

Cost-utility analysis of sodium-glucose cotransporter-2 inhibitors on chronic kidney disease progression in patients with type 2 diabetes mellitus

Supplementary Table 1: Baseline characteristic of patients with type 2 diabetes and chronic kidney disease stage 3

Supplementary Table 2: Cumulative failure probability for each transition

Supplementary Figure 1: Number of patients prescribed SGLT2i and non-SGLT2i by year

Supplementary Figure 2: Breakdown of annual cost per patient by category

Supplementary Table 1: Baseline characteristic of patients with type 2 diabetes and chronic kidney disease stage 3

a) Before balancing by inverse-probability weighting

Baseline Characteristics	Overall (N = 20,735)	SGLT2i (n = 2,194)	Non-SGLT2i (n = 18,541)	p-value
Age, year, mean (SD)	70.0 (10.4)	66.8 (9.5)	70.4 (10.4)	<0.001
Age, year, n (%)				
< 40	155 (0.8)	14 (0.6)	141 (0.8)	< 0.001
40 - 60	3,436 (16.6)	519 (23.7)	2,917 (15.7)	
> 60	17,144 (82.7)	1,661 (75.7)	15,483 (83.5)	
Sex, male, n (%)	10,017 (48.3)	1,253 (57.1)	8,764 (47.3)	< 0.001
BMI, kg/m ² , median (IQR)	26.5 (24.6, 28.4)	27.3 (25.0, 29.7)	26.4 (24.5, 28.2)	< 0.001
BMI, kg/m ² , n (%)				
< 18	162 (0.8)	14 (0.6)	148 (0.8)	< 0.001
18 - 25	6,111 (29.5)	530 (24.2)	5,581 (30.1)	
> 25	14,462 (69.8)	1,650 (75.2)	12,812 (69.1)	
eGFR, ml/minute/1.73 m ² , mean (SD)	48.49 (8.2)	50.37 (7.5)	48.27 (8.3)	< 0.001
HbA1c, %, median (IQR)	6.8 (6.3, 7.7)	7.3 (6.6, 8.3)	6.8 (6.3, 7.6)	< 0.001
HbA1c, %, n (%)				
< 7	11,842 (57.1)	871 (39.7)	10,971 (59.2)	< 0.001
≥ 7	8,893 (42.9)	1,323 (60.3)	7,570 (40.8)	
HDL-C, mg/dL, median (IQR)	44.6 (38.9, 52.0)	42.0 (37.0, 49.0)	45.0 (39.0, 52.0)	< 0.001
HDL-C, mg/dL, n (%)				
< 40	5,997 (28.9)	830 (37.8)	5,167 (27.9)	< 0.001
≥ 40	14,738 (71.1)	1,364 (62.2)	13,374 (72.1)	
CVD, n (%)	4,877 (23.5)	836 (38.1)	4,041 (21.8)	< 0.001
DR, n (%)	1,894 (9.1)	283 (12.9)	1,611 (8.7)	< 0.001
Duration of T2D, years, median (IQR)	2.5 (0, 6.4)	4.0 (0.2, 10.2)	2.5 (0, 6.3)	<0.001
Health insurance scheme, n (%)				
NHSO	3,285 (15.8)	177 (8.1)	3,108 (16.8)	< 0.001
SSS	594 (2.9)	57 (2.6)	537 (2.9)	
CSMBS	12,189 (58.8)	1,577 (71.9)	10,612 (57.2)	
Self-paid	4,667 (22.5)	383 (17.5)	4,284 (23.1)	
Sulfonylureas	6,392 (30.8)	656 (29.9)	5,736 (30.9)	0.320
Thiazolidinediones	2,801 (13.5)	410 (18.7)	2,391 (12.9)	< 0.001
DPP-4 inhibitors	3,604 (17.4)	666 (30.4)	2,938 (15.9)	< 0.001

BMI, body mass index; CSMBS, Civil Service Medical Benefits Scheme; CVD, cardiovascular disease; DPP-4, Dipeptidyl peptidase-4; DR, diabetic retinopathy; eGFR, estimated glomerular filtration rate; HbA1c, hemoglobin A1c; HDL-C, high-density lipoprotein cholesterol; IQR, interquartile range; NHSO, National Health Security; SD, standard deviation; SSS, Social Security Scheme; T2D, type 2 diabetes

b) After balancing by inverse-probability weighting

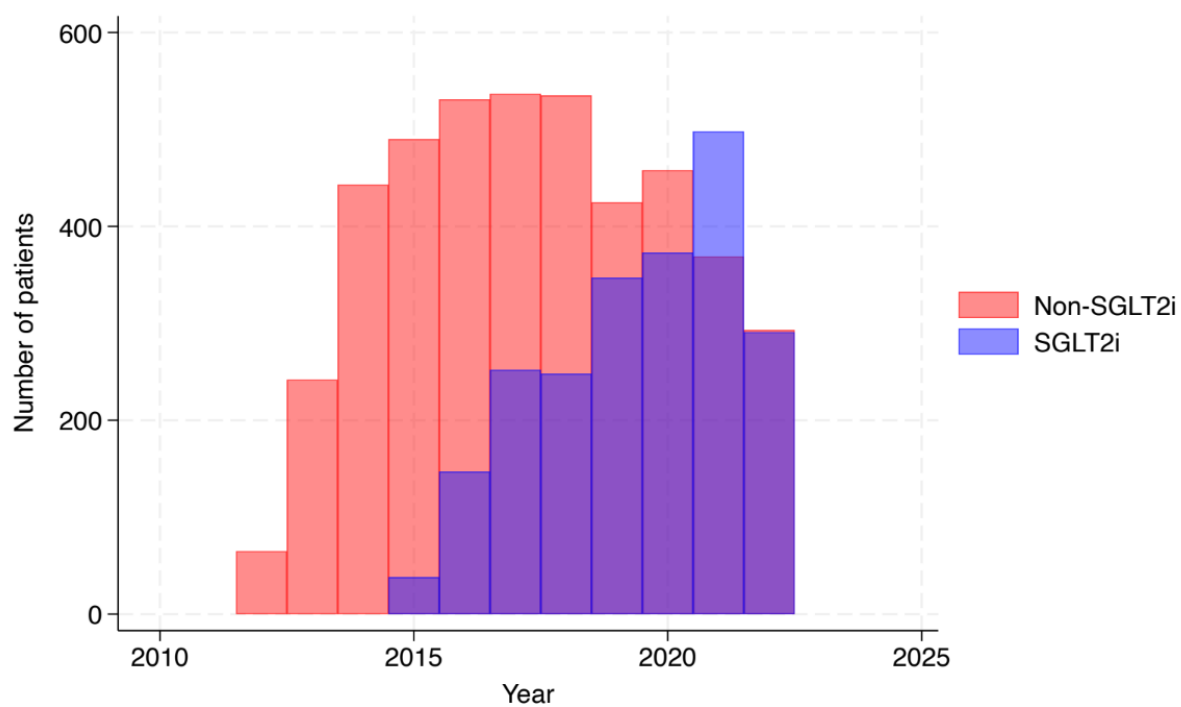
Variables	Standardized difference		Variance ratio	
	Raw	Weighted	Raw	Weighted
Age, year				
40 - 60	0.147229	-0.018328	1.239632	0.9718187
> 60	-0.1338578	0.0166271	1.204997	0.9756549
Sex (Male)	0.1172756	-0.0066177	0.9806397	1.000767
BMI, kg/m ²				
< 18	-0.0188939	-0.0037051	0.8014692	0.9580547
> 25	0.2675976	0.0068058	0.7996457	0.99494
eGFR (ml/min/1.73 m ²)	0.2801222	0.0065615	0.7953911	0.9300069
HDL-C $\geq$ 40 mg/dL	-0.1457426	0.0001199	1.101249	0.9999144
HbA1c $\geq$ 7 %	0.2850833	-0.0007748	0.96329	1.000025
Hypertension	0.1119595	-0.0087426	0.7040261	1.026165
CVD	0.3961874	0.0170563	1.45172	1.017762
DR	0.171534	0.0003832	1.580645	1.001074
Health insurance scheme				
SSS	-0.0181262	-0.0058218	0.9005817	0.9664094
CSMBS	0.3315896	-0.0171343	0.8212581	1.007575
Self-paid	-0.118535	0.0011361	0.8351657	1.001634

BMI, body mass index; CSMBS, Civil Service Medical Benefits Scheme; CVD, cardiovascular disease; DR, diabetic retinopathy; eGFR, estimated glomerular filtration rate; HbA1c, hemoglobin A1c; HDL-C, high-density lipoprotein cholesterol; SSS, Social Security Scheme

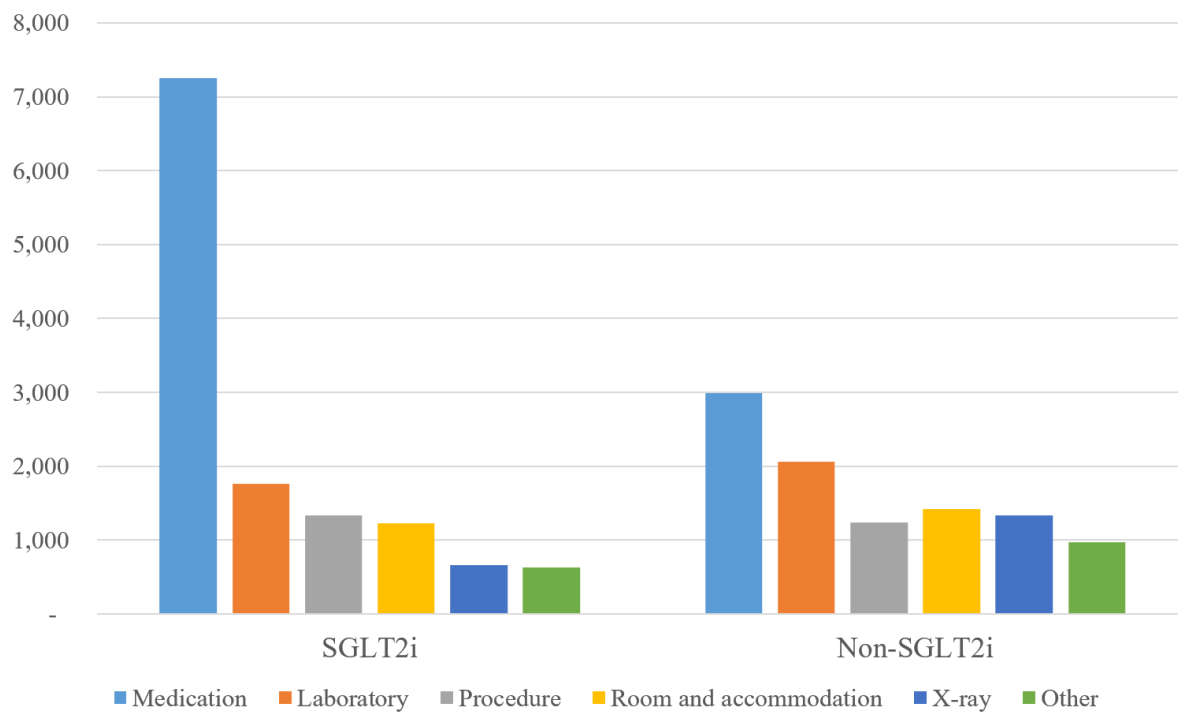
Supplementary Table 2: Cumulative failure probability in percentage for each transition

Transition	Cohort	Time (years)									
		1	2	3	4	5	6	7	8	9	10
CKD3→CKD4	SGLT2i	0.4 (0.1, 0.8)	1.3 (0.6, 2.0)	2.2 (1.3, 3.1)	3.1 (2.2, 4.2)	4.0 (2.9, 5.3)	5.6 (4.3, 7.1)	6.8 (5.3, 8.4)	8.7 (7.0, 10.5)	10.2 (8.5, 12.0)	13.2 (11.2, 15.3)
	Non-SGLT2i	1.8 (1.0, 2.7)	5.1 (3.7, 6.5)	8.5 (6.8, 10.1)	11.3 (9.5, 13.3)	13.8 (11.7, 15.9)	17.7 (15.4, 20.0)	20.2 (17.8, 22.8)	23.9 (21.4, 26.5)	26.5 (23.7, 29.2)	31.0 (28.3, 33.9)
CKD3→CKD5	SGLT2i	0.2 (0.0, 0.5)	0.5 (0.1, 1.0)	0.9 (0.3, 1.5)	0.9 (0.4, 1.5)	1.3 (0.7, 2.0)	1.6 (0.9, 2.5)	1.8 (1.1, 2.7)	1.9 (1.1, 2.8)	2.0 (1.2, 3.0)	2.5 (1.5, 3.5)
	Non-SGLT2i	0.3 (0.0, 0.7)	0.9 (0.4, 1.5)	1.5 (0.8, 2.3)	1.6 (0.9, 2.4)	2.2 (1.3, 3.1)	2.9 (1.9, 3.9)	3.2 (2.0, 4.3)	3.3 (2.2, 4.4)	3.5 (2.4, 4.7)	4.2 (3.0, 5.5)
CKD3→Death	SGLT2i	0.4 (0.1, 0.8)	0.7 (0.2, 1.3)	0.9 (0.4, 1.5)	1.1 (0.5, 1.9)	1.4 (0.7, 2.2)	1.8 (1.0, 2.7)	2.0 (1.2, 3.0)	2.5 (1.6, 3.5)	2.6 (1.7, 3.7)	2.9 (1.9, 4.0)
	Non-SGLT2i	1.3 (0.7, 2.1)	2.1 (1.3, 3.2)	2.8 (1.8, 3.9)	3.4 (2.4, 4.7)	4.3 (3.0, 5.7)	5.4 (4.0, 6.8)	6.1 (4.5, 7.8)	7.3 (5.6, 9.0)	7.9 (6.1, 9.7)	8.5 (6.6, 10.3)
CKD4→CKD5	SGLT2i	0.5 (0.1, 1.0)	1.0 (0.5, 1.7)	2.7 (1.7, 3.8)	4.5 (3.2, 5.9)	7.1 (5.5, 8.7)	9.8 (7.9, 11.5)	12.0 (10.1, 14.0)	13.6 (11.5, 15.6)	15.6 (13.3, 17.8)	18.3 (15.9, 20.6)
	Non-SGLT2i	1.1 (0.5, 1.8)	2.2 (1.4, 3.1)	5.9 (4.5, 7.4)	9.5 (7.8, 11.5)	14.8 (12.6, 17.0)	20.1 (17.6, 22.4)	24.5 (21.7, 27.0)	27.4 (24.6, 30.1)	31.0 (28.3, 33.9)	35.6 (32.8, 38.6)
CKD4→Death	SGLT2i	0.5 (0.1, 0.9)	0.6 (0.1, 1.0)	0.8 (0.3, 1.4)	1.0 (0.5, 1.7)	1.2 (0.6, 1.9)	1.8 (1.0, 2.7)	2.8 (1.9, 3.9)	3.1 (2.1, 4.3)	3.6 (2.4, 4.8)	5.7 (4.2, 7.2)
	Non-SGLT2i	1.6 (0.9, 2.4)	2.0 (1.2, 2.9)	2.8 (1.9, 3.8)	3.7 (2.6, 4.8)	4.4 (3.2, 5.7)	6.5 (5.1, 8.0)	9.8 (8.1, 11.5)	10.8 (9.1, 12.7)	12.3 (10.4, 14.2)	19.3 (16.9, 21.6)
CKD5→Death	SGLT2i	2.0 (1.2, 2.9)	4.0 (2.9, 5.2)	11.0 (9.1, 12.9)	13.2 (11.2, 15.2)	16.1 (14.0, 18.5)	23.7 (21.2, 26.4)	29.3 (26.5, 32.0)	35.7 (32.7, 38.7)	37.4 (34.4, 40.5)	48.0 (45.1, 51.2)
	Non-SGLT2i	1.4 (0.8, 2.1)	2.8 (1.7, 3.8)	7.7 (6.2, 9.4)	9.3 (7.7, 11.0)	11.5 (9.6, 13.5)	17.1 (14.8, 19.3)	21.3 (18.8, 23.6)	26.3 (23.7, 28.9)	27.7 (25.0, 30.2)	36.3 (33.5, 39.1)

CKD, chronic kidney disease; SGLT2i, sodium-glucose cotransporter-2 inhibitor



Supplementary Figure 1: Number of patients prescribed SGLT2i and non-SGLT2i by year



Supplementary Figure 2: Breakdown of annual cost per patient by category