

## SUPPLEMENTAL MATERIAL

**Supplemental Table1.** Hazard ratios and 95% confidence intervals for incident CVD by healthy lifestyle score for black and white participants weighted to the WHI-OS non-smoking population\*

	Sample N	Crude	Adjusted for PC components	Adjusted for RRS components
<b>White participants</b>				
1	330	Reference	Reference	Reference
2	842	1.09 (0.79, 1.52)	0.99 (0.75, 1.31)	0.94 (0.71, 1.25)
3	849	0.77 (0.55, 1.07)	0.77 (0.58, 1.02)	0.76 (0.57, 1.01)
4	518	0.54 (0.40, 0.80)	0.72 (0.54, 0.97)	0.71 (0.52, 0.96)
5	191	0.56 (0.36, 0.89)	0.73 (0.50, 1.07)	0.76 (0.52, 1.12)
Trend		0.81 (0.74, 0.89)	0.89 (0.83, 0.96)	0.90 (0.83, 0.97)
<b>Black participants</b>				
1	66	Reference	Reference	Reference
2	95	0.62 (0.31, 1.22)	1.05 (0.47, 2.34)	0.84 (0.40, 1.75)
3	85	0.85 (0.44, 1.99)	1.21 (0.56, 2.64)	1.84 (0.53, 2.44)
4	31	0.58 (0.23, 1.48)	1.15 (0.41, 3.22)	1.06 (0.41, 2.72)
5	12	0.25 (0.06, 1.10)	0.79 (0.16, 3.86)	0.60 (0.12, 2.98)
Trend		0.85 (0.67, 1.06)	1.04 (0.82, 1.32)	1.01 (0.78, 1.30)

\* The healthy lifestyle components were defined as 1) non-smoker (all participants by inclusion criteria); 2) optimal weight: BMI between 18.5 and 24.9 or WC in bottom 2 quintiles; 3) healthy diet: AHEI score in top 2 quintiles; 4) adequate physical activity:  $\geq$  2.5 hours of moderate intensity physical activity or  $\geq$  75 minutes of vigorous intensity physical activity per week; and 5) Moderate alcohol: alcohol consumption greater than none, but  $<$ 1 drink per day. The reference group for each component was all other participants.

**Supplemental Table 2.** Pearson correlations for lifestyle factors and PC and RRS variables in the subcohort, weighted to the WHI-OS non-smoking population

	BMI	Waist circumference	Physical activity	AHEI score	Moderate alcohol use
BMI	1	-	-	-	-
Waist circumference	0.82	1	-	-	-
Physical activity	-0.20	-0.21	1	-	-
AHEI score	-0.15	-0.17	0.25	1	-
Moderate alcohol use	-0.07	-0.05	0.12	0.07	1
Diabetes	0.17	0.21	-0.05	-0.01	-0.08
Family history of MI	0.03	0.04	-0.03	0.02	-0.05
Systolic blood pressure	0.14	0.18	-0.04	-0.04	-0.03
Total cholesterol	0.04	0.06	0.00	-0.04	0.02
HDL cholesterol	-0.28	-0.32	0.15	0.02	0.04
Natural log of hsCRP	0.40	0.43	-0.20	-0.16	0.02
HbA1c % (diabetic participants only)	0.15	0.21	-0.05	-0.01	-0.07

**Supplemental Table 3.** Hazard ratios and 95% confidence intervals for all comparison models, weighted to the WHI-OS non-smoking population

	<b>Lifestyle</b>	<b>Lifestyle + PC</b>	<b>Lifestyle + RRS</b>	<b>PC</b>	<b>RRS</b>
Age (yrs)	1.13 (1.12, 1.14)	1.11 (1.10, 1.12)	1.12 (1.10, 1.13)	1.11 (1.10, 1.12)	1.12 (1.10, 1.13)
Black	1.13 (0.87, 1.47)	1.09 (0.86, 1.45)	1.14 (0.86, 1.51)	1.15 (0.88, 1.50)	1.19 (0.95, 1.56)
Other race	1.00 (0.76, 1.32)	0.89 (0.62, 1.20)	0.91 (0.67, 1.24)	0.90 (0.67, 1.22)	0.94 (0.69, 1.28)
BMI*	1.00 (0.89, 1.14)	0.96 (0.85, 1.11)	0.98 (0.84, 1.13)		
Waist circumference*	1.22 (1.08, 1.38)	1.02 (0.88, 1.19)	0.99 (0.85, 1.16)		
Physical activity quartiles					
1.5-5.5 MET-hrs/week	0.77 (0.61, 0.98)	0.72 (0.56, 0.93)	0.72 (0.56, 0.92)		
5.6-11.7 MET-hrs/week	0.71 (0.56, 0.90)	0.69 (0.53, 0.89)	0.68 (0.53, 0.88)		
11.8-21.0 MET-hrs/week	0.66 (0.52, 0.84)	0.66 (0.51, 0.85)	0.67 (0.52, 0.86)		
21.1 + MET-hrs/week	0.66 (0.52, 0.85)	0.66 (0.51, 0.86)	0.65 (0.50, 0.85)		
AHEI score*	0.98 (0.91, 1.06)	0.97 (0.90, 1.05)	0.98 (0.91, 1.06)		
Alcohol use					
≤1 drink/day	0.99 (0.92, 1.07)	0.93 (0.79, 1.10)	0.92 (0.78, 1.08)		
>1 drinks/day	0.94 (0.75, 1.18)	1.12 (0.87, 1.42)	1.11 (0.85, 1.41)		
Anti-hypertensive medication use		1.43 (1.20, 1.69)		1.46 (1.24, 1.72)	
Diabetes		1.65 (1.18, 2.29)		1.74 (1.27, 2.38)	
Family history of early MI			1.23 (1.01, 1.49)		1.24 (1.02, 1.50)
Systolic blood pressure (mmHg)* <sup>++</sup>		1.33 (1.23, 1.45)	1.37 (1.26, 1.48)	1.32 (1.22, 1.42)	1.35 (1.25, 1.46)
Total cholesterol (mg/dL)* <sup>+</sup>		1.03 (0.95, 1.12)	1.01 (0.93, 1.09)	1.04 (0.98, 1.12)	1.01 (0.92, 1.09)
HDL (mg/dL)* <sup>+</sup>		0.72 (0.66, 0.79)	0.73 (0.67, 0.80)	0.72 (0.66, 0.78)	0.73 (0.62, 0.79)
hsCRP (mg/L)* <sup>+</sup>			1.19 (1.10, 1.30)		1.20 (1.11, 1.30)
HbA1c % (diabetic participants only)*			1.11 (1.04, 1.18)		1.71 (1.02, 1.18)

\* Hazard ratio given for 1 standard deviation

<sup>+</sup> Modeled using the natural log

**Supplemental Table 4a.** Reclassification of predicted 10-year risk of total cardiovascular disease comparing the PC model to the PC + Lifestyle, weighted to the WHI-OS non smoking population\*

PC Model	PC + Lifestyle Model		
	0-<5%	5-<7.5%	7.5% +
0-<5%			
Cases/subcohort	531/881	45/36	
Estimated N	37795	881	
Obs risk (%)	1.8%	6.2%	
5-<7.5%			
Cases/subcohort	47/48	190/218	64/43
Estimated N	948	3824	897
Obs risk (%)	6.6%	6.7%	10.5%
7.5% +			
Cases/subcohort		41/47	669/535
Estimated N		751	7462
Obs risk (%)		7.4%	12.8%

\* Estimated numbers may not add up to totals due to rounding  
 PC model used the risk factors from the Pooled Cohort risk score, including age, smoking status, history of diabetes, anti-hypertensive treatment status, and the natural logarithms of systolic blood pressure, total, and HDL cholesterol in addition to race, with coefficients re-estimated in the study population.

**Supplemental Table 4b.** Reclassification of predicted 10-year risk of total cardiovascular disease comparing the RRS model to the RRS + Lifestyle, weighted to the WHI-OS population\*

RRS Model	RRS + Lifestyle Model		
	0-<5%	5-<7.5%	7.5% +
0-<5%			
Cases/subcohort	538/870	38/43	
Estimated N	37418	1063	
Obs risk (%)	1.9%	4.5%	
5-<7.5%			
Cases/subcohort	42/49	184/205	53/41
Estimated N	892	3933	906
Obs risk (%)	6.5%	6.1%	7.7%
7.5% +			
Cases/subcohort		44/55	688/545
Estimated N		845	7501
Obs risk (%)		6.8%	13.1%

\* Estimated numbers may not add up to totals due to rounding  
 RRS model used the risk factors from the Reynolds risk score (RRS), including age, smoking status, family history of a premature MI, HbA1c if the subject had a history of diabetes, and the natural logarithms of hsCRP, systolic blood pressure, total, and HDL cholesterol in addition to race with coefficients re-estimated in the study population.

**Supplemental Table 5.** Comparisons between CVD risk predictions based on lifestyle factors, traditional factors and combined models in WHI-OS additional analyses

	<b>Reference model</b>	<b>Change in c-statistic</b>	<b>IDI</b>	<b>Continuous NRI</b>	<b>NRI</b>
Non-smokers < 65					
Lifestyle + PC	PC	0.002 (0.61)	0.002 (0.11)	0.17 (0.02)	0.03 (0.54)
Lifestyle + RRS	RRS	0.004 (0.40)	0.002 (0.30)	0.19 (0.01)	0.006 (0.87)
Non-smokers >= 65					
Lifestyle + PC	PC	0.004 (0.11)	0.004 (0.009)	0.10 (0.03)	0.01 (0.40)
Lifestyle + RRS	RRS	0.003 (0.19)	0.004 (0.004)	0.11 (0.009)	-0.004 (0.81)
Smokers and non-smokers with pack-years included in lifestyle variables					
Lifestyle + PC	PC	0.005 (0.01)	0.004 (0.002)	0.15 (<0.001)	0.004 (0.72)
Lifestyle + RRS	RRS	0.004 (0.047)	0.003 (0.04)	0.12 (0.005)	0.006 (0.59)

\* The PC model included age, smoking status (in the analysis including smokers), history of diabetes, anti-hypertensive medication use, and the natural logarithms of systolic blood pressure, total, and HDL cholesterol in addition to race, with coefficients re-estimated in the study population.

\*\* The RRS model included age, smoking status (in the analysis including smokers), family history of a premature MI, HbA1c if the subject had a history of diabetes, and the natural logarithms of hsCRP, systolic blood pressure, total, and HDL cholesterol in addition to race with coefficients re-estimated in the study population.

**Supplemental Figure1.** Calibration plots of observed CVD rates for mean predicted rate by predicted decile of risk, weighted to the non-smoking WHI-OS population

