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Supplemental Table 1. Baseline characteristics of the total CHS population, and individuals excluded and included from the study population

Baseline Characteristics	Total Population N= 5201	Outside Cohort N = 1685	Within Cohort N = 3516	P- value
Age, years	73 ± 6	74 ± 6	72 ± 5	<0.001
Female gender, % (N)	57 (2962)	48.8 (823)	61 (2139)	<0.001
Black, % (N)	5 (246)	7 (111)	4 (135)	<0.001
Coronary heart disease, % (N)	20 (1022)	22 (370)	19 (652)	0.004
Diabetes mellitus, % (N)	15 (788)	19 (315)	14 (437)	<0.001
Hypertension, % (N)	57 (2942)	58 (981)	56 (1961)	0.09
Antihypertensive therapy, N	0.45 ± 0.5	0.48 ± 0.5	0.44 ± 0.5	0.011
RAAS Inhibitors, % (N)	6 (327)	8 (139)	5 (188)	<0.001
Current smoking, % (N)	12 (601)	12 (199)	11 (402)	0.003
Alcohol use, % (N)	11 (567)	9 (152)	12 (415)	0.003
Heart Rate, BPM	65 ± 12	66 ± 13	65 ± 11	<0.001
BMI, kg/m^2	26 ± 5	27 ± 5	26 ± 4	< 0.001
Systolic BP, mmHg	136 ± 22	137 ± 22	135 ± 21	<0.001

Hemoglobin, g/dl	14.1 ± 1.3	14.2 ± 1.5	14.0 ± 1.3	<0.001
eGFR, ml/min/1.73m^2	68 ± 17	65 ± 18	68 ± 16	<0.001
LVLS (4186), %	14.1 ± 3.8	12.9 ± 3.9	14.3 ± 3.7	<0.001
EDSR (4091), 1/sec	0.65 ± 0.24	0.6 ± 0.23	0.66 ± 0.24	<0.001
e′ (4026), cm/sec	2.75 ± 1.0	2.67 ± 1.04	2.76 ± 1.0	0.047
E/e′ (3907)	30 ± 15	32 ± 17	30 ± 14	0.01
LARS (4082), %	40.2 ± 15.6	37.0 ± 16.5	40.8 ± 15.4	<0.001
RVFWS (3696), %	15.5 ± 4.88	14.7 ± 5.0	15.7 ± 4.9	<0.001

Results are reported as means ± standard deviation, proportions or medians with interquartile ranges

Abbreviations: N, number; RAAS, renin-Angiotensin-aldosterone system; BPM, beats per minute; BMI, body mass index; BP, blood pressure; eGFR, estimated glomerular filtration rate; LVLS, left ventricular longitudinal strain; EDSR, early diastolic strain rate; e′, left ventricular early diastolic tissue velocity; LARS, left atrial reservoir strain; RVFWS, right ventricular free wall strain

Supplemental Table 2. Clinical interpretation of 2D speckle-tracking echocardiography parameters

2D speckle tracking echocardiography parameter	Measurement	Clinical Interpretation
Left ventricular longitudinal strain (LVLS)	Measures the maximal shortening of the longitudinal LV myocardial segments during systole.	Lower absolute values suggest subclinical LV systolic dysfunction.
Left ventricular early diastolic strain rate (EDSR)	Measures the rate (speed) at which strain or tissue deformation occurs in early diastole.	Lower absolute values suggest subclinical LV diastolic dysfunction and impaired LV relaxation.
Left ventricular early diastolic velocity (e′ velocity)	Measures early diastolic mitral annular velocity, a measure of LV relaxation.	Reductions suggest impairment in early diastolic myocardial relaxation.
E/e′ ratio	Measures ratio between early diastolic mitral inflow velocity and early diastolic velocity of the mitral annulus.	Higher values suggest increased LV filling pressures.
Right ventricular free wall strain (RVFWS)	Measures the maximal shortening of the longitudinal RV free wall myocardial segments.	Lower absolute values suggest subclinical RV systolic dysfunction.
Left atrial reservoir strain (LARS)	Measures the ability of the left atrium to fill during LV systole.	Provides insights into left atrial pressure and compliance. Lower absolute values suggest left atrial dysfunction (inability of the left atrium to fill from the pulmonary veins) and LV diastolic dysfunction.

LV=left ventricular; RV=right ventricular

Supplemental Table 3. Association of 2D speckle tracking echocardiogram measures with rapid decline in kidney function (defined as an annualized eGFR decline > 3 ml/min/1.72m^2 per year over 7 years)

Rapid Decline in Kidney Function N=211 events	Model 1	Model 2
Left Ventricular Longitudinal Strain	**1.18 (1.02, 1.36)** **P=0.03**	1.1 (0.95, 1.27) P=0.22
Left Ventricular Early Diastolic Strain Rate	**1.32 (1.14, 1.53)** **P<0.001**	**1.19 (1.03, 1.38)** **P=0.02**
Left Ventricular Early Diastolic Tissue Velocity (e′)	1.13 (0.98, 1.29) P=0.08	1.07 (0.94, 1.23) P=0.31
* E/e′	**1.24 (1.10, 1.41)** **P<0.001**	**1.14 (1.005, 1.30)** **P=0.04**
Left Atrial Reservoir Strain	**1.20 (1.03, 1.40)** **P=0.02**	1.14 (0.98, 1.33) P=0.09
Right Ventricular Free Wall Strain	1.00 (0.86, 1.16) P=0.98	1.01 (0.87, 1.17) P=0.90

Results are reported relative risk of rapid decline in kidney function with 95% CI per 1 SD decrease in speckle tracking echocardiographic parameter

*Relative risk of rapid decline in kidney function with 95% CI per 1 SD increase in E/eʹ

Model 1 adjusts for reader, institution, quality

Model 2 adjusts for factors in Model 1 and age, black race, male gender, heart rate, and physical activity score, history of coronary heart disease, diabetes, hypertension, antihypertensive therapy, smoking, alcohol use, body mass index, systolic blood pressure, hemoglobin, and baseline eGFR