Figure S1: Study population, the Atherosclerosis Risk in Communities Study cohort, visit 5 (ages 67-90 years during 2011-2013).

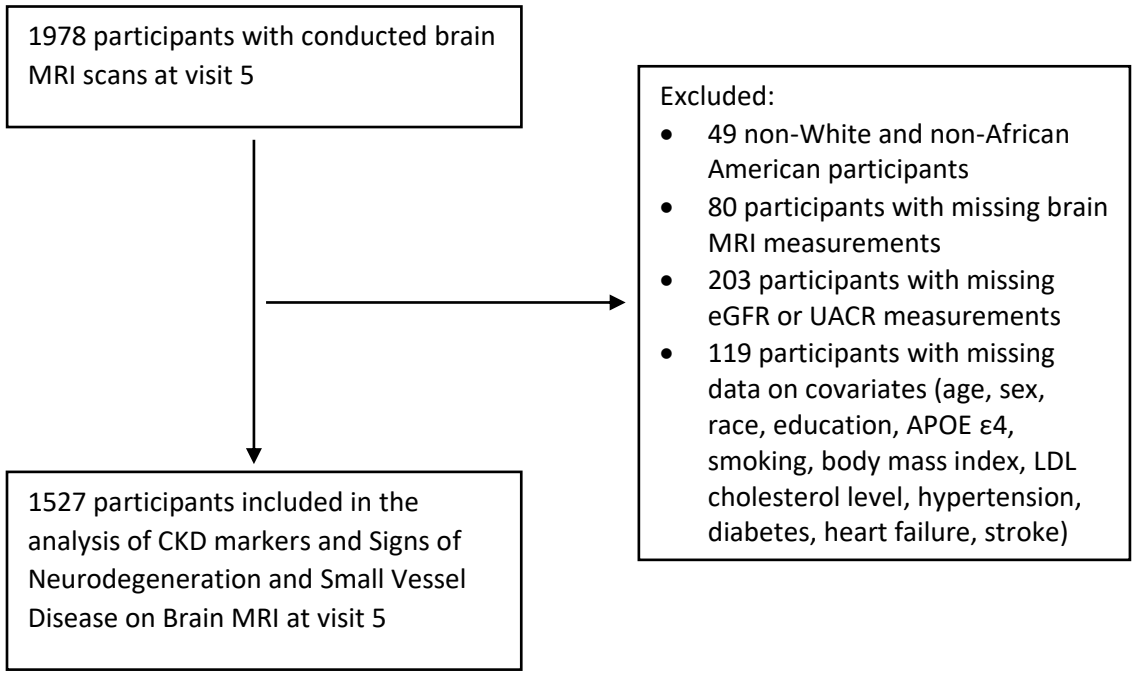

Table S1: Associations (95% confidence interval) of estimated glomerular filtration rate (eGFR) with brain pathological changes, the Atherosclerosis Risk in Communities Study cohort, visit 5 (ages 67-90 years during 2011-2013). Comparison of eGFR estimations based on creatinine, creatinine and cystatin-C, and beta-2-microglobulin (B2M). Models using inverse probability weighting to account for the selection of participants invited for magnetic resonance imaging (MRI) scans.

Brain MRI sign	eGFR Creatinine [a], per 1-IQR (25.35 ml/min/1.73m²) decrease		eGFR Creatinine + Cystatin-C [b], per 1-IQR (25.74 ml/min/1.73m²) decrease		eGFR Beta-2-microglobulin [c], per 1-IQR (19.08 ml/min/1.73m²) decrease	
	Effect Estimate [d]	P value	Effect Estimate [d]	P value	Effect Estimate [d]	P value
Brain volume	Standardized Regression Coefficient		Standardized Regression Coefficient		Standardized Regression Coefficient	
Total brain [cm³]	-0.05 (-0.09 to -0.01)	0.02	-0.05 (-0.09 to -0.01)	0.006	-0.07 (-0.10 to -0.03)	<0.001
Total cortex [cm³]	-0.07 (-0.11 to -0.02)	0.003	-0.07 (-0.11 to -0.03)	0.001	-0.10 (-0.13 to -0.06)	<0.001
Temporal lobe meta-ROI [cm³]	-0.07 (-0.12 to -0.01)	0.01	-0.06 (-0.11 to -0.01)	0.03	-0.07 (-0.12 to -0.02)	0.006
Cortex excluding temporal lobe meta-ROI [cm³]	-0.07 (-0.11 to -0.02)	0.003	-0.07 (-0.11 to -0.03)	0.001	-0.10 (-0.14 to -0.06)	<0.001
Brain infarcts	Odds Ratio		Odds Ratio		Odds Ratio	
Infarcts (any)	1.09 (0.90 to 1.33)	0.4	1.14 (0.95 to 1.38)	0.2	1.15 (0.97 to 1.37)	0.1
Cortical Infarcts	0.95 (0.71 to 1.26)	0.7	0.93 (0.72 to 1.21)	0.6	0.91 (0.72 to 1.15)	0.5
Lacunar Infarcts	1.12 (0.90 to 1.39)	0.3	1.20 (0.98 to 1.47)	0.08	1.28 (1.05 to 1.55)	0.01
Brain micro-hemorrhages	Odds Ratio		Odds Ratio		Odds Ratio	
Micro-hemorrhages (any)	1.03 (0.85 to 1.25)	0.8	1.05 (0.87 to 1.25)	0.6	1.11 (0.94 to 1.32)	0.2
Lobar micro-hemorrhages	1.19 (0.87 to 1.61)	0.3	1.17 (0.88 to 1.56)	0.3	1.20 (0.92 to 1.57)	0.2
Subcortical micro-hemorrhages	0.92 (0.75 to 1.12)	0.4	0.96 (0.80 to 1.16)	0.7	1.06 (0.89 to 1.26)	0.5
White matter lesions	Standardized Regression Coefficient		Standardized Regression Coefficient		Standardized Regression Coefficient	
Log-WMH volume [cm³]	0.04 (-0.03 to 0.12)	0.3	0.06 (-0.01 to 0.13)	0.08	0.08 (0.02 to 0.15)	0.01
Fractional anisotropy	-0.11 (-0.19 to -0.03)	0.01	-0.10 (-0.18 to -0.03)	0.007	-0.10 (-0.17 to -0.03)	0.007
Mean diffusivity [10^{-4} mm²/s]	0.07 (-0.01 to 0.15)	0.09	0.05 (-0.02 to 0.13)	0.2	0.07 (0.00 to 0.14)	0.06

a. Creatinine-based estimated glomerular filtration rate (eGFR) using the 2021 CKD Epidemiology Collaboration (CKD-EPI) equation.

b. Creatinine- and cystatin-C-based eGFR using the 2021 CKD-EPI equation.

c. Beta-2-microglobulin (B2M)-based estimated eGFR.

d. Models adjusted for age, sex, race, education, APOE ε4, smoking, body mass index, LDL cholesterol level, hypertension, diabetes, heart failure, stroke, and log urine albumin-creatinine-ratio (log-UACR). Continuous outcomes were standardized prior to regression to have a mean of 0 and standard deviation of 1. For brain volume measurements and log white matter hyperintensity volume (log-WMH), models were further adjusted for total intracranial volume.

Table S2: Interaction terms (95% confidence interval) of estimated glomerular filtration rate (eGFR cystatin-C) and race as well as log urine albumin-creatinine-ratio (log-UACR) and race, the Atherosclerosis Risk in Communities Study cohort, visit 5 (ages 67-90 years during 2011-2013). Models using inverse probability weighting to account for the selection of participants invited for magnetic resonance imaging (MRI) scans.

Brain MRI sign	**Interaction term eGFR and race**	P value	**Interaction term log-UACR and race**	P value
Brain volume	Regression Coefficient		Regression Coefficient	
Total brain [cm^3]	0.02 (-0.05 to 0.09)	0.6	0.01 (-0.03 to 0.06)	0.5
Total cortex [cm^3]	0.05 (-0.04 to 0.13)	0.3	0.00 (-0.04 to 0.05)	0.9
Temporal lobe meta-ROI [cm^3]	-0.03 (-0.13 to 0.07)	0.6	0.01 (-0.04 to 0.07)	0.6
Cortex excluding temporal lobe meta-ROI [cm^3]	0.06 (-0.02 to 0.15)	0.2	0.00 (-0.04 to 0.05)	0.9
Brain infarcts	Odds Ratio		Odds Ratio	
Infarcts (any)	0.86 (0.60 to 1.24)	0.4	0.95 (0.76 to 1.18)	0.6
Cortical Infarcts	0.80 (0.48 to 1.33)	0.4	0.79 (0.60 to 1.06)	0.1
Lacunar Infarcts	0.95 (0.63 to 1.41)	0.8	0.95 (0.75 to 1.20)	0.7
Brain micro-hemorrhages	Odds Ratio		Odds Ratio	
Micro-hemorrhages (any)	1.14 (0.80 to 1.65)	0.7	1.11 (0.89 to 1.37)	0.4
Lobar micro-hemorrhages	0.99 (0.55 to 1.77)	0.9	0.94 (0.70 to 1.27)	0.7
Subcortical micro-hemorrhages	1.33 (0.92 to 1.96)	0.1	1.20 (0.95 to 1.51)	0.1
White matter lesions	Regression Coefficient		Regression Coefficient	
Log-WMH volume [cm^3]	0.00 (-0.14 to 0.13)	0.9	0.00 (-0.09 to 0.08)	0.9
Fractional anisotropy	0.01 (-0.15 to 0.16)	0.9	-0.03 (-0.13 to 0.07)	0.6
Mean diffusivity [10^{-4} mm^2/s]	0.10 (-0.05 to 0.26)	0.2	-0.06 (-0.15 to 0.03)	0.2