

University of Groningen

Quality of prescribing in chronic kidney disease and type 2 diabetes

Smits, Kirsten Petronella Juliana

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Appendix 5: Supplemental data chapter 6

Table S6.1: Definition of comorbidities, which were documented in the medical records by means of the ICPC or short text prescriptions which were manually coded in GIANTT

Comorbidity	Short text prescriptions	ICPC codes
Cardiovascular disease	Ischaemic heart disease with angina	K74
	Acute myocardial infarction	K75
	Ischaemic heart disease without angina	K76
	Heart valve disease	K83
	Other heart disease	K84
	Transient cerebral ischaemia	K89
	Stroke/cerebrovascular accident	K90
	Left ventricular hypertrophy	
	Coronary artery bypass grafting	
	Percutaneous coronary angioplasty	
Peripheral vascular disease	Cerebrovascular disease	K91
	Atherosclerosis/PVD	K92
	Peripheral artery bypass grafting	
	Percutaneous transluminal angioplasty	
Renal complications	Congenital anomaly urinary tract	U85
	Glomerulonephritis/nephrosis	U88
	Orthostatic albumin/proteinuria	U90
	Renal failure	U99.1
	Renal hyperplasia	U99.2
	Renal hydronephrosis	U99.3
	Dialysis	
Kidney transplantation		
Diabetic complications	Retinopathy	F83
	Peripheral diabetic angiopathy	K99.6
	Diabetic neuropathy	N94.2
	Nephropathy	
	Diabetic foot	
	Amputation of toes and/or feet	
Malignancies	Malignancy of unknown primary site	A79
	Hodgkin's disease	B72
	Leukemia	B73
	Other malignancies blood/lymphatic system	B74
	Stomach malignancy	D74
	Colon/rectum malignancy	D75
	Pancreatic malignancy	D76

Table S6.1: Definition of comorbidities, which were documented in the medical records by means of the ICPC or short text prescriptions which were manually coded in GIANTT (continued)

Comorbidity	Short text prescriptions	ICPC codes
	Other nonspecified malignancy digestive system	D77
	Neoplasm eye/adnexa	F74.1
	Ear malignancy	H75.1
	Benign neoplasm cardiovascular system	K72.1
	Neoplasm musculoskeletal	L71.1
	Nervous system malignancy	N74
	Bronchus/lung malignancy	R84
	Other respiratory malignancy	R85
	Skin/subcutaneous malignancy	S77
	Thyroid malignancy	T71
	Kidney malignancy	U75
	Bladder malignancy	U76
	Other urinary tract malignancy	U77
	Cervic uteri malignancy	X75
	Breast malignancy	X76
	Other female genital malignancy	X77
	Prostate malignancy	Y77
	Other male genital malignancy	Y78
Psychological comorbidities	Dementia/Alzheimer	P70
	Other organic psychosis	P71
	Schizophrenia	P72
	Affective psychosis	P73
	Anxiety disorder	P74
	Hysteria/hypochondria	P75
	Depression	P76
	Suicide attempt	P77
	Neurasthenia/surmenage	P78
	Other neurotis	P79
	Personality/character disorder	P80
	Mental/intellectual retardation	P98
	Other/non specified psychosis	P99

GIANTT: Groningen Initiative to Analyse Type 2 diabetes Treatment; ICPC: International Classification of Primary Care

Table S6.2: Selected confounders in fully adjusted model per indicator

Ind	Effect size		Patient characteristics (p-values)											N of selected patient characteristics	
	Baseline risk factor	95% CI	Age	Gender	Diabetes duration	Time between indicator and outcome date	BMI	Smoking	CVD	PVD	Renal complications	Diabetic complications	Malignancy		Psychological comorbidities
1	-5.2	-9.0; -1.4	<0.001	0.149											2
2	-8.5	-9.9; -7.2	<0.001	0.019	<0.001	0.001	0.167		0.20		0.134			0.159	8
3	-8.9	-10.1; -7.5	<0.001	0.002	<0.001	0.001									4
4	-0.30	-0.33; -0.27	<0.001	0.018	<0.001	0.060	<0.001	0.019	0.036		0.010	0.195			9
5	-0.97	-1.03; -0.90	<0.001	0.500			0.163								3
6	-0.62	-0.70; -0.54	<0.001	0.087	0.169	0.1819	0.157	0.1454	0.069	0.078					8
7	-8.4	-10.4; -6.4	<0.001	0.009	0.042				0.122	0.035					5
8	-9.5	-11.5; -7.5	<0.001	0.040			0.102			0.154	0.037			0.081	6
9	0.11 [†]	0.04-0.34 [†]		0.074	0.137					0.183	0.024			0.107	6
10	0.94 [†]	0.75-1.18 [†]	<0.001	<0.001	<0.001	0.068	0.141	<0.001			<0.001				8
11	1.22 [†]	0.92-1.62 [†]	<0.001	0.004	<0.001			0.001	0.158	0.075	0.011	0.010	0.144		9

Ind: indicator; 95% CI: 95% confidence interval; BMI: body mass index; CVD: cardiovascular disease comorbidity, PVD: peripheral disease comorbidity; RAAS: renin-angiotensin-aldosterone system.

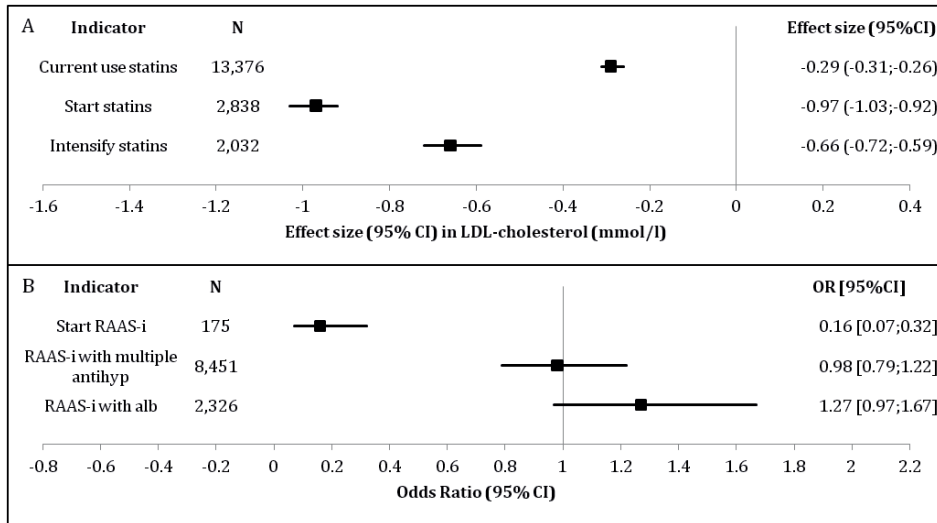
† Odds ratios with 95% CI intervals for logistic regression models.

Ind 1: start of glucose lowering drugs; Ind2: intensification with glucose lowering drugs after metformin monotherapy; Ind 3: intensification with insulin after two or more glucose lowering drugs; Ind 4: current prescription of statins; Ind 5: start of statins; Ind 6: intensification of statins; Ind 7: start of antihypertensives; Ind 8: intensification of antihypertensives; Ind 9: start of RAAS inhibitors; Ind 10: current use of RAAS inhibitors among multiple antihypertensive use; Ind 11: current use of RAAS inhibitors with albuminuria.

Table S6.3: Odds ratios for albuminuria in 2013 per age category for indicator on current use of renin-angiotensin-aldosterone system inhibitors when multiple antihypertensives are used

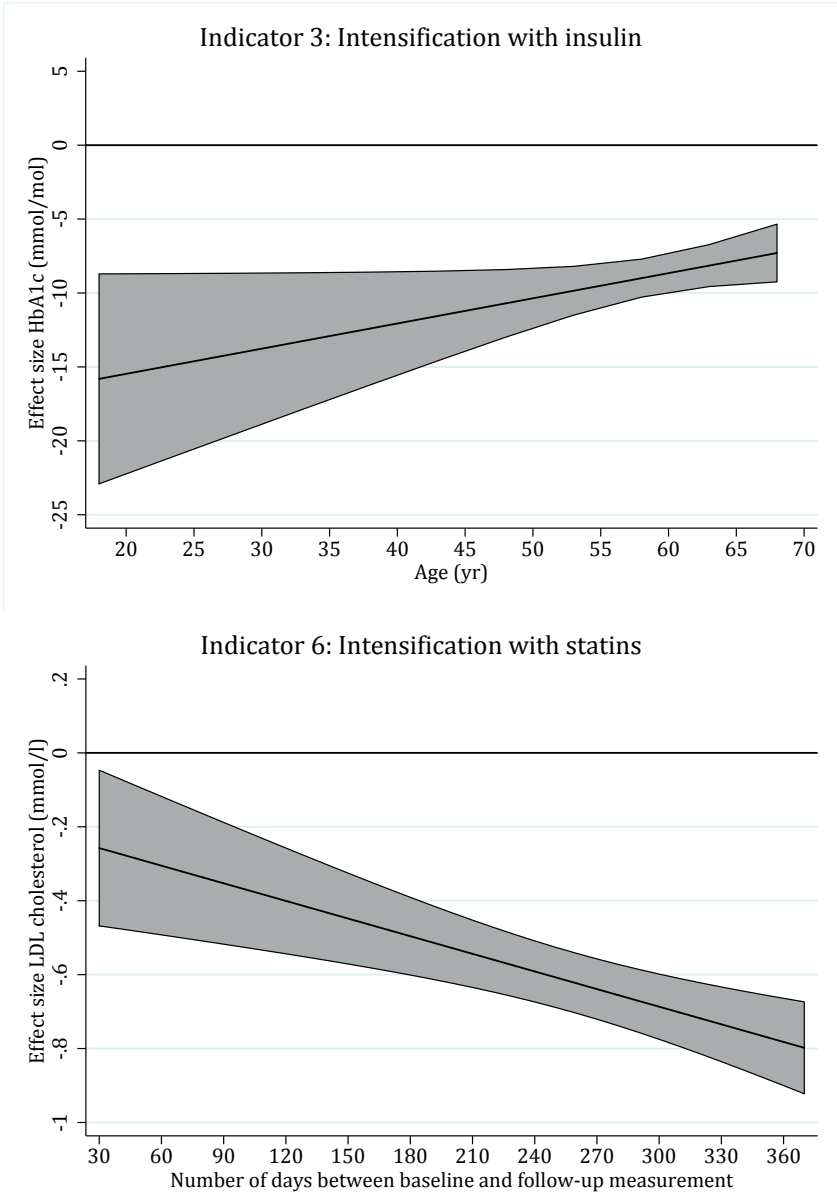
Age categories	Odds ratio	95% Confidence intervals
<63.1 years	1.34	0.76-2.38
63.1-69.5 years	1.01	0.59-1.72
69.5-76.5 years	1.00	0.63-1.60
≥76.5 years	0.80	0.57-1.12

Figure S6.1: Sensitivity analysis of indicators on statin (A) and RAAS inhibitors (B) using an allowed time period between indicator and outcome date of 548 days (1.5 years)



95%CI: 95% confidence intervals; LDL-cholesterol: low-density lipoprotein-cholesterol; OR: odds ratio; RAAS-i: RAAS inhibitors; antihyp: antihypertensives; alb: albuminuria.

Figure S6.2: Indicators with significant effect modification of age (A) and time between measurements (B)



HbA_{1c}: glycated haemoglobin; LDL-cholesterol: low-density lipoprotein-cholesterol
Predictive value of the indicator focusing on intensification with insulin on HbA_{1c} levels on the y-axis with increasing age on the x-axis (A) and of the indicator focusing on intensification with statins on LDL-cholesterol on the y-axis with increasing time between indicator and follow-up measurement of LDL-cholesterol (B).

