

## **SUPPLEMENTAL MATERIAL**

### **Predicted Atherosclerotic Cardiovascular Disease Risk and Masked Hypertension Among African Americans in the Jackson Heart Study**

Short title: Cardiovascular disease risk and masked hypertension

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**SUPPLEMENTAL TABLES**

**Supplemental Table 1.** Clinic and ambulatory blood pressure levels among Jackson Heart Study participants by category of 10-year predicted atherosclerotic cardiovascular risk.

	10-year predicted ASCVD risk category				p-trend
	<5%	≥5% to <7.5%	≥7.5% to <10%	≥10%	
	(n=212)	(n=93)	(n=74)	(n=265)	
<b>SBP, mmHg</b>					
Clinic SBP	117.3 ± 10.2	121.2 ± 9.5	122.5 ± 10.6	125.9 ± 9.3	<0.001
Daytime SBP	121.9 ± 9.7	125.9 ± 10.9	126.7 ± 10.1	131.2 ± 12.4	<0.001
Nighttime SBP	111.7 ± 11.4	116.3 ± 13.2	118.0 ± 11.0	123.0 ± 15.1	<0.001
24-hour SBP	117.8 ± 9.7	122.3 ± 10.8	123.7 ± 9.9	128.0 ± 12.5	<0.001
<b>DBP, mmHg</b>					
Clinic DBP	74.2 ± 7.7	73.5 ± 7.5	72.5 ± 8.0	72.3 ± 6.9	0.003
Daytime DBP	77.7 ± 8.4	77.2 ± 7.7	76.6 ± 8.3	77.2 ± 9.5	0.473
Nighttime DBP	66.4 ± 8.7	66.2 ± 9.1	68.2 ± 8.5	68.3 ± 10.1	0.015
24-hour DBP	73.2 ± 8.0	72.7 ± 7.5	73.5 ± 7.9	73.5 ± 9.0	0.553
Prehypertension, %	47.2%	61.3%	64.9%	77.4%	<0.001

The numbers in the table are mean ± standard deviation or percentages.

ASCVD: Atherosclerotic cardiovascular disease

SBP: systolic blood pressure

DBP: diastolic blood pressure

**Supplemental Table 2.** Characteristics and clinic and ambulatory blood pressure among Jackson Heart Study participants by category of 10-year predicted atherosclerotic cardiovascular risk stratified by those not taking antihypertensive medication (upper panel) and those taking antihypertensive medication (lower panel).

	10-year predicted ASCVD risk category			p-trend
	<5%	≥5% to <7.5%	≥7.5%	
<b>Participants not taking antihypertensive medication</b>				
	(n=159)	(n=45)	(n=101)	
Age, years	49.3 ± 6.1	57.0 ± 6.1	66.0 ± 6.4	<0.001
Male, %	18.2%	62.2%	51.5%	<0.001
Less than high school education, %	4.4%	17.8%	21.8%	<0.001
Current smoking, %	6.9%	4.4%	13.9%	0.074
Diabetes, %	1.9%	4.4%	26.7%	<0.001
eGFR < 60 ml/min/m <sup>2</sup> , %	0.0%	2.2%	8.9%	0.014
Body mass index, kg/m <sup>2</sup>	30.7 ± 7.6	29.8 ± 6.0	29.8 ± 5.0	0.254
Total cholesterol, mg/dL	198.2 ± 36.5	206.5 ± 34.4	216.8 ± 42.0	<0.001
LDL cholesterol, mg/dL	124.3 ± 35.9	136.7 ± 33.2	139.8 ± 36.6	<0.001
HDL cholesterol, mg/dL	55.5 ± 13.2	49.4 ± 12.9	55.6 ± 16.2	0.832
<b>SBP, mmHg</b>				
Clinic SBP	116.9 ± 10.5	120.1 ± 9.6	126.1 ± 8.4	<0.001
Daytime SBP	121.5 ± 9.4	127.3 ± 10.2	130.4 ± 11.1	<0.001
Nighttime SBP	111.4 ± 10.7	117.0 ± 12.9	120.8 ± 13.5	<0.001
24-hour SBP	117.4 ± 9.4	123.5 ± 10.6	126.8 ± 11.4	<0.001
<b>DBP, mmHg</b>				
Clinic DBP	74.0 ± 7.6	73.4 ± 8.2	72.2 ± 6.0	0.060
Daytime DBP	77.3 ± 8.4	79.1 ± 6.9	77.4 ± 8.7	0.824
Nighttime DBP	66.1 ± 8.2	68.6 ± 9.1	68.6 ± 8.7	0.016
24-hour DBP	72.8 ± 7.9	74.8 ± 7.1	73.9 ± 7.9	0.226
Prehypertension, %	47.2%	57.8%	80.2%	<0.001
<b>Participants taking antihypertensive medication</b>				
	(n=53)	(n=48)	(n=238)	
Age, years	50.6 ± 5.9	58.5 ± 7.2	65.0 ± 7.2	<0.001
Male, %	1.9%	6.3%	33.6%	<0.001
Less than high school education, %	11.3%	20.8%	19.9%	0.209
Current smoking, %	1.9%	10.4%	8.0%	0.234
Diabetes, %	1.9%	8.3%	37.8%	<0.001
eGFR < 60 ml/min/m <sup>2</sup> , %	0.0%	8.3%	16.0%	0.004
Body mass index, kg/m <sup>2</sup>	32.6 ± 7.4	33.4 ± 5.7	31.1 ± 5.7	0.034
Total cholesterol, mg/dL	192.8 ± 32.2	193.7 ± 37.3	203.2 ± 40.9	0.041
LDL cholesterol, mg/dL	115.0 ± 31.5	115.4 ± 36.6	126.1 ± 35.2	0.015
HDL cholesterol, mg/dL	60.3 ± 19.5	56.1 ± 15.1	53.8 ± 13.6	0.004

SBP, mmHg				
Clinic SBP	118.4 ± 9.3	122.3 ± 9.4	124.8 ± 10.2	<0.001
Daytime SBP	123.0 ± 10.6	124.5 ± 11.4	130.1 ± 12.5	<0.001
Nighttime SBP	112.7 ± 13.3	115.7 ± 13.6	122.4 ± 14.9	<0.001
24-hour SBP	119.0 ± 10.6	121.2 ± 10.9	127.2 ± 12.4	<0.001
DBP, mmHg				
Clinic DBP	74.9 ± 8.0	73.7 ± 6.9	72.3 ± 7.6	0.018
Daytime DBP	79.1 ± 8.5	75.4 ± 8.0	76.9 ± 9.4	0.262
Nighttime DBP	67.3 ± 10.1	64.0 ± 8.6	68.1 ± 10.2	0.216
24-hour DBP	74.4 ± 8.2	70.7 ± 7.3	73.4 ± 9.1	0.911
Prehypertension, %	47.2%	64.6%	72.3%	<0.001

The numbers in the table are mean ± standard deviation or percentages.

ASCVD: Atherosclerotic cardiovascular disease

eGFR: estimated glomerular filtration rate

HDL: high-density lipoprotein

LDL: low-density lipoprotein

SBP: systolic blood pressure

DBP: diastolic blood pressure

**Supplemental Table 3.** Prevalence and prevalence ratios for masked hypertension by category of 10-year predicted atherosclerotic cardiovascular disease risk among participants not taking antihypertensive medication (upper panel) and taking antihypertensive medication (bottom panel).

	10-year predicted ASCVD risk category			
	<5%	≥5% to <7.5%	≥7.5%	p-trend
<b>Participants not taking antihypertensive medication</b>	(n=159)	(n=45)	(n=101)	
	Prevalence			
Any masked hypertension	35.2%	62.2%	63.4%	<0.001
Masked daytime hypertension	20.1%	31.1%	37.6%	0.002
Masked nighttime hypertension	33.3%	53.3%	61.4%	<0.001
Masked 24-hour hypertension	22.0%	40.0%	46.5%	<0.001
	Unadjusted prevalence ratio (95% CI)			
Any masked hypertension	1 (ref)	1.60 (1.13 - 2.27)	1.84 (1.41 - 2.41)	<0.001
Masked daytime hypertension	1 (ref)	1.55 (0.91 - 2.64)	1.87 (1.25 - 2.79)	0.002
Masked nighttime hypertension	1 (ref)	1.77 (1.30 - 2.41)	1.80 (1.39 - 2.33)	<0.001
Masked 24-hour hypertension	1 (ref)	1.82 (1.14 - 2.88)	2.11 (1.48 - 3.03)	<0.001
	Adjusted prevalence ratio (95% CI)*			
Any masked hypertension	1 (ref)	1.62 (1.07 - 2.46)	1.94 (1.22 - 3.10)	0.006
Masked daytime hypertension	1 (ref)	1.49 (0.79 - 2.80)	1.88 (0.97 - 3.67)	0.064
Masked nighttime hypertension	1 (ref)	1.85 (1.27 - 2.71)	2.09 (1.35 - 3.23)	0.001
Masked 24-hour hypertension	1 (ref)	2.12 (1.22 - 3.66)	2.65 (1.48 - 4.76)	0.001
<b>Participants taking antihypertensive medication</b>	(n=53)	(n=48)	(n=238)	
	Prevalence			
Any masked hypertension	47.2%	39.6%	65.5%	0.001
Masked daytime hypertension	22.6%	22.9%	40.3%	0.004
Masked nighttime hypertension	41.5%	31.3%	59.2%	0.002
Masked 24-hour hypertension	20.8%	16.7%	44.1%	<0.001
	Unadjusted prevalence ratio (95% CI)			
Any masked hypertension	1 (ref)	0.75 (0.44 - 1.28)	1.43 (1.02 - 2.00)	0.006

Masked daytime hypertension	1 (ref)	1.01 (0.49 - 2.08)	1.78 (1.06 - 3.00)	0.009
Masked nighttime hypertension	1 (ref)	0.84 (0.53 - 1.32)	1.39 (1.03 - 1.87)	0.005
Masked 24-hour hypertension	1 (ref)	0.80 (0.35 - 1.83)	2.13 (1.23 - 3.67)	<0.001
	Adjusted prevalence ratio (95% CI)*			
Any masked hypertension	1 (ref)	0.72 (0.43 - 1.22)	1.21 (0.81 - 1.81)	0.154
Masked daytime hypertension	1 (ref)	1.30 (0.63 - 2.67)	2.14 (1.17 - 3.94)	0.008
Masked nighttime hypertension	1 (ref)	0.89 (0.57 - 1.40)	1.38 (0.96 - 1.98)	0.031
Masked 24-hour hypertension	1 (ref)	0.84 (0.37 - 1.90)	1.86 (1.02 - 3.39)	0.015

ASCVD: Atherosclerotic cardiovascular disease

CI: Confidence interval

\*Adjusted for age, sex, body mass index, less than high school education, and estimated glomerular filtration rate <60 ml/min/m<sup>2</sup>

**Supplemental Table 4.** Distribution of 10-year predicted atherosclerotic cardiovascular disease risk categories among Jackson Heart Study participants with and without masked hypertension.

ASCVD risk category	Type of masked hypertension							
	Any		Daytime		Nighttime		24-hour	
	No	Yes	No	Yes	No	Yes	No	Yes
	n=441	n=203	n=327	n=317	n=420	n=224	n=296	n=348
<5%	44.3%	23.3%	38.1%	21.7%	41.9%	23.7%	39.5%	20.5%
≥5% to <7.5%	15.5%	13.5%	15.4%	12.3%	16.5%	12.3%	16.0%	11.6%
≥7.5% to <10%	10.5%	12.4%	11.6%	11.3%	10.7%	12.3%	11.4%	11.6%
≥10%	29.7%	50.9%	34.9%	54.7%	30.9%	51.7%	33.1%	56.3%

ASCVD: Atherosclerotic cardiovascular disease

**Supplemental Table 5.** Prevalence of 10-year predicted atherosclerotic cardiovascular disease risk categories among participants with and without masked hypertension stratified by those not taking antihypertensive medication (upper panel) and those taking antihypertensive medication (lower panel).

	Type of masked hypertension							
	Any		Daytime		Nighttime		24-hour	
	No	Yes	No	Yes	No	Yes	No	Yes
ASCVD risk category	Participants not taking antihypertensive medications							
	n=221	n=84	n=166	n=139	n=205	n=100	n=157	n=148
<5%	57.5%	38.1%	63.9%	38.1%	60.5%	35.0%	65.6%	37.8%
≥5% to <7.5%	14.0%	16.7%	12.7%	17.3%	13.2%	18.0%	10.8%	18.9%
≥7.5%	28.5%	45.2%	23.5%	44.6%	26.3%	47.0%	23.6%	43.2%
ASCVD risk category	Participants taking antihypertensive medications							
	n=220	n=119	n=161	n=178	n=215	n=124	n=139	n=200
<5%	18.6%	10.1%	19.3%	12.4%	19.5%	8.9%	20.1%	12.5%
≥5% to <7.5%	16.8%	9.2%	20.5%	8.4%	18.6%	6.5%	20.9%	9.5%
≥7.5%	64.5%	80.7%	60.2%	79.2%	61.9%	84.7%	59.0%	78.0%

ASCVD: Atherosclerotic cardiovascular disease



**Supplemental Table 6.** Prevalence and prevalence ratios for masked hypertension by category of atherosclerotic cardiovascular disease risk among Jackson Heart Study participants with normal clinic blood pressure (upper panel) and with prehypertension (upper panel).

	10-year predicted ASCVD risk category				p-trend
	<5%	≥5% to <7.5%	≥7.5% to <10%	≥10%	
<b>Among participants with normal clinic blood pressure</b>	n=112	n=36	n=26	n=60	
	Prevalence				
Any masked hypertension	25.9%	44.4%	46.2%	53.3%	<0.001
Masked daytime hypertension	8.9%	22.2%	23.1%	23.3%	0.001
Masked nighttime hypertension	23.2%	33.3%	38.5%	50.0%	<0.001
Masked 24-hour hypertension	9.8%	22.2%	23.1%	30.0%	0.001
	Unadjusted prevalence ratio (95% CI)				
Any masked hypertension	1 (ref)	1.72 (1.06 - 2.78)	1.78 (1.06 - 3.00)	2.06 (1.39 - 3.05)	<0.001
Masked daytime hypertension	1 (ref)	2.49 (1.06 - 5.83)	2.58 (1.03 - 6.47)	2.61 (1.24 - 5.52)	0.007
Masked nighttime hypertension	1 (ref)	1.44 (0.81 - 2.54)	1.66 (0.92 - 2.99)	2.15 (1.41 - 3.28)	<0.001
Masked 24-hour hypertension	1 (ref)	2.26 (0.99 - 5.19)	2.35 (0.96 - 5.77)	3.05 (1.55 - 6.04)	<0.001
	Adjusted prevalence ratio (95% CI)*				
Any masked hypertension	1 (ref)	1.73 (1.01 - 2.97)	1.88 (1.00 - 3.54)	2.22 (1.24 - 3.99)	0.015
Masked daytime hypertension	1 (ref)	2.73 (0.97 - 7.69)	2.72 (0.82 - 8.98)	3.35 (1.02 - 11.01)	0.109
Masked nighttime hypertension	1 (ref)	1.45 (0.78 - 2.70)	1.77 (0.87 - 3.58)	2.38 (1.27 - 4.45)	0.006
Masked 24-hour hypertension	1 (ref)	1.97 (0.80 - 4.86)	2.04 (0.68 - 6.09)	2.75 (1.01 - 7.45)	0.078
<b>Among participants with prehypertension</b>	n=100	n=57	n=48	n=205	
	Prevalence				
Any masked hypertension	52.0%	54.4%	64.6%	70.7%	0.001
Masked daytime hypertension	34.0%	29.8%	35.4%	47.3%	0.009
Masked nighttime hypertension	49.0%	47.4%	60.4%	65.4%	0.002
Masked 24-hour hypertension	35.0%	31.6%	41.7%	52.7%	0.001
	Unadjusted prevalence ratio (95% CI)				
Any masked hypertension	1 (ref)	1.05 (0.77 - 1.42)	1.24 (0.94 - 1.65)	1.36 (1.10 - 1.67)	0.001
Masked daytime hypertension	1 (ref)	0.88 (0.54 - 1.42)	1.04 (0.65 - 1.67)	1.39 (1.02 - 1.90)	0.012
Masked nighttime hypertension	1 (ref)	0.97 (0.69 - 1.36)	1.23 (0.91 - 1.67)	1.33 (1.07 - 1.67)	0.003

Masked 24-hour hypertension	1 (ref)	0.90 (0.57 - 1.44)	1.19 (0.78 - 1.83)	1.51 (1.12 - 2.03)	0.001
	Adjusted prevalence ratio (95% CI)*				
Any masked hypertension	1 (ref)	1.06 (0.77 - 1.44)	1.29 (0.94 - 1.75)	1.42 (1.07 - 1.89)	0.007
Masked daytime hypertension	1 (ref)	0.98 (0.60 - 1.61)	1.20 (0.73 - 1.97)	1.72 (1.11 - 2.66)	0.006
Masked nighttime hypertension	1 (ref)	0.89 (0.63 - 1.27)	1.11 (0.79 - 1.57)	1.13 (0.81 - 1.58)	0.282
Masked 24-hour hypertension	1 (ref)	0.94 (0.58 - 1.51)	1.22 (0.78 - 1.90)	1.55 (1.02 - 2.35)	0.013

ASCVD: Atherosclerotic cardiovascular disease

CI: Confidence interval

Normal clinic blood pressure is defined as mean clinic systolic blood pressure <120 mm Hg and mean clinic diastolic blood pressure <80 mm Hg. Prehypertension is defined as mean clinic systolic blood pressure 120 to 139 mm Hg or mean clinic diastolic blood pressure 80 to 89 mm Hg.

\*Adjusted for age, sex, body mass index, less than high school education, and estimated glomerular filtration rate <60 ml/min/m<sup>2</sup>

**Supplemental Table 7.** C-statistic for masked hypertension using 10-year predicted atherosclerotic cardiovascular disease (ASCVD) risk compared with clinic systolic blood pressure (SBP) and diastolic blood pressure (DBP), clinic SBP alone, and clinic DBP alone among Jackson Heart Study participants not taking and taking antihypertensive medication in adjusted models.

	Adjusted c-statistic*				Difference in c-statistic (95% CI)		
	10-year predicted ASCVD Risk Score	Clinic SBP and DBP	Clinic SBP	Clinic DBP	Clinic SBP and DBP versus ASCVD risk score†	Clinic SBP versus ASCVD risk score‡	Clinic DBP versus ASCVD risk score§
Participants not taking antihypertensive medication							
Any masked hypertension	0.655 (0.593 to 0.718)	0.740 (0.684 to 0.797)	0.740 (0.684 to 0.797)	0.656 (0.594 to 0.718)	<b>0.085</b> ( <b>0.037 to 0.150</b> )	<b>0.085</b> ( <b>0.038 to 0.154</b> )	0.001 (-0.054 to 0.056)
Masked daytime hypertension	0.682 (0.636 to 0.728)	0.721 (0.680 to 0.763)	0.721 (0.679 to 0.762)	0.651 (0.606 to 0.697)	<b>0.039</b> ( <b>0.000 to 0.030</b> )	0.039 (-0.006 to 0.031)	-0.031 (-0.107 to -0.013)
Masked nighttime hypertension	0.664 (0.621 to 0.706)	0.689 (0.648 to 0.730)	0.689 (0.648 to 0.730)	0.646 (0.603 to 0.689)	0.025 (-0.010 to 0.034)	0.025 (-0.010 to 0.037)	-0.018 (-0.095 to 0.009)
Masked 24-hour hypertension	0.696 (0.652 to 0.739)	0.732 (0.691 to 0.772)	0.730 (0.690 to 0.771)	0.662 (0.618 to 0.707)	0.036 (-0.010 to 0.044)	0.035 (-0.025 to 0.051)	-0.033 (-0.112 to 0.001)
Participants taking antihypertensive medication							
Any masked hypertension	0.697 (0.641 to 0.754)	0.689 (0.632 to 0.747)	0.690 (0.632 to 0.747)	0.664 (0.606 to 0.723)	-0.008 (-0.056 to 0.026)	-0.008 (-0.050 to 0.031)	-0.033 (-0.082 to 0.006)
Masked daytime hypertension	0.682 (0.636 to 0.728)	0.721 (0.680 to 0.763)	0.721 (0.679 to 0.762)	0.651 (0.606 to 0.697)	<b>0.039</b> ( <b>0.041 to 0.095</b> )	<b>0.039</b> ( <b>0.043 to 0.094</b> )	-0.031 (-0.061 to 0.022)
Masked nighttime hypertension	0.664 (0.621 to 0.706)	0.689 (0.648 to 0.730)	0.689 (0.648 to 0.730)	0.646 (0.603 to 0.689)	<b>0.025</b> ( <b>0.013 to 0.064</b> )	<b>0.025</b> ( <b>0.016 to 0.053</b> )	-0.018 (-0.050 to 0.028)
Masked 24-hour hypertension	0.696 (0.652 to 0.739)	0.732 (0.691 to 0.772)	0.730 (0.690 to 0.771)	0.662 (0.618 to 0.707)	<b>0.036</b> ( <b>0.031 to 0.076</b> )	<b>0.035</b> ( <b>0.034 to 0.071</b> )	-0.033 (-0.068 to 0.005)

Statistically significant differences versus ASCVD risk score are shown in bold.

ASCVD: Atherosclerotic cardiovascular disease

CI: Confidence interval

\*Adjusted for age, sex, body mass index, less than high school education, and estimated glomerular filtration rate <60 ml/min/m<sup>2</sup>

†Comparing clinic SBP and DBP to 10-year predicted ASCVD Risk Score

‡Comparing clinic SBP to 10-year predicted ASCVD Risk Score

§Comparing clinic DBP to 10-year predicted ASCVD Risk Score

SBP: Systolic blood pressure

DBP: Diastolic blood pressure

**SUPPLEMENTAL FIGURES**

**Supplemental Figure 1.** Prevalence of 10-year predicted atherosclerotic cardiovascular disease risk categories among participants with and without masked hypertension stratified by those not taking antihypertensive medication (upper panel) and those taking antihypertensive medication (lower panel). The prevalence data, depicted here, are presented in Supplemental Table 5.



