

# **SUPPLEMENTAL MATERIAL**

## Appendix

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**Table S1. Office BP Classification.**

<b>Classification</b>	<b>SBP</b>	<b>DBP</b>
Normal	children: < 90th %tile adults: <120mm Hg	children: < 90th %tile adults: and <80mmHg
Pre-HTN	children: 90th to 95th %tile or if BP exceeds 120/80mm Hg even if 90th %tile up to 95th percentile adults: 120-139mm Hg	children: 90th to 95th %tile or if BP exceeds 120/80 even if 90th percentile up to 95th %tile adults: or 80–89mm Hg
Stage 1 HTN	children: 95th–99th %tile plus 5mm Hg adults: 140-159mm Hg	children: 95th–99th %tile plus 5mm Hg adults: or 90–99mm Hg
Stage 2 HTN	children: 99th %tile plus 5mm Hg adults: ≥160mm Hg	children: 99th %tile plus 5mm Hg adults: or >100mm Hg

%tile = percentile; DBP = diastolic blood pressure; HTN = hypertension; SBP = systolic blood pressure; for children (<18yo), based on table 5 (classification of BP) and table 3 (normative values) of the National High Blood Pressure Education Program Working Group on High Blood Pressure in C, Adolescents. The fourth report on the diagnosis, evaluation, and treatment of high blood pressure in children and adolescents;<sup>25</sup> For adults (>= 18yo), based on table 3 (classification of BP) of the 7<sup>th</sup> Report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure report.<sup>26</sup>

**Table S2. Classification of HTN with ABPM.**

<b>Classification</b>	<b>Office BP SBP or DBP *</b>	<b>24h Mean ABPM SBP or DBP †</b>
No hypertension	Pediatric: <95th %tile	Pediatric: <95th %tile
	Adults: <140/90 mm Hg	Adults: <135/85 mm Hg
White Coat Hypertension	Pediatric: ≥95th %tile	Pediatric: <95th %tile
	Adults: >140/90 mm Hg	Adults: <135/85 mm Hg
Masked Hypertension	Pediatric: <95th %tile	Pediatric: >95th %tile
	Adults: <140/90 mm Hg	Adults: >135/85 mm Hg
Ambulatory Hypertension	Pediatric: >95th %tile	Pediatric: >95th %tile
	Adults: >140/90 mm Hg	Adults: >135/85 mm Hg

ABPM = Ambulatory blood pressure monitoring; BP = Blood Pressure; ABPM = Ambulatory Blood Pressure Monitoring; Pediatric patients have age <18yo and adult patients age ≥18yo; %tile = percentile; BP = blood pressure; DBP = diastolic blood pressure; and SBP = systolic blood pressure. \*For pediatric patients, based on the normative data of the National High Blood Pressure Education Program Working Group on High BP in C, Adolescents. The fourth report on the diagnosis, evaluation, and treatment of high BP in children and adolescents;<sup>25</sup> for adult patients, based on the 7<sup>th</sup> Report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High BP report.<sup>26</sup> † For pediatric patients, based on normative pediatric ABPM values from the American Heart Association Atherosclerosis, Hypertension and Obesity in Youth Committee of the Council on Cardiovascular Disease in the Young;<sup>27</sup> for adult patients, based on the Subcommittee of Professional and Public Education of the American Heart Association Council on High Blood Pressure Research report.<sup>60</sup>

**Table S3. Sample Size Estimates for 80% Power.**

<b>Smallest Mean</b>	<b>Largest Mean</b>	<b>Standard</b>	<b>Group Sample</b>	<b>Total Sample</b>
<b>PWV (m/s)</b>	<b>PWV (m/s)</b>	<b>Deviation</b>	<b>Size</b>	<b>Size</b>
4.0	4.8	1.0	30	90
4.0	4.8	1.1	36	108
4.0	4.8	1.2	43	129
4.4	5.3	1.0	24	72
4.4	5.3	1.1	29	87
4.4	5.3	1.2	34	102

PWV = pulse wave velocity

**Table S4. Assessment for Confounding by Age at Treatment.**

	<b>1-3</b>	<b>4-9</b>	<b>10-14</b>	<b>≥15</b>	<b>p Value</b>
MRI proximal PWV (m/s)	4.8 ± 2.1	4.2 ± 1.1	5.6 ± 4.4	4.9 ± 1.3	0.35
AAO strain (%)	0.48 ± 0.24	0.44 ± 0.16	0.45 ± 0.24	0.28 ± 0.15	<b>0.02</b>
cfPWV (m/s)	5.4 ± 1.1	4.8 ± 0.8	5.4 ± 1.1	5.3 ± 0.9	0.13
AI (%)	-12 ± 14	-14 ± 20	-7 ± 18	-3 ± 19	0.21
Endo-PAT index	1.85 ± 0.55	1.89 ± 0.72	2.50 ± 0.73	2.34 ± 0.75	<b>0.02</b>
Right arm SBP (mm Hg)	121 ± 14	117 ± 12	124 ± 13	123 ± 12	0.34
Right arm DBP (mm Hg)	61 ± 5	63 ± 9	69 ± 11	68 ± 11	<b>0.05</b>
24-hour average SBP (mm Hg)	119 ± 14	120 ± 11	124 ± 8	126 ± 10	0.20
24-hour average DBP (mm Hg)	66 ± 8	64 ± 7	69 ± 7	71 ± 8	<b>0.04</b>
Hypertension Classification					0.14
No HTN	7 (58%)	19 (70%)	9 (53%)	6 (35%)	
White coat HTN	1 (8%)	1 (4%)	2 (12%)	1 (6%)	
HTN/Masked HTN/Anti HTN meds	4 (33%)	7 (26%)	6 (35%)	10 (59%)	
Peak exercise right arm SBP (mm Hg)	161 ± 34	169 ± 35	170 ± 27	180 ± 33	0.47
hs-CRP (mg/L)	127 (104, 146)	127 (66, 143)	129 (86, 149)	128 (98, 146)	0.67
MMP-9/gelatinase B (ng/mL)	707 (246, 4228)	411 (91, 2004)	515 (487, 3157)	409 (150, 4453)	0.15

Values are mean ± standard deviation, number (percent), or median (minimum; maximum).

AAO = Ascending aorta; AI = Augmentation index; cfPWV = carotid-femoral pulse wave velocity; DBP = Diastolic blood pressure; Endo-PAT = Endothelial pulse amplitude testing; hs-CRP = High sensitivity C-reactive protein; HTN = Hypertension; MMP = matrix metalloprotease; MRI = Magnetic resonance imaging; PWV = Pulse wave velocity; SBP = Systolic blood pressure.

**Table S5. Assessment for Confounding by Presence of Bicuspid Aortic Valve.**

	BAV	No BAV	p Value
MRI proximal PWV (m/s)	5.2 ± 3.1	4.2 ± 1.1	0.07
AAO strain (%)	0.37 ± 0.19	0.46 ± 0.21	0.07
cfPWV (m/s)	5.2 ± 0.8	5.1 ± 1.2	0.75
AI (%)	-7 ± 18	-14 ± 19	0.14
PAT index	2.13 ± 0.75	2.17 ± 0.75	0.79
Right arm SBP (mm Hg)	122 ± 12	119 ± 13	0.21
Right arm DBP (mm Hg)	66 ± 10	64 ± 9	0.47
24-hour average SBP (mm Hg)	121 ± 12	123 ± 10	0.54
24-hour average DBP (mm Hg)	68 ± 8	67 ± 7	0.68
Hypertension Classification			0.86
No HTN	22 (55%)	18 (58%)	
White coat HTN	3 (7%)	1 (3%)	
HTN/Masked HTN/Anti HTN meds	15 (38%)	12 (39%)	
Unknown	2	1	
Peak exercise right arm SBP (mm Hg)	174 ± 32	166 ± 34	0.29
High sensitivity CRP (mg/L)	128 (74, 149)	128 (66, 146)	0.98
MMP-9/gelatinase B (ng/mL)	488 (91, 4228)	546 (49, 4453)	0.45

Values are mean ± standard deviation, number (percent), or median (minimum; maximum).

AAO = Ascending aorta; AI = Augmentation index; cfPWV = carotid-femoral pulse wave velocity; DBP = Diastolic blood pressure; Endo-PAT = Endothelial pulse amplitude testing; hs-CRP = High sensitivity C-reactive protein; HTN = Hypertension; MMP = matrix metalloprotease; MRI = Magnetic resonance imaging; PWV = Pulse wave velocity; SBP = Systolic blood pressure.



**Table S6. Adjustment for Potential Confounders.**

	Unadjusted Model		Adjusted Model	
	Coefficient	p value	Coefficient	p value
CMR proximal PWV (m/s)				
Balloon dilation	-0.76	0.29	-0.49	0.50
Stent	0.77	0.26	0.87	0.28
AAO strain (%)				
Balloon dilation	0.14	<b>0.02</b>	0.12	<b>0.04</b>
Stent	-0.02	0.73	0.03	0.68
cfPWV (m/s)				
Balloon dilation	0.05	0.84	0.07	0.79
Stent	-0.20	0.46	-0.54	0.09
AI (%)				
Balloon dilation	8.65	0.08	10.6	<b>0.04</b>
Stent	18.3	<b>0.001</b>	18.0	<b>0.003</b>
Endo-PAT index				
Balloon dilation	-0.15	0.48	-0.12	0.59
Stent	0.11	0.62	-0.12	0.64
24-hour average SBP (mm Hg)				
Balloon dilation	-4.99	0.12	-5.24	0.11
Stent	0.42	0.89	-2.30	0.36
24-hour average DBP (mm Hg)				
Balloon dilation	-1.15	0.60	-0.26	0.91
Stent	0.48	0.83	-2.57	0.29
Peak exercise right arm SBP (mm Hg)				
Balloon dilation	-20.1	<b>0.03</b>	-19.3	<b>0.04</b>
Stent	-0.28	0.97	-3.28	0.76

Log hs-CRP (mg/L)				
Balloon dilation	-0.07	0.07	-0.07	0.10
Stent	0.02	0.65	0.03	0.54
Log MMP-9/gelatinase B (ng/mL)				
Balloon dilation	0.53	<b>0.02</b>	0.64	<b>0.01</b>
Stent	-0.27	0.22	-0.29	0.28

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Multivariable linear models adjusted for age at treatment and presence of bicuspid aortic valve.

For each comparison, the surgical group is the reference group. AAO = ascending aorta; AI = augmentation index; CMR = cardiac magnetic resonance imaging; DBP = diastolic blood pressure; hs-CRP = high sensitivity C-reactive protein; MMP-9 = matrix metalloprotease 9; PWV = pulse wave velocity; SBP = systolic blood pressure