

# Supplementary Material

**eTable 1** ICD codes used for definition of exposures (AS and RA), outcomes (ACS, Stroke, and DVT/PE), and comorbidities (any CV disease, COPD, diabetes, and malignancy)

Exposures/Outcomes/Comorbidities	ICD-10	ICD-9	ICD-8
<b>Exposures</b>			
AS	M45		
RA	M05, M060, M062, M063, M068, M069 M123		
<b>Outcomes</b>			
ACS (primary diagnosis)	I20-I21		
Stroke	I60-I61, I63		
DVT/PE	I26, I80-I82	451-453, 415B	450-453
<b>Exclusion diagnoses</b>			
<b>ACS</b>			
- Ischemic heart disease	I20-I25	410-414	410-414
- Congestive heart disease	I42, I50	425, 428	425, 427.0-427.1, 428.9
<b>Stroke</b>			
- Ischemic stroke	I63	433, 434	432-434 430, 431.00, 431.08-
- Haemorrhagic stroke	I60-I61	430-431	431.09, 431.90, 431.98- 431.99
- Unspecified stroke	I64	436	436
<b>Comorbidities</b>			
Any CV disease	I00-I99	400-499	
COPD	J41-J44	491-492, 496	
Diabetes	E10-E11	250	
Malignancy	Identified from the Swedish Cancer Register		

AS: ankylosing spondylitis; RA: rheumatoid arthritis; ACS: acute coronary syndromes; DVT: deep venous thromboembolism; PE: pulmonary embolism; CV: Cardiovascular; COPD: chronic obstructive pulmonary disease

**eTable 2** ATC codes used for definition of drug groups

<b>Drug group</b>	<b>ATC code</b>
NSAIDs	M01A
- Naproxen	M01AE02
- COX-2 inhibitors	M01AH
- Other NSAIDs	M01A with Naproxen and COX-2 inhibitors excluded
Diuretics	C03
Beta-blockers	C07
ACE-inhibitors / All antagonists	C09
Calcium blockers	C08
Warfarin	B01AA03
Aspirin	B01AC06
Other anti-thrombotic drugs	B01AC04, B01AC07, B01AC13, B01AC24
Anti-diabetics and insulin	A10B, A10A
Statins	C10AA
TNFi	L04AB01, L04AB02, L04AB04, L04AB05, L04AB06

NSAID: nonsteroidal anti-inflammatory drugs; COX-2: cyclo-oxygenase-2 inhibitor;

ACE-inhibitors: angiotensin-converting-enzyme inhibitor

**eTable 3** Sex- and age adjusted hazard ratios for ACS, stroke and DVT/PE in patients with AS, RA, and the general population in Sweden, identified 2006-2011, followed for first ever CV outcomes 2007 through Dec 31<sup>st</sup> 2012

Measure/Group	ACS			Stroke			DVT/PE		
	AS vs GenPop	RA vs GenPop	AS vs RA	AS vs GenPop	RA vs GenPop	AS vs RA	AS vs GenPop	RA vs GenPop	AS vs RA
<b>HR</b>									
Overall	1.3 (1.0-1.7)	1.7 (1.4-2.0)	0.8 (0.6-1.0)	1.5 (1.1-2.0)	1.5 (1.2-1.8)	1.0 (0.8-1.3)	1.4 (1.1-1.9)	1.8 (1.5-2.1)	0.8 (0.6-1.0)
<b>Sex-specific HR</b>									
- Men	1.3 (1.0-1.8)	1.7 (1.4-2.1)	0.7 (0.6-1.0)	1.3 (0.9-1.8)	1.3 (1.1-1.7)	0.9 (0.7-1.3)	1.6 (1.1-2.2)	2.1 (1.7-2.7)	0.7 (0.5-1.0)
- Women	1.1 (0.5-2.3)	2.1 (1.4-3.0)	0.5 (0.3-1.1)	2.5 (1.4-4.3)	2.0 (1.4-2.8)	1.3 (0.8-2.0)	1.2 (0.7-2.0)	1.5 (1.2-2.0)	0.8 (0.5-1.3)
<b>Age-specific HR</b>									
- 18-39y	2.4 (0.3-19.4)	6.1 (0.8-46.1)	1.1 (0.1-8.9)	1.9 (0.5-7.4)	1.7 (0.4-8.0)	0.9 (0.1-5.5)	1.9 (0.8-4.4)	2.0 (0.9-4.1)	0.7 (0.3-1.9)
- 40-49y	1.5 (0.7-3.5)	2.5 (1.3-4.7)	0.5 (0.2-1.2)	1.5 (0.5-4.1)	1.4 (0.6-3.1)	1.4 (0.5-4.3)	0.8 (0.3-1.9)	1.8 (1.0-3.0)	0.5 (0.2-1.2)
- 50-59y	1.1 (0.7-1.8)	1.6 (1.2-2.2)	0.7 (0.4-1.1)	1.6 (0.9-2.9)	1.5 (1.0-2.3)	1.2 (0.7-2.2)	1.4 (0.8-2.4)	2.0 (1.4-2.8)	0.7 (0.4-1.2)
- 60-69y	1.2 (0.8-1.9)	1.5 (1.2-2.0)	0.8 (0.5-1.2)	1.7 (1.1-2.7)	1.5 (1.1-2.0)	1.2 (0.8-1.8)	1.7 (1.1-2.7)	1.8 (1.4-2.4)	0.9 (0.6-1.3)
- 70-79y	1.9 (1.0-3.9)	1.7 (1.1-2.7)	1.1 (0.6-2.0)	1.3 (0.7-2.4)	1.6 (1.2-2.3)	0.8 (0.5-1.4)	1.5 (0.7-3.2)	1.8 (1.2-2.7)	0.8 (0.4-1.6)
- ≥80y	-	-	-	0.8 (0.2-2.9)	0.9 (0.5-1.7)	0.8 (0.3-2.5)	1.0 (0.2-4.6)	1.0 (0.5-2.0)	0.9 (0.2-3.7)

AS: ankylosing spondylitis; RA: rheumatoid arthritis; ACS: acute coronary syndromes; DVT: deep venous thromboembolism; PE: pulmonary embolism; CV: Cardiovascular; COPD: chronic obstructive pulmonary disease; HR: hazard ratio

**eTable 4** Overall number of study subjects, events, and sum of follow-up years, and overall, sex-, and age-specific incidence rates per 1000 person-years (95% CI) of ACS, stroke, and DVT/PE in the three cohorts of Swedish patients with Ankylosing Spondylitis (AS), Rheumatoid Arthritis (RA) and general population comparator subjects (GenPop) **identified 2001 through 2011** and followed for CV incidence through December 31<sup>st</sup> 2012

Measure/Group	ACS			Stroke			DVT/PE		
	AS	RA	GenPop	AS	RA	GenPop	AS	RA	GenPop
N	6813	39 084	31 198	7288	43 711	34 023	7261	43 490	33 880
N events	160	2166	540	128	2015	426	135	1876	462
Follow-up (years)	44 680	244 695	20 7091	47 764	269 712	225 912	47 483	267 226	224 898
<b>Overall rates</b>									
- Crude	3.6 (3.0-4.1)	8.9 (8.5-9.2)	2.6 (2.4-2.8)	2.7 (2.2-3.1)	7.5 (7.1-7.8)	1.9 (1.7-2.1)	2.8 (2.4-3.3)	7.0 (6.7-7.3)	2.1 (1.9-2.2)
- Standardised*	-	5.1 (4.8-5.4)	-	-	2.9 (2.7-3.1)	-	-	4.2 (3.9-4.4)	-
<b>Sex-specific rates</b>									
- Men	4.6 (3.9-5.4)	13.3 (12.4-14.2)	3.3 (3.0-3.6)	2.9 (2.3-3.5)	8.9 (8.2-9.6)	2.1 (1.9-2.4)	2.8 (2.2-3.4)	7.3 (6.7-8.0)	2.1 (1.8-2.3)
- Women	1.5 (0.9-2.1)	7.5 (7.1-7.8)	1.3 (1.0-1.5)	2.1 (1.4-2.9)	7.0 (6.6-7.3)	1.3 (1.1-1.6)	2.9 (2.0-3.7)	6.9 (6.5-7.3)	2.0 (1.7-2.4)
<b>Age-specific rates</b>									
- 18-39y	0.6 (0.2-1.0)	0.4 (0.1-0.6)	0.2 (0.1-0.3)	0.4 (0.1-0.8)	0.3 (0.1-0.5)	0.2 (0.1-0.4)	1.0 (0.5-1.5)	2.0 (1.4-2.5)	0.8 (0.6-1.0)
- 40-49y	2.2 (1.3-3.0)	2.2 (1.7-2.7)	1.7 (1.3-2.0)	1.1 (0.5-1.7)	1.3 (0.9-1.7)	0.7 (0.5-1.0)	2.0 (1.2-2.8)	3.1 (2.4-3.7)	1.6 (1.2-1.9)
- 50-59y	5.6 (4.2-7.0)	5.7 (5.1-6.3)	4.3 (3.8-4.9)	3.2 (2.2-4.2)	2.9 (2.5-3.3)	2.2 (1.8-2.6)	3.6 (2.6-4.7)	4.8 (4.3-5.3)	2.6 (2.2-3.0)
- 60-69y	9.4 (6.6-12.2)	9.0 (8.3-9.8)	6.6 (5.6-7.7)	6.8 (4.7-8.9)	7.0 (6.4-7.6)	4.6 (3.8-5.4)	5.6 (3.7-7.6)	7.8 (7.2-8.5)	3.8 (3.1-4.4)
- 70-79y	16.2 (8.5-23.9)	18.4 (17.1-19.7)	13.2 (9.7-16.7)	14.5 (8.4-20.5)	16.0 (14.9-17.1)	10.7 (8.4-13.1)	10.1 (5.1-15.0)	11.4 (10.5-12.3)	5.9 (4.1-7.6)
- ≥80y	-	25.9 (23.1-28.7)	16.1 (3.2-28.9)	22.4 (4.5-40.3)	24.9 (22.4-27.3)	27.0 (16.2-37.7)	6.6 (0.0-15.7)	13.8 (12.0-15.6)	7.8 (2.4-13.2)

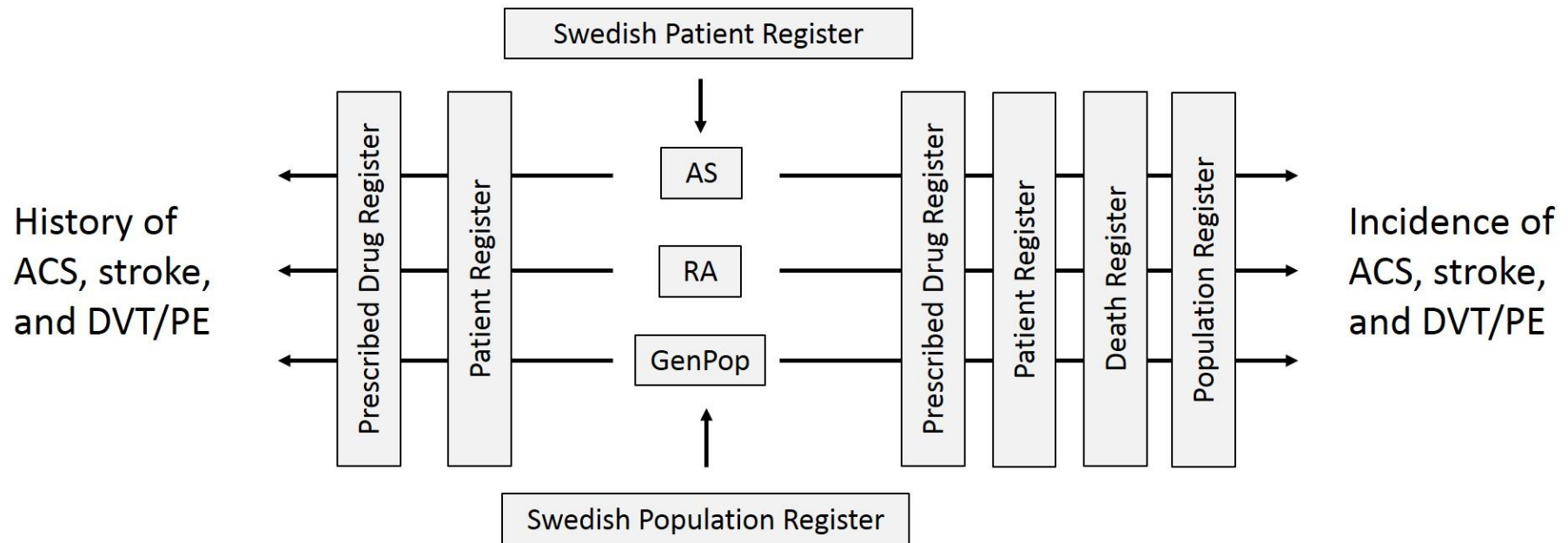
\*Standardised to the age- and sex distribution of the AS cohort;

ACS: acute coronary syndromes; DVT: deep venous thromboembolism; PE: pulmonary embolism

**eTable 5** Sex- and age adjusted hazard ratios for ACS, stroke and DVT/PE in patients with AS, RA, and the general population in Sweden, **identified 2001-2011**, followed for first ever CV outcomes 2007 through Dec 31<sup>st</sup> 2012

Measure/Group	ACS			Stroke			DVT/PE		
	AS vs GenPop	RA vs GenPop	AS vs RA	AS vs GenPop	RA vs GenPop	AS vs RA	AS vs GenPop	RA vs GenPop	AS vs RA
<b>HR</b>									
Overall	1.3 (1.1-1.5)	1.6 (1.4-1.8)	0.8 (0.7-0.9)	1.4 (1.1-1.7)	1.4 (1.2-1.6)	1.0 (0.8-1.2)	1.4 (1.1-1.7)	1.9 (1.7-2.1)	0.7 (0.6-0.9)
<b>Sex-specific HR</b>									
- Men	1.3 (1.1-1.6)	1.6 (1.4-1.8)	0.7 (0.6-0.9)	1.3 (1.0-1.6)	1.4 (1.2-1.6)	0.9 (0.7-1.1)	1.3 (1.1-1.7)	2.0 (1.7-2.4)	0.6 (0.5-0.8)
- Women	1.1 (0.7-1.8)	2.1 (1.7-2.6)	0.5 (0.4-0.8)	1.6 (1.1-2.3)	1.6 (1.3-2.0)	1.0 (0.7-1.4)	1.4 (1.0-2.0)	1.8 (1.5-2.2)	0.8 (0.6-1.1)
<b>Age-specific HR</b>									
- 18-39y	3.1 (1.4-6.9)	3.2 (1.3-8.3)	0.9 (0.3-2.6)	1.9 (0.8-4.5)	1.6 (0.6-4.2)	1.8 (0.6-5.7)	1.3 (0.7-2.2)	2.0 (1.3-3.1)	0.7 (0.4-1.3)
- 40-49y	1.2 (0.8-1.8)	1.9 (1.3-2.6)	0.7 (0.4-1.1)	1.4 (0.8-2.6)	1.5 (0.9-2.4)	0.9 (0.5-1.7)	1.2 (0.8-1.9)	2.0 (1.4-2.7)	0.6 (0.4-1.0)
- 50-59y	1.2 (0.9-1.6)	1.8 (1.5-2.2)	0.7 (0.5-0.9)	1.4 (1.0-2.0)	1.4 (1.1-1.8)	1.0 (0.7-1.5)	1.4 (1.0-1.9)	1.9 (1.5-2.3)	0.7 (0.5-1.0)
- 60-69y	1.4 (1.0-1.9)	1.6 (1.3-2.0)	0.8 (0.6-1.1)	1.4 (1.0-2.0)	1.5 (1.2-1.8)	1.0 (0.7-1.3)	1.5 (1.0-2.2)	2.0 (1.6-2.5)	0.7 (0.5-1.0)
- 70-79y	1.2 (0.7-2.0)	1.4 (1.0-1.8)	0.9 (0.5-1.4)	1.3 (0.8-2.1)	1.4 (1.1-1.8)	0.9 (0.6-1.5)	1.7 (1.0-3.1)	1.6 (1.2-2.2)	1.1 (0.6-1.8)
- ≥80y	-	1.6 (0.7-3.7)	-	0.9 (0.3-2.1)	0.9 (0.6-1.3)	1.0 (0.4-2.1)	1.0 (0.2-4.8)	1.7 (0.8-3.4)	0.5 (0.1-2.1)

AS: ankylosing spondylitis; RA: rheumatoid arthritis; ACS: acute coronary syndromes; DVT: deep venous thromboembolism; PE: pulmonary embolism; CV: Cardiovascular; COPD: chronic obstructive pulmonary disease; HR: hazard ratio



**eFigure 1** Schematic of the register linkages used to identify a national cohort of patients with AS, a national cohort of patients with RA, a matched general population comparator cohort, previous medical histories, and incident cardiovascular outcomes during the study period

AS: ankylosing spondylitis; RA: rheumatoid arthritis; GenPop: general population comparators; ACS: acute coronary syndromes; DVT: deep venous thromboembolism; PE: pulmonary embolism