ONLINE SUPPLEMENT:

Additional Analyses for the Study "Incremental Predictive Value of Adding Past Blood Pressure Measurements to the Framingham Hypertension Risk Equation: the Whitehall II Study " by Mika Kivimäki, Adam G. Tabak, G. David Batty, Jane E. Ferrie, Hermann Nabi, Michael G. Marmot, Daniel R. Witte, Archana Singh-Manoux, Martin J. Shipley

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Table S1. **Stepwise Multivariable-adjusted Weibull Estimates and Hazard Ratios for Incident Hypertension in the Derivation Cohort for the Repeat Measures Risk Prediction Score (614 Incident Hypertension Cases among 4135 Person-examination Observations)**

Parameter/predictor	Weibull β-coefficient (±SE)	Hazard ratio (95% CI)	P value
Intercept	14.6705 ± 0.7072		
Age* (per year)	-0.0266 ± 0.0046	1.046 (1.030 – 1.062)	<0.0001
Women (vs men)	-0.2197 ± 0.0540	1.447 (1.211 – 1.729)	<0.0001
Systolic blood pressure (per 1 mm Hg)	-0.0408 ± 0.0035	1.071 (1.059 – 1.084)	<0.0001
Previous systolic blood pressure (per 1 mm Hg)	-0.0166 ± 0.0033	1.028 (1.017 – 1.039)	<0.0001
Diastolic blood pressure† (per 1 mm Hg)	-0.0155 ± 0.0050	1.026 (1.010 – 1.043)	0.002
Previous diastolic blood pressure (per 1 mm Hg)	-0.0209 ± 0.0045	1.036 (1.021 – 1.051)	<0.0001
Current smoking (vs not)	-0.1217 ± 0.0780	1.227 (0.949 – 1.587)	0.12
Parental hypertension (vs not)	-0.1748 ± 0.0494	1.341 (1.140 – 1.579)	0.0004
Body mass index (per unit)	-0.0264 ± 0.0066	1.045 (1.023 – 1.068)	<0.0001
Age by diastolic blood pressure‡	0.0018 ± 0.0005	0.9970 (0.9953 – 0.9987)	0.0004
Scale parameter	0.5947 ± 0.0222		NA
Weibull shape	1.6815 ± 0.0629		NA

* Main effect of age is given for a diastolic blood pressure of 75 mm Hg.

† Main effect of diastolic blood pressure is given for an age of 50 years.

‡ The effect of increasing diastolic blood pressure on the incidence of hypertension decreases with age.

Table S2. **Stepwise Multivariable-adjusted Weibull Estimates and Hazard Ratios for Incident Hypertension in the Participants of the First Screening Cycle Only (573 Incident Hypertension Cases among 4141 Person-examination Observations)**

Parameter/predictor	Weibull β-coefficient (±SE)	Hazard ratio (95% CI)	P value
Intercept	14.9377 ± 0.7520		
Age* (per year)	-0.0373 ± 0.0061	1.064 (1.043 – 1.085)	<0.0001
Women (vs men)	-0.1986 ± 0.0570	1.391 (1.155 – 1.675)	0.0005
Systolic blood pressure (per 1 mm Hg)	-0.0357 ± 0.0038	1.061 (1.048 – 1.075)	<0.0001
Previous systolic blood pressure (per 1 mm Hg)	-0.0144 ± 0.0035	1.024 (1.013 – 1.036)	<0.0001
Diastolic blood pressure† (per 1 mm Hg)	-0.0221 ± 0.0056	1.037 (1.019 – 1.057)	<0.0001
Previous diastolic blood pressure (per 1 mm Hg)	-0.0204 ± 0.0046	1.035 (1.019 – 1.050)	<0.0001
Current smoking (vs not)	-0.1249 ± 0.0768	1.231 (0.958 – 1.581)	0.10
Parental hypertension (vs not)	-0.1667 ± 0.0515	1.319 (1.115 – 1.561)	0.0012
Body mass index (per unit)	-0.0306 ± 0.0068	1.052 (1.029 – 1.076)	<0.0001
Age by diastolic blood pressure‡	0.0028 ± 0.0007	0.9954 (0.9930 – 0.9977)	<0.0001
Scale parameter	0.6016 ± 0.0234		NA
Weibull shape	1.6623 ± 0.0648		NA

* Main effect of age is given for a diastolic blood pressure of 75 mm Hg.

† Main effect of diastolic blood pressure is given for an age of 50 years.

‡ The effect of increasing diastolic blood pressure on the incidence of hypertension decreases with age.

Table S3. **Stepwise Multivariable-adjusted Weibull Estimates and Hazard Ratios for Incident Hypertension in the Derivation Cohort for the Average Blood Pressure Risk Prediction Score (614 Incident Hypertension Cases among 4135 Person-examination Observations)**

Parameter/predictor	Weibull β-coefficient (±SE)	Hazard ratio (95% CI)	P value
Intercept	15.2711 ± 0.7414		
Age* (per year)	-0.0328 ± 0.0047	1.056 (1.040 – 1.073)	<0.0001
Women (vs men)	-0.2247 ± 0.0543	1.456 (1.218 – 1.739)	<0.0001
Average systolic blood pressure (per 1 mm Hg) †	-0.0580 ± 0.0043	1.102 (1.086 – 1.117)	<0.0001
Average diastolic blood pressure† (per 1 mm Hg) †	-0.0379 ± 0.0061	1.065 (1.044 – 1.087)	<0.0001
Current smoking (vs not)	-0.1065 ± 0.0786	1.195 (0.924 – 1.557)	0.18
Parental hypertension (vs not)	-0.1817 ± 0.0497	1.355 (1.151 – 1.594)	0.0003
Body mass index (per unit)	-0.0297 ± 0.0066	1.051 (1.028 – 1.074)	<0.0001
Age by usual diastolic blood pressure‡	0.0025 ± 0.0007	0.9958 (0.9935 – 0.9980)	0.0002
Scale parameter	0.5984 ± 0.0224		NA
Weibull shape	1.6710 ± 0.0626		NA

* Main effect of age is given for a diastolic blood pressure of 75 mm Hg.

† The average of current and previous blood pressure.

‡ The effect of increasing diastolic blood pressure on the incidence of hypertension decreases with age.

Table S4. **Stepwise Multivariable-adjusted Weibull Estimates and Hazard Ratios for Incident Hypertension in the Derivation Cohort for the 'Usual' Blood Pressure + Current Blood Pressure Risk Prediction Score (614 Incident Hypertension Cases among 4135 Person-examination Observations)**

Parameter/predictor	Weibull β-coefficient (±SE)	Hazard ratio (95% CI)	P value
Intercept	18.6112 ± 1.0039		
Age* (per year)	-0.0266 ± 0.0046	1.046 (1.030 – 1.062)	<0.0001
Women (vs men)	-0.2197 ± 0.0540	1.447 (1.211 – 1.729)	0.0005
Current systolic blood pressure (per 1 mm Hg)	-0.0408 ± 0.0035	1.071 (1.059 – 1.084)	<0.0001
Usual systolic blood pressure (per 1 mm Hg)	-0.0318 ± 0.0063	1.055 (1.033 – 1.077)	<0.0001
Current diastolic blood pressure† (per 1 mm Hg)	-0.0155 ± 0.0050	1.026 (1.010 – 1.043)	0.0019
Usual diastolic blood pressure (per 1 mm Hg)	-0.0501 ± 0.0108	1.088 (1.050 – 1.127)	<0.0001
Current smoking (vs not)	-0.1217 ± 0.0780	1.227 (0.949 – 1.587)	0.12
Parental hypertension (vs not)	-0.1748 ± 0.0494	1.342 (1.140 – 1.579)	0.0004
Body mass index (per unit)	-0.0264 ± 0.0066	1.045 (1.022 – 1.068)	<0.0001
Age by current diastolic blood pressure‡	0.0018 ± 0.0005	0.9970 (0.9953 – 0.9987)	0.0004
Scale parameter	0.5947 ± 0.0222		NA
Weibull shape	1.6815 ± 0.0629		NA

* Main effect of age is given for a current diastolic blood pressure of 75 mm Hg.

† Main effect of current diastolic blood pressure is given for an age of 50 years.

‡ The effect of increasing current diastolic blood pressure on the incidence of hypertension decreases with age.

Table S5. **Reclassification of the Predicted Risk of Incident Hypertension, Based on the Framingham, Repeat Measures, Average and Usual Blood Pressure Risk Prediction Scores in the Validation Cohort (2785 Observations).**

	Reclassified*		
Reclassification	Increased risk	Decreased risk	Net correctly reclassified, %
Framingham → Average Blood Pressure score			
Hypertensive (N=438)	44	84	-9.1%
Non-hypertensive (N=2347)	268	618	14.9%
Net Reclassification Improvement (95% CI)			5.8% (0.1 to 11.4)
Repeat Measures Score → Average Blood Pressure score			
Hypertensive (N=438)	20	31	-9.1%
Non-hypertensive (N=2347)	169	147	-0.9%
Net Reclassification Improvement (95% CI)			-3.4% (-7.0 to 0.1)
Framingham → 'Usual' + Current Blood Pressure score			
Hypertensive (N=438)	34	68	-7.8%
Non-hypertensive (N=2347)	183	584	17.1%
Net Reclassification Improvement (95% CI)			9.3% (4.2 to 14.4)

*Based on four predicted risk categories: <5%, 5%-10%, 11%-20% and >20%.