

Suppl. table 1: Codebook of diagnostic codes (ICD) and ATC codes applied in the study of associations between RVO and CVD and mortality					
ICD-8 and ICD-10 codes for RVO exposure group					
Exposure group	ICD8	ICD10	ATC	Additional criteria	
<i>RVO</i>	37703	DH348*	Not applied	Only if registered at ophthalmology associated department	
<i>BRVO</i>		DH348C	Not applied	Only if registered at ophthalmology associated department	
<i>CRVO</i>		DH348D, DH348F	Not applied	Only if registered at ophthalmology associated department	
ICD-8 and ICD-10 codes for CVD outcome group					
Outcome group	Diagnosis	ICD8	ICD10	ATC	Additional criteria
CVD	<i>All below</i>	All below	All below	Not applied	
Ischemic CVD	<i>Acute myocardial infarction</i>	410*	I21*- I22*, I23*, I240*-I241*, I248, I249*	Not applied	None
	<i>Atherosclerotic heart disease</i>	411*, 413*	I20*, I251, I258, I259	Not applied	None
	<i>Coronary artery bypass graft</i>	N/A	KFNA*-KFNF*, KFNH*, KFNJ*-KFNK*, KFNW*	Not applied	None
	<i>Ischemic stroke</i>	433*-436*	I63*-I64*, G458, G459	Not applied	None
	<i>Peripheral arterial disease</i>	445*	I702, I702A, I739A, I739C	Not applied	Only as primary diagnosis
	<i>Other arterial occlusion</i>	444*	I74*	Not applied	None
Non-ischemic CVD	<i>Non-ischemic heart failure</i>	42709, 42710, 42711, 42719, 42899, 78249	I110, I130, I132, I420, I429, I500*-I501*, I509*	Not applied	Only as primary diagnosis AND EXCLUDED if any prior diagnosis of acute myocardial infarction, atherosclerotic heart disease or coronary artery bypass graft.
	<i>Pulmonary hypertension - idiopathic</i>	426*	I270	Not applied	None
	<i>Atrial fibrillation / atrial flutter</i>	42793, 42794	I48*	Not applied	None
	<i>Non-ischemic stroke</i>	430*, 431*	I60*-I62*	Not applied	None
	<i>Aortic dissection</i>	44109	I710*	Not applied	None
	<i>Aortic dilation/aneurysm</i>	44110, 44111, 44119, 44120, 44121, 44129, 44199	I711*-I716*, I718*-I719*	Not applied	None
	<i>Aortic stenosis</i>	39590, 39592, 39603, 39604, 39690, 39693, 39694	I060, I062, I350, I352	Not applied	None

ICD-8 and ICD-10 codes for CVD outcome group					
Outcome group	Diagnosis	ICD8	ICD10	ATC	Additional criteria
Venous occlusion	<i>Pulmonary hypertension (chronic thromboembolic)</i>	426*	I272	Not applied	None
	<i>Cerebral venous thrombosis</i>	N/A	I676*	Not applied	None
	<i>Deep venous thrombosis</i>	45100, 45108, 45109	I801*-I803*	Not applied	None
	<i>Pulmonary embolism</i>	45099	I26, I260, I269*	Not applied	None
ICD-8 and ICD-10 codes for covariates					
Covariate	ICD8	ICD10	ATC	Additional criteria	
<i>Diabetes mellitus</i>	249*, 250*	E10*-E14*	A10A*, A10B*	Patients with a minimum of 2 medicine prescriptions of A10A or A10B within 12 months OR ICD10 E10* or ICD8 249* or 250* AND age <30 yrs at time of diagnosis AND at least one A10A ATC prescription OR At least two registrations of ICD10 E11* OR At least one registration of ICD10 E12*-E14* EXCLUDED if ICD diagnosis or ATC prescription is within 12 months after a registration of ICD10 DO244/ICD8 63747 (Gestational diabetes) OR ever diagnosed with PCOS: ICD10 DE28.2	
<i>Dyslipidemia</i>	27900-27901, 27200-27201	E78*	C10*	Any registration of ICD E78* AND/OR Two prescriptions of ATC C10 within 12 months, WITHOUT a previous registration of ICD I21*-I22*, I240*-I241*, I248 eller I249*	
<i>Chronic obstructive pulmonary disease</i>		J44*, J96*, J13*-18*	Not applied	J44 only as A-diagnosis and if patient is >30 years at diagnosis AND/OR J96 as A-diagnosis AND ONLY in combination with J44 as B-diagnosis AND/OR J13-18 as A-diagnosis AND ONLY in combination with J44 as B-diagnosis	
<i>Arterial hypertension</i>	400*-404*	I10*, I11, I119*, I12*, I13, I131, I139, I15	α adrenergic blockers (C02A*, C02B*, C02C*) non-loop diuretics (C02DA*, C02L*, C03A*, C03B*, C03D*, C03E*, C03X*, C07C*, C07D*, C08G*, C09BA*, C09DA*, C09XA52) vasodilators (C02DB*, C02DD*, C02DG*) β blockers (C07*, MC09BX02, MC09BX04, MC09BX05) calcium channel blockers (C07FB*, C08*, C09BB*, C09DB*) renin-angiotensin system inhibitors (C09*)	ICD code AND/OR Combination treatment (prescribed within 6 months) with at least two different groups of antihypertensive medication, each prescribed at least twice within 12 months	

*: subgroups included. HR= Hazard ratio, ICD= International Classification of Diseases, ATC= Anatomical Therapeutic Chemical code, RVO= Retinal vein occlusion, BRVO= Branch retinal vein occlusion, CRVO= Central retinal vein occlusion, CVD= Cardiovascular diseases

Suppl. table 2: Hazard ratios of CVDs and all-cause mortality of patients with RVO, BRVO and CRVO compared to individuals without RVO

	RVO	BRVO	CRVO
CVD			
Crude HR (95% CI)	1.29 (1.24;1.33)	1.22 (1.10;1.34)	1.23 (1.10;1.37)
Adjusted HR (95% CI)*	1.29 (1.25;1.34)	1.26 (1.14;1.39)	1.22 (1.10;1.36)
Adjusted HR (95% CI)**	1.13 (1.09;1.17)	1.14 (1.03;1.25)	1.12 (1.00;1.25)
Ischemic CVD			
Crude HR (95% CI)	1.26 (1.21;1.32)	1.14 (1.02;1.29)	1.12 (0.99;1.28)
Adjusted HR (95% CI)*	1.36 (1.30;1.42)	1.36 (1.20;1.52)	1.27 (1.11;1.44)
Adjusted HR (95% CI)**	1.16 (1.11;1.21)	1.18 (1.05;1.33)	1.12 (0.99;1.28)
Non-ischemic CVD			
Crude HR (95% CI)	1.44 (1.33;1.55)	1.40 (1.23;1.59)	1.38 (1.18;1.60)
Adjusted HR (95% CI)*	1.32 (1.23;1.42)	1.29 (1.13;1.46)	1.24 (1.07;1.44)
Adjusted HR (95% CI)**	1.23 (1.15;1.33)	1.22 (1.07;1.38)	1.16 (1.00;1.35)
Venous disease			
Crude HR (95% CI)	1.17 (1.06;1.28)	1.21 (0.95;1.56)	1.15 (0.87;1.51)
Adjusted HR (95% CI)*	1.07 (0.97;1.17)	1.02 (0.79;1.31)	0.97 (0.74;1.28)
Adjusted HR (95% CI)**	0.99 (0.90;1.09)	0.99 (0.78;1.28)	0.91 (0.69;1.20)
All-cause mortality			
Crude HR (95% CI)	1.03 (1.00;1.06)	0.84 (0.78;0.92)	1.10 (1.02;1.19)
Adjusted HR (95% CI)*	1.09 (1.06;1.12)	0.97 (0.89;1.05)	1.20 (1.12;1.30)
Adjusted HR (95% CI)**	1.00 (0.97;1.03)	0.95 (0.87;1.03)	1.12 (1.04;1.21)

*: adjusted for sex, age at entry. **: adjusted for sex, age at entry, index year, marital status at entry, diabetes, hypertension, chronic obstructive pulmonary disorders, dyslipidemia and Charlson comorbidity index conditions. RVO= Retinal vein occlusion, BRVO= Branch retinal vein occlusion, CRVO= Central retinal vein occlusion, CVD= Cardiovascular diseases

Suppl. table 3: Hazard ratios of CVDs and all-cause mortality of individuals with RVO, BRVO and CRVO prior to and after March 17th 2011 compared to individuals without RVO

	RVO prior to 2011	RVO after 2011	BRVO prior to 2011	BRVO after 2011	CRVO prior to 2011	CRVO after 2011
CVD						
Crude HR (95% CI)	1.29 (1.24;1.35)	1.26 (1.18;1.35)	1.25 (1.04;1.50)	1.21 (1.07;1.35)	1.22 (1.03;1.46)	1.23 (1.07;1.41)
Adjusted HR (95% CI)*	1.29 (1.23;1.34)	1.30 (1.21;1.39)	1.28 (1.06;1.54)	1.25 (1.11;1.40)	1.20 (1.01;1.43)	1.24 (1.08;1.42)
Adjusted HR (95% CI)**	1.10 (1.06;1.15)	1.19 (1.11;1.28)	1.10 (0.92;1.32)	1.15 (1.02;1.29)	1.08 (0.91;1.29)	1.14 (0.99;1.31)
Ischemic CVD						
Crude HR (95% CI)	1.33 (1.27;1.40)	1.10 (1.01;1.19)	1.25 (1.00;1.55)	1.11 (0.96;1.27)	1.17 (0.95;1.44)	1.10 (0.93;1.30)
Adjusted HR (95% CI)*	1.38 (1.31;1.45)	1.31 (1.21;1.43)	1.41 (1.13;1.75)	1.33 (1.16;1.53)	1.24 (1.01;1.53)	1.28 (1.09;1.51)
Adjusted HR (95% CI)**	1.15 (1.10;1.21)	1.17 (1.07;1.27)	1.19 (0.96;1.48)	1.18 (1.02;1.35)	1.08 (0.88;1.33)	1.15 (0.98;1.36)
Non-ischemic CVD						
Crude HR (95% CI)	1.30 (1.24;1.36)	1.44 (1.33;1.55)	1.30 (1.05;1.61)	1.40 (1.23;1.59)	1.22 (1.00;1.48)	1.38 (1.18;1.60)
Adjusted HR (95% CI)*	1.25 (1.19;1.31)	1.32 (1.23;1.42)	1.25 (1.01;1.54)	1.29 (1.13;1.46)	1.13 (0.93;1.38)	1.24 (1.07;1.44)
Adjusted HR (95% CI)**	1.06 (1.01;1.12)	1.24 (1.15;1.33)	1.06 (0.86;1.31)	1.22 (1.07;1.38)	1.00 (0.82;1.21)	1.16 (1.00;1.35)
Venous disease						
Crude HR (95% CI)	1.13 (1.01;1.27)	1.26 (1.06;1.50)	1.59 (1.04;2.41)	1.08 (0.79;1.47)	1.13 (0.72;1.77)	1.16 (0.81;1.64)
Adjusted HR (95% CI)*	1.08 (0.97;1.21)	1.04 (0.87;1.23)	1.41 (0.93;2.14)	0.88 (0.65;1.21)	1.03 (0.65;1.61)	0.94 (0.66;1.34)
Adjusted HR (95% CI)**	0.99 (0.89;1.11)	0.98 (0.83;1.17)	1.38 (0.91;2.10)	0.86 (0.63;1.18)	0.98 (0.62;1.53)	0.87 (0.61;1.24)
All-cause mortality						
Crude HR (95% CI)	1.07 (1.04;1.11)	0.91 (0.86;0.96)	0.96 (0.82;1.12)	0.80 (0.73;0.89)	1.21 (1.08;1.35)	1.03 (0.93;1.14)
Adjusted HR (95% CI)*	1.10 (1.07;1.13)	1.04 (0.99;1.10)	1.06 (0.91;1.24)	0.93 (0.84;1.03)	1.26 (1.12;1.41)	1.16 (1.05;1.29)
Adjusted HR (95% CI)**	1.01 (0.98;1.04)	0.97 (0.91;1.02)	0.96 (0.82;1.13)	0.94 (0.85;1.04)	1.41 (1.25;1.58)	0.97 (0.87;1.07)

*: adjusted for sex, age at entry. **: adjusted for sex, age at entry, index year, marital status at entry, diabetes, hypertension, chronic obstructive pulmonary disorders, dyslipidemia and Charlson comorbidity index conditions. RVO= Retinal vein occlusion, BRVO= Branch retinal vein occlusion, CRVO= Central retinal vein occlusion, CVD= Cardiovascular diseases

Suppl. table 4: Number of events, time to event, age at event, total risk time and event rates for all RVO, BRVO, CRVO and not RVO exposed

	RVO	BRVO	CRVO	Not RVO exposed
CVD				
No. of CVD events	2,983	398	329	912,702
Time to CVD (yrs)	3.7(1.5;7.2)	2.5(1.2;4.3)	2.5(0.9;4.6)	9.5(4.7;14.8)
Age at CVD diagnosis (yrs)	77.3(69.6;83.9)	74.7(67.1;82.0)	77.2(70.0;83.5)	69.1(58.9;78.5)
Total risk time (person-years at risk)	59,743	9,071	7,145	49,569,145
Rate of CVD per 1000 person-years at risk	49.9	43.9	46.0	18.4
Ischemic CVD				
No. of ischemic CVD events	2,152	278	228	631,619
Time to ischemic CVD (yrs)	3.7(1.5;7.2)	2.2(1.0;4.1)	2.3(0.8;4.7)	8.8(4.4;14.1)
Age at ischemic CVD diagnosis (yrs)	77.3(69.2;83.8)	75.0(67.0;81.8)	77.8(71.1;83.5)	69.0(58.9;78.6)
Total risk time (person-years at risk)	69,842	10,595	8,517	52,159,479
Rate of ischemic CVD per 1000 person-years at risk	30.8	26.2	26.8	12.1
Non-ischemic CVD				
No. of non-ischemic CVD events	2,396	322	270	533,272
Time to non-ischemic CVD (yrs)	4.2(1.8;7.9)	2.5(1.2;4.2)	2.5(0.9;4.6)	10.9(5.6;16.0)
Age at non-ischemic CVD diagnosis (yrs)	79.3(72.2;85.1)	76.7(69.0;83.5)	79.0(71.0;85.4)	73.9(64.7;81.8)
Total risk time (person-years at risk)	79,326	11,442	9,327	55,265,430
Rate of non-ischemic CVD per 1000 person-years at risk	30.2	28.1	28.9	9.6
Venous disease				
No. of venous disease events	438	62	50	126,579
Time to venous disease (yrs)	3.8(1.6;7.6)	2.9(1.6;5.0)	2.3(1.4;4.0)	11.1(5.9;16.1)
Age at venous disease diagnosis (yrs)	77.1(71.1;84.0)	74.2(70.1;82.8)	77.8(70.0;85.1)	69.4(58.4;78.8)
Total risk time (person-years at risk)	93,748	13,508	11,128	57,658,861
Rate of venous disease per 1000 person-years at risk	4.7	4.6	4.5	2.2
All-cause mortality				
No. of deaths	5216	537	662	1,128,488
Time to death (yrs)	4.9(2.3;8.7)	3.1(1.3;4.8)	2.9(1.3;5.1)	9.9(4.8;15.2)
Age at death (yrs)	83.8(77.1;89.4)	82.2(75.4;88.8)	83.9(77.2;89.4)	79.7(69.6;87.2)
Total risk time (person-years at risk)	97,889	14,060	11,657	58,809,748
Mortality rate (deaths/1000 person-years)	53.3	38.2	56.8	19.2

Time and age presented as median (25%;75% percentile). RVO= Retinal vein occlusion, BRVO= Branch retinal vein occlusion, CRVO= Central retinal vein occlusion, CVD= Cardiovascular diseases, yrs= years

Suppl. table 5: Hazard ratios of CVDs and all-cause mortality of individuals with RVO, BRVO and CRVO compared to individuals without RVO in women and men

	RVO		BRVO		CRVO	
	Women	Men	Women	Men	Women	Men
CVD						
Crude HR (95% CI)	1.30 (1.23;1.36)	1.30 (1.24;1.35)	1.19 (1.03;1.37)	1.26 (1.05;1.52)	1.29 (1.10;1.50)	1.21 (1.02;1.44)
Adjusted HR (95% CI)*	1.33 (1.27;1.40)	1.29 (1.24;1.35)	1.26 (1.09;1.45)	1.29 (1.08;1.55)	1.35 (1.16;1.58)	1.19 (1.00;1.42)
Adjusted HR (95% CI)**	1.15 (1.09;1.21)	1.10 (1.06;1.15)	1.13 (0.98;1.30)	1.11 (0.92;1.33)	1.18 (1.01;1.38)	1.06 (0.89;1.26)
Ischemic CVD						
Crude HR (95% CI)	1.27 (1.20;1.35)	1.33 (1.27;1.40)	1.12 (0.94;1.32)	1.25 (1.00;1.55)	1.19 (0.98;1.44)	1.15 (0.94;1.42)
Adjusted HR (95% CI)*	1.41 (1.33;1.50)	1.38 (1.31;1.45)	1.38 (1.16;1.63)	1.41 (1.14;1.76)	1.43 (1.18;1.73)	1.23 (1.00;1.51)
Adjusted HR (95% CI)**	1.18 (1.11;1.25)	1.15 (1.09;1.20)	1.20 (1.01;1.43)	1.18 (0.95;1.46)	1.21 (1.00;1.46)	1.05 (0.85;1.30)
Non-ischemic CVD						
Crude HR (95% CI)	1.33 (1.26;1.41)	1.30 (1.24;1.37)	1.36 (1.16;1.60)	1.32 (1.07;1.63)	1.27 (1.06;1.52)	1.21 (0.99;1.47)
Adjusted HR (95% CI)*	1.30 (1.23;1.38)	1.26 (1.20;1.32)	1.29 (1.10;1.52)	1.27 (1.02;1.56)	1.21 (1.01;1.45)	1.13 (0.93;1.37)
Adjusted HR (95% CI)**	1.13 (1.06;1.19)	1.07 (1.02;1.12)	1.20 (1.02;1.41)	1.08 (0.87;1.33)	1.06 (0.88;1.27)	0.98 (0.81;1.20)
Venous disease						
Crude HR (95% CI)	1.12 (0.98;1.28)	1.14 (1.02;1.27)	1.26 (0.90;1.77)	1.59 (1.05;2.42)	1.17 (0.79;1.74)	1.13 (0.72;1.77)
Adjusted HR (95% CI)*	1.03 (0.91;1.18)	1.08 (0.97;1.21)	1.07 (0.77;1.50)	1.42 (0.93;2.15)	1.01 (0.69;1.50)	1.03 (0.66;1.61)
Adjusted HR (95% CI)**	0.94 (0.83;1.08)	0.99 (0.88;1.11)	1.03 (0.74;1.44)	1.36 (0.90;2.07)	0.93 (0.63;1.38)	0.97 (0.62;1.52)
All-cause mortality						
Crude HR (95% CI)	1.03 (0.99;1.07)	0.99 (0.95;1.03)	0.90 (0.81;1.01)	0.76 (0.67;0.87)	1.03 (0.92;1.15)	1.10 (0.99;1.22)
Adjusted HR (95% CI)*	1.10 (1.06;1.14)	1.07 (1.03;1.12)	1.03 (0.92;1.15)	0.89 (0.79;1.02)	1.15 (1.03;1.29)	1.26 (1.14;1.39)
Adjusted HR (95% CI)**	1.01 (0.97;1.05)	0.99 (0.95;1.03)	1.00 (0.90;1.12)	0.89 (0.78;1.01)	1.15 (1.02;1.29)	1.11 (1.00;1.23)

*: adjusted for age at entry. **: adjusted for age at entry, index year, marital status at entry, diabetes, hypertension, chronic obstructive pulmonary disorders, dyslipidemia and Charlson comorbidity index conditions.
RVO= Retinal vein occlusion, BRVO= Branch retinal vein occlusion, CRVO= Central retinal vein occlusion, CVD= Cardiovascular diseases

eFigure 1: No. of retinal vein occlusion diagnoses per year

