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Supplemental Table 1. Change in cMRI from baseline to 12 month study visit in COMBINE participants

	Baseline	12 Month Follow-up	12-Month Change	
	N = 112	**N = 112**	**Median IQR (diff)**	***p* - value**
Left ventricular end systolic volume index, $mL/m^{2.7}$	12.2 ± 6.0	12.8 ± 6.7	0.9 (-1.3 − 2.6)	0.49
Left ventricular end diastolic volume index, $mL/m^{2.7}$	32.5 ± 9.8	32.8 ± 10.9	-0.3 (-4.9 − 5.1)	0.82
Left atrial end systolic volume index, $mL/m^{2.7}$	12.4 ± 7.0	13.3 ± 8.6	1.0 (-1.3 − 2.2)	0.39
Left atrial end diastolic volume index, $mL/m^{2.7}$	20.7 ± 8.3	21.5 ± 9.3	0.3 (-2.4 − 3.2)	0.51
Left ventricular mass index, $g/m^{2.7}$	29.2 ± 8.6	30.5 ± 9.6	1.5 (-1.5 − 4.2)	0.29
Mitral Valve E/A ratio	0.8 ± 0.3	0.9 ± 0.4	-0.02 (-0.16 − 0.18)	0.64

Abbreviations: cMRI; cardiac magnetic resonance imaging; N, number, IQR, interquartile range

Supplemental Table 2. Associations of CKD status in individuals without baseline cardiovascular disease with cMRI parameters

	Unadjusted		Minimally Adjusted		Fully Adjusted	
cMRI parameter	Parameter Estimate (95% CI)	*p*-value	Parameter Estimate (95% CI)	*p*-value	Parameter Estimate (95% CI)	*p*-value
Left Ventricular End Systolic Volume (N=121)	-0.74 (-3.21, 1.73)	0.55	-0.47 (-2.93, 1.98)	0.70	-1.32 (-3.79, 1.16)	0.29
Left Ventricular Diastolic Volume(N=121)	-1.47 (-5.66, 2.72)	0.49	-0.96 (-5.19, 3.28)	0.66	-3.50 (-7.69, 0.69)	0.10
Left atrial end systolic volume index (N=117)	1.79 (-1.31, 4.88)	0.25	1.11 (-2.02, 4.25)	0.48	-0.04 (-3.36, 3.28)	0.98
Left atrial end diastolic volume(N=117)	0.17 (-3.55, 3.90)	0.93	-0.61 (-4.37, 3.14)	0.75	-2.32 (-6.25, 1.61)	0.24
Left ventricular mass index, $g/m^{2.7}$ (N=121)	4.34 (1.01, 7.66)	**0.01**	4.34 (1.09 − 7.59)	0.009	0.28 (-2.47 – 3.03)	0.84
Mitral Valve E/A ratio (N=104)	-0.16 (-0.30, -0.02)	**0.03**	-0.12 (-0.23, -0.005)	**0.04**	-0.10 (-0.23, 0.02)	0.10

Cardiovascular disease defined as the presence or history of heart failure, ischemia, stroke, revascularization, angina, myocardial infarction

CKD status was defined using eGFR for healthy volunteers

Minimally Adjusted was adjusted for age and sex, race

Fully Adjusted Model: Covariates in the minimally adjusted model plus body mass index and systolic blood pressure

Abbreviations: CKD, chronic kidney disease; cMRI, cardiac magnetic resonance imaging

Supplemental Table 3. Associations between eGFR and UACR and baseline cMRI parameters in individuals without baseline cardiovascular disease in CKD participants

CKD participants N=97	LVESV Index N=97	LVEDV Index N=97	LAESV Index N=93	LAEDV Index N=93	LVM Index N=97	Mitral Valve E/A ratio N=80
Spearman Correlation Coefficients (p values)						
Baseline eGFR, ml/min/1.73m^2	-0.11 (0.28)	-0.09 (0.38)	-0.08 (0.46)	-0.07 (0.52)	-0.06 (0.56)	0.08 (0.51)
Baseline UACR, mg/g	0.15 (0.13)	0.11 (0.27)	0.10 (0.35)	0.03 (0.81)	**0.46** **(<.0001)**	-0.10 (0.38)
*Linear Regression Analyses with B-estimates and 95% CI						
Baseline eGFR, ml/min/1.73m^2	0.002 (-0.15, 0.16)	-0.02 (-0.27, 0.24)	0.01 (-0.20, 0.22)	0.08 (-0.15, 0.31)	0.01 (-0.16, 0.18)	0.001 (-0.007,0.01)
Baseline ln UACR	-0.20 (-0.99, 0.60)	-0.80 (-2.09, 0.50)	-0.03 (-1.06, 0.99)	-0.72 (-1.85, 0.40)	0.86 (-0.006, 1.72)	**-0.05** **(-0.096, -0.01**)

Cardiovascular disease defined as the presence or history of heart failure, ischemia, stroke, revascularization, angina, myocardial infarction

β estimate per 1 unit increase in parameter.

Models adjusted age, sex, race, ethnicity, smoking, body mass index, systolic blood pressure, diabetes, hemoglobin, BNP, HS-Troponin, phosphate, PTH, FGF23, and eGFR (when UACR is the exposure) or UACR (when eGFR is the exposure).

Abbreviations: eGFR, estimated glomerular filtration rate; UACR, urine albumin-to-creatinine ratio; cMRI, cardiac magnetic resonance imaging; CKD, chronic kidney disease; N, number; LVESV, left ventricular end systolic volume; LVEDV, left ventricular end diastolic volume; LAESV, left atrial end systolic volume; LAEDV, left atrial end diastolic volume; LVM, left ventricular mass; CI, confidence interval; BNP, brain natriuretic peptide; HS-Troponin, high sensitivity troponin; PTH, parathyroid hormone; FGF23, fibroblast growth factor 23

Supplemental Table 4. Associations between eGFR and UACR and 12-month change in cMRI in individuals without baseline cardiovascular disease in CKD participants

N = 79 CKD Participants	LVESV Index N=79	LVEDV Index N=79	LAESV Index N=73	LAEDV Index N=73	LVM Index N=79	Mitral Valve E/A ratio N=48
Spearman Correlation Coefficients (p values)						
Baseline eGFR, ml/min/1.73m^2	0.05 (0.64)	0.04 (0.71)	0.20 (0.08)	0.23 (0.06)	**-0.24 (0.03)**	-0.05 (0.74)
Baseline UACR, mg/g	0.04 (0.73)	0.16 (0.16)	-0.15 (0.20)	0.009 (0.94)	0.19 (0.09)	0.15 (0.30)
*Linear Regression Analyses with B-estimates and 95% CI						
Baseline eGFR, ml/min/1.73m^2	-0.05 (-0.30, 0.20)	-0.11 (-0.51, 0.30)	0.12 (-0.11,0.35)	0.06 (-0.24, 0.36)	-0.22 (-0.47 ,0.03)	-0.01 (-0.04, 0.02)
Baseline ln UACR	1.00 (-0.05,2.06)	1.58 (-0.19, 3.36)	-0.35 (-1.36, 0.67)	0.42 (-0.91, 1.74)	0.02 (-1.06, 1.10)	-0.013 (-0.09,0.06)

Cardiovascular disease defined as the presence or history of heart failure, ischemia, stroke, revascularization, angina, myocardial infarction

β estimate per 1 unit increase in parameter.

Models adjusted age, sex, race, ethnicity, smoking, body mass index, systolic blood pressure, diabetes, hemoglobin, BNP; HS-Troponin, phosphate, PTH, FGF23, eGFR (when UACR is the exposure) or UACR (when eGFR is the exposure), randomization arm, and interaction term of exposure x randomization arm

Abbreviations: eGFR, estimated glomerular filtration rate; UACR, urine albumin-to-creatinine ratio; cMRI, cardiac magnetic resonance imaging; CKD, chronic kidney disease; N, number; LVESV, left ventricular end systolic volume; LVEDV, left ventricular end diastolic volume; LAESV, left atrial end systolic volume; LAEDV, left atrial end diastolic volume; LVM, left ventricular mass; CI, confidence interval; BNP, brain natriuretic peptide; HS-Troponin, high sensitivity troponin; PTH, parathyroid hormone; FGF23, fibroblast growth factor 23

Supplemental Table 5. Associations between parameters of mineral metabolism and baseline and 12-month change in cMRI in in CKD participants

Baseline Parameters	LVESV Index N=140	LVEDV Index N=140	LAESV Index N=134	LAEDV Index N=134	LVM Index N=140	Mitral Valve E/A ratio N=116
Spearman Correlation Coefficients (p values)						
FGF23, pg/mL	**0.18 (0.03)**	**0.24 (0.005)**	0.05 (0.58)	0.11 (0.19)	**0.26 (0.002)**	-0.016 (0.86)
Phosphate, mg/dL	0.16 (0.06)	0.13 (0.14)	0.04 (0.62)	0.08 (0.39)	0.12 (0.16)	0.07 (0.47)
PTH, pg/mL	0.08 (0.37)	0.14 (0.09)	0.08 (0.35)	0.07 (0.45)	**0.21 (0.01)**	-0.13 (0.15)
Linear Regression Analyses with B-estimates and 95% CI						
ln FGF23	-0.18 (-2.53, 2.17)	0.54 (-2.97,4.05)	0.12 (-2.51, 2.76)	1.11 (-1.73, 3.94)	0.54 (-2.09, 3.17)	0.07 (-0.04, 0.18)
Phosphate, mg/dL	0.98 (-1.34, 3.29)	-0.90 (-4.36, 2.56)	-2.14 (-4.77, 0.50)	-2.07 (-4.91,0.76)	0.09 (-2.51, 2.68)	-0.013 (-0.13, 0.10)
ln PTH	0.12 (-1.56,1.79)	0.82 (-1.68, 3.32)	-0.55 (-2.42, 1.32)	-0.38 (-2.39,1.64)	0.92 (-0.95,2.80)	0.01 (-0.07, 0.09)
***12-month Change**	**LVESV Index N= 112**	**LVEDV Index N=112**	**LAESV Index N=105**	**LAEDV Index N=105**	**LVM Index N=112**	**Mitral Valve E/A ratio N=73**
Spearman Correlation Coefficients (p values)						
FGF23, pg/mL	-0.08 (0.39)	-0.04 (0.66)	-0.006 (0.95)	-0.049 (0.62)	0.05 (0.60)	0.05 (0.66)

Phosphate, mg/dL	-0.04 (0.68)	0.004 (0.97)	0.07 (0.50)	-0.07 (0.48)	0.08 (0.42)	0.05 (0.67)
PTH, pg/mL	0.07 (0.49)	-0.007 (0.94)	-0.12 (0.24)	-0.095 (0.33)	0.09 (0.33)	-0.11 (0.35)
Linear Regression Analyses with B-estimates and 95% CI						
ln FGF23	-0.18 (-3.90, 3.54)	-1.61 (-7.38, 4.16)	-0.57 (-4.15, 3.00)	0.86 (-3.31, 5.03)	-0.87 (-4.28, 2.53)	-0.13 (-0.47, 0.20)
Phosphate, mg/dL	1.56 (-2.37,5.49)	2.85 (-3.24,8.95)	0.32 (-3.40,4.05)	0.29 (-4.06, 4.64)	0.40 (-3.13, 3.92)	0.002 (-0.37, 0.38)
ln PTH	0.32 (-2.72, 3.36)	-0.09 (-4.80,4.62)	0.71 (-2.25, 3.67)	-0.61 (-4.12, 2.91)	-0.97 (-3.74, 1.80)	-0.08 (-0.35,0.19)

β estimate per 1 unit increase in parameter.

Models adjusted age, sex, race, ethnicity, smoking, body mass index, systolic blood pressure, diabetes, hemoglobin, BNP; HS-Troponin, phosphate, PTH, FGF23, eGFR, UACR

*12-month change analyses also adjust for randomization arm, and interaction term of exposure x randomization arm

Abbreviations: cMRI, cardiac magnetic resonance imaging; CKD, chronic kidney disease; N, number; LVESV, left ventricular end systolic volume; LVEDV, left ventricular end diastolic volume; LAESV, left atrial end systolic volume; LAEDV, left atrial end diastolic volume; LVM, left ventricular mass; FGF23, fibroblast growth factor 23; PTH, parathyroid hormone; CI, confidence interval; BNP, brain natriuretic peptide; HS-Troponin, high sensitivity troponin; eGFR, estimated glomerular filtration rate; UACR, urine albumin-to-creatinine ratio