SUPPLEMENTARY DATA

Supporting Information to 'Healthcare costs associated with incident complications in type 2 diabetes patients in Germany'

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I. Statistical appendix

The basecase model is therefore noted as follows:

$y_{ij} = \beta_0 + \beta_1 Z_{1i} + \beta_{2l} Z_{2li} + \beta_{3k} Z_{3ki} + \beta_4 Z_{4ij} + \beta_{5km} Z_{5kmij} + e_{ij}$

where:

i = patient i

j = observation j (quarters 1-12)

k = complication k

l = age group l

m = time period m for a new complication

y_{ij} = outcome/total healthcare costs for patient i and observation j

β_0 = coefficient for the intercept

β_1 = coefficient for sex

Z_{1i} = dummy variable for sex (0='female', 1='male')

β_{2l} = coefficient for age group l

Z_{2li} = dummy variables for the age group

(l=1: '<50'=1,else 0 ,
l=2: '50-60'=1 else 0,
l=3: '60-70'=1 else 0,
l=4: '>80'=1 else 0)

β_{3k} = coefficient for pre-existing complication k in 2012

Z_{3ki} = for each complication k: 1 if present at baseline, 0 otherwise

β_4= coefficient for death of other reasons

Z_{4ij} = 1 (for death of other reasons), 0 otherwise

β_{5km} = coefficient for new complication k, in time period m

Z_{5kmij} = dummy variables for complication k, in time period m

(m=1: 'quarter of event*'=1 else 0,
m=2: 'follow-up quarter'< 1 year'=1 else 0,
m=3: 'follow-up quarter'>1 year'=1 else 0)

e_{ij} = error term for patient i, observation j

* 'Event' refers to quarter when the diabetes complication first occurred/started.

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II. Tables

Table S1: Technical definition of type 2 diabetes

Criteria/ diabetes group	ICD*-E11 (IPC)	ICD-E11 (OPC)	ICD-E10 (IPC)	ICD-E10 (OPC)	ICD-E14 (IPC)	ICD-E14 (OPC)	OAD†	DMP type 2
(1) Type 2	(≥1 OR	≥2) AND	0 AND	0				
		≥1 AND	0 AND	0 AND	(≥1 OR	≥1)		
		≥1 AND	0 AND	0		AND	(Yes OR	Yes)
(2) Unclear with type 2 indication	(≥1 OR	≥1) AND	(≥1 OR	≥1)		AND	(Yes OR	Yes)
(3) Unspecified with type 2 indication	0 AND	0 AND	0 AND	0 AND	(≥1 AND	≥2) AND	(Yes OR	Yes)

* E10, type 1 diabetes; E11, type 2 diabetes, E14, unspecified diabetes.

† At least one prescription of oral antidiabetics in 2012.

Abbrevations: DMP, disease management program; ICD, international classification of diseases; ipc, inpatient care; OAD, oral antidiabetic drugs; opc, outpatient care.

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Table S2: Identification of relevant complications and events based on ICD-10-GM, OPS- and EBM-codes (1-13)

Microvascular complications	**ICD-, OPS- or EBM-codes**
Eye complications	
Retinopathy	ICD-codes E10-E14.3- (diabetes with eye complications), H36.0 (diabetic retinopathy), H35.0 (background retinopathy and retinal vascular changes), H35.2 (other proliferative retinopathy)
Blindness in one or two eyes	ICD-codes H54.0 (blindness, both eyes), H54.4 (blindness, one eye)
Renal complications	
Renal insufficiency	E11.2- (or E14.2-) (diabetes with renal complications), ICD-codes N17 (acute renal failure), N18 (chronic renal failure, without N18.5), N19 (not other specified renal failure)
ESRD	ICD-code N18.5 (terminal renal insufficiency)
→ with or without dialysis	ICD-codes Z49 (dialysis), Z99.2 (long-term dialysis in renal insufficiency) OPS-codes 8-854 (hemodialysis), 8-855 (hemodiafiltration), 8-857 (peritoneal dialysis), 8-85a (dialysis after failed kidney transplant) EBM-codes 13602-13622 w/o 13621 (dialysis fees), 40815-40838 (material cost fee)
Neuropathic complications	
Diabetic foot syndrome (with polyneuropathy and peripheral angiopathy)	ICD-codes E10-E14.74 and .75 (diabetes with multiple complications, with diabetic foot syndrome) or ICD-code for peripheral neuropathy G63.2 (diabetic polyneuropathy) + one of the ICD-codes for PVD: E11.5 (or E14.5) (diabetes with peripheral vascular complications), I70.2 (atherosclerosis of extremities), I73.9 (peripheral vascular disease, not other specified), I79.2 (diabetic peripheral angiopathy), R02 (gangrene) or

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	EBM-code 02311 (treatment of diabetic foot)
Amputation of lower extremities	OPS-codes 5-864 (amputation of lower extremity), 5-865 (amputation of the foot)
Macrovascular complications	
Cardiovascular complications	
Angina pectoris	ICD-code I20 (angina pectoris)
Chronic heart failure (CHF)	ICD-codes I50 (heart failure) , I11.0 (hypertensive heart disease with heart failure), I13.0 (hypertensive heart and chronic kidney disease with heart failure), I13.2 (Hypertensive heart and chronic kidney disease with heart failure and with end stage renal disease)
Myocardial infarction/cardiac arrest (non-fatal event)	ICD-codes I21 (acute myocardial infarction), I46.0 or .9 (cardiac arrest)
Myocardial infarction/cardiac arrest (fatal event)	In addition, see hospital death
Other IHD (non-fatal event)	ICD-codes I22 (recurrent myocardial infarction), I24 (other acute ischemic heart disease), I25 (chronic ischemic heart disease)
Other IHD (fatal event)	In addition, see hospital death
Cerebrovascular complications	
Stroke* (non-fatal event)	ICD-codes I60 (subarachnoidal haemorrhage), I61 (intracerebral bleeding), I62 (other non-traumatic intracranial bleeding), I63 (brain infarction), I64 (stroke)
Stroke (fatal event)	In addition, see hospital death
Other events/death	
Hospital death	Reason for discharge is death
Death due to other reasons (including unknown causes)	Reason for termination of membership due to death

* Stroke includes bleeding inside the brain (hemorrhagic stroke).

Abbreviations: CHF, chronic heart failure; EBM, uniform value scale for outpatient services; ESRD, end-stage renal disease; GM, german modification; ICD, International Classification of Diseases; IHD, ischemic heart disease; OPS, operation procedure codes; PVD, peripheral vascular disease.

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Table S3: Identification of risk factors and antidiabetic treatment based on ICD-10-GM and ATC-codes

Risk factor	**ICD-codes**
Derailed diabetes (derailment of glucose metabolism)	E10-E14 plus 1, 3 or 5 as fifth digit
Diabetes without complications	E10-E14 plus 9 as fourth digit
Hypertension	I10-I15
Hazardous alcohol consumption or smoking	F10 (Alcohol related disorders), F17 (Nicotine dependence)
Depression	F32 (single depressive episode), F33 (recurrent depressive disorder), F34 (persistent affective disorder)
Obesity	E66
Cancer	C00-C99
Sleeping disorder	G47 (sleep disorders), F51 (sleep disorders not due to a substance or known physiological condition)
Antidiabetic treatment	**ATC-codes**
Antidiabetic treatment type	No antidiabetics, OAD alone (ATC-code A10B), insulin+OAD (A10A and A10B) or insulin alone (A10A)

Abbreviations: ATC, anatomical therapeutic chemical; GM, german modification; ICD, International Classification of Diseases; OAD, oral antidiabetics.

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Table S4: Quality assurance activities (December 2016-March 2017)

Quality aspect	Observed, n	Activity
Inpatient care		
No or zero total payments	5057 and 221 inpatient and outpatient hospital cases	Cases were deleted, patients remain included
Negative total payments	5 cases	Cross-checked with sum of invoice values, otherwise cut to zero
Implausible length of stay (>365 days) compared to the amount of payment	1 case	Not necessary
Incorrect discharge reason death	1 case	Corrected
Hospital visits abroad	945 cases	Those cases remain included
Pharmaceuticals		
Date of prescription after date of handling by the pharmacy	No	-
Charged costs after death	Yes, 822 observations (781 cases)	Charged costs after the quarter of death are not considered

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Table S5: Calculation of the adapted Diabetes Complication Severity Index (aDCSI) based on ICD-10-GM [further adapted from (10)]

Complication	**ICD-9-CM**	**aDCSI Score***	**ICD-10-GM**
Retinopathy			
Diabetic ophthalmologic disease	250.5x	●	E10-E14.3-, H36.0
Background retinopathy	362.01	●	E10-E14.3
Other retinopathy	362.1	●	H35.0
Retinal edema	362.83	●	H35.8
Clinically Significant Macular Edema (CSME)	362.53	●	H35.3
Other retinal disorders	362.81, 621.82	●	H35.6, H35.8
Proliferative retinopathy	362.02	●●	H35.2
Retinal detachment	361.xx	●●	H33
Blindness	369.xx .00-.99	●●	H54
Vitreous hemorrhage	379.23	●●	H43.1
Nephropathy			
Diabetic nephropathy	250.4	●	E10-E14.2-
Acute glomerulonephritis	580	●	N00
Nephrotic syndrome	581	●	N04
Hypertension, nephrosis	581.81	●	N08
Chronic glomerulonephritis	582	●	N03
Nephritis/nephropathy	583	●	N05, N08, N17
Chronic renal failure	585	●●	N18
Rental failure, not otherwise specified	586	●●	N19
Renal insufficiency	593.9	●●	N28.9
Neuropathy			
Diabetic neuropathy	250.6, 356.9	●	E10-E14.4-, G60.9
Amyotrophy	358.1	●	G73.0, G73.3
Cranial nerve palsy	951.0, 951.1, 951.3	●	S04.1, S04.2
Mononeuropathy	354.0-355.9	●	G56-G59
Charcot’s anthropathy	713.5	●	M14.6
Polyneuropathy	357.2	●	G62, G63.2
Cerebrovascular			
Transient ischemic attack (TIA)	435	●	G45
Stroke	431, 433, 434, 436	●●	I61, I63, I66, I67
Cardiovascular			
Atherosclerosis	440.xx	●	I70

Other ischemic heart disease (IHD)	411	●	I24
Angina pectoris	413	●	I20
Other chronic IHD	414	●	I25
Myocardial infarction	410	●●	I21
Ventricular fibrillation, arrest	427.1, 427.3	●●	I47.2, I48
Atrial fibrillation, arrest	427.4, 427.5	●●	I49.0
Other atherosclerotic cardiovascular disease (ASCVD)	429.2	●	I25.1
Old myocardial infarction	412	●●	I25.2
Heart failure	428	●●	I50
Atherosclerosis, severe	440.23, 440.24	●●	I70.24, I70.25
Aortic aneurysm/dissection	441	●●	I71
Peripheral vascular disease (PVD)			
Diabetic PVD	250.7	●	E10-E14.5-
Other aneurysm, lower extremities (LE)	442.3	●	I72.4
PVD	443.81, 443.9	●	I79.2/8, I73.9
Foot wound + complication	892.1	●	S91
Claudication, intermittent	443.9	●	I73.9
Embolism/thrombosis (LE)	444.22	●●	I74.3
Gangrene	785.4	●●	I96
Gas gangrene	0.4	●●	A48.0
Ulcer of lower limbs	707.1	●●	L97
Metabolic			
Ketoacidosis	250.1	●●	E10-E14.1
Hyperosmolar	250.2	●●	E10-E14.0
Other coma	250.3	●●	E10-E14.0

* Seven complications which in each case can be rated with 0-2 points (except for neuropathy), thus the total score ranges from 0-13.

Abbreviations: aDSCI, adapted Diabetes Complications Severity Index, GM, german modification; ICD, International Classification of Diseases; LE, lower extremities.

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Table S6: Adapted Diabetes Complication Severity Index (aDCSI) in the population by age and sex (at baseline)

Sex	Age group	N	Mean	Std Dev	Minimum	Maximum
Male	<50 yrs	16374	0.6	1.1	0	10
	50-59 yrs	40320	1.1	1.4	0	11
	60-69 yrs	61142	1.7	1.7	0	11
	70-79 yrs	65336	2.5	2.0	0	12
	>80 yrs	17038	3.3	2.1	0	11
Female	<50 yrs	10738	0.5	1.0	0	8
	50-59 yrs	21056	0.9	1.2	0	9
	60-69 yrs	32520	1.3	1.5	0	10
	70-79 yrs	37265	2.0	1.8	0	11
	>80 yrs	14431	2.8	2.0	0	12

Abbreviations: aDCSI, adapted Diabetes Complications Severity Index; std dev, standard deviation; yrs, years.

Table S7: Effects of acute events and chronic type 2 diabetes complications on total costs in GEE normal regression considering interactions* with age and sex

* All three-fold interactions of complications with age and sex are considered here, except for rare complications with low incidences (amputation, blindness, ESRD, fatal MI, fatal stroke, fatal IHD). Here the interaction gender x complication is considered though.

† Due to statistical reasons, it was not differentiated between the follow-up period <1 year and >1 year.

Abbreviations: CHF, chronic heart failure; ESRD, end-stage renal disease; IHD, ischemic heart disease; MI, myocardial infarction; QTR, quarter.

Parameter	Manifestations			Estimate	Standard Error (SE)	p Value
Intercept				762.9	9.4	<.0001
Age group	**<50**			-12.7	19.4	0.5127
Age group	**50-59**			-40.7	13.3	0.0022
Age group	**60-69**			-46.8	12.3	0.0001
Age group	**>80**			-165.9	15.4	<.0001
Age group	**70-79**			0.0	0.0	.
Gender	**Male**			-35.1	11.5	0.0023
Gender	**Female**			0.0	0.0	.
Foot	**Qtr of event**			570.8	71.3	<.0001
Foot	**Follow-up qtr †**			324.5	38.0	<.0001
Foot	**No**			0.0	0.0	.
Amputation	**Qtr of event**			13074.1	851.1	<.0001
Amputation	**Follow-up qtr**			2498.2	692.4	0.0003
Amputation	**No**			0.0	0.0	.
Retinopathy	**Qtr of event**			-20.1	45.8	0.6599
Retinopathy	**Follow-up qtr**			35.6	35.4	0.3145
Retinopathy	**No**			0.0	0.0	.
Blindness	**Qtr of event**			2573.5	353.0	<.0001
Blindness	**Follow-up qtr**			524.0	95.0	<.0001
Blindness	**No**			0.0	0.0	.
Nephropathy	**Qtr of event**			2784.8	115.4	<.0001
Nephropathy	**Follow-up qtr**			625.4	40.0	<.0001
Nephropathy	**No**			0.0	0.0	.
ESRD	**Qtr of event**			17349.1	1051.1	<.0001
ESRD	**Follow-up qtr**			4176.2	294.2	<.0001
ESRD	**No**			0.0	0.0	.
Stroke. nonfatal	**Qtr of event**			9197.1	423.2	<.0001
Stroke. nonfatal	**Follow-up qtr**			1688.0	154.6	<.0001
Stroke. nonfatal	**No**			0.0	0.0	.
Stroke. fatal	**Qtr of event**			9387.2	1059.0	<.0001
Stroke. fatal	**No**			0.0	0.0	.
Myocardia linfarction. nonfatal	**Qtr of event**			7848.1	569.1	<.0001
Myocardia linfarction. nonfatal	**Follow-up qtr**			773.6	202.6	0.0001
Myocardia linfarction. nonfatal	**No**			0.0	0.0	.
Myocardial infarction. fatal	**Qtr of event**			4677.9	686.6	<.0001

Parameter	Manifestations			Estimate	Standard Error (SE)	p Value
Myocardial infarction. fatal	No			0.0	0.0	.
Other IHD, nonfatal	Qtr of event			5040.1	428.2	<.0001
Other IHD, nonfatal	Follow-up qtr			476.2	156.7	0.0024
Other IHD, nonfatal	No			0.0	0.0	.
IHD. fatal	Qtr of event			8248.2	3335.7	0.0134
IHD. fatal	No			0.0	0.0	.
Angina pectoris	Qtr of event			1803.1	154.7	<.0001
Angina pectoris	Follow-up qtr			191.7	61.9	0.0019
Angina pectoris	No			0.0	0.0	.
CHF	Qtr of event			3345.3	139.5	<.0001
CHF	Follow-up qtr			717.7	44.1	<.0001
CHF	No			0.0	0.0	.
Death for other reasons	Qtr of event			5621.2	124.7	<.0001
Death for other reasons	No			0.0	0.0	.
History of foot complications	Yes			369.6	13.9	<.0001
History of foot complications	No			0.0	0.0	.
History of amputation	Yes			2004.1	171.7	<.0001
History of amputation	No			0.0	0.0	.
History of retinopathy	Yes			62.1	9.3	<.0001
History of retinopathy	No			0.0	0.0	.
History of blindness	Yes			198.8	47.6	<.0001
History of blindness	No			0.0	0.0	.
History of nephropathy	Yes			407.5	11.2	<.0001
History of nephropathy	No			0.0	0.0	.
History of ESRD	Yes			6883.0	160.4	<.0001
History of ESRD	No			0.0	0.0	.
History of stroke	Yes			626.7	46.4	<.0001
History of stroke	No			0.0	0.0	.
History of MI	Yes			48.1	45.2	0.2864
History of MI	No			0.0	0.0	.
History of IHD	Yes			555.0	25.3	<.0001
History of IHD	No			0.0	0.0	.
History of angina	Yes			-12.5	19.1	0.512
History of angina	No			0.0	0.0	.
History of CHF	Yes			529.2	12.9	<.0001
History of CHF	No			0.0	0.0	.
Age group*gender	<50	Male		-189.7	23.1	<.0001
Age group*gender	<50	Female		0.0	0.0	.
Age group*gender	50-59	Male		-113.1	17.5	<.0001
Age group*gender	50-59	Female		0.0	0.0	.
Age group*gender	60-69	Male		-37.4	16.1	0.0203
Age group*gender	60-69	Female		0.0	0.0	.
Age group*gender	>80	Male		77.4	22.3	0.0005
Age group*gender	>80	Female		0.0	0.0	.

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Parameter	Manifestations			Estimate	Standard Error (SE)	p Value
Age group*gender	70-79	Male		0.0	0.0	.
Age group*gender	70-79	Female		0.0	0.0	.
Age group*gender*MI	<50	Male	Qtr of event	-562.9	1010.7	0.5776
Age group*gender*MI	<50	Male	Follow-up qtr	-107.7	372.9	0.7726
Age group*gender*MI	<50	Male	No	0.0	0.0	.
Age group*gender*MI	<50	Female	Qtr of event	-2510.5	1337.2	0.0605
Age group*gender*MI	<50	Female	Follow-up qtr	-131.6	551.7	0.8115
Age group*gender*MI	<50	Female	No	0.0	0.0	.
Age group*gender*MI	50-60	Male	Qtr of event	-786.5	740.5	0.2882
Age group*gender*MI	50-60	Male	Follow-up qtr	-275.5	266.7	0.3015
Age group*gender*MI	50-60	Male	No	0.0	0.0	.
Age group*gender*MI	50-60	Female	Qtr of event	-1449.2	803.7	0.0714
Age group*gender*MI	50-60	Female	Follow-up qtr	-368.6	312.8	0.2386
Age group*gender*MI	50-60	Female	No	0.0	0.0	.
Age group*gender*MI	60-70	Male	Qtr of event	-6.2	644.0	0.9924
Age group*gender*MI	60-70	Male	Follow-up qtr	-261.9	240.3	0.2758
Age group*gender*MI	60-70	Male	No	0.0	0.0	.
Age group*gender*MI	60-70	Female	Qtr of event	-1629.3	693.7	0.0188
Age group*gender*MI	60-70	Female	Follow-up qtr	64.8	343.8	0.8505
Age group*gender*MI	60-70	Female	No	0.0	0.0	.
Age group*gender*MI	>80	Male	Qtr of event	-1714.3	693.7	0.0135
Age group*gender*MI	>80	Male	Follow-up qtr	-380.6	266.2	0.1528
Age group*gender*MI	>80	Male	No	0.0	0.0	.
Age group*gender*MI	>80	Female	Qtr of event	-2543.3	670.8	0.0001
Age group*gender*MI	>80	Female	Follow-up qtr	-464.1	276.0	0.0926
Age group*gender*MI	>80	Female	No	0.0	0.0	.
Age group*gender*MI	70-80	Male	Qtr of event	-31.0	651.8	0.9621
Age group*gender*MI	70-80	Male	Follow-up qtr	-107.2	227.6	0.6378
Age group*gender*MI	70-80	Male	No	0.0	0.0	.
Age group*gender*MI	70-80	Female	Qtr of event	0.0	0.0	.
Age group*gender*MI	70-80	Female	Follow-up qtr	0.0	0.0	.
Age group*gender*MI	70-80	Female	No	0.0	0.0	.
Age group*gender*MI, fatal	Male	Qtr of event		4472.4	1420.9	0.0016
Age group*gender*MI, fatal	Male	No		0.0	0.0	.
Age group*gender*MI, fatal	Female	Qtr of event		0.0	0.0	.
Age group*gender*MI, fatal	Female	No		0.0	0.0	.
Gender*IHD, fatal	Male	Qtr of event		14596.8	7244.9	0.0439
Gender*IHD, fatal	Male	No		0.0	0.0	.
Gender*IHD, fatal	Female	Qtr of event		0.0	0.0	.
Gender*IHD, fatal	Female	No		0.0	0.0	.
Age group*gender*IHD	<50	Male	Qtr of event	153.5	793.4	0.8466
Age group*gender*IHD	<50	Male	Follow-up qtr	-481.6	260.6	0.0646
Age group*gender*IHD	<50	Male	No	0.0	0.0	.
Age group*gender*IHD	<50	Female	Qtr of event	-681.3	1093.2	0.5332

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Parameter	Manifestations			Estimate	Standard Error (SE)	p Value
Age group*gender*IHD	<50	Female	Follow-up qtr	546.6	963.5	0.5705
Age group*gender*IHD	<50	Female	No	0.0	0.0	.
Age group*gender*IHD	50-60	Male	Qtr of event	1182.4	753.1	0.1164
Age group*gender*IHD	50-60	Male	Follow-up qtr	112.1	258.5	0.6645
Age group*gender*IHD	50-60	Male	No	0.0	0.0	.
Age group*gender*IHD	50-60	Female	Qtr of event	2588.4	1316.3	0.0493
Age group*gender*IHD	50-60	Female	Follow-up qtr	-81.1	297.8	0.7855
Age group*gender*IHD	50-60	Female	No	0.0	0.0	.
Age group*gender*IHD	60-70	Male	Qtr of event	1010.9	506.7	0.046
Age group*gender*IHD	60-70	Male	Follow-up qtr	-29.2	193.7	0.8801
Age group*gender*IHD	60-70	Male	No	0.0	0.0	.
Age group*gender*IHD	60-70	Female	Qtr of event	377.7	885.7	0.6698
Age group*gender*IHD	60-70	Female	Follow-up qtr	-288.7	204.2	0.1574
Age group*gender*IHD	60-70	Female	No	0.0	0.0	.
Age group*gender*IHD	>80	Male	Qtr of event	94.1	577.8	0.8706
Age group*gender*IHD	>80	Male	Follow-up qtr	-69.2	245.3	0.7779
Age group*gender*IHD	>80	Male	No	0.0	0.0	.
Age group*gender*IHD	>80	Female	Qtr of event	-150.3	761.0	0.8434
Age group*gender*IHD	>80	Female	Follow-up qtr	134.8	298.0	0.6509
Age group*gender*IHD	>80	Female	No	0.0	0.0	.
Age group*gender*IHD	70-80	Male	Qtr of event	874.8	467.0	0.061
Age group*gender*IHD	70-80	Male	Follow-up qtr	-278.3	172.5	0.1067
Age group*gender*IHD	70-80	Male	No	0.0	0.0	.
Age group*gender*IHD	70-80	Female	Qtr of event	0.0	0.0	.
Age group*gender*IHD	70-80	Female	Follow-up qtr	0.0	0.0	.
Age group*gender*IHD	70-80	Female	No	0.0	0.0	.
Age group*gender*stroke	<50	Male	Qtr of event	89.0	1151.4	0.9384
Age group*gender*stroke	<50	Male	Follow-up qtr	-224.0	532.7	0.6741
Age group*gender*stroke	<50	Male	No	0.0	0.0	.
Age group*gender*stroke	<50	Female	Qtr of event	935.0	1992.7	0.6389
Age group*gender*stroke	<50	Female	Follow-up qtr	6092.3	4133.8	0.1405
Age group*gender*stroke	<50	Female	No	0.0	0.0	.
Age group*gender*stroke	50-60	Male	Qtr of event	22.2	992.9	0.9822
Age group*gender*stroke	50-60	Male	Follow-up qtr	-392.5	246.0	0.1106
Age group*gender*stroke	50-60	Male	No	0.0	0.0	.
Age group*gender*stroke	50-60	Female	Qtr of event	-690.8	1282.0	0.59
Age group*gender*stroke	50-60	Female	Follow-up qtr	1098.7	782.7	0.1604
Age group*gender*stroke	50-60	Female	No	0.0	0.0	.
Age group*gender*stroke	60-70	Male	Qtr of event	102.3	583.7	0.8608
Age group*gender*stroke	60-70	Male	Follow-up qtr	185.8	225.5	0.4099
Age group*gender*stroke	60-70	Male	No	0.0	0.0	.
Age group*gender*stroke	60-70	Female	Qtr of event	80.8	685.6	0.9062
Age group*gender*stroke	60-70	Female	Follow-up qtr	229.4	299.8	0.4442
Age group*gender*stroke	60-70	Female	No	0.0	0.0	.

SUPPLEMENTARY DATA

Parameter	Manifestations			Estimate	Standard Error (SE)	p Value
Age group*gender*stroke	>80	Male	Qtr of event	-508.9	560.5	0.3639
Age group*gender*stroke	>80	Male	Follow-up qtr	-823.9	207.7	<.0001
Age group*gender*stroke	>80	Male	No	0.0	0.0	.
Age group*gender*stroke	>80	Female	Qtr of event	-1339.7	536.2	0.0125
Age group*gender*stroke	>80	Female	Follow-up qtr	-790.3	198.0	<.0001
Age group*gender*stroke	>80	Female	No	0.0	0.0	.
Age group*gender*stroke	70-80	Male	Qtr of event	-136.2	502.2	0.7862
Age group*gender*stroke	70-80	Male	Follow-up qtr	-75.6	188.6	0.6884
Age group*gender*stroke	70-80	Male	No	0.0	0.0	.
Age group*gender*stroke	70-80	Female	Qtr of event	0.0	0.0	.
Age group*gender*stroke	70-80	Female	Follow-up qtr	0.0	0.0	.
Age group*gender*stroke	70-80	Female	No	0.0	0.0	.
Age group*gender*stroke, fatal	Male	Qtr of event		2013.3	1699.3	0.2361
Age group*gender*stroke, fatal	Male	No		0.0	0.0	.
Age group*gender*stroke, fatal	Female	Qtr of event		0.0	0.0	.
Age group*gender*stroke, fatal	Female	No		0.0	0.0	.
Age group*gender*CHF	<50	Male	Qtr of event	-28.3	658.0	0.9657
Age group*gender*CHF	<50	Male	Follow-up qtr	186.3	207.8	0.3698
Age group*gender*CHF	<50	Male	No	0.0	0.0	.
Age group*gender*CHF	<50	Female	Qtr of event	-280.2	592.7	0.6363
Age group*gender*CHF	<50	Female	Follow-up qtr	256.0	243.1	0.2923
Age group*gender*CHF	<50	Female	No	0.0	0.0	.
Age group*gender*CHF	50-60	Male	Qtr of event	2.3	338.2	0.9946
Age group*gender*CHF	50-60	Male	Follow-up qtr	107.8	92.8	0.2451
Age group*gender*CHF	50-60	Male	No	0.0	0.0	.
Age group*gender*CHF	50-60	Female	Qtr of event	-348.9	344.8	0.3116
Age group*gender*CHF	50-60	Female	Follow-up qtr	-47.4	119.9	0.6928
Age group*gender*CHF	50-60	Female	No	0.0	0.0	.
Age group*gender*CHF	60-70	Male	Qtr of event	-216.6	188.8	0.2513
Age group*gender*CHF	60-70	Male	Follow-up qtr	62.8	69.7	0.3672
Age group*gender*CHF	60-70	Male	No	0.0	0.0	.
Age group*gender*CHF	60-70	Female	Qtr of event	-222.9	230.9	0.3345
Age group*gender*CHF	60-70	Female	Follow-up qtr	115.5	80.1	0.1491
Age group*gender*CHF	60-70	Female	No	0.0	0.0	.
Age group*gender*CHF	>80	Male	Qtr of event	-450.4	204.4	0.0275
Age group*gender*CHF	>80	Male	Follow-up qtr	-72.5	72.3	0.3163
Age group*gender*CHF	>80	Male	No	0.0	0.0	.
Age group*gender*CHF	>80	Female	Qtr of event	-624.6	189.8	0.001
Age group*gender*CHF	>80	Female	Follow-up qtr	-289.4	64.0	<.0001
Age group*gender*CHF	>80	Female	No	0.0	0.0	.
Age group*gender*CHF	70-80	Male	Qtr of event	144.4	172.6	0.4028
Age group*gender*CHF	70-80	Male	Follow-up qtr	48.7	56.5	0.3885
Age group*gender*CHF	70-80	Male	No	0.0	0.0	.
Age group*gender*CHF	70-80	Female	Qtr of event	0.0	0.0	.

SUPPLEMENTARY DATA

Parameter	Manifestations			Estimate	Standard Error (SE)	p Value
Age group*gender*CHF	70-80	Female	Follow-up qtr	0.0	0.0	.
Age group*gender*CHF	70-80	Female	No	0.0	0.0	.
Age group*gender*foot	<50	Male	Qtr of event	187.6	425.0	0.6589
Age group*gender*foot	<50	Male	Follow-up qtr	-21.8	71.4	0.7601
Age group*gender*foot	<50	Male	No	0.0	0.0	.
Age group*gender*foot	<50	Female	Qtr of event	305.7	237.2	0.1974
Age group*gender*foot	<50	Female	Follow-up qtr	252.6	200.7	0.2081
Age group*gender*foot	<50	Female	No	0.0	0.0	.
Age group*gender*foot	50-60	Male	Qtr of event	-24.7	98.5	0.802
Age group*gender*foot	50-60	Male	Follow-up qtr	67.0	59.5	0.26
Age group*gender*foot	50-60	Male	No	0.0	0.0	.
Age group*gender*foot	50-60	Female	Qtr of event	-93.0	94.6	0.326
Age group*gender*foot	50-60	Female	Follow-up qtr	13.2	60.9	0.828
Age group*gender*foot	50-60	Female	No	0.0	0.0	.
Age group*gender*foot	60-70	Male	Qtr of event	-63.9	89.9	0.477
Age group*gender*foot	60-70	Male	Follow-up qtr	40.5	54.4	0.4558
Age group*gender*foot	60-70	Male	No	0.0	0.0	.
Age group*gender*foot	60-70	Female	Qtr of event	-37.3	95.7	0.697
Age group*gender*foot	60-70	Female	Follow-up qtr	58.6	58.6	0.3179
Age group*gender*foot	60-70	Female	No	0.0	0.0	.
Age group*gender*foot	>80	Male	Qtr of event	377.4	133.1	0.0046
Age group*gender*foot	>80	Male	Follow-up qtr	-51.5	71.4	0.4703
Age group*gender*foot	>80	Male	No	0.0	0.0	.
Age group*gender*foot	>80	Female	Qtr of event	208.9	123.0	0.0894
Age group*gender*foot	>80	Female	Follow-up qtr	-157.2	63.1	0.0127
Age group*gender*foot	>80	Female	No	0.0	0.0	.
Age group*gender*foot	70-80	Male	Qtr of event	190.1	99.6	0.0563
Age group*gender*foot	70-80	Male	Follow-up qtr	45.9	51.0	0.3681
Age group*gender*foot	70-80	Male	No	0.0	0.0	.
Age group*gender*foot	70-80	Female	Qtr of event	0.0	0.0	.
Age group*gender*foot	70-80	Female	Follow-up qtr	0.0	0.0	.
Age group*gender*foot	70-80	Female	No	0.0	0.0	.
Age group*gender*retinopathy	<50	Male	Qtr of event	-11.4	74.8	0.8787
Age group*gender*retinopathy	<50	Male	Follow-up qtr	73.9	106.7	0.4887
Age group*gender*retinopathy	<50	Male	No	0.0	0.0	.
Age group*gender*retinopathy	<50	Female	Qtr of event	20.6	82.2	0.8018
Age group*gender*retinopathy	<50	Female	Follow-up qtr	72.3	78.0	0.3534
Age group*gender*retinopathy	<50	Female	No	0.0	0.0	.
Age group*gender*retinopathy	50-60	Male	Qtr of event	95.6	64.7	0.1394
Age group*gender*retinopathy	50-60	Male	Follow-up qtr	55.6	51.4	0.2794
Age group*gender*retinopathy	50-60	Male	No	0.0	0.0	.
Age group*gender*retinopathy	50-60	Female	Qtr of event	212.5	87.9	0.0156
Age group*gender*retinopathy	50-60	Female	Follow-up qtr	73.7	54.1	0.1729
Age group*gender*retinopathy	50-60	Female	No	0.0	0.0	.

SUPPLEMENTARY DATA

Parameter	Manifestations			Estimate	Standard Error (SE)	p Value
Age group*gender*retinopathy	60-70	Male	Qtr of event	23.9	55.8	0.6686
Age group*gender*retinopathy	60-70	Male	Follow-up qtr	-61.9	44.9	0.1684
Age group*gender*retinopathy	60-70	Male	No	0.0	0.0	.
Age group*gender*retinopathy	60-70	Female	Qtr of event	44.3	62.4	0.4775
Age group*gender*retinopathy	60-70	Female	Follow-up qtr	-28.1	47.2	0.552
Age group*gender*retinopathy	60-70	Female	No	0.0	0.0	.
Age group*gender*retinopathy	>80	Male	Qtr of event	136.2	105.1	0.1949
Age group*gender*retinopathy	>80	Male	Follow-up qtr	-6.6	72.2	0.9269
Age group*gender*retinopathy	>80	Male	No	0.0	0.0	.
Age group*gender*retinopathy	>80	Female	Qtr of event	178.3	94.3	0.0587
Age group*gender*retinopathy	>80	Female	Follow-up qtr	59.0	76.2	0.4383
Age group*gender*retinopathy	>80	Female	No	0.0	0.0	.
Age group*gender*retinopathy	70-80	Male	Qtr of event	-33.8	58.7	0.5644
Age group*gender*retinopathy	70-80	Male	Follow-up qtr	-49.1	46.0	0.2854
Age group*gender*retinopathy	70-80	Male	No	0.0	0.0	.
Age group*gender*retinopathy	70-80	Female	Qtr of event	0.0	0.0	.
Age group*gender*retinopathy	70-80	Female	Follow-up qtr	0.0	0.0	.
Age group*gender*retinopathy	70-80	Female	No	0.0	0.0	.
Age group*gender*nephropathy	<50	Male	Qtr of event	-753.8	465.0	0.105
Age group*gender*nephropathy	<50	Male	Follow-up qtr	-240.0	97.0	0.0134
Age group*gender*nephropathy	<50	Male	No	0.0	0.0	.
Age group*gender*nephropathy	<50	Female	Qtr of event	-1430.6	330.7	<.0001
Age group*gender*nephropathy	<50	Female	Follow-up qtr	-159.8	138.0	0.2469
Age group*gender*nephropathy	<50	Female	No	0.0	0.0	.
Age group*gender*nephropathy	50-60	Male	Qtr of event	-478.2	218.7	0.0287
Age group*gender*nephropathy	50-60	Male	Follow-up qtr	28.1	73.0	0.7
Age group*gender*nephropathy	50-60	Male	No	0.0	0.0	.
Age group*gender*nephropathy	50-60	Female	Qtr of event	-945.8	214.9	<.0001
Age group*gender*nephropathy	50-60	Female	Follow-up qtr	-16.8	89.4	0.8506
Age group*gender*nephropathy	50-60	Female	No	0.0	0.0	.
Age group*gender*nephropathy	60-70	Male	Qtr of event	177.8	187.0	0.3415
Age group*gender*nephropathy	60-70	Male	Follow-up qtr	122.3	60.8	0.0442
Age group*gender*nephropathy	60-70	Male	No	0.0	0.0	.
Age group*gender*nephropathy	60-70	Female	Qtr of event	-593.7	178.5	0.0009
Age group*gender*nephropathy	60-70	Female	Follow-up qtr	-86.4	64.0	0.1771
Age group*gender*nephropathy	60-70	Female	No	0.0	0.0	.
Age group*gender*nephropathy	>80	Male	Qtr of event	171.8	192.6	0.3724
Age group*gender*nephropathy	>80	Male	Follow-up qtr	-164.8	64.3	0.0103
Age group*gender*nephropathy	>80	Male	No	0.0	0.0	.
Age group*gender*nephropathy	>80	Female	Qtr of event	96.9	176.0	0.5818
Age group*gender*nephropathy	>80	Female	Follow-up qtr	-104.3	60.2	0.0834
Age group*gender*nephropathy	>80	Female	No	0.0	0.0	.
Age group*gender*nephropathy	70-80	Male	Qtr of event	55.5	145.4	0.7027
Age group*gender*nephropathy	70-80	Male	Follow-up qtr	-71.8	51.1	0.1595

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Parameter	Manifestations			Estimate	Standard Error (SE)	p Value
Age group*gender*nephropathy	70-80	Male	No	0.0	0.0	.
Age group*gender*nephropathy	70-80	Female	Qtr of event	0.0	0.0	.
Age group*gender*nephropathy	70-80	Female	Follow-up qtr	0.0	0.0	.
Age group*gender*nephropathy	70-80	Female	No	0.0	0.0	.
Age group*gender*angina	<50	Male	Qtr of event	-79.6	279.5	0.7758
Age group*gender*angina	<50	Male	Follow-up qtr	215.6	227.0	0.3421
Age group*gender*angina	<50	Male	No	0.0	0.0	.
Age group*gender*angina	<50	Female	Qtr of event	-597.4	272.4	0.0283
Age group*gender*angina	<50	Female	Follow-up qtr	59.5	155.4	0.7017
Age group*gender*angina	<50	Female	No	0.0	0.0	.
Age group*gender*angina	50-60	Male	Qtr of event	80.7	209.3	0.6998
Age group*gender*angina	50-60	Male	Follow-up qtr	-25.6	105.7	0.809
Age group*gender*angina	50-60	Male	No	0.0	0.0	.
Age group*gender*angina	50-60	Female	Qtr of event	-636.4	215.2	0.0031
Age group*gender*angina	50-60	Female	Follow-up qtr	-80.0	106.5	0.4526
Age group*gender*angina	50-60	Female	No	0.0	0.0	.
Age group*gender*angina	60-70	Male	Qtr of event	433.2	190.0	0.0226
Age group*gender*angina	60-70	Male	Follow-up qtr	-111.4	80.1	0.1643
Age group*gender*angina	60-70	Male	No	0.0	0.0	.
Age group*gender*angina	60-70	Female	Qtr of event	-160.5	208.1	0.4405
Age group*gender*angina	60-70	Female	Follow-up qtr	-48.1	89.9	0.5926
Age group*gender*angina	60-70	Female	No	0.0	0.0	.
Age group*gender*angina	>80	Male	Qtr of event	469.5	260.6	0.0716
Age group*gender*angina	>80	Male	Follow-up qtr	46.1	111.5	0.6793
Age group*gender*angina	>80	Male	No	0.0	0.0	.
Age group*gender*angina	>80	Female	Qtr of event	5.7	268.3	0.9831
Age group*gender*angina	>80	Female	Follow-up qtr	13.0	109.9	0.906
Age group*gender*angina	>80	Female	No	0.0	0.0	.
Age group*gender*angina	70-80	Male	Qtr of event	491.7	186.8	0.0085
Age group*gender*angina	70-80	Male	Follow-up qtr	7.6	77.1	0.9217
Age group*gender*angina	70-80	Male	No	0.0	0.0	.
Age group*gender*angina	70-80	Female	Qtr of event	0.0	0.0	.
Age group*gender*angina	70-80	Female	Follow-up qtr	0.0	0.0	.
Age group*gender*angina	70-80	Female	No	0.0	0.0	.
Gender*ESRD	Male	Qtr of event		6340.7	1369.8	<.0001
Gender*ESRD	Male	Follow-up qtr		1345.7	371.0	0.0003
Gender*ESRD	Male	No		0.0	0.0	.
Gender*ESRD	Female	Qtr of event		0.0	0.0	.
Gender*ESRD	Female	Follow-up qtr		0.0	0.0	.
Gender*ESRD	Female	No		0.0	0.0	.
Gender*blindness	Male	Qtr of event		-523.9	398.6	0.1888
Gender*blindness	Male	Follow-up qtr		-178.8	120.2	0.137
Gender*blindness	Male	No		0.0	0.0	.

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Parameter	Manifestations			Estimate	Standard Error (SE)	p Value
Gender*blindness	**Female**	**Qtr of event**		0.0	0.0	.
Gender*blindness	**Female**	**Follow-up qtr**		0.0	0.0	.
Gender*blindness	**Female**	**No**		0.0	0.0	.
Gender*amputation	**Male**	**Qtr of event**		632.8	1019.5	0.5348
Gender*amputation	**Male**	**Follow-up qtr**		-125.3	712.1	0.8603
Gender*amputation	**Male**	**No**		0.0	0.0	.
Gender*amputation	**Female**	**Qtr of event**		0.0	0.0	.
Gender*amputation	**Female**	**Follow-up qtr**		0.0	0.0	.
Gender*amputation	**Female**	**No**		0.0	0.0	.

Table S8: Expected total costs per quarter and year for type 2 diabetes patients of varying age and gender*

* All three-fold interactions of complications with age and sex are considered here (see Table S7), except for rare complications with low incidences (amputation, blindness, ESRD, fatal MI, fatal stroke, fatal IHD). Here the interaction gender x complication is considered though.

† Due to statistical reasons, it was not differentiated between the follow-up period <1 year and >1 year.

‡ A mean case scenario was assumed to account for the possibility that complications can occur in one of four quarters.

Abbreviations: CHF, chronic heart failure; ESRD, end-stage renal disease; IHD, ischemic heart disease; MI, myocardial infarction; QTR, quarter.

Type of complication	**Age group (in years)**	**Total estimated costs (in €) in the quarter of event (and follow-up quarter†)**				**Annualized total costs (in €) in the year of event‡ (and follow-up year)**			
		Male		**Female**		**Male**		**Female**	
		Qtr of event	**Follow-up qtr**	**Qtr of event**	**Follow-up qtr**	**Year of event**	**Follow-up year**	**Year of event**	**Follow-up year**
Foot	**<50**	1,284	828	1,627	1,327	3,314	3,313	4,743	5,309
	50-59	1,120	965	1,200	1,060	3,429	3,862	3,873	4,240
	60-69	1,150	1,009	1,250	1,099	3,629	4,034	3,972	4,396
	70-79	1,489	1,098	1,334	1,087	4,228	4,393	4,109	4,350
	>80	1,510	912	1,377	764	3,838	3,649	3,419	3,057
Amputation	**<50**	14,232	2,898	13,824	3,248	19,368	11,594	19,823	12,994
	50-59	14,281	2,947	13,796	3,220	19,562	11,788	19,710	12,882
	60-69	14,350	3,017	13,790	3,214	19,841	12,066	19,686	12,857
	70-79	14,435	3,101	13,837	3,261	20,178	12,403	19,873	13,045
	>80	14,346	3,012	13,671	3,095	19,824	12,049	19,210	12,381
Retinopathy	**<50**	494	635	751	858	2,235	2,540	3,164	3,433
	50-59	649	665	915	832	2,508	2,661	3,245	3,326
	60-69	647	617	740	724	2,539	2,469	2,900	2,895
	70-79	674	714	743	799	2,837	2,857	3,085	3,194
	>80	678	668	755	692	2,640	2,674	2,688	2,767
Blindness	**<50**	2,575	871	3,324	1,274	4,669	3,483	6,361	5,097
	50-59	2,624	919	3,296	1,246	4,864	3,677	6,248	4,985
	60-69	2,693	989	3,290	1,240	5,142	3,955	6,224	4,960
	70-79	2,777	1,073	3,336	1,287	5,479	4,292	6,411	5,148
	>80	2,689	985	3,171	1,121	5,125	3,939	5,748	4,484
Nephropathy	**<50**	2,557	911	2,104	1,216	4,711	3,644	5,054	4,864
	50-59	2,881	1,228	2,561	1,331	5,583	4,910	5,641	5,323
	60-69	3,606	1,391	2,907	1,255	6,658	5,565	5,864	5,021
	70-79	3,568	1,281	3,548	1,388	6,582	5,126	6,775	5,553
	>80	3,519	1,100	3,479	1,118	6,128	4,400	6,052	4,473
ESRD	**<50**	24,215	6,047	18,099	4,926	34,075	24,189	26,614	19,706
	50-59	24,264	6,096	18,071	4,898	34,269	24,384	26,502	19,594
	60-69	24,333	6,165	18,065	4,892	34,547	24,662	26,478	19,569
	70-79	24,418	6,250	18,112	4,939	34,884	24,999	26,665	19,756
	>80	24,329	6,161	17,946	4,773	34,530	24,645	26,002	19,093

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Type of complication	Age group (in years)	Total estimated costs (in €) in the quarter of event (and follow-up quarter†)				Annualized total costs (in €) in the year of event‡ (and follow-up year)			
		Male		Female		Male		Female	
		Qtr of event	Follow-up qtr	Qtr of event	Follow-up qtr	Year of event	Follow-up year	Year of event	Follow-up year
Nonfatal stroke	<50	9,812	1,990	10,882	8,531	13,584	7,958	24,804	34,123
	50-59	9,793	1,870	9,229	3,509	13,459	7,478	15,575	14,036
	60-69	9,943	2,517	9,994	2,634	14,684	10,070	15,018	10,534
	70-79	9,789	2,340	9,960	2,451	14,391	9,361	14,781	9,804
	>80	9,250	1,504	8,455	1,495	12,465	6,014	11,592	5,979
Fatal stroke	<50	11,926	na	10,137	na	12,765	na	11,263	na
	50-59	11,975	na	10,109	na	12,874	na	11,193	na
	60-69	12,044	na	10,103	na	13,031	na	11,177	na
	70-79	12,128	na	10,150	na	13,220	na	11,295	na
	>80	12,040	na	9,984	na	13,021	na	10,880	na
Nonfatal MI	<50	7,811	1,191	6,088	1,392	10,386	4,765	9,302	5,569
	50-59	7,636	1,072	7,121	1,127	10,105	4,289	9,895	4,509
	60-69	8,485	1,155	6,935	1,554	11,184	4,621	10,341	6,218
	70-79	8,545	1,394	8,611	1,537	11,728	5,577	12,060	6,146
	>80	6,696	1,032	5,902	907	9,203	4,130	8,157	3,626
Fatal MI	<50	9,676	na	5,428	na	10,515	na	6,554	na
	50-59	9,724	na	5,400	na	10,624	na	6,483	na
	60-69	9,794	na	5,394	na	10,780	na	6,468	na
	70-79	9,878	na	5,441	na	10,970	na	6,585	na
	>80	9,790	na	5,275	na	10,771	na	6,171	na
Nonfatal IHD	<50	5,719	520	5,109	1,773	7,287	2,080	8,894	7,092
	50-59	6,796	1,162	8,351	1,117	9,401	4,649	11,110	4,469
	60-69	6,695	1,091	6,134	904	9,296	4,362	8,563	3,614
	70-79	6,643	926	5,803	1,239	9,123	3,703	8,806	4,957
	>80	5,696	1,046	5,487	1,208	8,225	4,186	8,195	4,832
Fatal IHD	<50	23,371	na	8,998	na	24,209	na	10,124	na
	50-59	23,419	na	8,970	na	24,319	na	10,054	na
	60-69	23,489	na	8,964	na	24,475	na	10,038	na
	70-79	23,573	na	9,011	na	24,665	na	10,156	na
	>80	23,484	na	8,845	na	24,466	na	9,741	na
Angina pectoris	<50	2,249	933	1,956	1,002	4,436	3,731	4,584	4,006
	50-59	2,458	740	1,889	834	4,429	2,961	4,223	3,336
	60-69	2,880	724	2,359	860	4,931	2,896	4,722	3,439
	70-79	3,023	927	2,566	955	5,505	3,709	5,142	3,819
	>80	2,835	877	2,406	802	5,110	3,509	4,504	3,207
CHF	<50	3,842	1,430	3,815	1,724	6,775	5,718	7,527	6,896
	50-59	3,922	1,400	3,719	1,393	6,882	5,598	6,891	5,570
	60-69	3,772	1,424	3,839	1,549	6,874	5,696	7,237	6,197
	70-79	4,218	1,494	4,108	1,481	7,551	5,977	7,474	5,923
	>80	3,457	1,285	3,318	1,025	6,343	5,139	5,751	4,101
No complication	<50	526		750		2,102		3,001	

SUPPLEMENTARY DATA

Type of complication	Age group (in years)	Total estimated costs (in €) in the quarter of event (and follow-up quarter†)				Annualized total costs (in €) in the year of event‡ (and follow-up year)			
		Male		Female		Male		Female	
		Qtr of event	Follow-up qtr	Qtr of event	Follow-up qtr	Year of event	Follow-up year	Year of event	Follow-up year
	50-59	574		722		2,296		2,889	
	60-69	644		716		2,574		2,864	
	70-79	728		763		2,911		3,052	
	>80	639		597		2,558		2,388	

Table S9: Comparing relative cost factors* with the UKPDS Outcomes Model (Version 2) based on the example of 70-79 years old patients†

* Cost factors were calculated by dividing the total costs for each complication by the total costs in absence of complications.

† The extended model with all three-fold interactions of complications with age and sex was used here (see Table S8).

Abbreviations: CHF, chronic heart failure; ESRD, end-stage renal disease; IHD, ischemic heart disease; MI, myocardial infarction; na, not available.

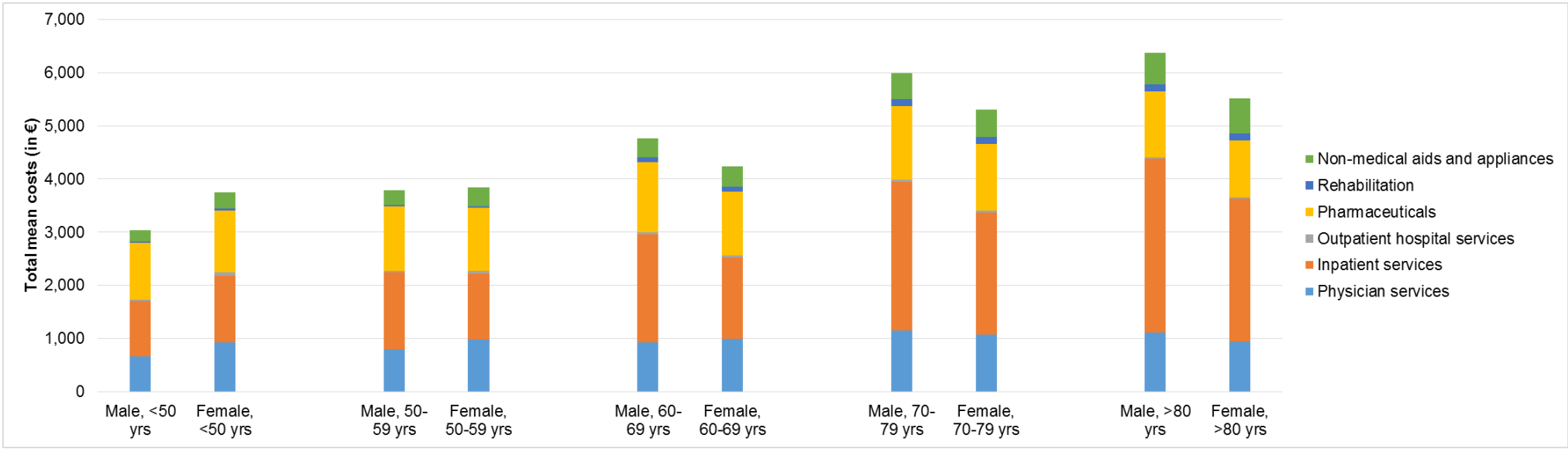
	Male						Female					
Type of complication	**Year of event (in €)**	**Cost Factor**	**Cost Factor (UKPDS)**	**Follow-up year (in €)**	**Cost Factor**	**Cost Factor (UKPDS)**	**Year of event (in €)**	**Cost Factor**	**Cost Factor (UKPDS)**	**Follow-up year (in €)**	**Cost Factor**	**Cost Factor (UKPDS)**
Foot	4,228	1.5	3.9	4,393	1.5	0.6	4,109	1.3	3.2	4,350	1.4	0.5
Amputation	20,178	6.9	7.9	12,403	4.3	2.8	19,873	6.5	6.9	13,045	4.3	2.6
Retinopathy	2,837	1.0	na	2,857	1.0	na	3,085	1.0	na	3,194	1.0	na
Blindness	5,479	1.9	2.6	4,292	1.5	1.1	6,411	2.1	2.4	5,148	1.7	1.1
Nephropathy	6,582	2.3	na	5,126	1.8	na	6,775	2.2	na	5,553	1.8	na
ESRD	34,884	12.0	11.2	24,999	8.6	11.2	26,665	8.7	9.4	19,756	6.5	9.4
Non-fatal stroke	14,391	4.9	5.9	9,361	3.2	1.8	14,781	4.8	5.2	9,804	3.2	1.8
Fatal stroke	13,220	4.5	3.4	na	na	na	11,295	3.7	3.1	na	na	na
Non-fatal MI	11,728	4.0	4.9	5,577	1.9	1.8	12,060	4.0	4.3	6,146	2.0	1.7
Fatal MI	10,970	3.8	2.0	na	na	na	6,585	2.2	1.8	na	na	na
Non-fatal IHD	9,123	3.1	7.2	3,703	1.3	1.9	8,806	2.9	6.3	4,957	1.6	1.8
Fatal IHD	24,665	8.5	3.2	na	na	na	10,156	3.3	2.9	na	na	na
Angina pectoris	5,505	1.9	na	3,709	1.3	na	5,142	1.7	na	3,819	1.3	na
CHF	7,551	2.6	3.1	5,977	2.1	2.3	7,474	2.4	2.8	5,923	1.9	2.1
No complication	2,911	1.0	1.0	2,911	1.0	1.0	3,052	1.0	1.0	3,052	1.0	1.0

SUPPLEMENTARY DATA

Figures

Figure S1. Descriptive analysis of the non-standardized total healthcare costs 2013-2015

A. Shares of total healthcare costs by age, sex, and healthcare sector



B. Shares of total healthcare costs by healthcare sector und year

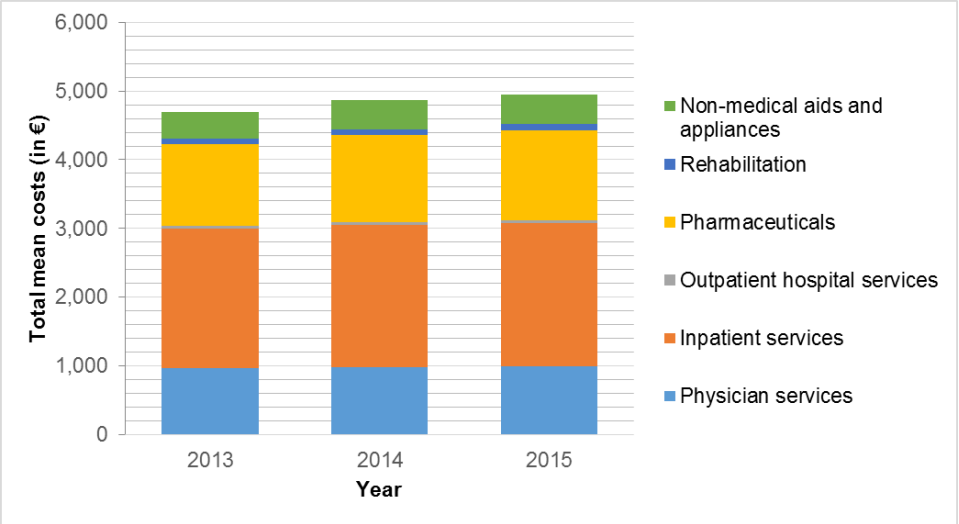
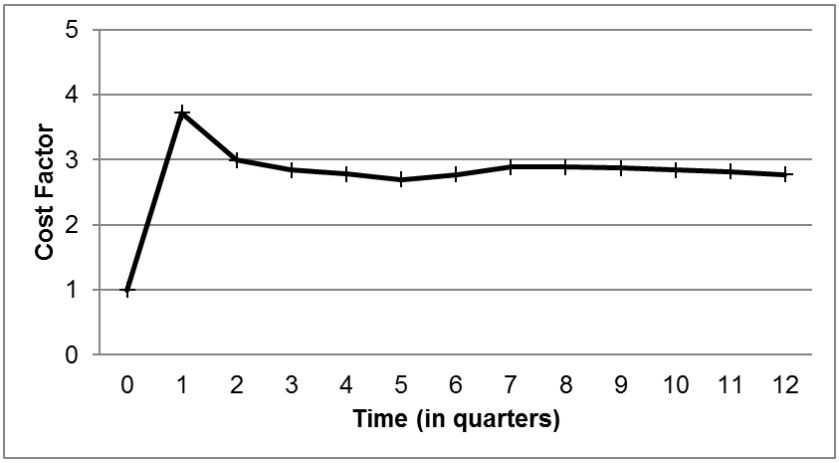


Figure S2: Relative cost factor* at time and after the occurrence of acute events or onset of chronic complications in quarterly intervals†

* Cost factor was calculated by dividing total costs in quarter x by mean costs in a quarter of no complications (€703).

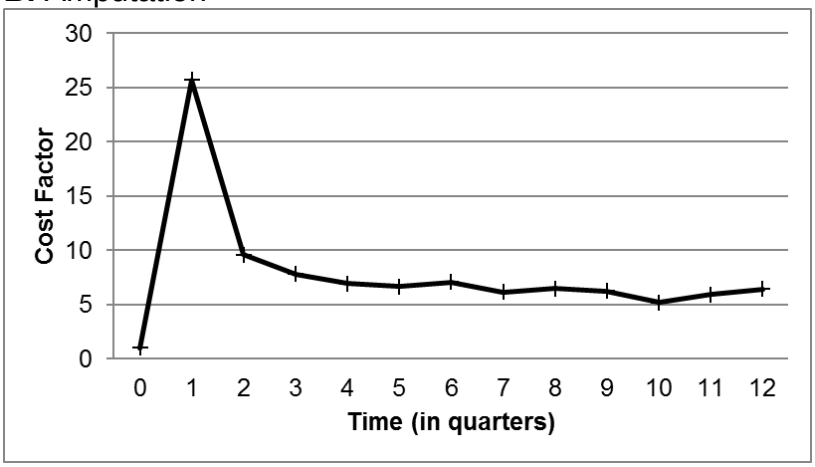
† The method of linear interpolation was used between quarterly data points.

A. Diabetic foot



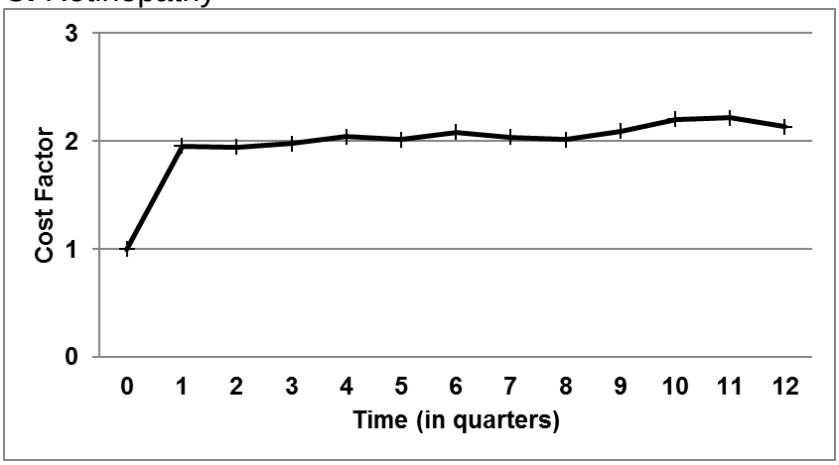
Time	0	1	2	3	4	5	6	7	8	9	10	11	12
n	41,481	44,689	38,576	33,036	29,488	25,649	21,943	18,083	15,338	12,130	8,999	5,879	2,803

B. Amputation



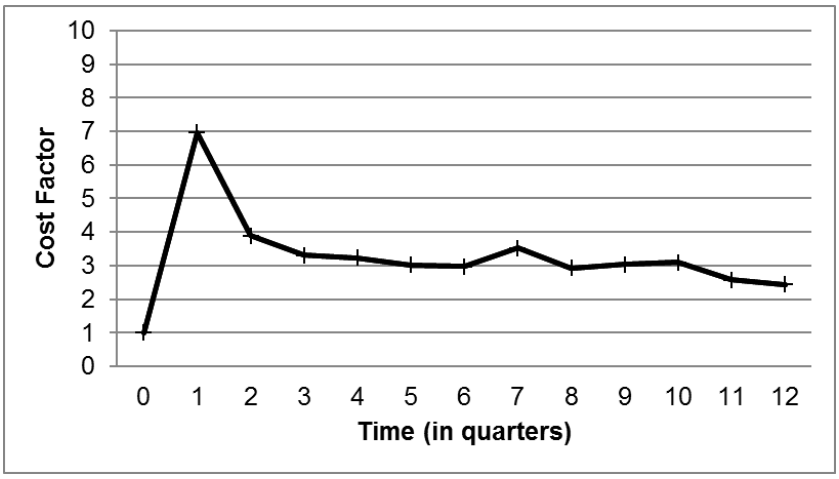
Time	0	1	2	3	4	5	6	7	8	9	10	11	12
n	1,726	1,887	1,510	1,273	1,086	924	764	652	518	413	314	184	94

C. Retinopathy



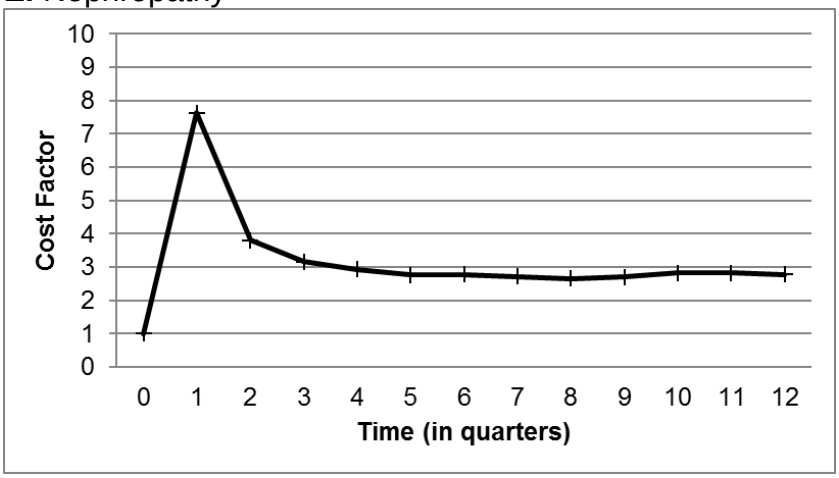
Time	0	1	2	3	4	5	6	7	8	9	10	11	12
n	26,190	30,408	28,564	26,627	24,641	22,463	20,248	18,057	15,779	12,997	10,200	7,296	3,949

D. Blindness



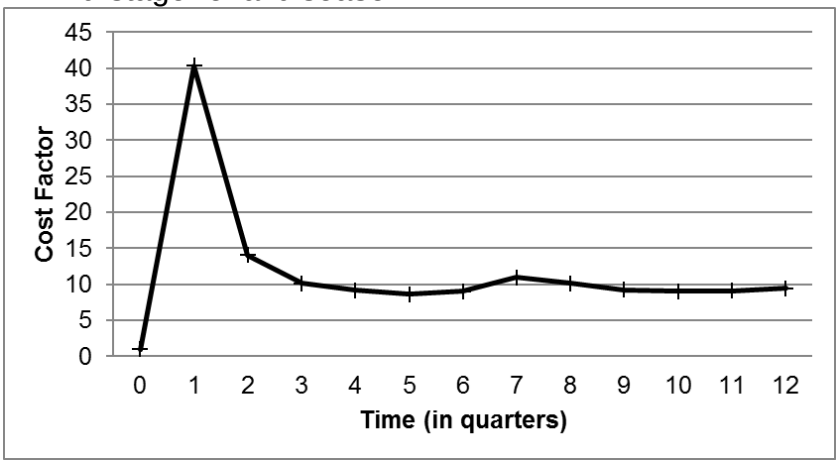
Time	0	1	2	3	4	5	6	7	8	9	10	11	12
n	1,771	1,949	1,746	1,549	1,383	1,240	1,079	920	765	619	460	303	144

E. Nephropathy



Time	0	1	2	3	4	5	6	7	8	9	10	11	12
n	43,302	47,463	41,028	36,179	31,909	28,018	24,444	20,962	17,535	13,718	10,009	6,589	3,320

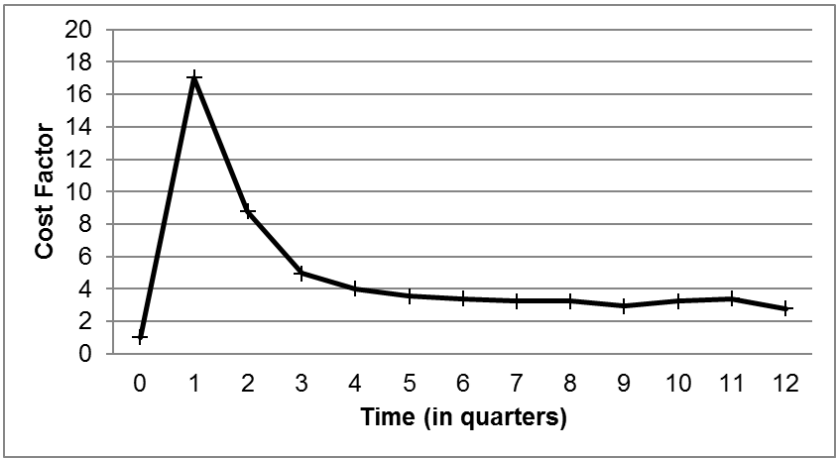
F. End-stage renal disease



Time	0	1	2	3	4	5	6	7	8	9	10	11	12
n	3,470	3,775	2,308	1,874	1,581	1,350	1,137	952	775	606	422	271	114

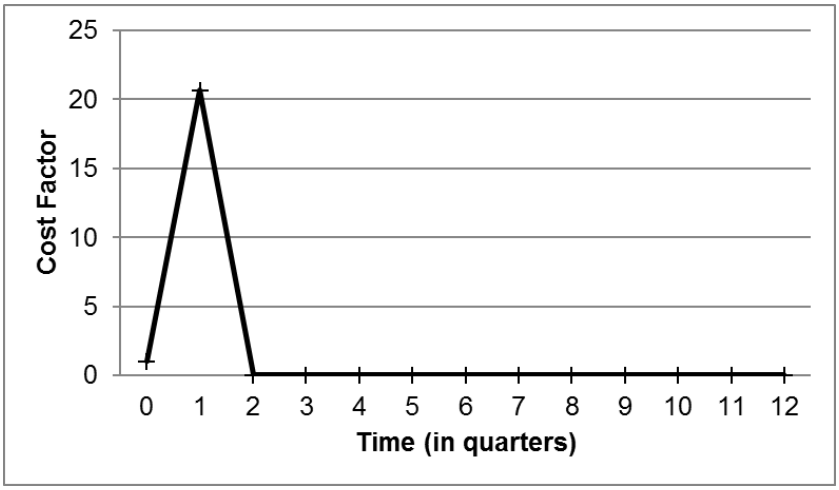
SUPPLEMENTARY DATA

G1. Non-fatal stroke



Time	0	1	2	3	4	5	6	7	8	9	10	11	12
n	6,628	7,192	6,281	5,452	4,747	4,116	3,499	2,919	2,365	1,869	1,376	848	403

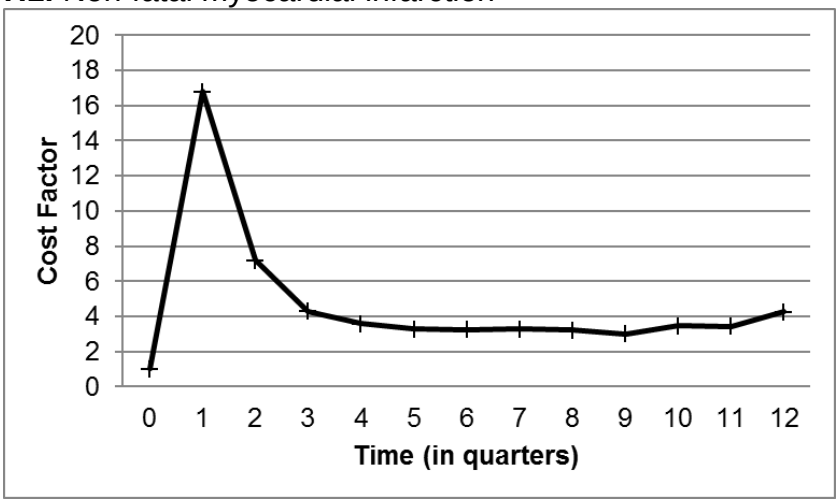
G2. Fatal stroke



Time	0	1		2	3	4	5	6	7	8	9	10	11	12
n	686	739		690	632	575	495	415	355	297	228	169	110	53

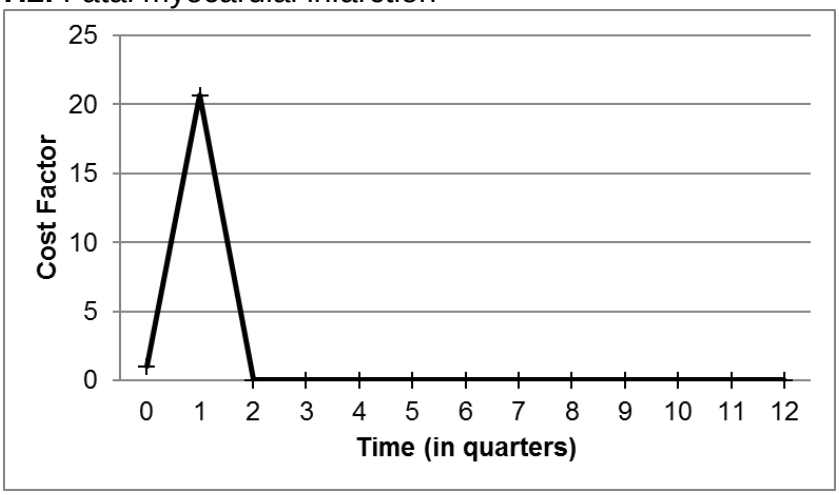
SUPPLEMENTARY DATA

H1. Non-fatal myocardial infarction



Time	0	1	2	3	4	5	6	7	8	9	10	11	12
n	5,168	5,650	4,980	4,408	3,913	3,423	2,866	2,434	1,989	1,553	1,150	773	395

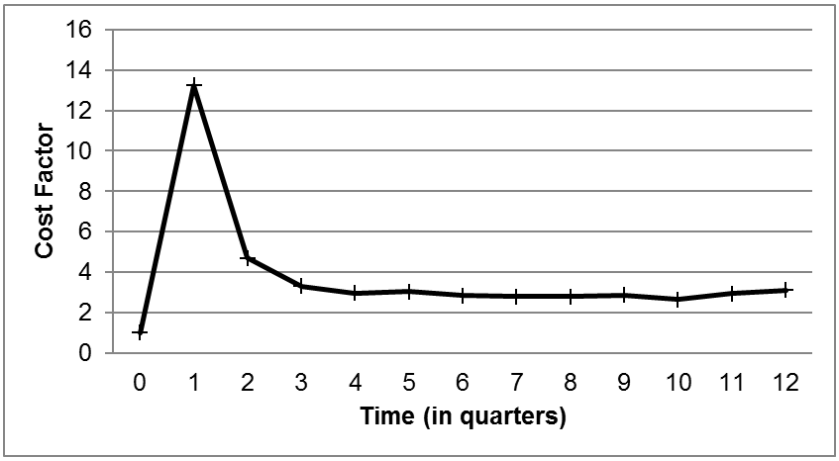
H2. Fatal myocardial infarction



Time	0	1	2	3	4	5	6	7	8	9	10	11	12
n	726	790	716	655	576	502	421	354	282	218	168	123	64

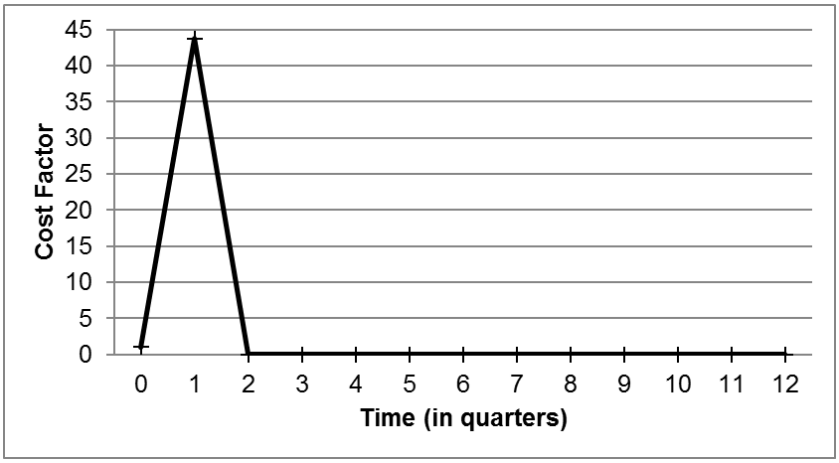
SUPPLEMENTARY DATA

I1. Non-fatal other ischemic heart disease



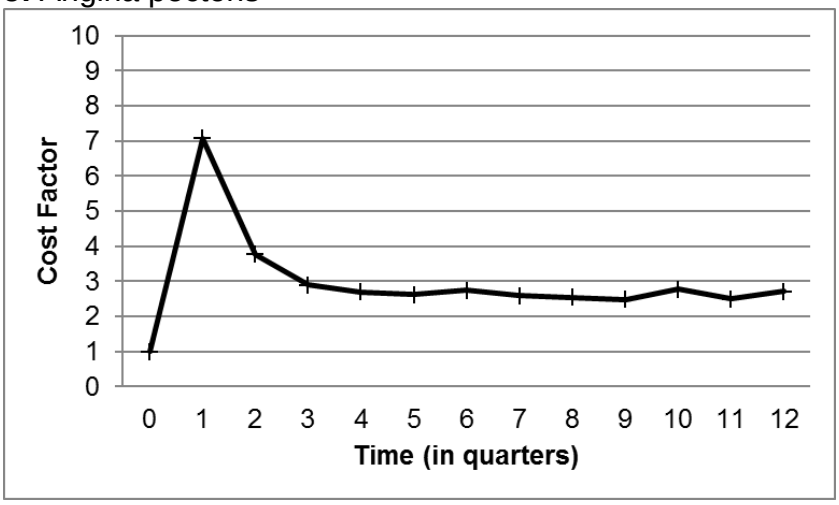
Time	0	1	2	3	4	5	6	7	8	9	10	11	12
n	5,918	6,345	5,749	5,157	4,557	3,949	3,439	2,892	2,396	1,838	1,321	836	397

I2. Fatal other ischemic heart disease



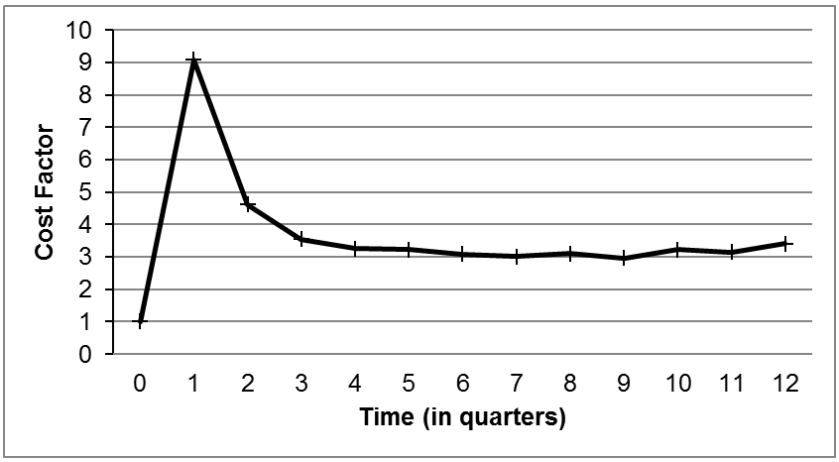
Time	0	1	2	3	4	5	6	7	8	9	10	11	12
n	55	57	53	46	39	35	27	23	20	14	7	5	2

J. Angina pectoris



Time	0	1	2	3	4	5	6	7	8	9	10	11	12
n	14,781	16,491	15,123	13,878	12,683	11,298	9,901	8,552	7,236	5,762	4,336	3,004	1,563

K. Chronic heart failure



Time	0	1	2	3	4	5	6	7	8	9	10	11	12
n	33,142	36,825	32,378	29,103	26,072	23,093	20,438	17,653	14,725	11,462	8,602	5,728	2,859

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