

Supplemental Online Content

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This supplemental material has been provided by the authors to give readers additional information about their work.

eTable 1. Stratified analysis by visit 2 NT-proBNP levels of the association between percent change in NT-proBNP (continuous variable) with risk of incident heart failure hospitalization and all-cause death after visit 4.

	Visit 2 NT-proBNP <125pg/mL	Visit 2 NT-proBNP ≥125pg/mL	P _{interaction}
Heart Failure			0.096
Model 1	1.10 (1.07, 1.13)	1.16 (1.09, 1.24)	
Model 2	1.06 (1.02, 1.11)	1.10 (0.98, 1.23)	
Model 3	1.12 (1.08, 1.16)	1.05 (0.95, 1.16)	
Model 4	1.00 (0.95, 1.05)	0.77 (0.56, 1.07)	
All-Cause Death			0.791
Model 1	1.08 (1.05, 1.10)	1.08 (1.05, 1.11)	
Model 2	1.05 (1.02, 1.09)	1.05 (1.01, 1.09)	
Model 3	1.07 (1.04, 1.11)	1.06 (1.02, 1.10)	
Model 4	1.02 (0.98, 1.06)	0.96 (0.91, 1.02)	

Model 1: age, sex, race

Model 2: model 1 plus systolic blood pressure, diastolic blood pressure, hypertensive medication use, diabetes, fasting glucose, low-density lipoprotein cholesterol, triglyceride, cholesterol lowering medication use, cigarette smoking, estimated glomerular filtration rate, body mass index, prevalent coronary heart disease.

Model 3: model 2 plus visit 2 NT-proBNP (log-transformed)

Model 4: model 2 plus visit 4 NT-proBNP (log-transformed)

eTable 2. Subgroup analysis of association between percent change in NT-proBNP and heart failure hospitalization.

Subgroups	HR (95% CI)	p-interaction
		0.11
Female	1.12 (1.04,1.21)	
Male	1.04 (0.99,1.09)	
		0.96
White	1.06 (1.01,1.10)	
Black	1.05 (0.94,1.17)	
		0.15
Non-hypertensive	1.03 (0.96,1.11)	
Hypertensive	1.10 (1.04,1.16)	
		0.04
Non-diabetic	1.05 (1.00,1.10)	
Diabetic	1.15 (1.01,1.32_	
		0.45
BMI <30 kg/m ²	1.06 (1.01,1.07)	
BMI ≥30 kg/m ²	1.10 (1.00,1.21)	
		0.046
Not current smoking	1.04 (0.99,1.09)	
Current smoking	1.16 (1.06,1.28)	
		0.14
No prevalent CHD	1.10 (1.04,1.17)	
Prevalent CHD	1.03 (0.97,1.10)	

Abbreviations: BMI = body mass index, CHD = coronary heart disease

Model is adjusted for age, sex, race, systolic blood pressure, diastolic blood pressure, hypertensive medication use, diabetes, fasting glucose, low-density lipoprotein cholesterol, triglyceride, cholesterol lowering medication use, cigarette smoking, estimated glomerular filtration rate, body mass index, prevalent coronary heart disease.

eTable 3. Subgroup analysis of association between percent change in NT-proBNP and all-cause death. Significant p-interaction is <0.007 after accounting for multiple

Subgroups	HR (95% CI)	p-interaction
		0.02
Female	1.13 (1.07,1.20)	
Male	1.04 (1.00,1.07)	
		0.10
White	1.05 (1.02,1.08)	
Black	1.09 (1.02,1.17)0.58	
		0.17
Non-hypertensive	1.04 (1.00,1.08)	
Hypertensive	1.08 (1.03,1.13)	
		0.73
Non-diabetic	1.05 (1.02,1.09)	
Diabetic	1.05 (1.01,1.09)	
		0.054
BMI <30 kg/m ²	1.04 (1.01,1.08)	
BMI ≥30 kg/m ²	1.12 (1.05,1.19)	
		0.91
Not current smoking	1.05 (1.03,1.08)	
Current smoking	1.06 (0.96,1.16)	
		0.02
No prevalent CHD	1.10 (1.06,1.15)	
Prevalent CHD	1.03 (0.99,1.07)	

Abbreviations: BMI = body mass index, CHD = coronary heart disease

Model is adjusted for age, sex, race, systolic blood pressure, diastolic blood pressure, hypertensive medication use, diabetes, fasting glucose, low-density lipoprotein cholesterol, triglyceride, cholesterol lowering medication use, cigarette smoking, estimated glomerular filtration rate, body mass index, prevalent coronary heart disease.

eTable 4. Stratified analysis by visit 2 NT-proBNP levels of the association between percent change in NT-proBNP, modeled as a categorical variable, with risk for incident heart failure hospitalization and all-cause death after visit 4.

	Visit 2 NT-proBNP <125pg/mL			Visit 2 NT-proBNP ≥125pg/mL		
	>25% decrease	≤ 25% change	>25% increase	>25% decrease	≤ 25% change	>25% increase
Heart Failure Hospitalization						
Model 1	1.08 (0.88, 1.32)	Ref	2.61 (2.11, 3.22)	1.17 (0.89, 1.53)	Ref	6.13 (3.15, 11.96)
Model 2	1.15 (0.86, 1.53)	Ref	1.93 (1.39, 2.67)	0.86 (0.57, 1.29)	Ref	6.56 (2.27, 18.99)
Model 3	1.02 (0.76, 1.37)	Ref	4.30 (2.82, 6.55)	0.81 (0.53, 1.22)	Ref	7.46 (2.53, 21.97)
Model 4	1.37 (1.02, 1.84)	Ref	1.26 (0.86, 1.84)	1.32 (0.32, 5.50)	Ref	1.30 (0.82, 2.06)
All-Cause Death						
Model 1	1.02 (0.89, 1.17)	Ref	1.82 (1.56, 2.11)	0.97 (0.80, 1.18)	Ref	8.02 (5.16, 12.47)
Model 2	1.14 (0.94, 1.38)	Ref	1.56 (1.26, 1.94)	0.59 (0.44, 0.79)	Ref	5.47 (2.58, 11.60)
Model 3	1.10 (0.90, 1.33)	Ref	2.06 (1.55, 2.72)	0.55 (0.41, 0.74)	Ref	5.60 (2.63, 11.93)
Model 4	1.21 (0.99, 1.47)	Ref	1.32 (1.03, 1.69)	0.80 (0.58, 1.11)	Ref	1.22 (0.41, 3.69)

Model 1: age, sex, race

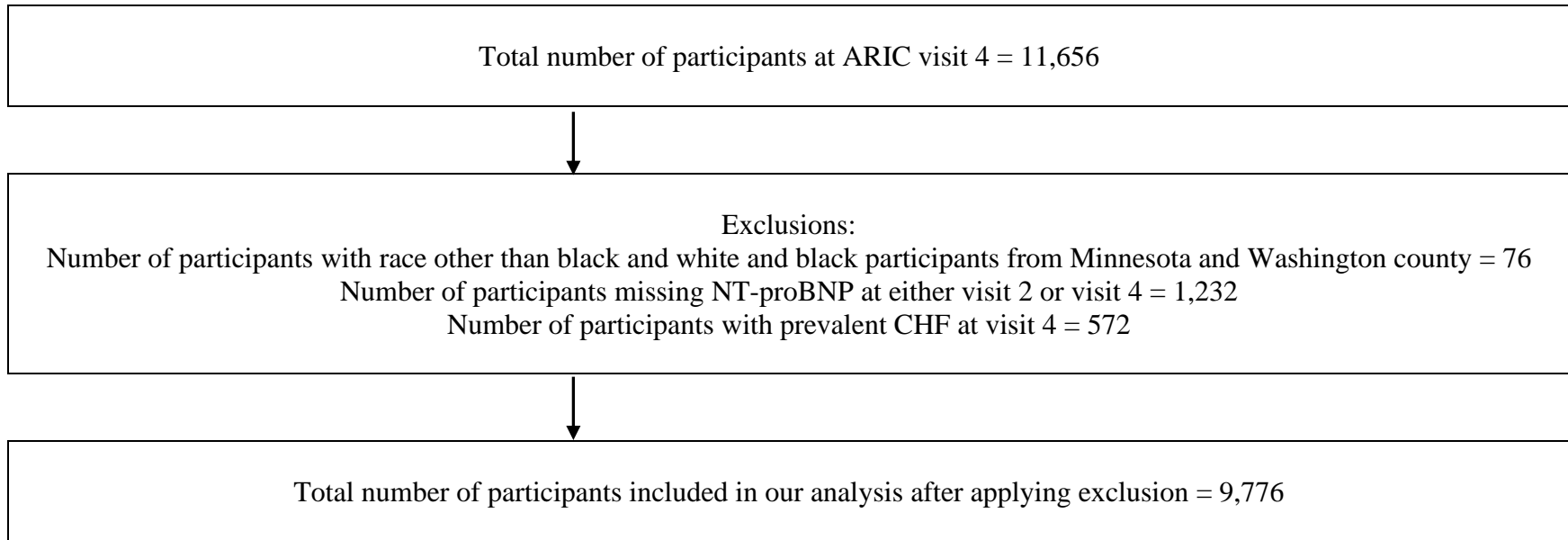
Model 2: model 1 plus systolic blood pressure, diastolic blood pressure, hypertensive medication use, diabetes, fasting glucose, low-density lipoprotein cholesterol, triglyceride, cholesterol lowering medication use, cigarette smoking, estimated glomerular filtration rate, body mass index, prevalent coronary heart disease.

eTable 5. Association between risk factors at visit 2 with absolute change in NT-proBNP.

	β -coefficient	95% Confidence Interval	p-value
Age	0.025	0.018 – 0.031	<0.001
Male	-0.308	-0.372 – -0.245	<0.001
Black Race	-0.298	-0.383 – -0.213	<0.001
Systolic Blood Pressure	0.011	0.008 – 0.014	<0.001
Diastolic Blood Pressure	-0.005	-0.009 – -0.000	0.044
Hypertension Medication Use	0.278	0.198 – 0.358	<0.001
Diabetes	0.056	-0.073 – 0.185	0.393
LDL-C	-0.001	-0.001 – 0.000	0.155
Triglyceride	-0.003	-0.004 – -0.002	<0.001
Cholesterol medication	-0.054	-0.183 – 0.076	0.414
eGFR	-0.012	-0.014 – -0.010	<0.001
Body Mass Index	-0.010	-0.017 – -0.003	0.004
Current Smoker	0.223	0.144 – 0.857	<0.001
Prevalent Coronary Heart Disease	2.663	2.065-3.260	<0.001

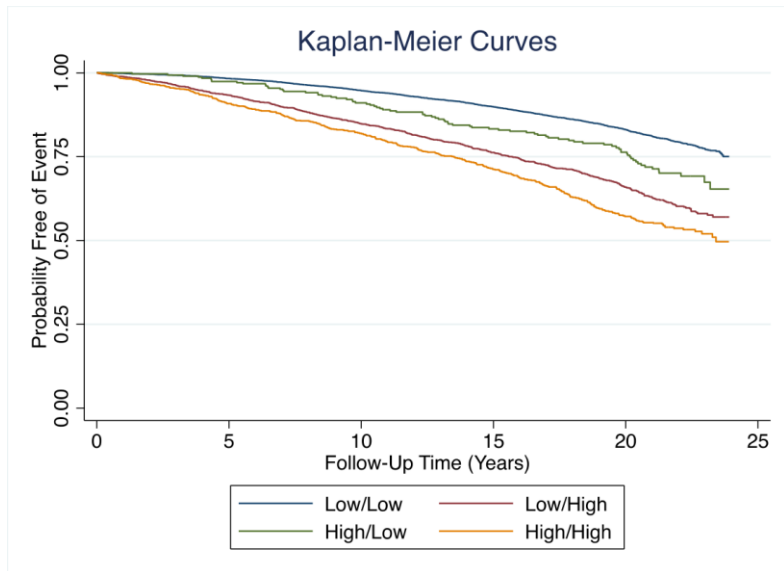
Abbreviations: LDL-C = low-density lipoprotein cholesterol, eGFR = estimated glomerular filtration rate.

eFigure 1. Inclusion and exclusion criteria.



eFigure 2. Kaplan-Meier curves of heart failure hospitalization (a) and all-cause death (b) by NT-proBNP change categories.

a)



b)

