

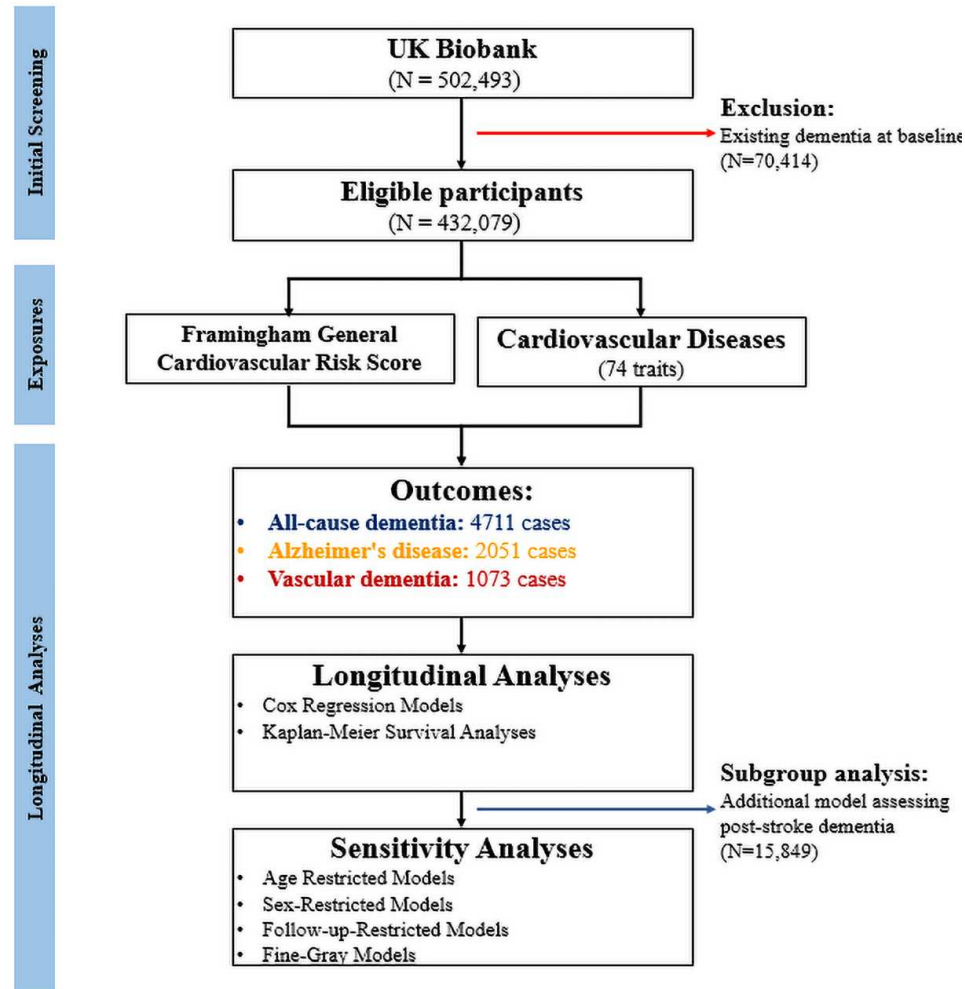
Supplementary Materials

Supplementary Materials 1 – Study Design and Missing Covariates.....	3
SM Figure 1 Study workflow.....	3
SM Table 1.1 Detailed Information on Missing Covariates.....	4
Supplementary Materials 2 – Prevalence rates.....	5
SM Table 2.1 Prevalence Rate of Cardiovascular Disease.....	5
Supplementary Materials 3 – Analysis of Framingham General Cardiovascular Risk Score.....	8
SM Table 3.1 Proportional Hazards Ratio of Multi-Adjusted Model of Framingham General Cardiovascular Risk Score Analysis.....	8
Supplementary Materials 4 – Analysis of All Types of Dementia.....	9
SM Table 4.1 Minimal-Adjusted Cox Regression Model of the Association Between Cardiovascular Diseases and Dementia.....	9
SM Table 4.2 Multi-Adjusted Cox Regression Model of the Association Between Cardiovascular Diseases and Dementia.....	11
SM Table 4.3 Proportional Hazards Ratio of Multi-Adjusted Cox Regression Model.....	14
Supplementary Materials 5 - Sensitivity Analysis: Age-Restricted Models.....	18
SM Table 5.1 Association Between Cardiovascular Diseases and All-Cause Dementia in Age-Restricted Model.....	18
SM Table 5.2 Association Between Cardiovascular Diseases and Alzheimer’s Disease in Age-Restricted Model.....	19
SM Table 5.3 Association Between Cardiovascular Diseases and Vascular dementia in Age-Restricted Model.....	21
Supplementary Materials 6 – Sensitivity Analysis: Sex-Restricted Models.....	23
SM Table 6.1 Association Between Cardiovascular Diseases and All-Cause Dementia in Sex-Restricted Model.....	23
SM Table 6.2 Association Between Cardiovascular Diseases and Alzheimer’s Disease in Sex-Restricted Model.....	24
SM Table 6.3 Association Between Cardiovascular Diseases and Vascular Dementia in Sex-Restricted Model.....	26
Supplementary Materials 7 - Sensitivity analysis: Follow-up-Restricted Model.....	28
SM Table 7.1 Association Between Cardiovascular Diseases and All-cause Dementia in Follow-up-Restricted Model.....	28
SM Table 7.2 Association Between Cardiovascular Diseases and Alzheimer’s disease in Follow-up Restricted Model.....	29
SM Table 7.3 Association Between Cardiovascular Diseases and Vascular Dementia in Follow-up Restricted Model.....	31
Supplementary Materials 8 - Fine-Gray Models.....	33
SM Table 8.1 Association of Cardiovascular Diseases and All-cause Dementia in Fine-Gray Model.....	33
SM Table 8.2 Association of Cardiovascular Diseases and Alzheimer's Disease in Fine-Gray Model.....	35
SM Table 8.3 Association of Cardiovascular Diseases and Vascular Dementia in Fine-Gray Model.....	36

Supplementary Materials 9 – Analysis of Post-Stroke Dementia	39
SM Table 9.1 Cox Regression Model of Association Between Cardiovascular Diseases and Post-Stroke Dementia	39
<i>Appendix</i>	42
<i>Appendix 1</i> - Framingham General Cardiovascular Risk Score Calculation	42
<i>Appendix 2</i> - Predication of 10-year Cardiovascular Disease Risk	44
<i>Appendix 3</i> – International Classification of Diseases Coding	46
<i>Appendix 4</i> - Field ID of Covariates in UK Biobank.....	62
<i>Appendix 5</i> - UK biobank codes for dementia diagnosis and classification	63

Supplementary Materials 1 – Study Design and Missing Covariates

SM Figure 1 Study workflow



SM Table 1.1 Detailed Information on Missing Covariates

SM Table 1.1 Detailed Information on Missing Covariates		
Covariates	N*	Missing rate (%)
Ethnicity	6087	1.41%
MET minutes/wk	87713	20.30%
Blood Pressure	30898	7.15%
Smoking Status	2573	0.60%
BMI	2772	0.64%
Education	86772	20.08%
Smoking Status	2573	0.59%
Alcohol status	1411	0.33%
Total cholesterol	28251	6.54%
High density lipoprotein cholesterol	62597	14.49%
<i>ApoE4</i>	62129	14.38%
Townsend Deprivation Index	552	0.13%

*N represents the number of missing responses.

Supplementary Materials 2 – Prevalence rates

SM Table 2.1 Prevalence Rate of Cardiovascular Disease

SM Table 2.1 Prevalence Rate of Cardiovascular Diseases

ICD coding Traits	Non-Dementia (n=427,368)	Dementia (n=4,711)
Traits Included		
I00 rheumatic fever without mention of heart involvement	1474(0.3)	28(0.6)
I01 rheumatic fever with heart involvement	30(0.0)	0(0.0)
I02 rheumatic chorea	21(0.0)	2(0.0)
I05 rheumatic mitral valve diseases	742(0.2)	24(0.5)
I06 rheumatic aortic valve diseases	99(0.0)	3(0.1)
I07 rheumatic tricuspid valve diseases	1397(0.3)	37(0.8)
I08 multiple valve diseases	5801(1.4)	187(4.0)
I09 other rheumatic heart diseases	112(0.0)	5(0.1)
I10Primary hypertension	145688(34.1)	2967(63.0)
I11 hypertensive heart disease	661(0.2)	20(0.4)
I12 hypertensive renal disease	2077(0.5)	82(1.7)
I13 hypertensive heart and renal disease	107(0.0)	5(0.1)
I15 secondary hypertension	260(0.1)	8(0.2)
I20 angina pectoris	33047(7.7)	925(19.6)
I21 acute myocardial infarction	20190(4.7)	531(11.3)
I22 subsequent myocardial infarction	881(0.2)	26(0.6)
I23 certain current complications following acute myocardial infarction	88(0.0)	0(0.0)
I24 other acute ischemic heart diseases	4155(1.0)	128(2.7)
I25 chronic ischemic heart disease	44798(10.5)	1250(26.5)
I26 pulmonary embolism	9990(2.3)	251(5.3)
I27 other pulmonary heart diseases	2361(0.6)	64(1.4)
I28 other diseases of pulmonary vessels	119(0.0)	2(0.0)
I30 acute pericarditis	612(0.1)	12(0.3)
I31 other diseases of pericardium	2861(0.7)	56(1.2)
I32 pericarditis in diseases classified elsewhere	13(0.0)	0(0.0)

I33 acute and subacute endocarditis	494(0.1)	18(0.4)
I34 nonrheumatic mitral valve disorders	6123(1.4)	160(3.4)
I35 nonrheumatic aortic valve disorders	6685(1.6)	217(4.6)
I36 nonrheumatic tricuspid valve disorders	425(0.1)	15(0.3)
I37 pulmonary valve disorders	546(0.1)	18(0.4)
I38 endocarditis, valve unspecified	905(0.2)	27(0.6)
I39 endocarditis and heart valve disorders in diseases classified elsewhere	11(0.0)	0(0.0)
I40 acute myocarditis	87(0.0)	1(0.0)
I41 myocarditis in diseases classified elsewhere	10(0.0)	0(0.0)
I42 cardiomyopathy	3054(0.7)	55(1.2)
I43 cardiomyopathy in diseases classified elsewhere	100(0.0)	4(0.1)
I44 atrioventricular and left bundle-branch block	9852(2.3)	404(8.6)
I45 other conduction disorders	6152(1.4)	244(5.2)
I46 cardiac arrest	2519(0.6)	63(1.3)
I47 paroxysmal tachycardia	7207(1.7)	123(2.6)
I48 atrial fibrillation and flutter	31964(7.5)	1029(21.8)
I49 other cardiac arrhythmias	10815(2.5)	257(5.5)
I50 heart failure	14587(3.4)	586(12.4)
I51 complications and ill-defined descriptions of heart disease	14073(3.3)	457(9.7)
I52 other heart disorders in diseases classified elsewhere	4(0.0)	0(0.0)
I60 subarachnoid hemorrhage	208(0.1)	10(0.2)
I61 intracerebral hemorrhage	1722(0.4)	130(2.8)
I62 other nontraumatic intracranial hemorrhage	900(0.2)	67(1.4)
I63 cerebral infarction	7635(1.8)	453(9.6)
I64 stroke, not specified as hemorrhage or infarction	8185(1.9)	360(7.6)
I65 occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	2234(0.5)	112(2.4)
I66 occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction	177(0.0)	5(0.1)
I67 other cerebrovascular diseases	7275(1.7)	904(19.2)
I68 cerebrovascular disorders in diseases classified elsewhere	83(0.0)	36(0.8)
I69 sequelae of cerebrovascular disease	2657(0.6)	291(6.2)
I70 atherosclerosis	3075(0.7)	110(2.3)
I74 arterial embolism and thrombosis	1854(0.4)	46(1.0)

I77 other disorders of arteries and arterioles	2995(0.7)	87(1.8)
I78 diseases of capillaries	2829(0.7)	38(0.8)
I79 disorders of arteries, arterioles and capillaries in diseases classified elsewhere	152(0.0)	8(0.2)
I80 phlebitis and thrombophlebitis	17100(4.0)	360(7.6)
I81 portal vein thrombosis	390(0.1)	3(0.1)
I82 other venous embolism and thrombosis	1179(0.3)	23(0.5)
I83 varicose veins of lower extremities	22327(5.2)	316(6.7)
I84 hemorrhoids	30061(7.0)	444(9.4)
I85 oesophageal varices	1062(0.2)	27(0.6)
I86 varicose veins of other sites	2089(0.5)	26(0.6)
I87 other disorders of veins	1792(0.4)	53(1.1)
I88 nonspecific lymphadenitis	447(0.1)	8(0.2)
I89 other non-infective disorders of lymphatic vessels and lymph nodes	2515(0.6)	53(1.1)
I95 hypotension	15545(3.6)	881(18.7)
I97 postprocedural disorders of circulatory system, not elsewhere classified	363(0.1)	10(0.2)
I98 other disorders of circulatory system in diseases classified elsewhere	537(0.1)	21(0.4)
I99 other and unspecified disorders of circulatory system	563(0.1)	16(0.3)

Excluded Traits:

I71 aortic aneurysm and dissection
I72 other aneurysm
I73 other peripheral vascular diseases

Supplementary Materials 3 – Analysis of Framingham General Cardiovascular Risk Score**SM Table 3.1 Proportional Hazards Ratio of Multi-Adjusted Model of Framingham General Cardiovascular Risk Score Analysis****SM Table 3.2 Proportional Hazards Ratio of Multi-Adjusted Model of Framingham General Cardiovascular Risk Score Analysis**

	Multi-adjusted model		
		Chi-square	<i>P</i>
ACD	FGCRS continuous score	2.428	0.119
	FGCRS categories	25.319	0.013
AD	FGCRS continuous score	0.389	0.533
	FGCRS categories	16.157	0.184
VaD	FGCRS continuous score	6.622	0.010
	FGCRS categories	12.289	0.420

Abbreviations: ACD, All-cause dementia; AD, Alzheimer's disease; VaD, Vascular dementia

Supplementary Materials 4 – Analysis of All Types of Dementia

SM Table 4.1 Minimal-Adjusted Cox Regression Model of the Association Between Cardiovascular Diseases and Dementia

SM Table 4.1 Minimal-Adjusted Cox Regression Model of the Association Between Cardiovascular Diseases and All-Cause Dementia

Traits	ACD			AD			VaD					
	HR	95% CI	P	HR	95% CI	P	HR	95% CI	P			
Ischemic heart disorders												
Angina pectoris	1.440	1.338	1.549	0.000	1.352	1.205	1.518	0.000	1.913	1.663	2.201	0.000
Acute myocardial infarction	1.390	1.268	1.524	0.000	1.238	1.066	1.437	0.005	2.293	1.957	2.688	0.000
Subsequent myocardial infarction	1.420	0.965	2.089	0.075	1.526	0.843	2.764	0.163	2.388	1.316	4.331	0.004
Certain current complications following acute myocardial infarction	0.000	0.000	inf	0.963	0.000	0.000	inf	0.975	0.000	0.000	Inf	0.983
Other acute ischemic heart diseases	1.518	1.273	1.810	0.000	1.412	1.065	1.871	0.016	2.208	1.636	2.980	0.000
Chronic ischemic heart disease	1.520	1.422	1.626	0.000	1.386	1.247	1.539	0.000	2.173	1.908	2.476	0.000
Atherosclerosis	1.518	1.256	1.835	0.000	0.965	0.668	1.393	0.850	2.489	1.832	3.381	0.000
Arrhythmias and conduction disorders												
Atrioventricular and left bundle-branch block	1.715	1.547	1.901	0.000	1.626	1.381	1.914	0.000	2.396	1.992	2.884	0.000
Other conduction disorders	1.803	1.584	2.054	0.000	1.615	1.305	1.998	0.000	2.154	1.689	2.747	0.000
Cardiac arrest	1.766	1.377	2.265	0.000	1.130	0.701	1.822	0.616	2.460	1.611	3.757	0.000
Paroxysmal tachycardia	1.027	0.859	1.229	0.768	0.969	0.732	1.283	0.825	1.478	1.081	2.019	0.014
Atrial fibrillation and flutter	1.538	1.432	1.651	0.000	1.267	1.129	1.421	0.000	2.225	1.945	2.546	0.000
Other cardiac arrhythmias	1.344	1.185	1.525	0.000	1.146	0.931	1.410	0.198	1.619	1.274	2.058	0.000
Blood flow-reduction disorders												
Cardiomyopathy	1.081	0.828	1.410	0.568	1.091	0.723	1.646	0.678	1.814	1.189	2.769	0.006
Cardiomyopathy in diseases classified elsewhere	2.009	0.754	5.356	0.163	3.560	1.147	11.052	0.028	0.000	0.000	Inf	0.978
Heart failure	1.852	1.695	2.023	0.000	1.657	1.436	1.911	0.000	2.662	2.268	3.123	0.000
Hypotension	3.152	2.928	3.394	0.000	2.469	2.185	2.790	0.000	3.962	3.429	4.577	0.000
Embolic and other cerebrovascular disorders												
Pulmonary embolism	1.706	1.501	1.938	0.000	1.515	1.231	1.864	0.000	2.237	1.775	2.820	0.000
Subarachnoid hemorrhage	4.053	2.179	7.538	0.000	0.895	0.126	6.360	0.912	3.487	0.871	13.961	0.078
Intracerebral hemorrhage	4.120	3.460	4.905	0.000	2.576	1.844	3.599	0.000	8.696	6.711	11.268	0.000
Other nontraumatic intracranial hemorrhage	3.863	3.033	4.918	0.000	2.696	1.734	4.190	0.000	8.696	6.711	11.268	0.000
Cerebral infarction	2.875	2.607	3.169	0.000	1.424	1.163	1.745	0.001	7.218	6.229	8.364	0.000

Stroke, not specified as hemorrhage or infarction	2.473	2.220	2.756	0.000	1.523	1.240	1.871	0.000	5.060	4.277	5.986	0.000
Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	1.860	1.541	2.244	0.000	0.939	0.628	1.406	0.761	3.805	2.882	5.024	0.000
Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction	1.340	0.557	3.222	0.513	0.571	0.080	4.060	0.576	1.233	0.173	8.764	0.834
Other cerebrovascular diseases	5.816	5.404	6.259	0.000	4.177	3.685	4.734	0.000	13.185	11.596	14.991	0.000
Cerebrovascular disorders in diseases classified elsewhere	9.074	6.530	12.611	0.000	5.117	2.435	10.755	0.000	26.905	17.229	42.016	0.000
Sequelae of cerebrovascular disease	5.312	4.716	5.983	0.000	2.339	1.788	3.059	0.000	13.345	11.243	15.839	0.000
Arterial embolism and thrombosis	1.274	0.953	1.704	0.102	0.475	0.226	0.997	0.049	2.652	1.752	4.012	0.000
Rheumatic and valvular disorders												
Rheumatic fever without mention of heart involvement	1.101	0.759	1.596	0.613	0.777	0.404	1.496	0.450	0.517	0.166	1.606	0.254
Rheumatic fever with heart involvement	0.000	0.000	inf	0.958	0.000	0.000	inf	0.975	7.373	1.037	52.410	0.046
Rheumatic chorea	4.354	1.088	17.416	0.038	4.815	0.678	34.210	0.116	0.000	0.000	Inf	0.982
Rheumatic mitral valve diseases	1.489	0.997	2.224	0.052	0.852	0.382	1.900	0.696	1.084	0.406	2.894	0.872
Rheumatic aortic valve diseases	1.204	0.388	3.733	0.748	0.000	0.000	inf	0.969	0.000	0.000	Inf	0.979
Rheumatic tricuspid valve diseases	1.201	0.869	1.659	0.268	0.911	0.516	1.606	0.746	1.485	0.819	2.690	0.193
Multiple valve diseases	1.293	1.116	1.497	0.001	1.058	0.827	1.353	0.652	2.007	1.568	2.569	0.000
Other rheumatic heart diseases	2.064	0.858	4.963	0.105	0.836	0.118	5.942	0.858	0.000	0.000	Inf	0.980
Nonrheumatic mitral valve disorders	1.214	1.037	1.422	0.016	1.222	0.963	1.552	0.099	1.587	1.187	2.121	0.002
Nonrheumatic aortic valve disorders	1.261	1.099	1.446	0.001	0.890	0.694	1.140	0.356	1.618	1.261	2.077	0.000
Nonrheumatic tricuspid valve disorders	1.402	0.844	2.329	0.191	1.033	0.429	2.487	0.942	1.668	0.624	4.455	0.308
Pulmonary valve disorders	1.546	0.973	2.456	0.065	1.642	0.820	3.289	0.162	1.827	0.759	4.401	0.179
Endocarditis, valve unspecified	1.378	0.944	2.012	0.097	0.946	0.472	1.895	0.876	2.161	1.159	4.030	0.015
Endocarditis and heart valve disorders in diseases classified elsewhere	0.000	0.000	inf	0.963	0.000	0.000	inf	0.978	0.000	0.000	Inf	0.987
Other disorders												
Primary hypertension	1.554	1.461	1.654	0.000	1.416	1.291	1.553	0.000	3.017	2.600	3.502	0.000
Hypertensive heart disease	2.430	1.566	3.771	0.000	2.690	1.397	5.181	0.003	2.879	1.289	6.427	0.010
Hypertensive renal disease	2.263	1.818	2.817	0.000	1.724	1.161	2.560	0.007	3.579	2.525	5.073	0.000
Hypertensive heart and renal disease	2.394	0.995	5.758	0.051	0.000	0.000	Inf	0.976	6.638	2.481	17.757	0.000
Secondary hypertension	1.789	0.894	3.580	0.100	2.182	0.818	5.822	0.119	5.546	2.483	12.386	0.000
Other pulmonary heart diseases	1.271	0.993	1.628	0.057	0.936	0.603	1.455	0.770	1.602	1.028	2.497	0.037
Other diseases of pulmonary vessels	1.001	0.250	4.005	0.999	1.190	0.168	8.451	0.862	4.083	1.020	16.350	0.047
Acute pericarditis	1.549	0.879	2.730	0.130	2.167	1.031	4.552	0.041	2.166	0.811	5.784	0.123
Other diseases of pericardium	1.236	0.949	1.609	0.115	1.101	0.716	1.692	0.662	1.852	1.189	2.883	0.006

Pericarditis in diseases classified elsewhere	0.000	0.000	inf	0.971	0.000	0.000	Inf	0.984	0.000	0.000	Inf	0.983
Acute and subacute endocarditis	2.204	1.387	3.502	0.001	1.517	0.631	3.651	0.352	2.973	1.332	6.637	0.008
Acute myocarditis	1.372	0.193	9.744	0.752	0.000	0.000	inf	0.974	0.000	0.000	Inf	0.984
Myocarditis in diseases classified elsewhere	0.000	0.000	inf	0.968	0.000	0.000	Inf	0.982	0.000	0.000	Inf	0.983
Complications and ill-defined descriptions of heart disease	1.531	1.389	1.688	0.000	1.160	0.979	1.374	0.085	2.399	2.025	2.841	0.000
Other heart disorders in diseases classified elsewhere	0.000	0.000	inf	0.973	0.000	0.000	inf	0.978	0.000	0.000	Inf	0.987
Other disorders of arteries and arterioles	1.379	1.115	1.706	0.003	0.757	0.487	1.177	0.217	1.720	1.165	2.541	0.006
Diseases of capillaries	0.990	0.719	1.362	0.949	1.011	0.627	1.630	0.964	0.930	0.464	1.865	0.839
Disorders of arteries, arterioles and capillaries in diseases classified elsewhere	2.714	1.355	5.433	0.005	3.653	1.368	9.752	0.010	3.858	1.240	11.997	0.020
Phlebitis and thrombophlebitis	1.424	1.278	1.586	0.000	1.292	1.088	1.534	0.003	1.757	1.432	2.155	0.000
Portal vein thrombosis	0.696	0.224	2.158	0.530	0.539	0.076	3.831	0.537	0.961	0.135	6.833	0.969
Other venous embolism and thrombosis	1.646	1.093	2.480	0.017	0.675	0.253	1.801	0.433	2.141	1.018	4.503	0.045
Varicose veins of lower extremities	1.015	0.906	1.139	0.792	0.675	0.253	1.801	0.433	1.358	1.101	1.676	0.004
Hemorrhoids	1.111	1.007	1.225	0.035	1.109	0.955	1.287	0.175	1.223	1.005	1.489	0.045
Oesophageal varices	2.022	1.385	2.952	0.000	2.026	1.120	3.667	0.020	1.167	0.437	3.119	0.757
Varicose veins of other sites	1.190	0.809	1.750	0.378	1.371	0.777	2.420	0.276	0.741	0.277	1.978	0.549
Other disorders of veins	1.640	1.250	2.151	0.000	1.738	1.152	2.623	0.008	2.294	1.437	3.661	0.001
Nonspecific lymphadenitis	2.409	1.204	4.821	0.013	3.549	1.475	8.537	0.005	1.405	0.198	9.983	0.734
Other non-infective disorders of lymphatic vessels and lymph nodes	1.474	1.123	1.935	0.005	1.396	0.907	2.149	0.129	1.888	1.165	3.060	0.010
Postprocedural disorders of circulatory system, not elsewhere classified	1.686	0.907	3.137	0.099	2.016	0.838	4.849	0.118	3.962	3.429	4.577	0.000
Other disorders of circulatory system in diseases classified elsewhere	3.476	2.264	5.339	0.000	3.760	1.953	7.242	0.000	1.913	0.616	5.945	0.262
Other and unspecified disorders of circulatory system	1.661	1.016	2.714	0.043	1.909	0.953	3.824	0.068	4.415	2.367	8.234	0.000

Abbreviations: ACD, All-cause dementia; AD, Alzheimer's disease; VaD, Vascular dementia; HR, Hazards ratio; 95% CI, 95% confidential interval

Minimal-adjusted: Adjusted for Age, Sex, Ethnicity, Body-Mass-Index, and *ApoE4*.

SM Table 4.2 Multi-Adjusted Cox Regression Model of the Association Between Cardiovascular Diseases and Dementia

SM Table 4.2 Multi-Adjusted Cox Regression Model of the Association Between Cardiovascular Diseases and Dementia

Traits	ACD			AD			VaD		
	HR	95% CI	P	HR	95% CI	P	HR	95% CI	P
Ischemic heart disorders									

Angina pectoris	1.287	1.192	1.389	0.000	1.249	1.109	1.407	0.000	1.560	1.348	1.807	0.000
Acute myocardial infarction	1.228	1.116	1.350	0.000	1.141	0.979	1.329	0.092	1.870	1.586	2.205	0.000
Subsequent myocardial infarction	1.156	0.779	1.715	0.473	1.363	0.752	2.472	0.307	1.742	0.958	3.168	0.069
Certain current complications following acute myocardial infarction	0.000	0.000	inf	0.961	0.000	0.000	inf	0.973	0.000	0.000	Inf	0.979
Other acute ischemic heart diseases	1.355	1.134	1.619	0.001	1.318	0.994	1.747	0.056	1.776	1.309	2.410	0.000
Chronic ischemic heart disease	1.354	1.263	1.452	0.000	1.269	1.138	1.415	0.000	1.768	1.543	2.026	0.000
Atherosclerosis	1.245	1.023	1.516	0.029	0.783	0.530	1.155	0.218	1.744	1.269	2.397	0.001
Arrhythmias and conduction disorders												
Atrioventricular and left bundle-branch block	1.562	1.403	1.739	0.000	1.556	1.316	1.839	0.000	2.069	1.707	2.508	0.000
Other conduction disorders	1.658	1.452	1.893	0.000	1.531	1.233	1.901	0.000	1.867	1.456	2.394	0.000
Cardiac arrest	1.609	1.249	2.074	0.000	1.110	0.688	1.792	0.668	2.082	1.349	3.214	0.001
Paroxysmal tachycardia	0.957	0.796	1.149	0.635	0.925	0.694	1.234	0.596	1.332	0.968	1.834	0.078
Atrial fibrillation and flutter	1.479	1.375	1.591	0.000	1.231	1.094	1.385	0.001	2.053	1.786	2.359	0.000
Other cardiac arrhythmias	1.275	1.120	1.453	0.000	1.120	0.906	1.385	0.295	1.497	1.168	1.919	0.001
Blood flow-reduction disorders												
Cardiomyopathy	0.997	0.758	1.313	0.985	1.045	0.685	1.594	0.839	1.778	1.161	2.722	0.008
Cardiomyopathy in diseases classified elsewhere	2.012	0.755	5.367	0.162	3.443	1.108	10.700	0.033	0.000	0.000	Inf	0.980
Heart failure	1.639	1.495	1.796	0.000	1.543	1.332	1.786	0.000	2.141	1.812	2.529	0.000
Hypotension	2.912	2.700	3.142	0.000	2.361	2.084	2.676	0.000	3.315	2.853	3.852	0.000
Embollic and other cerebrovascular disorders												
Pulmonary embolism	1.663	1.461	1.894	0.000	1.459	1.180	1.804	0.000	2.122	1.673	2.692	0.000
Subarachnoid hemorrhage	4.300	2.312	7.999	0.000	0.958	0.135	6.826	0.965	4.004	1.012	16.234	0.050
Intracerebral hemorrhage	3.901	3.261	4.666	0.000	2.562	1.825	3.599	0.000	7.763	5.941	10.144	0.000
Other nontraumatic intracranial hemorrhage	3.686	2.883	4.712	0.000	2.598	1.652	4.086	0.000	4.014	2.514	6.410	0.000
Cerebral infarction	2.569	2.322	2.842	0.000	1.367	1.114	1.677	0.003	5.949	5.096	6.946	0.000
Stroke, not specified as hemorrhage or infarction	2.138	1.893	2.416	0.000	1.397	1.114	1.751	0.004	4.085	3.377	4.942	0.000
Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	3.901	3.261	4.666	0.000	0.879	0.587	1.317	0.532	2.709	2.024	3.625	0.000
Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction	1.188	0.494	2.859	0.700	0.555	0.078	3.949	0.557	0.942	0.132	6.708	0.952
Other cerebrovascular diseases	5.213	4.828	5.629	0.000	3.956	3.478	4.499	0.000	10.902	9.521	12.483	0.000
Cerebrovascular disorders in diseases classified elsewhere	9.384	6.750	13.046	0.000	5.344	2.542	11.236	0.000	29.257	18.695	45.787	0.000
Sequelae of cerebrovascular disease	4.592	4.043	5.215	0.000	2.261	1.717	2.976	0.000	10.506	8.701	12.686	0.000
Arterial embolism and thrombosis	1.052	0.780	1.417	0.742	0.430	0.204	0.904	0.026	1.879	1.227	2.879	0.004

Rheumatic and valvular disorders

Rheumatic fever without mention of heart involvement	1.063	0.733	1.543	0.746	0.759	0.394	1.461	0.409	0.486	0.156	1.511	0.212
Rheumatic fever with heart involvement	0.000	0.000	inf	0.961	0.000	0.000	inf	0.976	8.443	1.187	60.051	0.033
Rheumatic chorea	4.708	1.176	18.851	0.029	5.712	0.803	40.639	0.082	0.000	0.000	Inf	0.987
Rheumatic mitral valve diseases	1.278	0.847	1.928	0.242	0.807	0.361	1.800	0.600	0.918	0.343	2.458	0.865
Rheumatic aortic valve diseases	0.966	0.310	3.010	0.953	0.000	0.000	inf	0.968	0.000	0.000	Inf	0.978
Rheumatic tricuspid valve diseases	1.107	0.797	1.538	0.545	0.887	0.503	1.567	0.680	1.235	0.661	2.305	0.508
Multiple valve diseases	1.189	1.023	1.382	0.024	0.996	0.774	1.281	0.973	1.779	1.380	2.292	0.000
Other rheumatic heart diseases	1.573	0.652	3.795	0.313	0.674	0.095	4.800	0.693	0.000	0.000	Inf	0.978
Nonrheumatic mitral valve disorders	1.427	0.886	2.298	0.144	1.417	0.674	2.978	0.358	1.345	0.504	3.594	0.554
Nonrheumatic aortic valve disorders	1.298	0.889	1.896	0.177	0.925	0.462	1.854	0.826	1.834	0.982	3.427	0.057
Nonrheumatic tricuspid valve disorders	0.000	0.000	inf	0.965	0.000	0.000	inf	0.981	0.000	0.000	Inf	0.985
Pulmonary valve disorders	1.102	0.936	1.297	0.243	1.124	0.878	1.438	0.353	1.414	1.051	1.904	0.022
Endocarditis, valve unspecified	1.172	1.019	1.348	0.026	0.844	0.656	1.087	0.188	1.381	1.069	1.784	0.013
Endocarditis and heart valve disorders in diseases classified elsewhere	1.394	0.839	2.315	0.200	1.038	0.431	2.501	0.933	1.717	0.643	4.588	0.281

Other disorders

Primary hypertension	1.408	1.314	1.509	0.000	1.345	1.212	1.492	0.000	2.630	2.234	3.097	0.000
Hypertensive heart disease	2.049	1.288	3.257	0.002	2.332	1.163	4.675	0.017	1.629	0.609	4.358	0.331
Hypertensive renal disease	1.608	1.274	2.030	0.000	1.424	0.955	2.122	0.083	1.948	1.332	2.847	0.001
Hypertensive heart and renal disease	1.766	0.734	4.253	0.204	0.000	0.000	Inf	0.977	3.001	0.961	9.365	0.058
Secondary hypertension	1.645	0.822	3.293	0.160	2.050	0.768	5.474	0.152	4.540	2.031	10.147	0.000
Other pulmonary heart diseases	1.155	0.900	1.483	0.258	0.895	0.575	1.392	0.622	1.300	0.824	2.052	0.260
Other diseases of pulmonary vessels	1.003	0.251	4.014	0.996	1.232	0.173	8.756	0.835	4.014	1.002	16.085	0.050
Acute pericarditis	1.457	0.806	2.634	0.212	1.870	0.839	4.170	0.126	2.222	0.832	5.934	0.111
Other diseases of pericardium	1.153	0.883	1.505	0.296	1.067	0.694	1.641	0.767	1.648	1.057	2.569	0.027
Pericarditis in diseases classified elsewhere	0.000	0.000	inf	0.970	0.000	0.000	Inf	0.984	0.000	0.000	Inf	0.984
Acute and subacute endocarditis	1.999	1.256	3.180	0.003	1.402	0.582	3.379	0.452	2.563	1.145	5.734	0.022
Acute myocarditis	0.000	0.000	inf	0.958	0.000	0.000	inf	0.976	0.000	0.000	Inf	0.982
Myocarditis in diseases classified elsewhere	0.000	0.000	inf	0.969	0.000	0.000	Inf	0.982	0.000	0.000	Inf	0.985
Complications and ill-defined descriptions of heart disease	1.398	1.264	1.545	0.000	1.075	0.903	1.279	0.416	2.030	1.704	2.419	0.000
Other heart disorders in diseases classified elsewhere	0.000	0.000	inf	0.976	0.000	0.000	inf	0.980	0.001	0.000	Inf	0.986
Other disorders of arteries and arterioles	1.207	0.974	1.496	0.086	0.698	0.449	1.086	0.111	1.275	0.855	1.901	0.234

Diseases of capillaries	0.920	0.660	1.284	0.625	1.013	0.628	1.632	0.959	0.817	0.388	1.719	0.594
Disorders of arteries, arterioles and capillaries in diseases classified elsewhere	1.325	0.628	2.794	0.460	2.153	0.799	5.800	0.129	1.395	0.446	4.370	0.567
Phlebitis and thrombophlebitis	1.393	1.248	1.556	0.000	1.263	1.061	1.505	0.009	1.719	1.396	2.118	0.000
Portal vein thrombosis	0.679	0.219	2.108	0.503	0.541	0.076	3.844	0.539	0.900	0.127	6.398	0.916
Other venous embolism and thrombosis	1.604	1.064	2.417	0.024	0.673	0.252	1.796	0.430	1.999	0.950	4.206	0.068
Varicose veins of lower extremities	1.038	0.924	1.165	0.534	1.137	0.961	1.346	0.135	1.396	1.125	1.730	0.002
Hemorrhoids	1.085	0.982	1.199	0.111	1.108	0.953	1.288	0.182	1.154	0.940	1.416	0.171
Oesophageal varices	1.696	1.152	2.496	0.007	1.849	1.021	3.349	0.043	0.655	0.211	2.039	0.466
Varicose veins of other sites	1.207	0.814	1.789	0.349	1.433	0.811	2.529	0.215	0.570	0.183	1.772	0.331
Other disorders of veins	1.544	1.174	2.031	0.002	1.716	1.136	2.591	0.010	1.994	1.232	3.229	0.005
Nonspecific lymphadenitis	2.475	1.237	4.954	0.010	3.694	1.535	8.889	0.004	1.484	0.209	10.549	0.693
Other non-infective disorders of lymphatic vessels and lymph nodes	1.395	1.057	1.840	0.019	1.387	0.900	2.135	0.138	1.641	0.997	2.699	0.051
Postprocedural disorders of circulatory system, not elsewhere classified	1.435	0.746	2.762	0.279	1.893	0.786	4.559	0.155	1.368	0.341	5.481	0.659
Other disorders of circulatory system in diseases classified elsewhere	2.698	1.737	4.193	0.000	3.212	1.665	6.197	0.001	0.861	0.215	3.455	0.833
Other and unspecified disorders of circulatory system	1.463	0.894	2.392	0.130	1.793	0.894	3.596	0.100	3.238	1.727	6.071	0.000

Abbreviations: ACD, All-cause dementia; AD, Alzheimer's disease; VaD, Vascular dementia; HR, Hazards ratio; 95% CI, 95% confidential interval

Multi-adjusted: Adjusted for Age, Sex, Education, Ethnicity, Body-Mass-Index, Metabolic equivalent of task-min/week, Smoking Status, Alcohol Intake, Townsend deprivation index at recruitment, Hypertension, Diabetes Mellitus, Hypercholesterolemia, History of Stroke, Blood pressure-lowering medication, Cholesterol- Lowering Medication, Insulin, *ApoE4*, Pacemaker.

SM Table 4.3 Proportional Hazards Ratio of Multi-Adjusted Cox Regression Model

SM Table 4.3 Proportional Hazards Ratio of Multi-Adjusted Cox Regression Model

Traits	ACD		AD		VaD	
	Chi-square	P	Chi-square	P	Chi-square	P
Ischemic heart disorders						
Angina pectoris	14.400	0.702	22.840	0.197	21.682	0.246
Acute myocardial infarction	14.065	0.725	23.110	0.186	20.100	0.330
Subsequent myocardial infarction	15.659	0.616	23.232	0.182	19.000	0.391
Certain current complications following acute myocardial infarction	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Other acute ischemic heart diseases	12.705	0.810	22.900	0.196	19.400	0.366
Chronic ischemic heart disease	22.200	0.224	24.031	0.154	20.700	0.296

Atherosclerosis	19.834	0.342	25.523	0.111	21.900	0.240
Arrhythmias and conduction disorders						
Atrioventricular and left bundle-branch block	13.260	0.780	23.034	0.189	18.900	0.396
Other conduction disorders	15.900	0.599	22.687	0.203	21.400	0.258
Cardiac arrest	14.348	0.710	22.891	0.195	19.200	0.380
Paroxysmal tachycardia	21.209	0.269	29.667	0.041	21.200	0.272
Atrial fibrillation and flutter	15.157	0.650	23.433	0.175	19.934	0.337
Other cardiac arrhythmias	12.800	0.800	22.954	0.192	19.094	0.386
Blood flow-reduction disorders						
Cardiomyopathy	12.081	0.840	22.834	0.197	19.100	0.388
Cardiomyopathy in diseases classified elsewhere	14.815	0.675	24.000	0.155	<i>NA</i>	<i>NA</i>
Heart failure	12.236	0.830	22.700	0.201	18.700	0.408
Hypotension	18.000	0.456	26.881	0.081	20.262	0.318
Embolic and other cerebrovascular disorders						
Pulmonary embolism	15.500	0.629	23.500	0.171	20.800	0.291
Subarachnoid hemorrhage	12.494	0.820	23.186	0.184	19.200	0.380
Intracerebral hemorrhage	12.522	0.820	22.641	0.205	19.338	0.371
Other nontraumatic intracranial hemorrhage	15.081	0.657	25.600	0.109	19.100	0.383
Cerebral infarction	11.500	0.870	22.500	0.212	20.725	0.294
Stroke, not specified as hemorrhage or infarction	27.600	0.068	27.700	0.067	21.208	0.269
Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	12.200	0.830	23.700	0.164	20.000	0.340
Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction	13.529	0.760	23.106	0.187	19.076	0.387
Other cerebrovascular diseases	12.920	0.800	23.991	0.155	17.200	0.509
Cerebrovascular disorders in diseases classified elsewhere	12.920	0.800	22.319	0.218	20.699	0.295
Sequelae of cerebrovascular disease	12.890	0.800	22.600	0.208	18.993	0.392
Arterial embolism and thrombosis	12.180	0.840	22.540	0.209	19.100	0.388
Rheumatic and valvular disorders						
Rheumatic fever without mention of heart involvement	12.089	0.840	24.980	0.126	20.200	0.324
Rheumatic fever with heart involvement	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	19.100	0.383
Rheumatic chorea	12.870	0.800	22.804	0.198	<i>NA</i>	<i>NA</i>
Rheumatic mitral valve diseases	12.108	0.840	22.687	0.203	19.400	0.370
Rheumatic aortic valve diseases	13.988	0.730	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>

Rheumatic tricuspid valve diseases	13.132	0.780	23.808	0.161	19.800	0.342
Multiple valve diseases	13.427	0.770	28.403	0.056	19.400	0.370
Other rheumatic heart diseases	16.071	0.588	24.803	0.130	<i>NA</i>	<i>NA</i>
Nonrheumatic mitral valve disorders	12.375	0.830	22.500	0.209	20.300	0.317
Nonrheumatic aortic valve disorders	13.076	0.790	22.550	0.209	20.500	0.307
Nonrheumatic tricuspid valve disorders	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Pulmonary valve disorders	12.690	0.810	23.279	0.180	19.600	0.355
Endocarditis, valve unspecified	13.651	0.750	25.107	0.122	19.516	0.361
Endocarditis and heart valve disorders in diseases classified elsewhere	13.002	0.790	22.600	0.207	21.018	0.279
Other disorders						
Primary hypertension	12.200	0.830	24.196	0.149	19.764	0.346
Hypertensive heart disease	1.220	0.830	22.682	0.203	19.000	0.391
Hypertensive renal disease	20.087	0.286	26.252	0.094	21.000	0.280
Hypertensive heart and renal disease	13.802	0.740	<i>NA</i>	<i>NA</i>	19.500	0.363
Secondary hypertension	13.757	0.740	22.628	0.205	19.442	0.365
Other pulmonary heart diseases	12.057	0.840	23.456	0.174	19.100	0.385
Other diseases of pulmonary vessels	13.550	0.760	23.729	0.164	20.900	0.287
Acute pericarditis	12.992	0.790	22.616	0.206	19.500	0.362
Other diseases of pericardium	13.287	0.770	24.043	0.154	19.100	0.387
Pericarditis in diseases classified elsewhere	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Acute and subacute endocarditis	12.520	0.820	23.046	0.189	19.700	0.352
Acute myocarditis	12.158	0.840	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Myocarditis in diseases classified elsewhere	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Complications and ill-defined descriptions of heart disease	12.247	0.830	22.925	0.194	19.052	0.389
Other heart disorders in diseases classified elsewhere	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
Other disorders of arteries and arterioles	12.144	0.840	22.816	0.198	19.100	0.388
Diseases of capillaries	12.056	0.840	22.557	0.208	20.100	0.326
Disorders of arteries, arterioles and capillaries in diseases classified elsewhere	13.010	0.790	22.676	0.203	26.100	0.097
Phlebitis and thrombophlebitis	13.100	0.790	22.946	0.193	18.991	0.392
Portal vein thrombosis	13.782	0.740	23.154	0.185	20.000	0.332
Other venous embolism and thrombosis	12.761	0.810	22.583	0.207	19.000	0.389
Varicose veins of lower extremities	12.152	0.840	22.896	0.195	18.978	0.393

Hemorrhoids	12.350	0.830	22.668	0.204	22.300	0.221
Oesophageal varices	13.796	0.740	22.532	0.209	19.651	0.353
Varicose veins of other sites	13.670	0.750	22.600	0.207	20.024	0.331
Other disorders of veins	12.316	0.830	25.525	0.111	18.898	0.398
Nonspecific lymphadenitis	13.238	0.780	22.560	0.208	26.400	0.091
Other non-infective disorders of lymphatic vessels and lymph nodes	13.454	0.760	22.588	0.207	20.100	0.325
Postprocedural disorders of circulatory system, not elsewhere classified	12.142	0.840	22.673	0.204	19.400	0.366
Other disorders of circulatory system in diseases classified elsewhere	12.135	0.840	23.300	0.179	19.100	0.385
Other and unspecified disorders of circulatory system	12.083	0.840	22.713	0.202	19.101	0.386

Abbreviations: ACD, All-cause dementia; AD, Alzheimer's disease; VaD, Vascular dementia; 95% CI, 95% confidential interval; NA, not applicable

Supplementary Materials 5 - Sensitivity Analysis: Age-Restricted Models

SM Table 5.1 Association Between Cardiovascular Diseases and All-Cause Dementia in Age-Restricted Model

SM Table 5.1 Association Between Cardiovascular Diseases and All-Cause Dementia in Age-Restricted Model

Traits	Age<65			Age>65		
	HR	95% CI	P	HR	95% CI	P
Ischemic heart disorders						
Angina pectoris	1.514	1.337 1.716	0.000	1.175	1.067 1.294	0.001
Acute myocardial infarction	1.217	1.034 1.434	0.018	1.230	1.095 1.383	0.001
Other acute ischemic heart diseases	1.230	0.893 1.693	0.205	1.419	1.145 1.760	0.001
Chronic ischemic heart disease	1.492	1.329 1.674	0.000	1.284	1.177 1.402	0.000
Atherosclerosis	1.208	0.848 1.721	0.296	1.259	0.994 1.594	0.056
Arrhythmias and conduction disorders						
Atrioventricular and left bundle-branch block	2.049	1.712 2.451	0.000	1.388	1.215 1.586	0.000
Other conduction disorders	1.696	1.331 2.161	0.000	1.659	1.416 1.945	0.000
Cardiac arrest	1.744	1.143 2.663	0.010	1.537	1.119 2.111	0.008
Atrial fibrillation and flutter	1.500	1.319 1.704	0.000	1.469	1.344 1.605	0.000
Other cardiac arrhythmias	1.283	1.028 1.603	0.028	1.273	1.084 1.495	0.003
Blood flow-reduction disorders						
Heart failure	1.823	1.551 2.142	0.000	1.568	1.403 1.753	0.000
Hypotension	3.261	2.878 3.695	0.000	2.738	2.489 3.012	0.000
Embolic and other cerebrovascular disorders						
Pulmonary embolism	1.705	1.378 2.110	0.000	1.633	1.386 1.923	0.000
Subarachnoid hemorrhage	2.295	0.573 9.187	0.240	4.912	2.338 10.319	0.000
Intracerebral hemorrhage	3.349	2.381 4.711	0.000	4.125	3.340 5.093	0.000
Other nontraumatic intracranial hemorrhage	3.754	2.434 5.789	0.000	3.564	2.643 4.804	0.000
Cerebral infarction	3.028	2.549 3.597	0.000	2.368	2.090 2.683	0.000
Stroke, not specified as hemorrhage or infarction	2.445	1.993 3.000	0.000	1.994	1.713 2.321	0.000
Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	1.581	1.090 2.293	0.016	1.613	1.288 2.020	0.000

Other cerebrovascular diseases	6.795	5.983	7.718	0.000	4.572	4.155	5.031	0.000
Cerebrovascular disorders in diseases classified elsewhere	15.315	8.420	27.854	0.000	7.848	5.280	11.664	0.000
Sequelae of cerebrovascular disease	5.672	4.640	6.934	0.000	4.029	3.416	4.751	0.000
Rheumatic and valvular disorders								
Rheumatic chorea	0.000	0.000	Inf	0.980	5.593	1.395	22.421	0.015
Multiple valve diseases	1.230	0.932	1.624	0.143	1.177	0.984	1.408	0.074
Nonrheumatic aortic valve disorders	1.649	1.317	2.066	0.000	0.992	0.830	1.185	0.927
Other disorders								
Primary hypertension	1.613	1.448	1.797	0.000	1.276	1.167	1.395	0.000
Hypertensive heart disease	2.133	0.955	4.764	0.065	1.976	1.120	3.489	0.019
Hypertensive renal disease	1.469	0.976	2.212	0.065	1.677	1.263	2.227	0.000
Acute and subacute endocarditis	2.922	1.610	5.304	0.000	1.354	0.644	2.847	0.425
Complications and ill-defined descriptions of heart disease	1.619	1.370	1.914	0.000	1.298	1.146	1.471	0.000
Phlebitis and thrombophlebitis	1.473	1.230	1.764	0.000	1.339	1.165	1.539	0.000
Other venous embolism and thrombosis	1.701	0.961	3.012	0.068	1.478	0.817	2.673	0.196
Oesophageal varices	2.099	1.239	3.557	0.006	1.387	0.785	2.450	0.260
Other disorders of veins	1.790	1.161	2.757	0.008	1.395	0.978	2.450	0.066
Nonspecific lymphadenitis	2.904	1.207	6.989	0.017	1.990	0.641	6.178	0.234
Other non-infective disorders of lymphatic vessels and lymph nodes	1.669	1.122	2.483	0.011	1.204	0.817	1.775	0.347
Other disorders of circulatory system in diseases classified elsewhere	3.212	1.770	5.828	0.000	2.242	1.163	4.323	0.016

Abbreviations: HR, Hazard Ratios; 95% CI, 95% confidential interval

Multi-adjusted: Adjusted for Age, Sex, Education, Ethnicity, Body-Mass-Index, Metabolic equivalent of task-min/week, Smoking Status, Alcohol Intake, Townsend deprivation index at recruitment, Hypertension, Diabetes Mellitus, Hypercholesterolemia, History of Stroke, Blood pressure-lowering medication, Cholesterol- Lowering Medication, Insulin, *ApoE4*, Pacemaker.

SM Table 5.2 Association Between Cardiovascular Diseases and Alzheimer's Disease in Age-Restricted Model

SM Table 5.2 Association Between Cardiovascular Diseases and Alzheimer's disease in Age-Restricted Model

Traits	Age<65			Age>65		
	HR	95% CI	P	HR	95% CI	P
Ischemic heart disorders						

Angina pectoris	1.433	1.174	1.748	0.000	1.165	1.004	1.351	0.044
Chronic ischemic heart disease	1.467	1.223	1.759	0.000	1.178	1.028	1.349	0.018
Arrhythmias and conduction disorders								
Atrioventricular and left bundle-branch block	2.100	1.583	2.786	0.000	1.375	1.118	1.691	0.003
Other conduction disorders	1.628	1.097	2.417	0.016	1.508	1.164	1.953	0.002
Atrial fibrillation and flutter	1.255	1.015	1.550	0.036	1.224	1.062	1.411	0.005
Blood flow-reduction disorders								
Cardiomyopathy in diseases classified elsewhere	5.061	0.711	36.005	0.105	2.940	0.732	11.802	0.128
Heart failure	1.803	1.389	2.340	0.000	1.452	1.216	1.733	0.000
Hypotension	2.436	1.967	3.017	0.000	2.332	1.999	2.719	0.000
Embolic and other cerebrovascular disorders								
Pulmonary embolism	1.863	1.353	2.566	0.000	1.240	0.934	1.647	0.137
Intracerebral hemorrhage	2.851	1.609	5.051	0.000	2.409	1.579	3.676	0.000
Other nontraumatic intracranial hemorrhage	2.302	0.952	5.567	0.064	2.665	1.572	4.518	0.000
Cerebral infarction	1.453	1.002	2.108	0.049	1.336	1.045	1.707	0.021
Stroke, not specified as hemorrhage or infarction	1.478	0.988	2.211	0.058	1.368	1.041	1.798	0.024
Other cerebrovascular diseases	5.066	4.069	6.308	0.000	3.550	3.029	4.160	0.000
Cerebrovascular disorders in diseases classified elsewhere	14.908	5.547	40.069	0.000	2.790	0.897	8.676	0.076
Sequelae of cerebrovascular disease	3.228	2.144	4.858	0.000	1.795	1.235	2.610	0.002
Arterial embolism and thrombosis	0.167	0.023	1.193	0.074	0.567	0.254	1.266	0.166
Other disorders								
Primary hypertension	1.587	1.346	1.872	0.000	1.204	1.054	1.374	0.006
Hypertensive heart disease	1.973	0.491	7.925	0.338	2.412	1.079	5.388	0.032
Phlebitis and thrombophlebitis	1.453	1.097	1.923	0.009	1.158	0.926	1.449	0.200
Oesophageal varices	1.611	0.602	4.312	0.342	2.079	0.987	4.381	0.054
Other disorders of veins	2.500	1.374	4.546	0.003	1.333	0.754	2.356	0.323
Nonspecific lymphadenitis	4.505	1.448	14.013	0.009	3.005	0.750	12.042	0.120
Other disorders of circulatory system in diseases classified elsewhere	3.214	1.198	8.620	0.020	3.239	1.341	7.826	0.009

Abbreviations: HR, Hazard Ratios; 95% CI, 95% confidential interval

Multi-adjusted: Adjusted for Age, Sex, Education, Ethnicity, Body-Mass-Index, Metabolic equivalent of task-min/week, Smoking Status, Alcohol Intake,

Townsend deprivation index at recruitment, Hypertension, Diabetes Mellitus, Hypercholesterolemia, History of Stroke, Blood pressure-lowering medication, Cholesterol- Lowering Medication, Insulin, *ApoE4*, Pacemaker.

SM Table 5.3 Association Between Cardiovascular Diseases and Vascular dementia in Age-Restricted Model

SM Table 5.3 Association Between Cardiovascular Diseases and Vascular dementia in Age-Restricted Model

Traits	Age<65			Age>65		
	HR	95% CI	P	HR	95% CI	P
Ischemic heart disorders						
Angina pectoris	1.837	1.437 2.349	0.000	1.431	1.192 1.717	0.000
Acute myocardial infarction	2.121	1.612 2.791	0.000	1.744	1.420 2.143	0.000
Other acute ischemic heart diseases	1.833	1.086 3.095	0.023	1.733	1.189 2.524	0.004
Chronic ischemic heart disease	1.935	1.537 2.435	0.000	1.692	1.430 2.001	0.000
Atherosclerosis	1.813	1.049 3.134	0.033	1.711	1.157 2.529	0.007
Arrhythmias and conduction disorders						
Atrioventricular and left bundle-branch block	3.009	2.194 4.127	0.000	1.767	1.389 2.249	0.000
Other conduction disorders	2.286	1.489 3.508	0.000	1.746	1.288 2.369	0.000
Cardiac arrest	2.479	1.225 5.018	0.012	1.910	1.100 3.317	0.022
Atrial fibrillation and flutter	2.382	1.873 3.029	0.000	1.916	1.617 2.270	0.000
Other cardiac arrhythmias	1.775	1.169 2.695	0.007	1.381	1.014 1.882	0.041
Blood flow-reduction disorders						
Cardiomyopathy	1.568	0.698 3.521	0.276	1.871	1.133 3.091	0.014
Heart failure	2.539	1.900 3.393	0.000	1.995	1.629 2.445	0.000
Hypotension	4.113	3.204 5.280	0.000	2.946	2.441 3.556	0.000
Embolic and other cerebrovascular disorders						
Pulmonary embolism	2.067	1.364 3.134	0.001	2.141	1.602 2.860	0.000
Intracerebral hemorrhage	6.505	3.849 10.993	0.000	8.281	6.062 11.311	0.000
Other nontraumatic intracranial hemorrhage	5.163	2.424 11.000	0.000	3.489	1.918 6.344	0.000
Cerebral infarction	7.359	5.646 9.592	0.000	5.390	4.456 6.520	0.000

Stroke, not specified as hemorrhage or infarction	5.070	3.698	6.950	0.000	3.644	2.870	4.628	0.000
Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	2.212	1.199	4.081	0.011	2.970	2.130	4.140	0.000
Other cerebrovascular diseases	16.516	13.187	20.685	0.000	8.816	7.450	10.432	0.000
Cerebrovascular disorders in diseases classified elsewhere	54.820	25.409	118.274	0.000	22.783	13.064	39.733	0.000
Sequelae of cerebrovascular disease	13.439	9.949	18.154	0.000	9.064	7.106	11.563	0.000
Arterial embolism and thrombosis	2.069	1.054	4.059	0.035	1.790	1.029	3.112	0.039
Rheumatic and valvular disorders								
Rheumatic fever with heart involvement	0.000	0.000	Inf	0.989	9.734	1.366	69.374	0.023
Multiple valve diseases	1.565	0.931	2.629	0.091	1.882	1.407	2.518	0.000
Nonrheumatic mitral valve disorders	2.299	1.462	3.616	0.000	1.083	0.730	1.606	0.691
Nonrheumatic aortic valve disorders	2.184	1.457	3.273	0.000	1.117	0.803	1.554	0.511
Other disorders								
Primary hypertension	3.752	2.846	4.947	0.000	2.099	1.718	2.566	0.000
Hypertensive renal disease	2.310	1.301	4.102	0.004	1.796	1.082	2.982	0.024
Secondary hypertension	9.815	3.645	26.430	0.000	2.211	0.551	8.883	0.263
Other diseases of pulmonary vessels	7.644	1.072	54.522	0.042	2.917	0.410	20.760	0.285
Other diseases of pericardium	2.185	1.124	4.247	0.021	1.401	0.771	2.547	0.269
Acute and subacute endocarditis	4.583	1.703	12.338	0.003	1.397	0.347	5.617	0.638
Complications and ill-defined descriptions of heart disease	2.595	1.944	3.465	0.000	1.797	1.442	2.238	0.000
Phlebitis and thrombophlebitis	1.561	1.072	2.275	0.020	1.766	1.374	2.271	0.000
Varicose veins of lower extremities	1.264	0.853	1.873	0.243	1.452	1.123	1.878	0.005
Other disorders of veins	2.233	1.048	4.757	0.037	1.789	0.956	3.349	0.069
Other and unspecified disorders of circulatory system	0.944	0.132	6.750	0.954	4.378	2.244	8.541	0.000

Abbreviations: HR, Hazard Ratios; 95% CI, 95% confidential interval

Multi-adjusted: Adjusted for Age, Sex, Education, Ethnicity, Body-Mass-Index, Metabolic equivalent of task-min/week, Smoking Status, Alcohol Intake, Townsend deprivation index at recruitment, Hypertension, Diabetes Mellitus, Hypercholesterolemia, History of Stroke, Blood pressure-lowering medication, Cholesterol-Lowering Medication, Insulin, *ApoE4*, Pacemaker.

Supplementary Materials 6 – Sensitivity Analysis: Sex-Restricted Models

SM Table 6.1 Association Between Cardiovascular Diseases and All-Cause Dementia in Sex-Restricted Model

SM Table 6.1 Association Between Cardiovascular Diseases and All-Cause Dementia in Sex-Restricted Model

Traits	Female			Male		
	HR	95% CI	P	HR	95% CI	P
Ischemic heart disorders						
Angina pectoris	1.253	1.104 1.422	0.000	1.310	1.189 1.443	0.000
Acute myocardial infarction	1.321	1.109 1.573	0.002	1.310	1.189 1.443	0.000
Other acute ischemic heart diseases	1.292	0.935 1.784	0.121	1.378	1.113 1.707	0.003
Chronic ischemic heart disease	1.468	1.310 1.644	0.000	1.294	1.184 1.414	0.000
Atherosclerosis	1.286	0.900 1.837	0.167	1.247	0.985 1.578	0.066
Arrhythmias and conduction disorders						
Atrioventricular and left bundle-branch block	1.649	1.372 1.981	0.000	1.532	1.343 1.749	0.000
Other conduction disorders	1.952	1.545 2.467	0.000	1.562	1.330 1.834	0.000
Cardiac arrest	1.974	1.269 3.070	0.003	1.473	1.081 2.008	0.014
Atrial fibrillation and flutter	1.423	1.265 1.602	0.000	1.518	1.383 1.667	0.000
Other cardiac arrhythmias	1.398	1.147 1.703	0.001	1.197	1.007 1.423	0.041
Blood flow-reduction disorders						
Heart failure	1.775	1.532 2.056	0.000	1.561	1.389 1.755	0.000
Hypotension	2.757	2.453 3.097	0.000	3.026	2.738 3.345	0.000
Embolic and other cerebrovascular disorders						
Pulmonary embolism	1.761	1.465 2.118	0.000	1.574	1.311 1.890	0.000
Subarachnoid hemorrhage	3.236	1.213 8.633	0.019	4.685	1.947 11.270	0.001
Intracerebral hemorrhage	2.990	2.193 4.078	0.000	4.587	3.681 5.715	0.000
Other nontraumatic intracranial hemorrhage	4.307	2.826 6.564	0.000	3.436	2.539 4.649	0.000
Cerebral infarction	2.490	2.115 2.931	0.000	2.623	2.306 2.984	0.000
Stroke, not specified as hemorrhage or infarction	2.017	1.649 2.467	0.000	2.210	1.895 2.577	0.000
Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	1.383	0.968 1.977	0.075	1.713	1.363 2.153	0.000
Other cerebrovascular diseases	5.161	4.594 5.797	0.000	5.269	4.757 5.836	0.000

Cerebrovascular disorders in diseases classified elsewhere	9.712	5.732	16.455	0.000	9.464	6.190	14.469	0.000
Sequelae of cerebrovascular disease	3.875	3.130	4.797	0.000	5.130	4.376	6.013	0.000
Rheumatic and valvular disorders								
Rheumatic chorea	4.855	0.682	34.544	0.114	4.724	0.664	33.630	0.121
Multiple valve diseases	1.504	1.213	1.863	0.000	0.989	0.801	1.221	0.919
Nonrheumatic aortic valve disorders	1.183	0.938	1.491	0.156	1.183	0.993	1.410	0.060
Other disorders								
Primary hypertension	1.382	1.244	1.537	0.000	1.434	1.308	1.572	0.000
Hypertensive heart disease	1.474	0.612	3.551	0.387	2.423	1.403	4.185	0.002
Hypertensive renal disease	2.038	1.453	2.859	0.000	1.340	0.972	1.847	0.074
Acute and subacute endocarditis	3.242	1.450	7.250	0.004	1.682	0.952	2.970	0.073
Complications and ill-defined descriptions of heart disease	1.421	1.205	1.677	0.000	1.384	1.220	1.570	0.000
Phlebitis and thrombophlebitis	1.245	1.061	1.460	0.007	1.557	1.338	1.813	0.000
Other venous embolism and thrombosis	1.406	0.730	2.707	0.308	1.771	1.046	2.997	0.033
Oesophageal varices	1.178	0.560	2.476	0.666	1.977	1.256	3.109	0.003
Other disorders of veins	1.119	0.683	1.832	0.656	1.850	1.329	2.576	0.000
Nonspecific lymphadenitis	3.528	1.582	7.869	0.002	1.283	0.320	5.135	0.725
Other non-infective disorders of lymphatic vessels and lymph nodes	1.267	0.877	1.832	0.207	1.663	1.091	2.535	0.018
Other disorders of circulatory system in diseases classified elsewhere	2.911	1.383	6.127	0.005	2.510	1.452	4.339	0.001

Abbreviations: HR, Hazard Ratios; 95% CI, 95% confidential interval

Multi-adjusted: Adjusted for Age, Sex, Education, Ethnicity, Body-Mass-Index, Metabolic equivalent of task-min/week, Smoking Status, Alcohol Intake, Townsend deprivation index at recruitment, Hypertension, Diabetes Mellitus, Hypercholesterolemia, History of Stroke, Blood pressure-lowering medication, Cholesterol-Lowering Medication, Insulin, *ApoE4*, Pacemaker.

SM Table 6.2 Association Between Cardiovascular Diseases and Alzheimer's Disease in Sex-Restricted Model

SM Table 6.2 Association Between Cardiovascular Diseases and Alzheimer's Disease in Sex-Restricted Model

Traits	Female			Male				
	HR	95% CI	P	HR	95% CI	P		
Ischemic heart disorders								
Angina pectoris	1.375	1.149	1.645	0.000	1.178	1.004	1.382	0.045

Chronic ischemic heart disease	1.457	1.236	1.718	0.000	1.158	1.002	1.338	0.047
Arrhythmias and conduction disorders								
Atrioventricular and left bundle-branch block	1.832	1.421	2.363	0.000	1.419	1.137	1.770	0.002
Other conduction disorders	1.689	1.171	2.437	0.005	1.485	1.135	1.941	0.004
Atrial fibrillation and flutter	1.179	0.983	1.414	0.076	1.279	1.095	1.495	0.002
Blood flow-reduction disorders								
Cardiomyopathy in diseases classified elsewhere	4.228	0.592	30.202	0.151	3.150	0.785	12.631	0.105
Heart failure	1.756	1.414	2.181	0.000	1.403	1.150	1.711	0.001
Hypotension	2.379	1.992	2.842	0.000	2.346	1.968	2.796	0.000
Embolic and other cerebrovascular disorders								
Pulmonary embolism	1.389	1.029	1.875	0.032	1.537	1.138	2.075	0.005
Intracerebral hemorrhage	1.720	0.949	3.120	0.074	3.338	2.204	5.054	0.000
Other nontraumatic intracranial hemorrhage	3.353	1.670	6.730	0.001	2.255	1.243	4.089	0.007
Cerebral infarction	1.235	0.894	1.706	0.201	1.471	1.129	1.918	0.004
Stroke, not specified as hemorrhage or infarction	1.444	1.034	2.015	0.031	1.366	1.004	1.859	0.047
Other cerebrovascular diseases	4.141	3.453	4.965	0.000	3.790	3.157	4.550	0.000
Cerebrovascular disorders in diseases classified elsewhere	4.583	1.473	14.258	0.009	6.177	2.301	16.581	0.000
Sequelae of cerebrovascular disease	2.094	1.373	3.194	0.001	2.401	1.670	3.453	0.000
Arterial embolism and thrombosis	0.570	0.183	1.776	0.333	0.369	0.138	0.986	0.047
Other disorders								
Primary hypertension	1.377	1.186	1.599	0.000	1.336	1.157	1.543	0.000
Hypertensive heart disease	1.406	0.350	5.642	0.631	3.038	1.358	6.796	0.007
Phlebitis and thrombophlebitis	1.130	0.887	1.439	0.323	1.453	1.128	1.872	0.004
Oesophageal varices	0.732	0.183	2.936	0.660	2.716	1.405	5.251	0.003
Other disorders of veins	1.561	0.835	2.917	0.163	1.847	1.066	3.198	0.029
Nonspecific lymphadenitis	3.737	1.202	11.620	0.023	3.540	0.883	14.196	0.074
Other disorders of circulatory system in diseases classified elsewhere	2.413	0.774	7.522	0.129	3.636	1.622	8.151	0.002

Abbreviations: HR, Hazard Ratios; 95% CI, 95% confidential interval

Multi-adjusted: Adjusted for Age, Sex, Education, Ethnicity, Body-Mass-Index, Metabolic equivalent of task-min/week, Smoking Status, Alcohol Intake, Townsend deprivation index at recruitment, Hypertension, Diabetes Mellitus, Hypercholesterolemia, History of Stroke, Blood pressure-lowering medication, Cholesterol-Lowering Medication, Insulin, *ApoE4*, Pacemaker.

SM Table 6.3 Association Between Cardiovascular Diseases and Vascular Dementia in Sex-Restricted Model

SM Table 3 Association Between Cardiovascular Diseases and Vascular Dementia in Sex-Restricted Model

Traits	Female			Male				
	HR	95% CI	P	HR	95% CI	P		
Ischemic heart disorders								
Angina pectoris	1.375	1.149	1.645	0.000	1.178	1.004	1.382	0.045
Chronic ischemic heart disease	1.457	1.236	1.718	0.000	1.158	1.002	1.338	0.047
Arrhythmias and conduction disorders								
Atrioventricular and left bundle-branch block	1.832	1.421	2.363	0.000	1.419	1.137	1.770	0.002
Other conduction disorders	1.689	1.171	2.437	0.005	1.485	1.135	1.941	0.004
Atrial fibrillation and flutter	1.179	0.983	1.414	0.076	1.279	1.095	1.495	0.002
Blood flow-reduction disorders								
Cardiomyopathy in diseases classified elsewhere	4.228	0.592	30.202	0.151	3.150	0.785	12.631	0.105
Heart failure	1.756	1.414	2.181	0.000	1.403	1.150	1.711	0.001
Hypotension	2.379	1.992	2.842	0.000	2.346	1.968	2.796	0.000
Embolitic and other cerebrovascular disorders								
Pulmonary embolism	1.389	1.029	1.875	0.032	1.537	1.138	2.075	0.005
Intracerebral hemorrhage	1.720	0.949	3.120	0.074	3.338	2.204	5.054	0.000
Other nontraumatic intracranial hemorrhage	3.353	1.670	6.730	0.001	2.255	1.243	4.089	0.007
Cerebral infarction	1.235	0.894	1.706	0.201	1.471	1.129	1.918	0.004
Stroke, not specified as hemorrhage or infarction	1.444	1.034	2.015	0.031	1.366	1.004	1.859	0.047
Other cerebrovascular diseases	4.141	3.453	4.965	0.000	3.790	3.157	4.550	0.000
Cerebrovascular disorders in diseases classified elsewhere	4.583	1.473	14.258	0.009	6.177	2.301	16.581	0.000
Sequelae of cerebrovascular disease	2.094	1.373	3.194	0.001	2.401	1.670	3.453	0.000
Arterial embolism and thrombosis	0.570	0.183	1.776	0.333	0.369	0.138	0.986	0.047
Other disorders								
Primary hypertension	1.377	1.186	1.599	0.000	1.336	1.157	1.543	0.000
Hypertensive heart disease	1.406	0.350	5.642	0.631	3.038	1.358	6.796	0.007
Phlebitis and thrombophlebitis	1.130	0.887	1.439	0.323	1.453	1.128	1.872	0.004
Oesophageal varices	0.732	0.183	2.936	0.660	2.716	1.405	5.251	0.003

Other disorders of veins	1.561	0.835	2.917	0.163	1.847	1.066	3.198	0.029
Nonspecific lymphadenitis	3.737	1.202	11.620	0.023	3.540	0.883	14.196	0.074
Other non-infective disorders of lymphatic vessels and lymph nodes	1.264	0.730	2.189	0.404	1.668	0.830	3.353	0.151
Other disorders of circulatory system in diseases classified elsewhere	2.413	0.774	7.522	0.129	3.636	1.622	8.151	0.002

Abbreviations: HR, Hazard Ratios; 95% CI, 95% confidential interval

Multi-adjusted: Adjusted for Age, Sex, Education, Ethnicity, Body-Mass-Index , Metabolic equivalent of task-min/week, Smoking Status, Alcohol Intake, Townsend deprivation index at recruitment, Hypertension, Diabetes Mellitus, Hypercholesterolemia, Hypertension History of Stroke, Blood pressure-lowering medications, Cholesterol- Lowering Medication, Insulin, *ApoE4*, Pacemaker.

Supplementary Materials 7 - Sensitivity analysis: Follow-up-Restricted Model**SM Table 7.1 Association Between Cardiovascular Diseases and All-cause Dementia in Follow-up-Restricted Model****SM Table 7.1 Association Between Cardiovascular Diseases and All-cause Dementia in Follow-up-Restricted Model**

Traits	Follow-up restricted			P
	HR	95% CI		
Ischemic heart disorders				
Angina pectoris	1.798	1.564	2.068	0.000
Acute myocardial infarction	1.517	1.277	1.801	0.000
Other acute ischemic heart diseases	1.683	1.199	2.361	0.003
Chronic ischemic heart disease	2.044	1.800	2.321	0.000
Atherosclerosis	1.016	0.641	1.609	0.947
Arrhythmias and conduction disorders				
Atrioventricular and left bundle-branch block	2.741	2.258	3.327	0.000
Other conduction disorders	3.003	2.411	3.739	0.000
Cardiac arrest	1.344	0.908	1.989	0.140
Atrial fibrillation and flutter	1.923	1.673	2.209	0.000
Other cardiac arrhythmias	1.869	1.495	2.337	0.000
Blood flow-reduction disorders				
Heart failure	2.141	1.807	2.536	0.000
Hypotension	4.124	3.582	4.748	0.000
Embolic and other cerebrovascular disorders				
Pulmonary embolism	1.996	1.586	2.512	0.000
Subarachnoid hemorrhage	4.299	1.608	11.489	0.004
Intracerebral hemorrhage	4.320	3.243	5.755	0.000
Other nontraumatic intracranial hemorrhage	4.520	3.138	6.511	0.000
Cerebral infarction	3.673	3.062	4.405	0.000
Stroke, not specified as hemorrhage or infarction	2.872	2.358	3.497	0.000
Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	2.104	1.436	3.082	0.000
Other cerebrovascular diseases	7.730	6.716	8.897	0.000
Cerebrovascular disorders in diseases classified elsewhere	10.307	5.782	18.375	0.000

Sequelae of cerebrovascular disease	6.819	5.495	8.461	0.000
Rheumatic and valvular disorders				
Rheumatic chorea	7.088	1.766	28.455	0.006
Multiple valve diseases	1.824	1.359	2.450	0.000
Nonrheumatic aortic valve disorders	1.154	0.830	1.605	0.394
Other disorders				
Primary hypertension	2.333	2.065	2.637	0.000
Hypertensive heart disease	1.752	0.872	3.520	0.115
Hypertensive renal disease	1.913	1.301	2.813	0.001
Acute and subacute endocarditis	2.048	0.916	4.580	0.081
Complications and ill-defined descriptions of heart disease	2.166	1.798	2.611	0.000
Phlebitis and thrombophlebitis	1.754	1.446	2.128	0.000
Other venous embolism and thrombosis	1.162	0.520	2.597	0.715
Oesophageal varices	3.276	1.852	5.797	0.000
Other disorders of veins	2.180	1.382	3.437	0.001
Nonspecific lymphadenitis	0.741	0.104	5.269	0.765
Other non-infective disorders of lymphatic vessels and lymph nodes	1.903	1.100	3.291	0.021
Other disorders of circulatory system in diseases classified elsewhere	2.684	1.111	6.484	0.028

Abbreviations: HR, Hazard Ratios; 95% CI, 95% confidential interval

Multi-adjusted: Adjusted for Age, Sex, Education, Ethnicity, Body-Mass-Index , Metabolic equivalent of task-min/week, Smoking Status, Alcohol Intake, Townsend deprivation index at recruitment, Hypertension, Diabetes Mellitus, Hypercholesterolemia, History of Stroke, Blood pressure-lowering medication, Cholesterol- Lowering Medication, Insulin, *ApoE4*, Pacemaker.

SM Table 7.2 Association Between Cardiovascular Diseases and Alzheimer's disease in Follow-up Restricted Model

SM Table 7.2 Association Between Cardiovascular Diseases and Alzheimer's disease in Follow-up Restricted Model

Traits	Follow-up restricted			
	HR	95% CI		P
Ischemic heart disorders				
Angina pectoris	1.755	1.422	2.166	0.000
Chronic ischemic heart disease	1.979	1.634	2.397	0.000

Arrhythmias and conduction disorders

Atrioventricular and left bundle-branch block	3.007	2.267	3.989	0.000
Other conduction disorders	2.455	1.694	3.558	0.000
Atrial fibrillation and flutter	1.630	1.312	2.026	0.000

Blood flow-reduction disorders

Cardiomyopathy in diseases classified elsewhere	10.445	2.584	42.222	0.001
Heart failure	1.959	1.501	2.557	0.000
Hypotension	2.929	2.305	3.721	0.000

Embolic and other cerebrovascular disorders

Pulmonary embolism	1.809	1.258	2.600	0.001
Intracerebral hemorrhage	3.794	2.366	6.086	0.000
Other nontraumatic intracranial hemorrhage	3.025	1.560	5.866	0.001
Cerebral infarction	2.113	1.474	3.029	0.000
Stroke, not specified as hemorrhage or infarction	1.951	1.380	2.758	0.000
Other cerebrovascular diseases	5.797	4.585	7.330	0.000
Cerebrovascular disorders in diseases classified elsewhere	6.826	1.689	27.587	0.007
Sequelae of cerebrovascular disease	4.783	3.162	7.235	0.000
Arterial embolism and thrombosis	0.515	0.128	2.070	0.350

Other disorders

Primary hypertension	2.161	1.806	2.585	0.000
Hypertensive heart disease	1.595	0.511	4.983	0.422
Phlebitis and thrombophlebitis	1.357	0.984	1.871	0.062
Oesophageal varices	3.515	1.452	8.507	0.005
Other disorders of veins	3.031	1.704	5.392	0.000
Nonspecific lymphadenitis	3.083	0.769	12.368	0.112
Other disorders of circulatory system in diseases classified elsewhere	3.271	0.813	13.164	0.095

Abbreviations: HR, Hazard Ratios; 95% CI, 95% confidential interval

Multi-adjusted: Adjusted for Age, Sex, Education, Ethnicity, Body-Mass-Index, Metabolic equivalent of task-min/week, Smoking Status, Alcohol Intake, Townsend deprivation index at recruitment, Hypertension, Diabetes Mellitus, Hypercholesterolemia, History of Stroke, Blood pressure-lowering medication, Cholesterol-Lowering Medication, Insulin, *ApoE4*, Pacemaker.

SM Table 7.3 Association Between Cardiovascular Diseases and Vascular Dementia in Follow-up Restricted Model

SM Table 7.3 Association Between Cardiovascular Diseases and Vascular Dementia in Follow-up Restricted Model

Traits	Follow-up restricted			
	HR	95% CI		P
Ischemic heart disorders				
Angina pectoris	2.314	1.637	3.271	0.000
Acute myocardial infarction	2.430	1.660	3.559	0.000
Other acute ischemic heart diseases	1.665	0.732	3.787	0.224
Chronic ischemic heart disease	2.816	2.031	3.903	0.000
Atherosclerosis	1.318	0.524	3.316	0.558
Arrhythmias and conduction disorders				
Atrioventricular and left bundle-branch block	3.362	2.099	5.387	0.000
Other conduction disorders	2.758	1.492	5.098	0.001
Cardiac arrest	1.476	0.599	3.637	0.398
Atrial fibrillation and flutter	2.594	1.836	3.663	0.000
Other cardiac arrhythmias	1.696	0.913	3.151	0.094
Blood flow-reduction disorders				
Cardiomyopathy	1.340	0.419	4.287	0.622
Heart failure	2.537	1.688	3.812	0.000
Hypotension	4.221	2.904	6.134	0.000
Embolic and other cerebrovascular disorders				
Pulmonary embolism	2.565	1.476	4.456	0.001
Intracerebral hemorrhage	5.296	2.568	10.921	0.000
Other nontraumatic intracranial hemorrhage	6.133	2.831	13.285	0.000
Cerebral infarction	6.313	4.191	9.509	0.000
Stroke, not specified as hemorrhage or infarction	5.472	3.579	8.366	0.000
Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	3.715	1.805	7.645	0.000
Other cerebrovascular diseases	19.237	13.806	26.804	0.000
Cerebrovascular disorders in diseases classified elsewhere	37.026	11.430	119.944	0.000
Sequelae of cerebrovascular disease	11.855	7.347	19.128	0.000

Arterial embolism and thrombosis	1.544	0.486	4.912	0.462
Rheumatic and valvular disorders				
Rheumatic fever with heart involvement	0.000	0.000	Inf	1.000
Multiple valve diseases	0.000	0.000	Inf	1.000
Nonrheumatic mitral valve disorders	2.620	1.404	4.888	0.002
Nonrheumatic aortic valve disorders	1.340	0.625	2.877	0.452
Other disorders				
Primary hypertension	3.844	2.650	5.576	0.000
Hypertensive renal disease	1.915	0.817	4.486	0.135
Secondary hypertension	18.910	4.635	77.151	0.000
Other diseases of pulmonary vessels	17.787	4.346	72.798	0.000
Other diseases of pericardium	1.611	0.512	5.072	0.415
Acute and subacute endocarditis	1.761	0.244	12.727	0.575
Complications and ill-defined descriptions of heart disease	3.394	2.256	5.105	0.000
Phlebitis and thrombophlebitis	2.527	1.593	4.008	0.000
Varicose veins of lower extremities	1.499	0.912	2.465	0.110
Other disorders of veins	4.811	2.215	10.450	0.000
Other and unspecified disorders of circulatory system	10.215	3.816	27.345	0.000

Abbreviations: HR, Hazard Ratios; 95% CI, 95% confidential interval

Multi-adjusted: Adjusted for Age, Sex, Education, Ethnicity, Body-Mass-Index, Metabolic equivalent of task-min/week, Smoking Status, Alcohol Intake, Townsend deprivation index at recruitment, Hypertension, Diabetes Mellitus, Hypercholesterolemia, History of Stroke, Blood pressure-lowering medication, Cholesterol-Lowering Medication, Insulin, *ApoE4*, Pacemaker.

Supplementary Materials 8 - Fine-Gray Models

SM Table 8.1 Association of Cardiovascular Diseases and All-cause Dementia in Fine-Gray Model

SM Table Association of Cardiovascular Diseases and All-cause Dementia in Fine-Gray Model

Traits	No. of competing event	Fine-Gray Model of death			Fine Gray Model of ACD				
		SHR	95% CI	P	SHR	95% CI	P		
Ischemic heart disorders									
Angina pectoris	719	1.117	1.028	1.214	0.009	1.282	1.189	1.382	0.000
Acute myocardial infarction	711	1.906	1.753	2.072	0.000	1.244	1.133	1.365	0.000
Other acute ischemic heart diseases	123	1.471	1.228	1.761	0.000	1.335	1.118	1.594	0.001
Chronic ischemic heart disease	1223	1.576	1.470	1.690	0.000	1.363	1.273	1.460	0.000
Atherosclerosis	127	1.616	1.351	1.932	0.000	1.305	1.078	1.579	0.006
Arrhythmias and conduction disorders									
Atrioventricular and left bundle-branch block	203	0.936	0.810	1.080	0.365	1.576	1.419	1.750	0.000
Other conduction disorders	118	0.909	0.756	1.093	0.310	1.660	1.456	1.892	0.000
Cardiac arrest	275	6.468	5.713	7.322	0.000	1.591	1.237	2.046	0.000
Atrial fibrillation and flutter	833	1.413	1.306	1.528	0.000	1.477	1.374	1.586	0.000
Other cardiac arrhythmias	1	1.221	1.061	1.404	0.005	1.268	1.115	1.442	0.000
Blood flow-reduction disorders									
Heart failure	715	2.520	2.315	2.742	0.000	1.638	1.497	1.793	0.000
Hypotension	571	2.114	1.934	2.312	0.000	2.903	2.694	3.128	0.000
Embolic and other cerebrovascular disorders									
Pulmonary embolism	531	3.966	3.621	4.345	0.000	1.674	1.473	1.902	0.000
Subarachnoid hemorrhage	17	6.408	3.980	10.319	0.000	4.226	2.272	7.860	0.000
Intracerebral hemorrhage	119	4.014	3.342	4.821	0.000	3.893	3.268	4.637	0.000
Other nontraumatic intracranial hemorrhage	67	3.974	3.120	5.062	0.000	3.669	2.881	4.673	0.000
Cerebral infarction	282	1.823	1.610	2.063	0.000	2.588	2.342	2.859	0.000
Stroke, not specified as hemorrhage or infarction	364	2.436	2.164	2.742	0.000	2.177	1.932	2.453	0.000
Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	52	0.924	0.702	1.217	0.575	1.604	1.327	1.939	0.000

Other cerebrovascular diseases	221	1.325	1.153	1.522	0.000	5.355	4.968	5.772	0.000
Cerebrovascular disorders in diseases classified elsewhere	1	0.473	0.067	3.360	0.454	9.342	6.721	12.984	0.000
Sequelae of cerebrovascular disease	87	1.349	1.081	1.684	0.008	4.597	4.058	5.209	0.000
Rheumatic and valvular disorders									
Rheumatic chorea	0	0.000	0.000	inf	0.957	3.945	0.985	15.790	0.052
Multiple valve diseases	110	0.931	0.770	1.126	0.462	1.197	1.033	1.387	0.017
Nonrheumatic aortic valve disorders	167	1.180	1.009	1.379	0.038	1.166	1.016	1.338	0.029
Other disorders									
Primary hypertension	2301	0.933	0.872	0.997	0.040	1.435	1.341	1.536	0.000
Hypertensive heart disease	88	7.787	6.293	9.636	0.000	2.136	1.375	3.316	0.001
Hypertensive renal disease	126	2.897	2.415	3.475	0.000	1.714	1.373	2.140	0.000
Acute and subacute endocarditis	26	2.858	1.940	4.208	0.000	1.957	1.230	3.113	0.005
Complications and ill-defined descriptions of heart disease	431	1.572	1.420	1.740	0.000	1.408	1.276	1.553	0.000
Phlebitis and thrombophlebitis	511	2.233	2.036	2.450	0.000	1.407	1.263	1.568	0.000
Other venous embolism and thrombosis	70	4.485	3.540	5.681	0.000	1.532	1.017	2.308	0.041
Oesophageal varices	78	4.277	3.414	5.357	0.000	1.733	1.186	2.532	0.004
Other disorders of veins	50	1.651	1.248	2.183	0.000	1.532	1.168	2.010	0.002
Nonspecific lymphadenitis	5	1.116	0.464	2.681	0.807	2.386	1.192	4.775	0.014
Other non-infective disorders of lymphatic vessels and lymph nodes	104	3.032	2.492	3.688	0.000	1.409	1.074	1.850	0.013
Other disorders of circulatory system in diseases classified elsewhere	46	4.612	3.443	6.177	0.000	2.780	1.808	4.273	0.000

Abbreviations: ACD, All-cause dementia; HR, Hazard Ratios; 95% CI, 95% confidential interval

Multi-adjusted: Adjusted for Age, Sex, Education, Ethnicity, Body-Mass-Index, Metabolic equivalent of task-min/week, Smoking Status, Alcohol Intake, Townsend deprivation index at recruitment, Hypertension, Diabetes Mellitus, Hypercholesterolemia, Hypertension History of Stroke, Blood pressure-lowering medications, Cholesterol- Lowering Medication, Insulin, *ApoE4*, Pacemaker.

SM Table 8.2 Association of Cardiovascular Diseases and Alzheimer's Disease in Fine-Gray Model

SM Table 8.2 Association of Cardiovascular Diseases and Alzheimer's Disease in Fine-Gray Model

Traits	No. of competing event	Fine-Gray Model of death			Fine Gray Model of AD				
		SHR	95% CI	P	SHR	95% CI	P		
Ischemic heart disorders									
Angina pectoris	719	1.124	1.034	1.221	0.006	1.738	1.404	2.153	0.000
Chronic ischemic heart disease	1223	1.911	1.758	2.078	0.000	1.899	1.557	2.316	0.000
Arrhythmias and conduction disorders									
Atrioventricular and left bundle-branch block	203	0.948	0.821	1.095	0.470	1.936	1.439	2.603	0.000
Other conduction disorders	118	0.923	0.767	1.110	0.396	1.938	1.331	2.820	0.001
Atrial fibrillation and flutter	833	1.428	1.320	1.544	0.000	1.537	1.237	1.909	0.000
Blood flow-reduction disorders									
Cardiomyopathy in diseases classified elsewhere	7	4.477	2.133	9.400	0.000	4.470	0.627	31.872	0.135
Heart failure	715	2.547	2.340	2.771	0.000	2.551	2.003	3.250	0.000
Hypotension	571	2.174	1.988	2.377	0.000	3.490	2.807	4.338	0.000
Embolic and other cerebrovascular disorders									
Pulmonary embolism	531	3.988	3.641	4.369	0.000	1.865	1.280	2.718	0.001
Intracerebral hemorrhage	119	4.170	3.472	5.009	0.000	3.910	2.295	6.663	0.000
Other nontraumatic intracranial hemorrhage	67	4.023	3.158	5.124	0.000	6.267	3.603	10.898	0.000
Cerebral infarction	282	1.876	1.657	2.124	0.000	2.009	1.434	2.814	0.000
Stroke, not specified as hemorrhage or infarction	364	2.469	2.193	2.779	0.000	1.943	1.329	2.841	0.001
Other cerebrovascular diseases	221	1.412	1.229	1.622	0.000	4.758	3.741	6.051	0.000
Cerebrovascular disorders in diseases classified elsewhere	1	0.626	0.088	4.449	0.640	6.027	1.499	24.233	0.011
Sequelae of cerebrovascular disease	87	1.412	1.130	1.763	0.002	4.171	2.782	6.254	0.000
Arterial embolism and thrombosis	97	2.294	1.872	2.810	0.000	0.672	0.215	2.096	0.493
Other disorders									
Primary hypertension	2301	0.939	0.878	1.004	0.064	1.809	1.467	2.231	0.000
Hypertensive heart disease	88	7.736	6.251	9.572	0.000	6.470	2.882	14.526	0.000
Phlebitis and thrombophlebitis	511	2.249	2.050	2.467	0.000	1.615	1.179	2.211	0.003

Oesophageal varices	78	4.276	3.414	5.357	0.000	1.265	0.315	5.087	0.740
Other disorders of veins	50	1.680	1.271	2.223	0.000	1.634	0.728	3.667	0.234
Nonspecific lymphadenitis	5	1.129	0.470	2.714	0.786	0.000	0.000	Inf	0.984
Other disorders of circulatory system in diseases classified elsewhere	46	4.621	3.450	6.190	0.000	2.574	0.639	10.363	0.183

Abbreviations: AD, Alzheimer's disease; HR, Hazard Ratios; 95% CI, 95% confidential interval

Multi-adjusted: Adjusted for Age, Sex, Education, Ethnicity, Body-Mass-Index, Metabolic equivalent of task-min/week, Smoking Status, Alcohol Intake, Townsend deprivation index at recruitment, Hypertension, Diabetes Mellitus, Hypercholesterolemia, History of Stroke, Blood pressure-lowering medication, Cholesterol-Lowering Medication, Insulin, *ApoE4*, Pacemaker.

SM Table 8.3 Association of Cardiovascular Diseases and Vascular Dementia in Fine-Gray Model

SM Table 8.3 Association of Cardiovascular Diseases and Vascular Dementia in Fine-Gray Model

Traits	No. of competing event	Fine-Gray Model of death			Fine Gray Model of VaD				
		SHR	95% CI	P	SHR	95% CI	P		
Ischemic heart disorders									
Angina pectoris	719	1.556	1.239	1.953	0.000	1.738	1.404	2.153	0.000
Acute myocardial infarction	711	1.970	1.533	2.531	0.000	1.810	1.409	2.324	0.000
Other acute ischemic heart diseases	123	2.082	1.337	3.242	0.001	2.388	1.579	3.613	0.000
Chronic ischemic heart disease	1223	1.774	1.436	2.192	0.000	1.899	1.557	2.316	0.000
Atherosclerosis	127	1.907	1.193	3.047	0.007	0.985	0.507	1.914	0.964
Arrhythmias and conduction disorders									
Atrioventricular and left bundle-branch block	203	2.308	1.732	3.075	0.000	1.936	1.439	2.603	0.000
Other conduction disorders	118	2.161	1.504	3.105	0.000	1.938	1.331	2.820	0.001
Cardiac arrest	275	2.526	1.383	4.613	0.003	2.010	1.036	3.899	0.039
Atrial fibrillation and flutter	833	1.962	1.577	2.442	0.000	1.537	1.237	1.909	0.000
Other cardiac arrhythmias	215	1.358	0.907	2.035	0.138	1.226	0.825	1.821	0.314
Blood flow-reduction disorders									
Cardiomyopathy	90	1.589	0.785	3.215	0.198	1.596	0.820	3.105	0.169
Heart failure	715	2.475	1.928	3.177	0.000	2.551	2.003	3.250	0.000
Hypotension	571	3.808	3.037	4.774	0.000	3.490	2.807	4.338	0.000

Embollic and other cerebrovascular disorders

Pulmonary embolism	531	2.889	2.074	4.025	0.000	1.865	1.280	2.718	0.001
Intracerebral hemorrhage	119	6.523	4.186	10.163	0.000	3.910	2.295	6.663	0.000
Other nontraumatic intracranial hemorrhage	67	5.101	2.715	9.584	0.000	6.267	3.603	10.898	0.000
Cerebral infarction	282	4.804	3.716	6.211	0.000	2.009	1.434	2.814	0.000
Stroke, not specified as hemorrhage or infarction	364	5.266	3.999	6.934	0.000	1.943	1.329	2.841	0.001
Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	52	2.504	1.579	3.972	0.000	0.636	0.262	1.543	0.317
Other cerebrovascular diseases	221	11.659	9.450	14.384	0.000	4.758	3.741	6.051	0.000
Cerebrovascular disorders in diseases classified elsewhere	1	16.521	6.138	44.469	0.000	6.027	1.499	24.233	0.011
Sequelae of cerebrovascular disease	87	10.860	8.098	14.563	0.000	4.171	2.782	6.254	0.000
Arterial embolism and thrombosis	87	2.456	1.375	4.389	0.002	0.672	0.215	2.096	0.493

Rheumatic and valvular disorders

Rheumatic fever with heart involvement	0	21.756	3.051	155.147	0.002	0.000	0.000	Inf	0.990
Multiple valve diseases	110	2.023	1.390	2.943	0.000	1.126	0.710	1.787	0.613
Nonrheumatic mitral valve disorders	148	1.426	0.898	2.265	0.132	1.463	0.952	2.248	0.083
Nonrheumatic aortic valve disorders	167	1.056	0.678	1.644	0.811	0.841	0.517	1.368	0.485

Other disorders

Primary hypertension	2301	2.560	1.986	3.301	0.000	1.809	1.467	2.231	0.000
Hypertensive renal disease	126	2.936	1.795	4.802	0.000	2.015	1.063	3.819	0.032
Secondary hypertension	14	8.977	3.704	21.756	0.000	3.617	0.900	14.541	0.070
Other diseases of pulmonary vessels	7	9.622	2.394	38.672	0.001	4.486	0.630	31.928	0.134
Other diseases of pericardium	113	1.004	0.415	2.427	0.994	2.111	1.160	3.843	0.015
Acute and subacute endocarditis	26	2.145	0.533	8.638	0.283	0.983	0.138	7.019	0.987
Complications and ill-defined descriptions of heart disease	431	2.170	1.659	2.837	0.000	1.269	0.925	1.740	0.139
Phlebitis and thrombophlebitis	511	2.103	1.549	2.855	0.000	1.615	1.179	2.211	0.003
Varicose veins of lower extremities	358	1.513	1.091	2.099	0.013	1.465	1.084	1.981	0.013
Other disorders of veins	50	2.669	1.373	5.188	0.004	1.634	0.728	3.667	0.234
Other and unspecified disorders of circulatory system	26	4.967	2.311	10.679	0.000	2.974	1.100	8.039	0.032

Abbreviations: VaD, Vascular dementia; HR, Hazard Ratios; 95% CI, 95% confidential interval

Multi-adjusted: Adjusted for Age, Sex, Education, Ethnicity, Body-Mass-Index , Metabolic equivalent of task-min/week, Smoking Status, Alcohol Intake, Townsend deprivation index at recruitment, Hypertension, Diabetes Mellitus, Hypercholesterolemia, History of Stroke, Blood pressure-lowering medication, Cholesterol- Lowering Medication, Insulin, *ApoE4*, Pacemaker.

Supplementary Materials 9 – Analysis of Post-Stroke Dementia

SM Table 9.1 Cox Regression Model of Association Between Cardiovascular Diseases and Post-Stroke Dementia

SM Table 9.1 Cox Regression Model of Association Between Cardiovascular Diseases and Post-Stroke Dementia

Traits	ACD			AD			VaD					
	HR	95% CI	P	HR	95% CI	P	HR	95% CI	P			
Ischemic heart disorders												
Angina pectoris	1.042	0.878	1.236	0.638	1.069	0.765	1.495	0.696	1.059	0.825	1.359	0.653
Acute myocardial infarction	1.204	0.995	1.456	0.056	1.015	0.681	1.514	0.940	1.498	1.152	1.948	0.003
Subsequent myocardial infarction	0.839	0.397	1.775	0.647	1.643	0.518	5.205	0.399	0.925	0.343	2.496	0.877
Certain current complications following acute myocardial infarction	0.000	0.000	Inf	0.987	0.000	0.000	Inf	0.991	0.000	0.000	Inf	0.990
Other acute ischemic heart diseases	1.342	0.965	1.867	0.080	1.183	0.600	2.333	0.628	1.199	0.732	1.962	0.471
Chronic ischemic heart disease	1.170	1.001	1.368	0.049	0.907	0.661	1.244	0.543	1.239	0.985	1.558	0.067
Atherosclerosis	1.277	0.921	1.770	0.143	0.655	0.268	1.601	0.353	1.741	1.150	2.638	0.009
Arrhythmias and conduction disorders												
Atrioventricular and left bundle-branch block	1.594	1.296	1.962	0.000	1.444	0.950	2.194	0.085	1.627	1.205	2.197	0.001
Other conduction disorders	1.170	0.873	1.568	0.294	0.987	0.531	1.834	0.966	0.911	0.570	1.458	0.699
Cardiac arrest	0.956	0.551	1.660	0.874	0.000	0.000	Inf	0.988	1.255	0.619	2.546	0.529
Paroxysmal tachycardia	0.795	0.527	1.199	0.273	0.923	0.431	1.978	0.837	0.798	0.435	1.463	0.465
Atrial fibrillation and flutter	1.373	1.178	1.599	0.000	0.794	0.574	1.098	0.163	1.469	1.172	1.842	0.001
Other cardiac arrhythmias	1.014	0.756	1.358	0.928	0.855	0.460	1.587	0.619	1.043	0.678	1.606	0.847
Blood flow-reduction disorders												
Cardiomyopathy	0.925	0.542	1.579	0.776	0.808	0.255	2.557	0.717	1.275	0.627	2.593	0.502
Cardiomyopathy in diseases classified elsewhere	0.000	0.000	Inf	0.986	0.000	0.000	Inf	0.991	0.000	0.000	Inf	0.991
Heart failure	1.439	1.203	1.720	0.000	1.096	0.752	1.597	0.633	1.473	1.136	1.912	0.004
Hypotension	2.030	1.713	2.405	0.000	1.519	1.057	2.182	0.024	2.014	1.567	2.587	0.000
Embolic and other cerebrovascular disorders												
Pulmonary embolism	1.436	1.094	1.885	0.009	1.703	1.030	2.816	0.038	1.212	0.784	1.872	0.387
Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	0.999	0.777	1.284	0.993	0.435	0.214	0.886	0.022	1.372	0.987	1.908	0.060
Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction	0.821	0.306	2.198	0.694	0.778	0.108	5.597	0.803	0.441	0.062	3.150	0.415
Other cerebrovascular diseases	2.445	2.109	2.834	0.000	1.647	1.220	2.223	0.001	3.197	2.566	3.982	0.000

Cerebrovascular disorders in diseases classified elsewhere	4.174	2.487	7.005	0.000	2.137	0.525	8.692	0.289	7.190	3.786	13.655	0.000
Sequelae of cerebrovascular disease	2.449	2.095	2.863	0.000	1.538	1.092	2.166	0.014	3.310	2.648	4.138	0.000
Arterial embolism and thrombosis	1.110	0.693	1.778	0.663	0.249	0.035	1.785	0.167	1.418	0.772	2.602	0.260
Rheumatic and valvular disorders												
Rheumatic fever without mention of heart involvement	0.865	0.358	2.089	0.747	0.000	0.000	Inf	0.993	0.788	0.195	3.176	0.737
Rheumatic fever with heart involvement	0.000	0.000	Inf	0.988	0.000	0.000	Inf	0.994	0.000	0.000	Inf	0.989
Rheumatic chorea	0.000	0.000	Inf	0.991	0.000	0.000	Inf	0.995	0.000	0.000	Inf	0.994
Rheumatic mitral valve diseases	1.420	0.759	2.660	0.273	0.514	0.072	3.682	0.507	0.326	0.046	2.325	0.263
Rheumatic aortic valve diseases	1.040	0.146	7.435	0.969	0.000	0.000	Inf	0.992	0.000	0.000	Inf	0.990
Rheumatic tricuspid valve diseases	0.672	0.333	1.354	0.266	0.595	0.146	2.418	0.468	0.953	0.392	2.320	0.916
Multiple valve diseases	1.441	1.112	1.866	0.006	0.776	0.409	1.474	0.439	1.744	1.218	2.496	0.002
Other rheumatic heart diseases	1.082	0.151	7.731	0.937	0.000	0.000	Inf	0.993	0.000	0.000	Inf	0.989
Pulmonary valve disorders	1.598	0.757	3.371	0.219	1.684	0.415	6.831	0.466	1.505	0.481	4.705	0.482
Endocarditis, valve unspecified	1.306	0.649	2.627	0.455	0.625	0.087	4.476	0.639	2.133	0.946	4.809	0.068
Endocarditis and heart valve disorders in diseases classified elsewhere	0.000	0.000	Inf	0.985	0.000	0.000	Inf	0.993	0.000	0.000	Inf	0.991
Nonrheumatic mitral valve disorders	1.042	0.765	1.419	0.796	0.978	0.530	1.803	0.943	1.092	0.694	1.719	0.703
Nonrheumatic aortic valve disorders	1.265	0.978	1.635	0.073	0.578	0.284	1.177	0.131	1.234	0.840	1.811	0.284
Nonrheumatic tricuspid valve disorders	0.969	0.362	2.594	0.950	0.768	0.107	5.535	0.794	1.757	0.562	5.489	0.332
Other disorders												
Primary hypertension	1.035	0.850	1.261	0.731	0.778	0.536	1.127	0.184	1.578	1.132	2.199	0.007
Hypertensive heart disease	1.283	0.479	3.437	0.620	1.204	0.167	8.669	0.854	0.589	0.082	4.204	0.597
Hypertensive renal disease	1.127	0.732	1.733	0.587	1.707	0.830	3.513	0.146	1.329	0.754	2.343	0.326
Hypertensive heart and renal disease	2.680	0.856	8.392	0.090	0.000	0.000	Inf	0.991	2.974	0.732	12.090	0.128
Secondary hypertension	1.351	0.336	5.425	0.672	0.000	0.000	Inf	0.991	2.916	0.722	11.779	0.133
Other pulmonary heart diseases	0.754	0.434	1.308	0.315	0.203	0.028	1.451	0.112	0.949	0.468	1.925	0.884
Other diseases of pulmonary vessels	0.000	0.000	Inf	0.987	0.000	0.000	Inf	0.993	3.457	0.484	24.707	0.216
Acute pericarditis	0.000	0.000	Inf	0.986	0.000	0.000	Inf	0.992	0.000	0.000	Inf	0.991
Other diseases of pericardium	1.250	0.772	2.024	0.365	1.967	0.921	4.202	0.081	1.503	0.774	2.918	0.229
Pericarditis in diseases classified elsewhere	0.000	0.000	Inf	0.986	0.000	0.000	Inf	0.994	0.000	0.000	Inf	0.991
Acute and subacute endocarditis	1.670	0.789	3.533	0.180	0.000	0.000	Inf	0.990	1.017	0.252	4.109	0.981
Acute myocarditis	0.000	0.000	Inf	0.987	0.000	0.000	Inf	0.994	0.000	0.000	Inf	0.991
Myocarditis in diseases classified elsewhere	0.000	0.000	Inf	0.987	0.000	0.000	Inf	0.994	0.000	0.000	Inf	0.991

Complications and ill-defined descriptions of heart disease	1.308	1.080	1.584	0.006	0.883	0.572	1.362	0.573	1.506	1.150	1.972	0.003
Other heart disorders in diseases classified elsewhere	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other disorders of arteries and arterioles	0.926	0.625	1.372	0.701	0.422	0.135	1.326	0.140	1.051	0.613	1.803	0.855
Diseases of capillaries	0.983	0.440	2.197	0.966	0.663	0.093	4.737	0.682	0.391	0.055	2.788	0.349
Disorders of arteries, arterioles and capillaries in diseases classified elsewhere	0.678	0.094	4.873	0.699	2.862	0.384	21.314	0.305	0.000	0.000	Inf	0.988
Phlebitis and thrombophlebitis	1.398	1.103	1.772	0.006	1.414	0.877	2.280	0.156	0.000	0.000	Inf	0.988
Portal vein thrombosis	5.337	1.326	21.476	0.018	12.151	1.678	87.962	0.013	5.804	0.807	41.742	0.081
Other venous embolism and thrombosis	0.811	0.261	2.527	0.718	0.000	0.000	Inf	0.993	1.144	0.284	4.608	0.850
Varicose veins of lower extremities	1.061	0.801	1.405	0.680	1.626	1.020	2.592	0.041	1.349	0.925	1.967	0.120
Hemorrhoids	1.169	0.920	1.486	0.200	0.883	0.521	1.498	0.645	1.217	0.857	1.730	0.273
Oesophageal varices	1.659	0.740	3.723	0.219	3.362	1.050	10.766	0.041	0.539	0.075	3.850	0.538
Varicose veins of other sites	2.223	1.053	4.692	0.036	3.965	1.255	12.528	0.019	0.683	0.096	4.868	0.703
Other disorders of veins	1.255	0.670	2.350	0.478	1.054	0.261	4.266	0.941	1.697	0.796	3.616	0.171
Nonspecific lymphadenitis	4.171	0.583	29.851	0.155	0.000	0.000	Inf	0.992	10.446	1.445	75.523	0.020
Other non-infective disorders of lymphatic vessels and lymph nodes	1.792	1.087	2.953	0.022	2.748	1.205	6.267	0.016	1.147	0.472	2.791	0.762
Postprocedural disorders of circulatory system, not elsewhere classified	0.611	0.086	4.355	0.623	2.442	0.339	17.589	0.375	1.231	0.172	8.822	0.836
Other disorders of circulatory system in diseases classified elsewhere	1.736	0.647	4.656	0.274	1.743	0.241	12.598	0.582	0.816	0.114	5.836	0.839
Other and unspecified disorders of circulatory system	0.725	0.233	2.258	0.579	1.066	0.149	7.654	0.949	1.060	0.263	4.271	0.935

Abbreviations: ACD, All-cause dementia, AD, Alzheimer's disease; VaD, Vascular Dementia; HR, Hazard Ratios; 95% CI, 95% confidential interval; NA, not applicable

Multi-adjusted: Adjusted for Age, Sex, Education, Ethnicity, Body-Mass-Index, Metabolic equivalent of task-min/week, Smoking Status, Alcohol Intake, Townsend deprivation index at recruitment, Hypertension, Diabetes Mellitus, Hypercholesterolemia, Blood pressure-lowering medication, Cholesterol- Lowering Medication, Insulin, *ApoE4*, Pacemaker.

Appendix

Appendix 1 - Framingham General Cardiovascular Risk Score Calculation

Appendix 1.1 Framingham General Cardiovascular Risk Score (FGCRS) Calculating for Female

Points	Age (years)	HDL (mmol/L)	TC (mmol/L)	SBP Not Treated	SBP Treated	Smoker	Diabetes	
				(mm Hg)				
-3				<120				
-2		>1.6						
-1		1.3-.16			<120			
0	30-34	1.2-1.29	<4.1	120-129		No	No	
1		0.9-.1.19	4.1-5.19	130-139				
2	35-39	<0.9			120-129			
3			5.2-6.19		130-139	Yes		
4	40-44		6.2-7.2	140-150			Yes	
5	45-49		>7.2	150-159	140-150			
6				160+	150-159			
7	50-54				160+			
8	55-59							
9	60-64							
10	65-69							
11	70-74							
12	75+							
13								
14								
15								
Points allotted								Total

Appendix 1.2 Framingham General Cardiovascular Risk Score (FGCRS) Calculating for Male

	Age (years)	HDL (mmol/L)	TC (mmol/L)	SBP Not Treated (mm Hg)	SBP Treated	Smoker	Diabetes	
Points								
-3								
-2		>1.6		<120				
-1		1.3-.16						
0	30-34	1.2-1.29	<4.1	120-129	<120	No	No	
1		0.9-.1.19	4.1-5.19	130-139				
2	35-39	<0.9	5.2-6.19	140-159	120-129			
3			6.2-7.2	160+	130-139		Yes	
4			>7.2		140-159	Yes		
5	40-44				160+			
6	45-49							
7								
8	50-54							
9								
10	55-59							
11	60-64							
12	65-69							
13								
14	70-74							
15	75+							
<i>Points allotted</i>								<i>Total</i>

Appendix 2 - Predication of 10-year Cardiovascular Disease Risk**Appendix 2.1 Predication of 10-year Cardiovascular Disease Risk and Risk Stratification for Female**

Total Points	Female 10-Year Cardiovascular Diseases Risk (%)	Risk Level
-3	<1	Low
-2	<1	
-1	1	
0	1.2	
1	1.5	
2	1.7	
3	2	
4	2.4	
5	2.8	
6	3.3	
7	3.9	
8	4.5	
9	5.3	
10	6.3	
11	7.3	
12	8.6	
13	10	Intermediate
14	11.7	
15	13.7	
16	15.9	
17	18.51	
18	21.5	High
19	24.8	
20	27.5	
21+	>30	

Appendix 2.2 Predication of 10-year Cardiovascular Disease Risk and Risk Stratification for Male

Total Points	Male 10-Year Cardiovascular Diseases Risk (%)	Risk Level
-3	<1	Low
-2	1.1	
-1	1.4	
0	1.6	
1	1.9	
2	2.3	
3	2.8	
4	3.3	
5	3.9	
6	4.7	
7	5.6	Intermediate
8	6.7	
9	7.9	
10	9.4	
11	11.2	High
12	13.3	
13	15.6	
14	18.4	
15	21.6	

Appendix 3 – International Classification of Diseases Coding**Appendix 4 International Classification of Diseases Coding****ICD-Coding/ Cardiovascular Traits**

I00 Rheumatic fever without mention of heart involvement
I01 Rheumatic fever with heart involvement
I01.0 Acute rheumatic pericarditis
I01.1 Acute rheumatic endocarditis
I01.2 Acute rheumatic myocarditis
I01.8 Other acute rheumatic heart disease
I01.9 Acute rheumatic heart disease, unspecified
I02 Rheumatic chorea
I02.0 Rheumatic chorea with heart involvement
I02.9 Rheumatic chorea without heart involvement
I05 Rheumatic mitral valve diseases
I05.0 Mitral stenosis
I05.1 Rheumatic mitral insufficiency
I05.2 Mitral stenosis with insufficiency
I05.8 Other mitral valve diseases
I05.9 Mitral valve disease, unspecified
I06 Rheumatic aortic valve diseases
I06.0 Rheumatic aortic stenosis
I06.1 Rheumatic aortic insufficiency
I06.2 Rheumatic aortic stenosis with insufficiency
I06.8 Other rheumatic aortic valve diseases
I06.9 Rheumatic aortic valve disease, unspecified
I07 Rheumatic tricuspid valve diseases
I07.0 Tricuspid stenosis
I07.1 Tricuspid insufficiency
I07.2 Tricuspid stenosis with insufficiency
I07.8 Other tricuspid valve diseases

I07.9 Tricuspid valve disease, unspecified
I08 Multiple valve diseases
I08.0 Disorders of both mitral and aortic valves
I08.1 Disorders of both mitral and tricuspid valves
I08.2 Disorders of both aortic and tricuspid valves
I08.3 Combined disorders of mitral, aortic and tricuspid valves
I08.8 Other multiple valve diseases
I08.9 Multiple valve disease, unspecified
I09 Other rheumatic heart diseases
I09.0 Rheumatic myocarditis
I09.1 Rheumatic diseases of endocardium, valve unspecified
I09.2 Chronic rheumatic pericarditis
I09.8 Other specified rheumatic heart diseases
I09.9 Rheumatic heart disease, unspecified
I10 Essential (primary) hypertension
I11 Hypertensive heart disease
I11.0 Hypertensive heart disease with (congestive) heart failure
I11.9 Hypertensive heart disease without (congestive) heart failure
I12 Hypertensive renal disease
I12.0 Hypertensive renal disease with renal failure
I12.9 Hypertensive renal disease without renal failure
I13 Hypertensive heart and renal disease
I13.0 Hypertensive heart and renal disease with (congestive) heart failure
I13.1 Hypertensive heart and renal disease with renal failure
I13.2 Hypertensive heart and renal disease with both (congestive) heart failure and renal failure
I13.9 Hypertensive heart and renal disease, unspecified
I15 Secondary hypertension
I15.0 Renovascular hypertension
I15.1 Hypertension secondary to other renal disorders
I15.2 Hypertension secondary to endocrine disorders
I15.8 Other secondary hypertension

I15.9 Secondary hypertension, unspecified
I20 Angina pectoris
I20.0 Unstable angina
I20.1 Angina pectoris with documented spasm
I20.8 Other forms of angina pectoris
I20.9 Angina pectoris, unspecified
I21 Acute myocardial infarction
I21.0 Acute transmural myocardial infarction of anterior wall
I21.1 Acute transmural myocardial infarction of inferior wall
I21.2 Acute transmural myocardial infarction of other sites
I21.3 Acute transmural myocardial infarction of unspecified site
I21.4 Acute subendocardial myocardial infarction
I21.9 Acute myocardial infarction, unspecified
I21.X Presumed acute myocardial infarction (unconfirmed)
I22 Subsequent myocardial infarction
I22.0 Subsequent myocardial infarction of anterior wall
I22.1 Subsequent myocardial infarction of inferior wall
I22.8 Subsequent myocardial infarction of other sites
I22.9 Subsequent myocardial infarction of unspecified site
I23 Certain current complications following acute myocardial infarction
I23.0 Hemopericardium as current complication following acute myocardial infarction
I23.1 Atrial septal defect as current complication following acute myocardial infarction
I23.2 Ventricular septal defect as current complication following acute myocardial infarction
I23.3 Rupture of cardiac wall without hemopericardium as current complication following acute myocardial infarction
I23.4 Rupture of chordae tendineae as current complication following acute myocardial infarction
I23.5 Rupture of papillary muscle as current complication following acute myocardial infarction
I23.6 Thrombosis of atrium, auricular appendage and ventricle as current complications following acute myocardial infarction
I23.8 Other current complications following acute myocardial infarction
I24 Other acute ischemic heart diseases
I24.0 Coronary thrombosis not resulting in myocardial infarction

I24.1 Dressler's syndrome
I24.8 Other forms of acute ischemic heart disease
I24.9 Acute ischemic heart disease, unspecified
I25 Chronic ischemic heart disease
I25.0 Atherosclerotic cardiovascular disease, so described
I25.1 Atherosclerotic heart disease
I25.2 Old myocardial infarction
I25.3 Aneurysm of heart
I25.4 Coronary artery aneurysm
I25.5 Ischemic cardiomyopathy
I25.6 Silent myocardial ischemia
I25.8 Other forms of chronic ischemic heart disease
I25.9 Chronic ischemic heart disease, unspecified
I26 Pulmonary embolism
I26.0 Pulmonary embolism with mention of acute cor pulmonale
I26.9 Pulmonary embolism without mention of acute cor pulmonale
I27 Other pulmonary heart diseases
I27.0 Primary pulmonary hypertension
I27.1 Kyphoscoliosis heart disease
I27.2 Other secondary pulmonary hypertension
I27.8 Other specified pulmonary heart diseases
I27.9 Pulmonary heart disease, unspecified
I28 Other diseases of pulmonary vessels
I28.0 Arteriovenous fistula of pulmonary vessels
I28.1 Aneurysm of pulmonary artery
I28.8 Other specified diseases of pulmonary vessels
I28.9 Disease of pulmonary vessels, unspecified
I30 Acute pericarditis
I30.0 Acute nonspecific idiopathic pericarditis
I30.1 Infective pericarditis
I30.8 Other forms of acute pericarditis

I30.9 Acute pericarditis, unspecified
I31 Other diseases of pericardium
I31.0 Chronic adhesive pericarditis
I31.1 Chronic constrictive pericarditis
I31.2 Hemopericardium, not elsewhere classified
I31.3 Pericardial effusion (noninflammatory)
I31.8 Other specified diseases of pericardium
I31.9 Disease of pericardium, unspecified
I32 Pericarditis in diseases classified elsewhere
I32.0 Pericarditis in bacterial diseases classified elsewhere
I32.1 Pericarditis in other infectious and parasitic diseases classified elsewhere
I32.8 Pericarditis in other diseases classified elsewhere
I33 Acute and subacute endocarditis
I33.0 Acute and subacute infective endocarditis
I33.9 Acute endocarditis, unspecified
I34 Nonrheumatic mitral valve disorders
I34.0 Mitral (valve) insufficiency
I34.1 Mitral (valve) prolapse
I34.2 Nonrheumatic mitral (valve) stenosis
I34.8 Other nonrheumatic mitral valve disorders
I34.9 Nonrheumatic mitral valve disorder, unspecified
I35 Nonrheumatic aortic valve disorders
I35.0 Aortic (valve) stenosis
I35.1 Aortic (valve) insufficiency
I35.2 Aortic (valve) stenosis with insufficiency
I35.8 Other aortic valve disorders
I35.9 Aortic valve disorder, unspecified
I36 Nonrheumatic tricuspid valve disorders
I36.0 Nonrheumatic tricuspid (valve) stenosis
I36.1 Nonrheumatic tricuspid (valve) insufficiency
I36.2 Nonrheumatic tricuspid (valve) stenosis with insufficiency

I36.8 Other nonrheumatic tricuspid valve disorders
I36.9 Nonrheumatic tricuspid valve disorder, unspecified
I37 Pulmonary valve disorders
I37.0 Pulmonary valve stenosis
I37.1 Pulmonary valve insufficiency
I37.2 Pulmonary valve stenosis with insufficiency
I37.8 Other pulmonary valve disorders
I37.9 Pulmonary valve disorder, unspecified
I38 Endocarditis, valve unspecified
I39 Endocarditis and heart valve disorders in diseases classified elsewhere
I39.0 Mitral valve disorders in diseases classified elsewhere
I39.1 Aortic valve disorders in diseases classified elsewhere
I39.2 Tricuspid valve disorders in diseases classified elsewhere
I39.3 Pulmonary valve disorders in diseases classified elsewhere
I39.4 Multiple valve disorders in diseases classified elsewhere
I39.8 Endocarditis, valve unspecified, in diseases classified elsewhere
I40 Acute myocarditis
I40.0 Infective myocarditis
I40.1 Isolated myocarditis
I40.8 Other acute myocarditis
I40.9 Acute myocarditis, unspecified
I41 Myocarditis in diseases classified elsewhere
I41.0 Myocarditis in bacterial diseases classified elsewhere
I41.1 Myocarditis in viral diseases classified elsewhere
I41.2 Myocarditis in other infectious and parasitic diseases classified elsewhere
I41.8 Myocarditis in other diseases classified elsewhere
I42 Cardiomyopathy
I42.0 Dilated cardiomyopathy
I42.1 Obstructive hypertrophic cardiomyopathy
I42.2 Other hypertrophic cardiomyopathy
I42.3 Endomyocardial (eosinophilic) disease

I42.4 Endocardial fibroelastosis
I42.5 Other restrictive cardiomyopathy
I42.6 Alcoholic cardiomyopathy
I42.7 Cardiomyopathy due to drugs and other external agents
I42.8 Other cardiomyopathies
I42.9 Cardiomyopathy, unspecified
I43 Cardiomyopathy in diseases classified elsewhere
I43.0 Cardiomyopathy in infectious and parasitic diseases classified elsewhere
I43.1 Cardiomyopathy in metabolic diseases
I43.2 Cardiomyopathy in nutritional diseases
I43.8 Cardiomyopathy in other diseases classified elsewhere
I44 Atrioventricular and left bundle-branch block
I44.0 Atrioventricular block, first degree
I44.1 Atrioventricular block, second degree
I44.2 Atrioventricular block, complete
I44.3 Other and unspecified atrioventricular block
I44.4 Left anterior fascicular block
I44.5 Left posterior fascicular block
I44.6 Other and unspecified fascicular block
I44.7 Left bundle-branch block, unspecified
I45 Other conduction disorders
I45.0 Right fascicular block
I45.1 Other and unspecified right bundle-branch block
I45.2 Bifascicular block
I45.3 Trifascicular block
I45.4 Nonspecific intraventricular block
I45.5 Other specified heart block
I45.6 Preexcitation syndrome
I45.8 Other specified conduction disorders
I45.9 Conduction disorder, unspecified
I46 Cardiac arrest

I46.0 Cardiac arrest with successful resuscitation
I46.1 Sudden cardiac death, so described
I46.9 Cardiac arrest, unspecified
I47 Paroxysmal tachycardia
I47.0 Reentry ventricular arrhythmia
I47.1 Supraventricular tachycardia
I47.2 Ventricular tachycardia
I47.9 Paroxysmal tachycardia, unspecified
I48 Atrial fibrillation and flutter
I48.0 Paroxysmal atrial fibrillation
I48.1 Persistent atrial fibrillation
I48.2 Chronic atrial fibrillation
I48.3 Typical atrial flutter
I48.4 Atypical atrial flutter
I48.9 Atrial fibrillation and atrial flutter, unspecified
I49 Other cardiac arrhythmias
I49.0 Ventricular fibrillation and flutter
I49.1 Atrial premature depolarization
I49.2 Junctional premature depolarization
I49.3 Ventricular premature depolarization
I49.4 Other and unspecified premature depolarization
I49.5 Sick sinus syndrome
I49.8 Other specified cardiac arrhythmias
I49.9 Cardiac arrhythmia, unspecified
I50 Heart failure
I50.0 Congestive heart failure
I50.1 Left ventricular failure
I50.9 Heart failure, unspecified
I51 Complications and ill-defined descriptions of heart disease
I51.0 Cardiac septal defect, acquired
I51.1 Rupture of chordae tendineae, not elsewhere classified

I51.2 Rupture of papillary muscle, not elsewhere classified
I51.3 Intracardiac thrombosis, not elsewhere classified
I51.4 Myocarditis, unspecified
I51.5 Myocardial degeneration
I51.6 Cardiovascular disease, unspecified
I51.7 Cardiomegaly
I51.8 Other ill-defined heart diseases
I51.9 Heart disease, unspecified
I52 Other heart disorders in diseases classified elsewhere
I52.0 Other heart disorders in bacterial diseases classified elsewhere
I52.1 Other heart disorders in other infectious and parasitic diseases classified elsewhere
I52.8 Other heart disorders in other diseases classified elsewhere
I60 Subarachnoid hemorrhage
I60.0 Subarachnoid hemorrhage from carotid siphon and bifurcation
I60.1 Subarachnoid hemorrhage from middle cerebral artery
I60.2 Subarachnoid hemorrhage from anterior communicating artery
I60.3 Subarachnoid hemorrhage from posterior communicating artery
I60.4 Subarachnoid hemorrhage from basilar artery
I60.5 Subarachnoid hemorrhage from vertebral artery
I60.6 Subarachnoid hemorrhage from other intracranial arteries
I60.7 Subarachnoid hemorrhage from intracranial artery, unspecified
I60.8 Other subarachnoid hemorrhage
I60.9 Subarachnoid hemorrhage, unspecified
I61 Intracerebral hemorrhage
I61.0 Intracerebral hemorrhage in hemisphere, subcortical
I61.1 Intracerebral hemorrhage in hemisphere, cortical
I61.2 Intracerebral hemorrhage in hemisphere, unspecified
I61.3 Intracerebral hemorrhage in brain stem
I61.4 Intracerebral hemorrhage in cerebellum
I61.5 Intracerebral hemorrhage, intraventricular
I61.6 Intracerebral hemorrhage, multiple localized

I61.8 Other intracerebral hemorrhage
I61.9 Intracerebral hemorrhage, unspecified
I62 Other nontraumatic intracranial hemorrhage
I62.0 Subdural hemorrhage (acute) (nontraumatic)
I62.1 Nontraumatic extradural hemorrhage
I62.9 Intracranial hemorrhage (nontraumatic), unspecified
I63 Cerebral infarction
I63.0 Cerebral infarction due to thrombosis of precerebral arteries
I63.1 Cerebral infarction due to embolism of precerebral arteries
I63.2 Cerebral infarction due to unspecified occlusion or stenosis of precerebral arteries
I63.3 Cerebral infarction due to thrombosis of cerebral arteries
I63.4 Cerebral infarction due to embolism of cerebral arteries
I63.5 Cerebral infarction due to unspecified occlusion or stenosis of cerebral arteries
I63.6 Cerebral infarction due to cerebral venous thrombosis, nonpyrogenic
I63.8 Other cerebral infarction
I63.9 Cerebral infarction, unspecified
I64 Stroke, not specified as hemorrhage or infarction
I65 Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction
I65.0 Occlusion and stenosis of vertebral artery
I65.1 Occlusion and stenosis of basilar artery
I65.2 Occlusion and stenosis of carotid artery
I65.3 Occlusion and stenosis of multiple and bilateral precerebral arteries
I65.8 Occlusion and stenosis of other precerebral artery
I65.9 Occlusion and stenosis of unspecified precerebral artery
I66 Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction
I66.0 Occlusion and stenosis of middle cerebral artery
I66.1 Occlusion and stenosis of anterior cerebral artery
I66.2 Occlusion and stenosis of posterior cerebral artery
I66.3 Occlusion and stenosis of cerebellar arteries
I66.4 Occlusion and stenosis of multiple and bilateral cerebral arteries
I66.8 Occlusion and stenosis of other cerebral artery

I66.9 Occlusion and stenosis of unspecified cerebral artery
I67 Other cerebrovascular diseases
I67.0 Dissection of cerebral arteries, nonruptured
I67.1 Cerebral aneurysm, nonruptured
I67.2 Cerebral atherosclerosis
I67.3 Progressive vascular leukoencephalopathy
I67.4 Hypertensive encephalopathy
I67.5 Moyamoya disease
I67.6 Nonpyrogenic thrombosis of intracranial venous system
I67.7 Cerebral arteritis, not elsewhere classified
I67.8 Other specified cerebrovascular diseases
I67.9 Cerebrovascular disease, unspecified
I68 Cerebrovascular disorders in diseases classified elsewhere
I68.0 Cerebral amyloid angiopathy
I68.1 Cerebral arteritis in infectious and parasitic diseases classified elsewhere
I68.2 Cerebral arteritis in other diseases classified elsewhere
I68.8 Other cerebrovascular disorders in diseases classified elsewhere
I69 Sequelae of cerebrovascular disease
I69.0 Sequelae of subarachnoid hemorrhage
I69.1 Sequelae of intracerebral hemorrhage
I69.2 Sequelae of other nontraumatic intracranial hemorrhage
I69.3 Sequelae of cerebral infarction
I69.4 Sequelae of stroke, not specified as hemorrhage or infarction
I69.8 Sequelae of other and unspecified cerebrovascular diseases
I70 Atherosclerosis
I70.0 Atherosclerosis of aorta
I70.00 Atherosclerosis of aorta (without gangrene)
I70.01 Atherosclerosis of aorta (with gangrene)
I70.1 Atherosclerosis of renal artery
I70.10 Atherosclerosis of renal artery (without gangrene)
I70.11 Atherosclerosis of renal artery (with gangrene)

I70.2 Atherosclerosis of arteries of the extremities
I70.20 Atherosclerosis of arteries of extremities (without gangrene)
I70.21 Atherosclerosis of arteries of extremities (with gangrene)
I70.8 Atherosclerosis of other arteries
I70.80 Atherosclerosis of other arteries (without gangrene)
I70.81 Atherosclerosis of other arteries (with gangrene)
I70.9 Generalized and unspecified atherosclerosis
I70.90 Generalized and unspecified atherosclerosis (without gangrene)
I70.91 Generalized and unspecified atherosclerosis (with gangrene)
I71 Aortic aneurysm and dissection
I71.0 Dissection of aorta [any part]
I71.1 Thoracic aortic aneurysm, ruptured
I71.2 Thoracic aortic aneurysm, without mention of rupture
I71.3 Abdominal aortic aneurysm, ruptured
I71.4 Abdominal aortic aneurysm, without mention of rupture
I71.5 Thoracoabdominal aortic aneurysm, ruptured
I71.6 Thoracoabdominal aortic aneurysm, without mention of rupture
I71.8 Aortic aneurysm of unspecified site, ruptured
I71.9 Aortic aneurysm of unspecified site, without mention of rupture
I72 Other aneurysm
I72.0 Aneurysm of carotid artery
I72.1 Aneurysm of artery of upper extremity
I72.2 Aneurysm of renal artery
I72.3 Aneurysm of iliac artery
I72.4 Aneurysm of artery of lower extremity
I72.5 Aneurysm and dissection of other precerebral arteries
I72.6 Aneurysm and dissection of vertebral artery
I72.8 Aneurysm of other specified arteries
I72.9 Aneurysm of unspecified site
I73 Other peripheral vascular diseases
I73.0 Raynaud's syndrome

I73.1 Thromboangiitis obliterans [Buerger]
I73.8 Other specified peripheral vascular diseases
I73.9 Peripheral vascular disease, unspecified
I74 Arterial embolism and thrombosis
I74.0 Embolism and thrombosis of abdominal aorta
I74.1 Embolism and thrombosis of other and unspecified parts of aorta
I74.2 Embolism and thrombosis of arteries of the upper extremities
I74.3 Embolism and thrombosis of arteries of the lower extremities
I74.4 Embolism and thrombosis of arteries of extremities, unspecified
I74.5 Embolism and thrombosis of iliac artery
I74.8 Embolism and thrombosis of other arteries
I74.9 Embolism and thrombosis of unspecified artery
I77 Other disorders of arteries and arterioles
I77.0 Arteriovenous fistula, acquired
I77.1 Stricture of artery
I77.2 Rupture of artery
I77.3 Arterial fibromuscular dysplasia
I77.4 Coeliac artery compression syndrome
I77.5 Necrosis of artery
I77.6 Arteritis, unspecified
I77.8 Other specified disorders of arteries and arterioles
I77.9 Disorder of arteries and arterioles, unspecified
I78 Diseases of capillaries
I78.0 Hereditary hemorrhagic telangiectasia
I78.1 Naevus, nonneoplastic
I78.8 Other diseases of capillaries
I78.9 Disease of capillaries, unspecified
I79 Disorders of arteries, arterioles and capillaries in diseases classified elsewhere
I79.0 Aneurysm of aorta in diseases classified elsewhere
I79.1 Aortitis in diseases classified elsewhere
I79.2 Peripheral angiopathy in diseases classified elsewhere

I79.8 Other disorders of arteries, arterioles and capillaries in diseases classified elsewhere
I80 Phlebitis and thrombophlebitis
I80.0 Phlebitis and thrombophlebitis of superficial vessels of lower extremities
I80.1 Phlebitis and thrombophlebitis of femoral vein
I80.2 Phlebitis and thrombophlebitis of other deep vessels of lower extremities
I80.3 Phlebitis and thrombophlebitis of lower extremities, unspecified
I80.8 Phlebitis and thrombophlebitis of other sites
I80.9 Phlebitis and thrombophlebitis of unspecified site
I81 Portal vein thrombosis
I82 Other venous embolism and thrombosis
I82.0 Budd-Chiari syndrome
I82.1 Thrombophlebitis migraines
I82.2 Embolism and thrombosis of vena cava
I82.3 Embolism and thrombosis of renal vein
I82.8 Embolism and thrombosis of other specified veins
I82.9 Embolism and thrombosis of unspecified vein
I83 Varicose veins of lower extremities
I83.0 Varicose veins of lower extremities with ulcer
I83.1 Varicose veins of lower extremities with inflammation
I83.2 Varicose veins of lower extremities with both ulcer and inflammation
I83.9 Varicose veins of lower extremities without ulcer or inflammation
I84 Hemorrhoids
I84.0 Internal thrombosed hemorrhoids
I84.1 Internal hemorrhoids with other complications
I84.2 Internal hemorrhoids without complication
I84.3 External thrombosed hemorrhoids
I84.4 External hemorrhoids with other complications
I84.5 External hemorrhoids without complication
I84.6 Residual hemorrhoidal skin tags
I84.7 Unspecified thrombosed hemorrhoids
I84.8 Unspecified hemorrhoids with other complications

I84.9 Unspecified hemorrhoids without complication
I85 Oesophageal varices
I85.0 Oesophageal varices with bleeding
I85.9 Oesophageal varices without bleeding
I86 Varicose veins of other sites
I86.0 Sublingual varices
I86.1 Scrotal varices
I86.2 Pelvic varices
I86.3 Vulval varices
I86.4 Gastric varices
I86.8 Varicose veins of other specified sites
I87 Other disorders of veins
I87.0 Postphlebitic syndrome
I87.1 Compression of vein
I87.2 Venous insufficiency (chronic) (peripheral)
I87.8 Other specified disorders of veins
I87.9 Disorder of vein, unspecified
I88 Nonspecific lymphadenitis
I88.0 Nonspecific mesenteric lymphadenitis
I88.1 Chronic lymphadenitis, except mesenteric
I88.8 Other nonspecific lymphadenitis
I88.9 Nonspecific lymphadenitis, unspecified
I89 Other non-infective disorders of lymphatic vessels and lymph nodes
I89.0 Lymphoedema, not elsewhere classified
I89.1 Lymphangitis
I89.8 Other specified non-infective disorders of lymphatic vessels and lymph nodes
I89.9 Non-infective disorder of lymphatic vessels and lymph nodes, unspecified
I95 Hypotension
I95.0 Idiopathic hypotension
I95.1 Orthostatic hypotension
I95.2 Hypotension due to drugs

I95.8 Other hypotension
I95.9 Hypotension, unspecified
I97 Postprocedural disorders of circulatory system, not elsewhere classified
I97.0 Postcardiotomy syndrome
I97.1 Other functional disturbances following cardiac surgery
I97.2 Postmastectomy lymphoedema syndrome
I97.8 Other postprocedural disorders of circulatory system, not elsewhere classified
I97.9 Postprocedural disorder of circulatory system, unspecified
I98 Other disorders of circulatory system in diseases classified elsewhere
I98.0 Cardiovascular syphilis
I98.1 Cardiovascular disorders in other infectious and parasitic diseases classified elsewhere
I98.2 Oesophageal varices in diseases classified elsewhere
I98.3 Oesophageal varices with bleeding in diseases classified elsewhere
I98.8 Other specified disorders of circulatory system in diseases classified elsewhere
I99 Other and unspecified disorders of circulatory system

Appendix 4 - Field ID of Covariates in UK Biobank**Appendix 3 Field ID of Covariates in UK Biobank**

Field ID	Description
21022	Age
31	Gender
21000	Ethnicity
189	Townsend deprivation index at recruitment
23104	Body mass index (BMI)
20116	Smoking status
1558	Alcohol intake
22040	Summed MET minutes per week for all activity
2443	Diabetes
41270	History of Stroke
6177	Medication for cholesterol, blood pressure, diabetes
4080	Systolic blood pressure, automated reading
93	Systolic blood pressure, manual reading
4079	Diastolic blood pressure, automated reading
94	Diastolic blood pressure, manual reading
95	Pulse rate (during blood-pressure measurement)
102	Pulse rate, automated reading
4079	Diastolic blood pressure, automated reading
94	Diastolic blood pressure, manual reading
95	Pulse rate (during blood-pressure measurement)
102	Pulse rate, automated reading
3079	Pace-maker
23400	Total Cholesterol
23406	HDL Cholesterol

Appendix 5 - UK biobank codes for dementia diagnosis and classification

Dementia diagnoses were collected from electronic health records, hospital admissions data and death register data from NHS Digital. All-cause dementia was diagnosed according to the International Classification of Diseases ICD-9 codes (290, 291.2, 294.1, 331.0-331.2, 331.5, 331.0 and 290.4) and ICD-10 codes (A81.0, F00, F01, F02, F03, F05.1, F10.6, G31.0, G31.1, and G31.8), if any of the above codes presented a primary or secondary diagnosis in the health records, or presented as a potential cause of death in the death register. AD was defined as code 331.0 in ICD-9 and codes F00 and G30 in ICD-10; VaD was defined as codes 290.4 in ICD-9 and codes F01 and I67.3 in ICD-10. In addition, dementia diagnoses were also retrieved from primary care data using Read codes (version 2 [Read v2] and version 3 [CTV3 or Read v3]).

Algorithmically-defined health outcomes

To aid researchers, UK Biobank have generated algorithmically-defined health outcomes using the self-reported health information, hospital inpatient data and death data, providing information on first diagnosis, for each participant, of a small number of health conditions.

First occurrences of medical conditions

A set of 'first occurrence' data-fields have been generated that map the clinical codes from primary care, hospital inpatient admissions, death records and self-reported medical conditions to 3-character ICD-10 codes and provide, for each participant, the date that code first occurred in any source.

Death data

Linkage to national death registries provides notifications of participant deaths (if in the UK), containing data on date and cause(s) of death. These are coded using ICD-10.

Hospital inpatient data

Hospital inpatient data are available for the full cohort. This provides information on hospital admissions for each participant and includes data on date of admission, diagnosis (and underlying conditions) during admission, procedures and discharge information. These are coded using ICD-9, ICD-10, OPCS-3 and OPCS-4.

Primary care data

Primary care data for ~230,000 UK Biobank participants (up to 2016 or 2017 depending on the data supplier) was made available in 2019. This dataset contains data from the GP system suppliers and contains coded clinical events (including consultations, diagnoses, procedures and laboratory tests), prescribed medications (including prescription date, drug code and, where available, drug name and quantity) and a range of administrative codes (e.g. referrals to specialist hospital clinics). The data are coded using READ2, CTV-3, BNF and DM+D.

Diagnosis	Code Type	Codes
ACD	ICD-9	290.2, 290.3, 290.4, 291.2, 294.1, 331.0, 331.1, 331.2, 331.5
	ICD-10	A81.0, F00, F00.0, F00.1, F00.2, F00.9, F01, F01.0, F01.1, F01.2, F01.3, F01.8, F01.9, F02, F02.0, F02.1, F02.2, F02.3, F02.4, F02.8, F03, F05.1, F10.6, G30, G30.0, G30.1, G30.8, G30.9, G31.0, G31.1, G31.8, I67.3

	Read V2	1461, A411., A4110, E00., E000., E001., E0010, E0011, E0012, E0013, E001z, E002., E0020, E0021, E002z, E003., E004., E0040, E0041, E0042, E0043, E004z, E012., E02y1, E041., Eu00., Eu000, Eu001, Eu002, Eu00z, Eu01., Eu010, Eu011, Eu012, Eu013, Eu01y, Eu01z, Eu02., Eu020, Eu021, Eu022, Eu023, Eu024, Eu025, Eu02y, Eu02z, Eu041, Eu106, Eu107, F110., F1100, F1101, F111., F112., F116., F118., F11x2, F11x7, F11x9, F11y2, F21y2, Fyu30, 38C13, 3AE3., 3AE4., 3AE5., 3AE6., 66h., 6AB., 8BM02, 8BM50, 8BM60, 8BPa., 8CMe0, 8CMG2, 8CMZ., 8CMZ0, 8CMZ1, 8CMZ2, 8CMZ3, 8CSA., 8Hla., 8IAe0, 8IAe2, 9hD., 9hD0., 9hD1., 9Ou., 9Ou1., 9Ou2., 9Ou3., 9Ou4., 9Ou5.
	Read CTV3	.1461, 1461, .E11., .E111, .E112, .E113, .E114, .E115, .E116, .E11Z, .F21Z, .F371, .G78., A411., A4110, E00., E000., E001., E0010, E0011, E0012, E0013, E001z, E002., E0020, E0021, E002z, E003., E004., E0040, E0041, E0042, E0043, E004z, E012., E02y1, E041., Eu00., Eu000, Eu001, Eu002, Eu00z, Eu01., Eu010, Eu011, Eu012, Eu013, Eu01y, Eu01z, Eu02., Eu020, Eu021, Eu022, Eu023, Eu024, Eu025, Eu02y, Eu02z, Eu041, F110., F1100, F1101, F111., F112., F116., F118., F11x2, F11x7, F11y2, F21y2, Fyu30, Ub1T6, X002m, X002w, X002x, X002y, X002z, X0030, X0031, X0032, X0033, X0034, X0035, X0036, X0037, X0039, X003A, X003B, X003C, X003D, X003E, X003F, X003G, X003H, X003I, X003J, X003l, X003m, X003P, X003R, X003T, X003V, X003W, X003X, X00R2, X00Rk, Xa0IH, Xa0sC, Xa0sE, Xa1GB, Xa25J, Xa3ez, XaA1S, XabVp, XaE74, XaIKB, XaIKC, XaKyY, XaOfZ, XE17j, XE1aG, XE1Xs, XE1Xu, XE1Z6, .3AE3, .3AE4, .3AE5, .3AE6, .66h., .6AB., .9hD1, .9Ou., .9Ou1, .9Ou2, .9Ou3, .9Ou4, .9Ou5, 3AE3., 3AE4., 3AE5., 3AE6., 66h., 6AB., 8BM02, 8BM50, 8BPa., 8CMe0, 8CMG2, 8CMZ., 8CMZ0, 8CMZ1, 8CMZ2, 8CMZ3, 8CSA., 8IAe0, 8IAe2, 9hD1., 9Ou., 9Ou1., 9Ou2., 9Ou3., 9Ou4., 9Ou5., Xa0fZ, XaaBZ, XaaeA, XaaiW, Xabd2, Xabd3, XabEk, XabEl, XabtQ, XacIx, XacIy, XacIz, XacJ0, XacLx, Xacly, Xaclz, XacM2, Xaefu, XaJBQ, XaJBU, XaJBV, XaJBW, XaJBX, XaJPy, XaLFf, XaLFo, XaLFp, XaMFy,
AD	ICD-9	331.0
	ICD-10	F00, F00.0, F00.1, F00.2, F00.9, G30, G30.0, G30.1, G30.8, G30.9 Read V2
	Read V2	Eu00., Eu000, Eu001, Eu002, Eu00z, F110., F1100, F1101, Fyu30
	Read CTV3	F21Z, Eu00., Eu000, Eu001, Eu002, Eu00z, F110., F1100, F1101, Fyu30, X002x, X002y, X002z, X0030, X0031, X0032, X0033, X003G, XaIKB, XaIKC, XE17j
VaD	ICD-9	290.4
	ICD-10	F01, F01.0, F01.1, F01.2, F01.3, F01.8, F01.9, I67.3

	Read V2	E004., E0040, E0041, E0042, E0043, E004z, E012., Eu01., Eu010, Eu011, Eu012, Eu013, Eu01y, Eu01z, F11x2, F21y2
	Read CTV3	.E115, .E116, .G78., E004., E0040, E0041, E0042, E0043, E004z, Eu01., Eu010, Eu011, Eu012, Eu013, Eu01y, Eu01z, F11x2, F21y2, X003R, X003T, X003V, X003W, Xa0IH, XE1Xs

Abbreviations: ACD, All-cause dementia; AD, Alzheimer's disease, VaD, Vascular dementia; ICD, International Classification of Diseases; Read V2, Read codes version 2; Read CTV3, Read codes version 3.