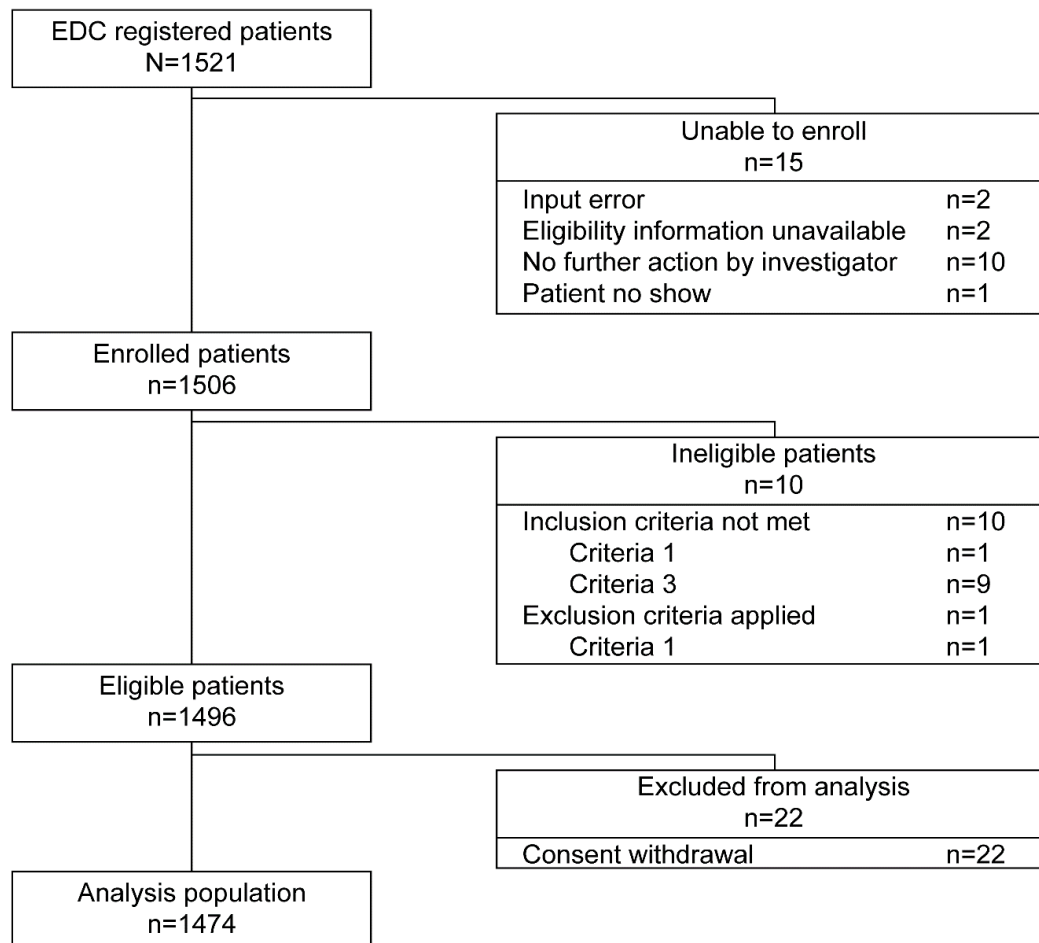
ANOVA, analysis of variance; BMI, body mass index; CVD, cardiovascular disease; HbA1c, hemoglobin A1c

[†]Calculated using Welch's test and one-way ANOVA for pairwise and multiple comparison, respectively

[‡]Calculated using Fisher's exact test and Chi-square test for pairwise and multiple comparison, respectively

[§]Patients with available HbA1c data were included in this analysis.

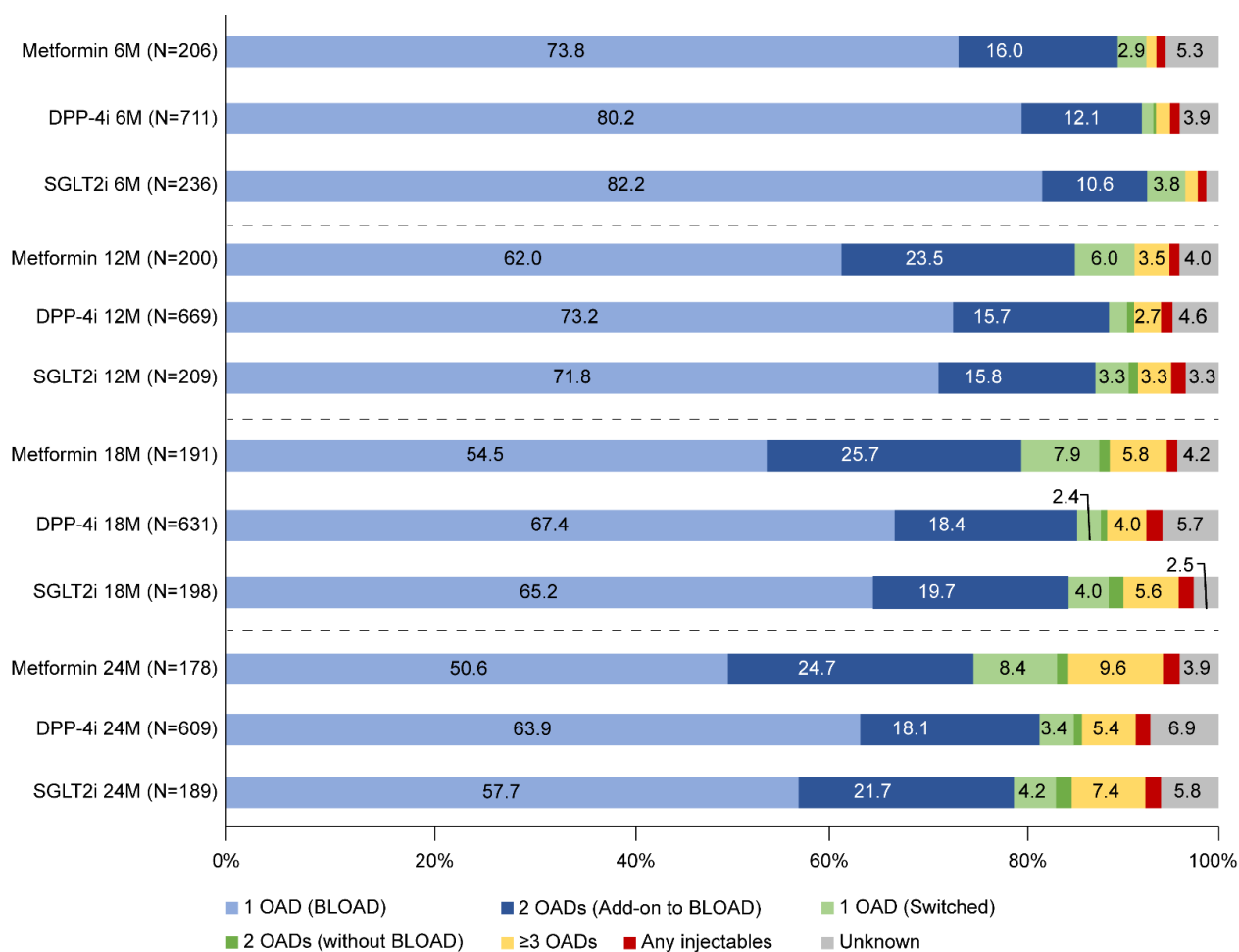
[¶]Most common comorbidities were liver disease, cerebrovascular disease, atrial fibrillation, chronic kidney disease and peptic ulcer disease, excluding those categorized as diabetes complications, CVD, dyslipidemia and hypertension.

Figure S1. Patient disposition

Inclusion criterion 1: Japanese adult patients with a diagnosis of T2DM by a physician; inclusion criterion 3: treatment-naïve patients who were newly initiating an OAD as monotherapy; exclusion criteria 1: type 1 diabetes, gestational diabetes or other form of secondary diabetes

One patient met both an inclusion criterion and an exclusion criterion at the same time

EDC, electronic data capture; OAD, oral antidiabetic drug; T2DM, type 2 diabetes mellitus

Figure S2. Distribution of treatment regimens over time according to baseline OAD

Data <2% are not shown.

BLOAD, baseline oral antidiabetic agent; DPP-4i, dipeptidyl peptidase-4 inhibitor; M, month; OAD, oral antidiabetic drug; SGLT2i, sodium-glucose cotransporter-2 inhibitor; unknown group refers to patients who had prescribing information unavailable during follow-up.