

Supplemental Material

Supplemental Table 1. Definitions of outcomes

Myocardial infarction	At least two of the following criteria: 1. chest pain for at least 20 minutes, not disappearing after administration of nitrates; 2. ST-elevation > 1mm in two following leads or a left bundle branch block of the electrocardiogram; 3. Creatine kinase (CK) elevation of at least two times the normal value of CK and a myocardial fraction >5% of total CK
Stroke	Definite: relevant clinical features causing an increase in impairment of at least one grade on the modified Rankin scale, accompanied by an infarction of hemorrhage on a repeat CT-scan Probable: clinical deficits causing an increase in impairment of at least one grade in the modified Rankin scale, without CT documentation
Cardiovascular mortality	Death from myocardial infarction, stroke, congestive heart failure, or rupture of abdominal aortic aneurysm. Sudden death (unexpected cardiac death occurring within 1 hour after onset of symptoms, or within 24 hours given convincing circumstantial evidence)
Cardiovascular event	Composite of myocardial infarction, stroke, retinal infarction, and cardiovascular mortality
All-cause mortality	Death from any cause
End-stage renal disease	Need for long-term dialysis or renal replacement therapy

Supplemental Table 2. Patient characteristics correlated with mean kidney length in patients with cardiovascular disease and vascular risk factors (n=10,251). Each patient characteristic was analyzed separately.

		Model 1
	SD	Mean kidney length in mm (95%CI)
Male sex		6.50 (6.15 - 6.85) ¹
Age (years) per SD	12	-1.97 (-2.13 - -1.80) ²
Cerebrovascular disease		-0.70 (-1.11 - -0.29)
Coronary heart disease		-0.01 (-0.36 - 0.35)
Abdominal aortic aneurysm		-0.06 (-0.55 - 0.43)
Peripheral arterial disease		0.38 (-0.34 - 1.10)
Diabetes mellitus		3.00 (2.59 - 3.42)
Smoking current or past		1.06 (0.68 - 1.43)
Body height (cm) per SD	9	3.12 (2.90 - 3.34)
Waist circumference (cm) per SD	13	2.91 (2.73 - 3.08)
Body mass index (kg/m ²) per SD	4	2.42 (2.27 - 2.58)
Body surface area (m ²) per SD	0.2	4.54 (4.36 - 4.72)
Systolic blood pressure (mmHg) per SD	22	0.50 (0.33 - 0.67)
Diastolic blood pressure (mmHg) per SD	12	0.57 (0.40 - 0.73)
Intima media thickness (mm) per SD	0.27	0.34 (0.16 - 0.53)
Total cholesterol (mg/dL) per SD	54	0.01 (-0.16 - 0.17)
Log(triglycerides) (mg/dL) per SD	0.6	0.78 (0.61 - 0.94)
LDL-cholesterol (mg/dL) per SD	46	-0.13 (-0.30 - 0.03)
HDL-cholesterol (mg/dL) per SD	15	-0.87 (-1.05 - -0.70)
eGFR (ml/min per 1.73m ²) per SD	18	2.97 (2.77 - 3.16)
Albuminuria		0.83 (0.38 - 1.29)
HbA1c (%) per SD	1.1	1.41 (1.21 - 1.62)

Model 1: each patient characteristic was adjusted for age and sex.

¹ adjusted for age, ² adjusted for sex, SD standard deviation

* For example; a one standard deviation higher eGFR (corresponding to 18 ml/min per 1.73m²) is correlated with a 2.97 mm larger kidney length (95%CI; 2.77 - 3.16).

Supplemental Table 3. Relation between tertiles of kidney length and cardiovascular events, mortality, and End-Stage Renal Disease, excluding patients with a kidney length difference of >2 cm

	First tertile (n=3414)	Second tertile (n=3415)	Third tertile (n=2941)
Range (cm)	7.8-10.8	10.9-11.6	11.7-16.1
	HR (95%CI)	HR (95%CI)	HR (95%CI)
Myocardial infarction			
Number of events	221	211	229
Model I	1.13 (0.91 - 1.41)	reference	1.21 (0.97 - 1.50)
Model II	1.07 (0.85 - 1.34)	reference	1.26 (1.01 - 1.57)
Stroke			
Number of events	139	119	99
Model I	1.14 (0.85 - 1.53)	reference	1.03 (0.75 - 1.41)
Model II	1.05 (0.78 - 1.41)	reference	1.10 (0.80 - 1.50)
Cardiovascular mortality			
Number of events	270	201	201
Model I	1.31 (1.04 - 1.64)	reference	1.22 (0.96 - 1.55)
Model II	1.16 (0.92 - 1.46)	reference	1.32 (1.04 - 1.68)
Cardiovascular events			
Number of events	453	386	391
Model I	1.18 (1.00 - 1.38)	reference	1.18 (1.01 - 1.40)
Model II	1.08 (0.91 - 1.27)	reference	1.27 (1.07 - 1.50)
All-cause mortality			
Number of events	531	436	390
Model I	1.08 (0.92 - 1.26)	reference	1.06 (0.90 - 1.25)
Model II	1.02 (0.87 - 1.20)	reference	1.10 (0.93 - 1.29)
End Stage Renal Disease			
Number of events	16	21	10
Model I	1.03 (0.47 - 2.23)	reference	0.26 (0.10 - 0.69)
Model II	0.32 (0.14 - 0.75)	reference	0.44 (0.16 - 1.20)

Model I age, sex, smoking, body height, waist circumference, diabetes, systolic blood pressure and albuminuria adjusted

Model II age, sex, smoking, body height, waist circumference, diabetes, systolic blood pressure, albuminuria and eGFR adjusted

Supplemental Table 4. Relation between tertiles of kidney length and cardiovascular events, mortality, and End-Stage Renal Disease, excluding patients with diabetes mellitus

	First tertile (n=3036)	Second tertile (n=2927)	Third tertile (n=2314)
Range (cm)	7.8-10.8	10.9-11.6	11.7-16.1
	HR (95%CI)	HR (95%CI)	HR (95%CI)
Myocardial infarction			
Number of events	197	168	164
Model I	1.23 (0.97 - 1.57)	reference	1.24 (0.97 - 1.59)
Model II	1.15 (0.90 - 1.47)	reference	1.30 (1.02 - 1.67)
Stroke			
Number of events	116	93	77
Model I	1.12 (0.80 - 1.56)	reference	1.13 (0.80 - 1.59)
Model II	1.05 (0.75 - 1.47)	reference	1.19 (0.84 - 1.68)
Cardiovascular mortality			
Number of events	231	157	132
Model I	1.37 (1.06 - 1.77)	reference	1.18 (0.89 - 1.57)
Model II	1.19 (0.91 - 1.55)	reference	1.28 (0.96 - 1.71)
Cardiovascular events			
Number of events	388	306	279
Model I	1.22 (1.02 - 1.47)	reference	1.22 (1.01 - 1.47)
Model II	1.12 (0.93 - 1.35)	reference	1.29 (1.07 - 1.56)
All-cause mortality			
Number of events	459	345	270
Model I	1.11 (0.94 - 1.33)	reference	1.06 (0.88 - 1.29)
Model II	1.06 (0.89 - 1.27)	reference	1.10 (0.90 - 1.33)
End-Stage Renal Disease			
Number of events	16	14	3
Model I	1.79 (0.73 - 4.35)	reference	0.26 (0.07 - 0.99)
Model II	0.75 (0.29 - 1.95)	reference	0.80 (0.20 - 3.21)

Model I age, sex, smoking, body height, waist circumference, fasting glucose, systolic blood pressure and albuminuria adjusted

Model II age, sex, smoking, body height, waist circumference, fasting glucose, systolic blood pressure, albuminuria and eGFR adjusted

Supplemental material is neither peer-reviewed nor thoroughly edited by CJASN. The authors alone are responsible for the accuracy and presentation of the material.

Supplemental Figure 1. Relation between kidney length and cardiovascular events and mortality. Results are presented as adjusted hazard ratios and 95% confidence intervals (dotted lines).

