SUPPLEMENTAL MATERIAL

Supplementary Table S1. Reproducibility Data for Measurements of Cardiac Mechanics (N=95)*

Parameter	Mean±SD	Interobserver Reproducibility			Intraobserver Reproducibility		
		ICC (95% CI)	Mean bias (95% CI)	CV	ICC (95% CI)	Mean bias (95% CI)	CV
Global longitudinal strain, %	15.3±2.7	0.77 (0.69, 0.85)	0.71 (0.34-1.08)	9.9%	0.90 (0.87, 0.94)	-0.17 (-0.46, 0.11)	7.2%
Global circumferential strain, %	21.6±5.0	0.76 (0.67, 0.85)	1.22 (0.52, 1.93)	13.6%	0.88 (0.83, 0.93)	-0.52 (-0.06, 1.09)	9.6%
Global radial strain, %	27.2±9.7	0.92 (0.89, 0.95)	-0.39 (-1.17, 0.38)	11.1%	0.92 (0.88, 0.95)	0.66 (0.10, 1.42)	11.3%
e' velocity, cm/s	2.7±1.1	0.76 (0.67, 0.84)	-0.11 (-0.28, 0.06)	26.9%	0.81 (0.75, 0.88)	-0.09 (-0.24, 0.06)	22.3%

*Only unrelated HyperGEN participants were included in reproducibility analyses
SD, standard deviation; ICC = intraclass correlation; CI, confidence interval; CV = coefficient of variation

Supplementary Table S2. Effect of Stepwise Addition of Covariates on the Association of Albuminuria with Global Longitudinal Strain

Covariate added to the statistical model	β-coefficient per doubling of UACR	95% CI
Base model	-0.45	-0.56, -0.33
+image quality	-0.36	-0.46, -0.25
+speckle-tracking technician	-0.36	-0.46, -0.25
+institution	-0.28	-0.38, -0.18
+age	-0.28	-0.38, -0.18
+sex	-0.29	-0.39, -0.19
+coronary artery disease	-0.29	-0.39, -0.18
+diabetes mellitus	-0.27	-0.37, -0.17
+history of smoking	-0.27	-0.37, -0.16
+anti-hypertensive use	-0.27	-0.37, -0.16
+systolic blood pressure	-0.22	-0.33, -0.11
+body mass index	-0.22	-0.33, -0.11
+glomerular filtration rate	-0.22	-0.33, -0.11
+ejection fraction	-0.22	-0.33, -0.11
+left ventricular mass index	-0.23	-0.34, -0.12

β-coefficient of association between urinary albumin-to-creatinine ratio and global longitudinal strain as each covariate is added in a stepwise fashion to the model. The base model is adjusted for the random effects of family membership, as is each model thereafter. Institution is highly collinear with race, and therefore captures the variance attributable to race. UACR = urinary albumin-to-creatinine ratio; CI = confidence interval

Supplementary Table S3. Effect of Each Individual Covariate on the Association of Albuminuria with Global Longitudinal Strain

Covariate added to the base model	β-coefficient per doubling of UACR	95% CI
Base model	-0.45	-0.56, -0.33
age	-0.45	-0.57, -0.34
history of smoking	-0.45	-0.56, -0.33
speckle-tracking technician	-0.45	-0.56, -0.34
ejection fraction	-0.45	-0.57, -0.34
coronary artery disease	-0.44	-0.56, -0.32
anti-hypertensive medication	-0.43	-0.55, -0.31
left ventricular mass index	-0.43	-0.54, -0.31
glomerular filtration rate	-0.43	-0.55, -0.32
body-mass index	-0.41	-0.53, -0.30
diabetes mellitus	-0.40	-0.52, -0.28
systolic blood pressure	-0.37	-0.49, -0.25
image quality	-0.36	-0.46, -0.25
institution	-0.36	-0.47, -0.25

The β-coefficients shown above are for the association between UACR and global longitudinal strain when each individual covariate is added to the base model (which accounts for family relatedness). Thus, each beta-coefficient above is for a model that contains only the covariate, family relatedness, and UACR (in contrast to the stepwise addition of covariates shown above in Supplementary Table S2). UACR = urinary albumin-to-creatinine ratio. CI=confidence interval.

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