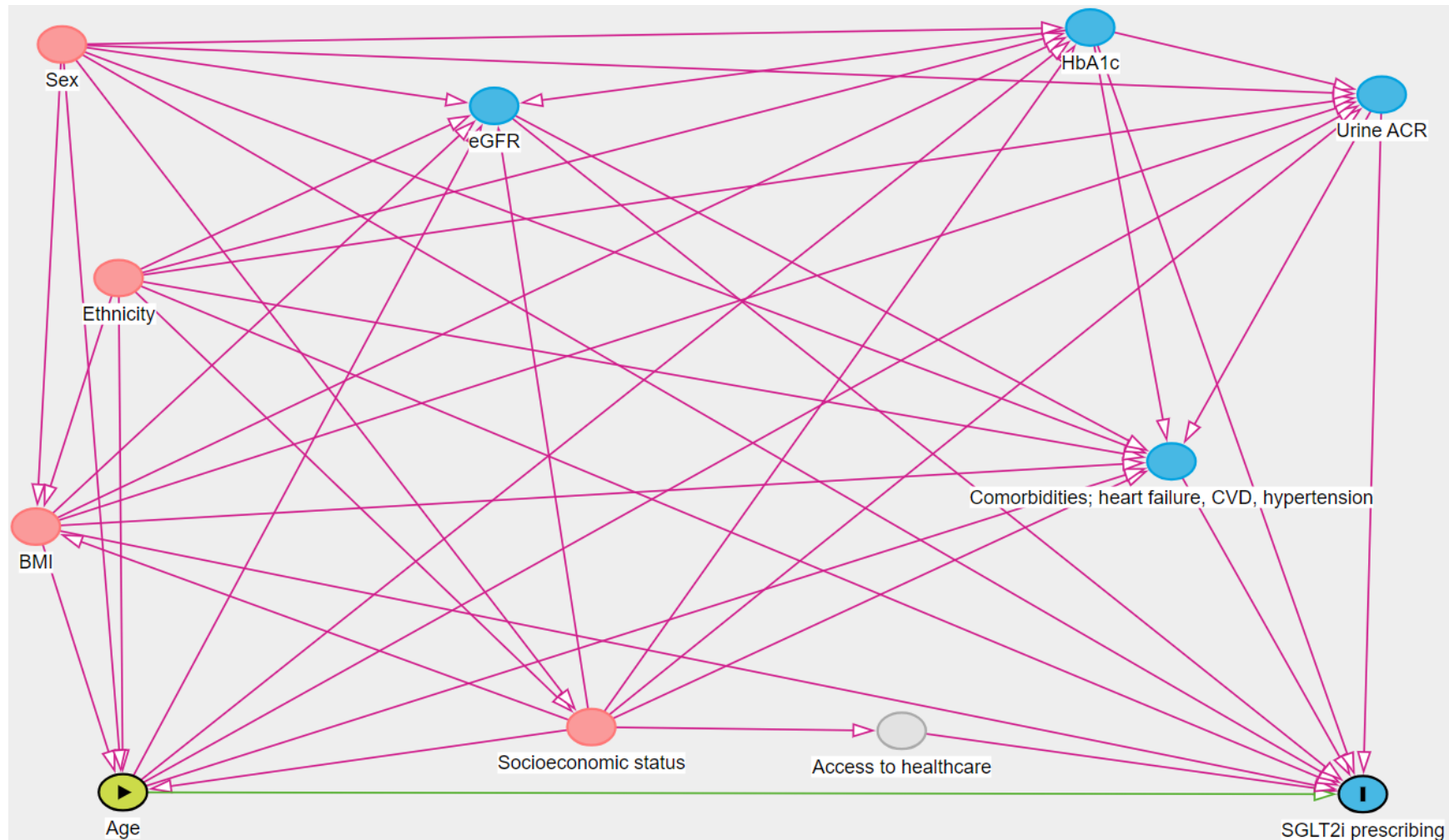


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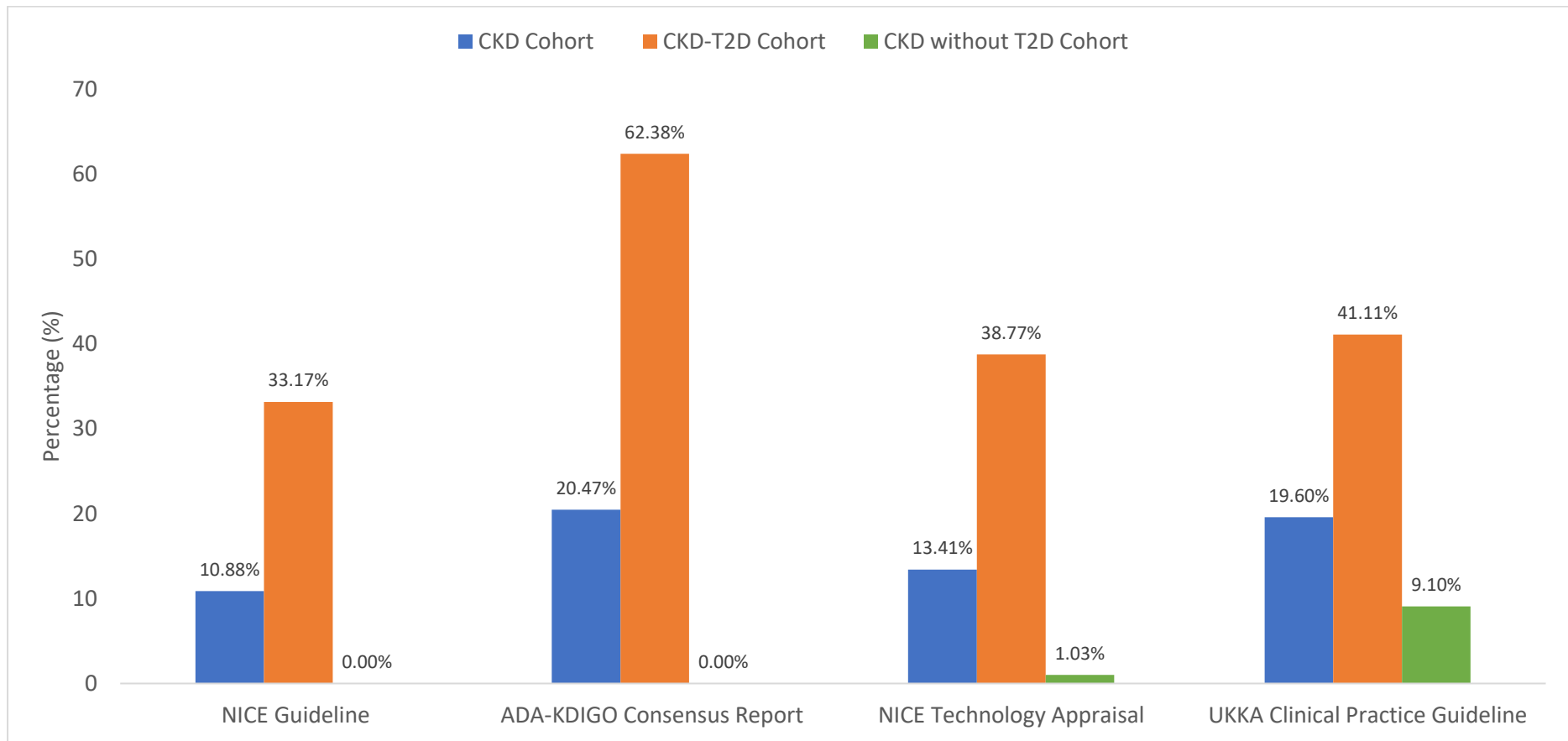
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Figure S1: Directed acyclic graph showing the hypothesised relationship between the exposure variable (age) and outcome variable (SGLT2 inhibitor prescribing).



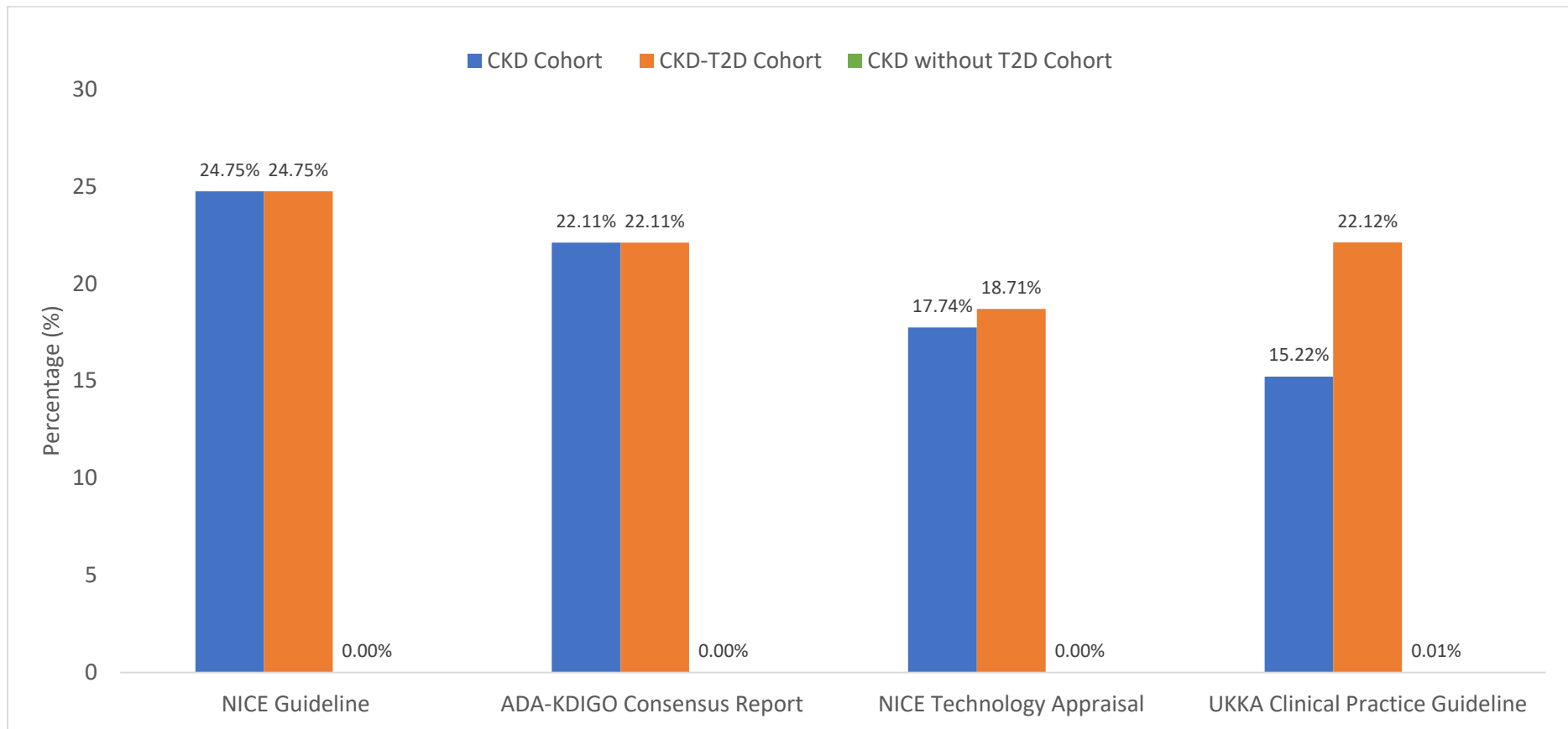
CVD – cardiovascular disease, eGFR – estimated glomerular filtration rate, urine ACR – urine albumin-to-creatinine ratio, SGLT2i – sodium-glucose co-transporter 2 inhibitor, HbA1c – glycated haemoglobin, BMI – body mass index.

Figure S2: Proportion of CKD population that met at least one guideline directed indication for SGLT2 inhibitor treatment stratified by guideline.



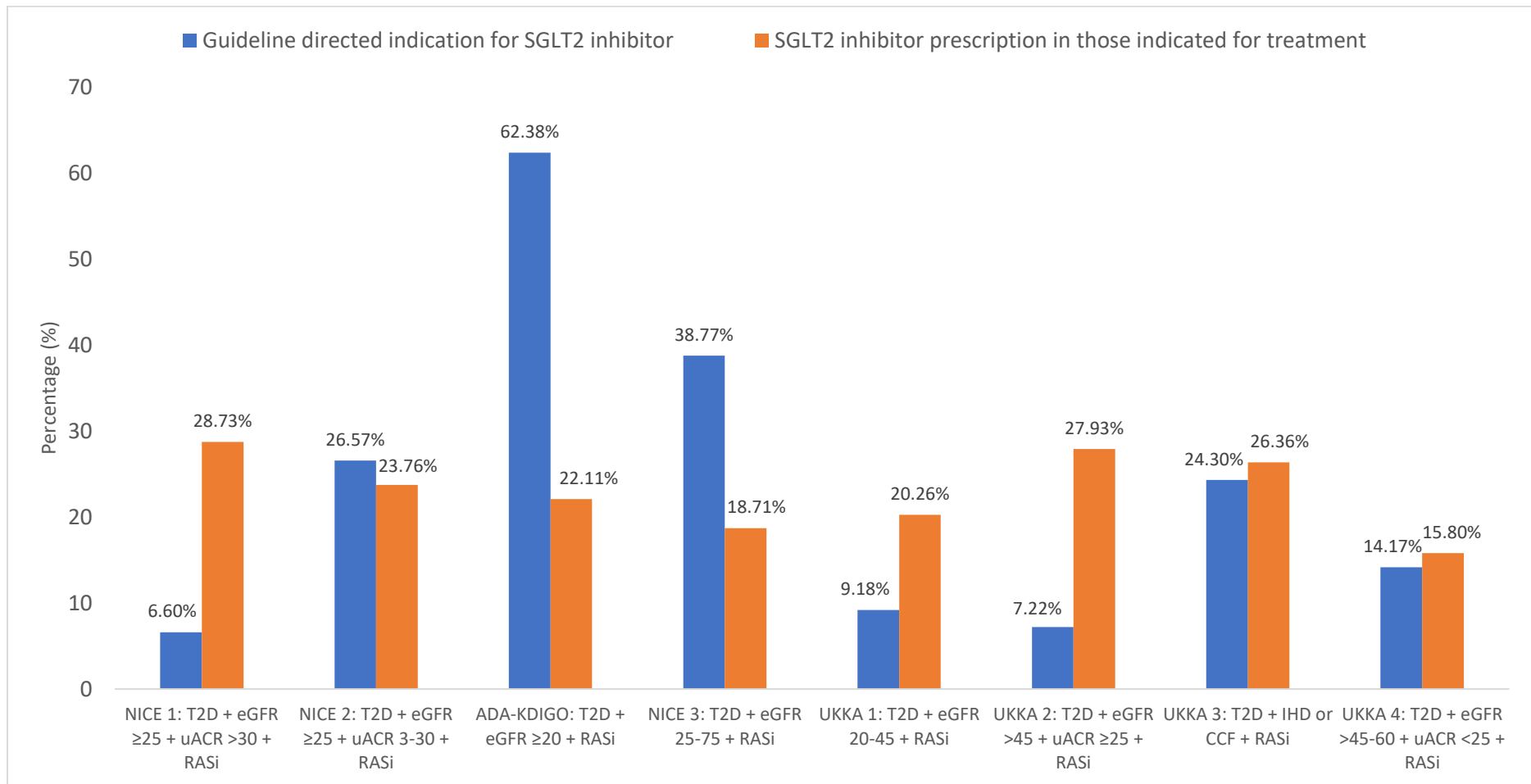
SGLT2 inhibitor – sodium-glucose co-transporter 2 inhibitor, CKD – chronic kidney disease, T2D – type 2 diabetes, NICE – National Institute for Health and Care Excellence, ADA – American Diabetes Association, KDIGO – Kidney Disease: Improving Global Outcomes, UKKA – United Kingdom Kidney Association.

Figure S3: Proportion of CKD population indicated for treatment prescribed an SGLT2 inhibitor stratified by guideline.



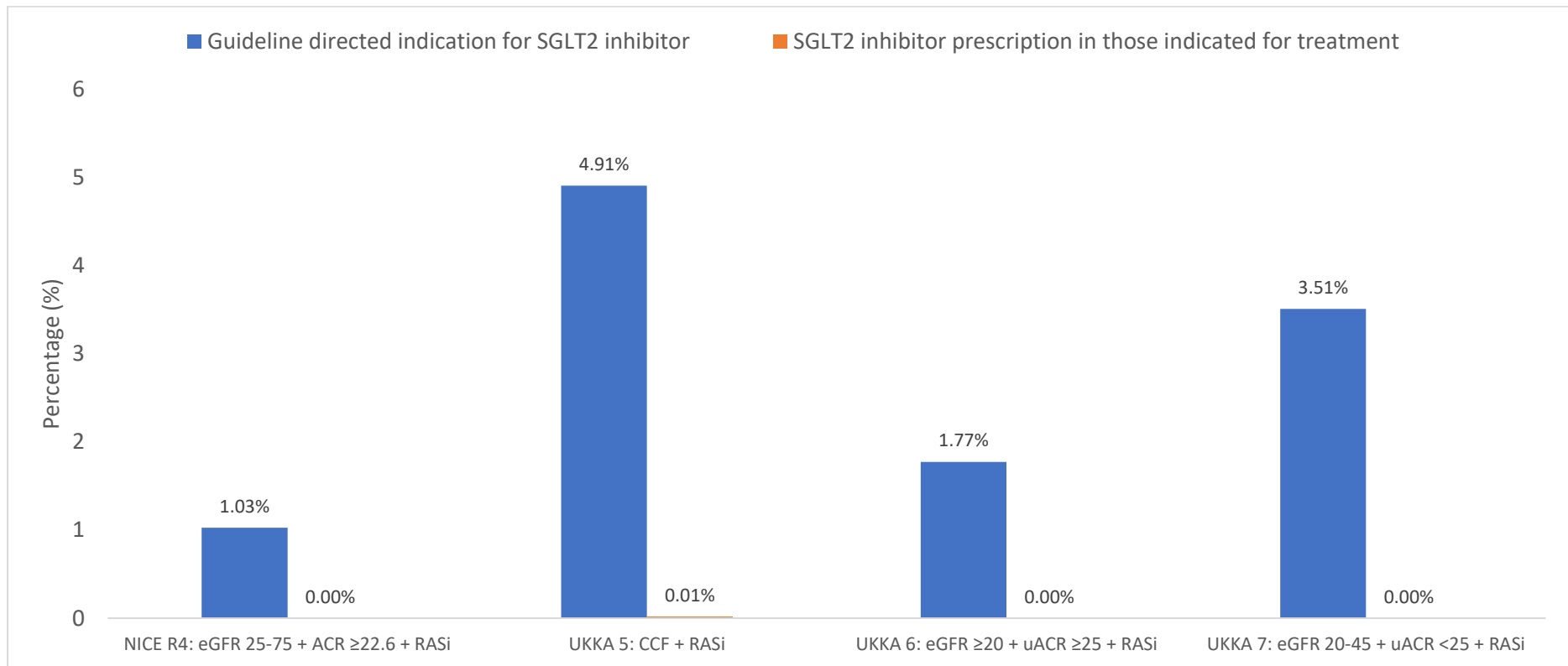
SGLT2 inhibitor – sodium-glucose co-transporter 2 inhibitor, CKD – chronic kidney disease, T2D – type 2 diabetes, NICE – National Institute for Health and Care Excellence, ADA – American Diabetes Association, KDIGO – Kidney Disease: Improving Global Outcomes, UKKA – United Kingdom Kidney Association.

Figure S4: CKD-T2D cohort and guideline directed indications for SGLT2 inhibitor treatment stratified by each indication.



SGLT2 inhibitor – sodium-glucose co-transporter 2 inhibitor, CKD – chronic kidney disease, T2D – type 2 diabetes, RASi – renin-angiotensin system inhibitor, IHD – ischaemic heart disease, CCF – congestive cardiac failure, eGFR – estimated glomerular filtration rate, uACR – urine albumin-to-creatinine ratio, NICE – National Institute for Health and Care Excellence, ADA – American Diabetes Association, KDIGO – Kidney Disease: Improving Global Outcomes, UKKA – United Kingdom Kidney Association.

Figure S5: CKD without T2D cohort and guideline directed indications for SGLT2 inhibitor treatment stratified by each indication.



SGLT2 inhibitor – sodium-glucose co-transporter 2 inhibitor, CKD – chronic kidney disease, T2D – type 2 diabetes, RASi – renin-angiotensin system inhibitor, CCF – congestive cardiac failure, eGFR – estimated glomerular filtration rate, uACR – urine albumin-to-creatinine ratio, NICE – National Institute for Health and Care Excellence, UKKA – United Kingdom Kidney Association.

Table S1: Sensitivity analysis 1 of multivariable logistic regression model using complete cases to explore factors associated with SGLT2 inhibitor prescribing in CKD-T2D cohort meeting guideline directed indications for SGLT2 inhibitor treatment.

Variable	n prescribed SGLT2i / N indicated	Percentage indicated prescribed SGLT2i, %	Unadjusted Odds Ratio (95% CI)	p-value	Multivariable Model 1* Odds Ratio (95% CI)	p-value	Multivariable Model 2** Odds Ratio (95% CI)	p-value
Age (years)	15588/73910	21.09	0.94 (0.94-0.94)	<0.0001	0.95 (0.95-0.95)	<0.0001	-	-
Sex								
Male	10528/43049	24.46	1.0 (Reference)				-	-
Female	5060/30861	16.40	0.61 (0.58-0.63)	<0.0001	0.71 (0.68-0.74)	<0.0001	-	-
Ethnicity								
White	12301/61010	20.16	1.0 (Reference)		1.0 (Reference)		-	-
Asian	2267/8085	28.04	1.54 (1.46-1.63)	<0.001	1.07 (1.00-1.14)	0.038	-	-
Black	670/3390	19.76	0.98 (0.89-1.06)	0.574	0.78 (0.70-0.86)	<0.001	-	-
Mixed	175/718	24.37	1.28 (1.07-1.51)	0.005	0.97 (0.79-1.17)	0.726	-	-
Other	175/707	24.75	1.30 (1.09-1.54)	0.003	1.06 (0.87-1.29)	0.555	-	-
IMD quintile								
5 (least deprived)	2009/9710	20.69	1.0 (Reference)					
4	2743/13390	20.49	1.04 (0.98-1.10)	0.20	0.96 (0.90-1.03)	0.25	-	-
3	2997/14906	20.11	1.06 (1.00-1.12)	0.063	0.89 (0.83-0.95)	0.0004	-	-
2	4020/18730	21.46	1.09 (1.03-1.16)	0.0023	0.78 (0.73-0.84)	<0.0001	-	-
1 (most deprived)	3819/17174	22.24	1.23 (1.17-1.30)	<0.0001	0.76 (0.71-0.81)	<0.0001	-	-
eGFR mL/min/1.73m²								
≥60	12078/46044	26.23	1.0 (Reference)				1.0 (Reference)	
≥45 to <60	2100/17639	11.91	0.38 (0.36-0.40)	<0.0001	-	-	0.62 (0.59-0.66)	<0.0001
≥30 to <45	1213/8508	14.26	0.47 (0.44-0.50)	<0.0001	-	-	0.74 (0.69-0.80)	<0.0001
≥15 to <30	196/1608	12.19	0.39 (0.33-0.45)	<0.0001	-	-	0.54 (0.46-0.64)	<0.0001
<15	1/111	0.90	0.03 (0.00-0.11)	0.0002	-	-	0.01 (0.00-0.07)	<0.0001
Urine ACR mg/mmol								
<3	6142/32188	19.08	1.0 (Reference)				1.0 (Reference)	
≥3 to ≤30	7047/33008	21.35	1.15 (1.11-1.20)	<0.0001	-	-	0.77 (0.74-0.81)	<0.0001
>30	2399/8714	27.53	1.61 (1.53-1.70)	<0.0001	-	-	1.06 (0.99-1.13)	0.080
Comorbidities								
CVD								
Absent	10678/49769	21.46	1.0 (Reference)				1.0 (Reference)	
Present	4910/24141	20.34	0.93 (0.90-0.97)	0.0005	-	-	1.12 (1.07-1.17)	<0.0001

Heart failure							
Absent	12451/62752	19.84	1.0 (Reference)	-	-	1.0 (Reference)	
Present	3137/11158	28.11	1.58 (1.51-1.65)	<0.0001	-	2.62 (2.47-2.78)	<0.0001

CVD – cardiovascular disease, IMD – index of multiple deprivation, eGFR – estimated glomerular filtration rate, urine ACR – urine albumin-to-creatinine ratio, HbA1c – glycated haemoglobin, BMI – body mass index, CI – confidence interval, SGLT2i – sodium-glucose co-transporter 2 inhibitor, CKD – chronic kidney disease, T2D – type 2 diabetes. CVD defined as ischaemic heart disease, stroke, and peripheral arterial disease.

*Multivariable model 1 includes the following covariates: age (years), sex (male, female), ethnicity (White, Asian, Black Mixed, Other), IMD quintile (IMD quintile 1-5), BMI category (<18.5 kg/m², ≥18.5-<25 kg/m², ≥25-<30 kg/m², ≥30-<35 kg/m², ≥35-<40 kg/m², ≥40 kg/m²), HbA1c category (<53 mmol/mol, ≥53-<64 mmol/mol, ≥64-<75 mmol/mol, ≥75-<85 mmol/mol, ≥85 mmol/mol), eGFR category (≥60 mL/min/1.73m², 45-59 mL/min/1.73m², 30-44 mL/min/1.73m², 15-29 mL/min/1.73m², <15 mL/min/1.73m²), urine ACR category (<3 mg/mmol, 3-30 mg/mmol, >30 mg/mmol), cardiovascular disease (absent, present), heart failure (absent, present), and hypertension (absent, present). **Multivariable model 2 includes the covariates in model 1 in addition to duration of type 2 diabetes (years) and diuretic prescription (absent, present). N = 73910.

Table S2: Sensitivity analysis 2 of multivariable logistic regression model using missing indicator method to explore factors associated with SGLT2 inhibitor prescribing in CKD-T2D cohort meeting guideline directed indications for SGLT2 inhibitor treatment.

Variable	n prescribed SGLT2i / N indicated	Percentage indicated prescribed SGLT2i, %	Unadjusted Odds Ratio (95% CI)	p-value	Multivariable Model 1* Odds Ratio (95% CI)	p-value	Multivariable Model 2** Odds Ratio (95% CI)	p-value
Age (years)	23464/106468	22.04	0.94 (0.94-0.95)	<0.0001	0.95 (0.95-0.95)	<0.0001	-	-
Sex								
Male	15716/60552	25.95	1.0 (Reference)				-	-
Female	7748/45916	16.87	0.58 (0.56-0.60)	<0.0001	0.70 (0.67-0.72)	<0.0001	-	-
Ethnicity								
White	19077/89928	21.21	1.0 (Reference)		1.0 (Reference)		-	-
Asian	2982/10386	28.71	1.50 (1.43-1.57)	<0.0001	1.07 (1.01-1.13)	0.017	-	-
Black	920/4306	21.37	1.01 (0.94-1.09)	0.81	0.84 (0.77-0.91)	<0.0001	-	-
Mixed	242/946	25.58	1.28 (1.10-1.48)	0.0011	0.97 (0.82-1.15)	0.75	-	-
Other	243/902	26.94	1.37 (1.18-1.59)	<0.0001	1.07 (0.90-1.27)	0.43	-	-
IMD quintile								
5 (least deprived)	4113/19402	21.20	1.0 (Reference)		1.0 (Reference)		-	-
4	4662/21563	21.62	1.03 (0.98-1.08)	0.30	0.95 (0.89-1.00)	0.045	-	-
3	4577/21254	21.53	1.02 (0.97-1.07)	0.41	0.86 (0.81-0.91)	<0.0001	-	-
2	4902/22167	22.11	1.06 (1.01-1.11)	0.024	0.77 (0.73-0.81)	<0.0001	-	-
1 (most deprived)	5210/22082	23.59	1.15 (1.10-1.20)	<0.0001	0.72 (0.68-0.76)	<0.0001	-	-
eGFR mL/min/1.73m²								
≥60	17079/63870	26.74	1.0 (Reference)		-	-	1.0 (Reference)	
≥45 to <60	3594/26183	13.73	0.44 (0.42-0.45)	<0.0001	-	-	0.66 (0.63-0.69)	<0.0001
≥30 to <45	1885/12369	15.24	0.49 (0.47-0.52)	<0.0001	-	-	0.74 (0.70-0.79)	<0.0001
≥15 to <30	321/2417	13.28	0.42 (0.37-0.47)	<0.0001	-	-	0.52 (0.45-0.59)	<0.0001
<15	2/226	0.88	0.02 (0.00-0.08)	<0.0001	-	-	0.01 (0.00-0.04)	<0.0001
Missing	583/1403	41.55	1.95 (1.75-2.17)	<0.0001	-	-	1.33 (1.14-1.55)	0.0003
Urine ACR mg/mmol								
<3	6935/36360	19.07	1.0 (Reference)		-	-	1.0 (Reference)	
≥3 to ≤30	7907/37185	21.26	1.15 (1.11-1.19)	<0.0001	-	-	0.81 (0.78-0.85)	<0.0001
>30	2771/9914	27.95	1.65 (1.56-1.73)	<0.0001	-	-	1.18 (1.11-1.26)	<0.0001
Missing	5851/23009	25.43	1.45 (1.39-1.51)	<0.0001	-	-	1.09 (1.04-1.15)	0.0006
Comorbidities								
CVD								

Absent	15562/70634	22.03	1.0 (Reference)	-	-	1.0 (Reference)
Present	7902/35834	22.05	1.00 (0.97-1.03)	0.94	-	1.08 (1.04-1.13) 0.0001
Heart failure						
Absent	17012/87824	19.37	1.0 (Reference)	-	-	1.0 (Reference)
Present	6452/18644	34.61	2.20 (2.13-2.28)	<0.0001	-	3.45 (3.29-3.63) <0.0001

CVD – cardiovascular disease, IMD – index of multiple deprivation, eGFR – estimated glomerular filtration rate, urine ACR – urine albumin-to-creatinine ratio, HbA1c – glycated haemoglobin, BMI – body mass index, CI – confidence interval, SGLT2i – sodium-glucose co-transporter 2 inhibitor, CKD – chronic kidney disease, T2D – type 2 diabetes. CVD defined as ischaemic heart disease, stroke, and peripheral arterial disease.

*Multivariable model 1 includes the following covariates: age (years), sex (male, female), ethnicity (White, Asian, Black Mixed, Other), IMD quintile (IMD quintile 1-5), BMI category (<18.5 kg/m², ≥18.5-<25 kg/m², ≥25-<30 kg/m², ≥30-<35 kg/m², ≥35-<40 kg/m², ≥40 kg/m²), HbA1c category (<53 mmol/mol, ≥53-<64 mmol/mol, ≥64-<75 mmol/mol, ≥75-<85 mmol/mol, ≥85 mmol/mol), eGFR category (≥60 mL/min/1.73m², 45-59 mL/min/1.73m², 30-44 mL/min/1.73m², 15-29 mL/min/1.73m², <15 mL/min/1.73m²), urine ACR category (<3 mg/mmol, 3-30 mg/mmol, >30 mg/mmol), cardiovascular disease (absent, present), heart failure (absent, present), and hypertension (absent, present). **Multivariable model 2 includes the covariates in model 1 in addition to duration of type 2 diabetes (years) and diuretic prescription (absent, present). N = 106468.