

**Supplementary Online Material**

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**Supplementary Table 1: Relevant codes for procedures, diagnoses and cause of death**

<b>AVR cohort selection</b>	<b>ACHI code</b>	<b>ACHI procedure description</b>
Bioprosthetic valve	38488-01	Replacement of aortic valve with bioprosthesis
Mechanical valve	38488-00	Replacement of aortic valve with mechanical prosthesis
<b>Readmissions</b>	<b>ICD-10-AM code</b>	<b>ICD-10-AM diagnosis description</b>
Acute myocardial infarction	^I21	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
Stroke	^I60-I64	I60.0 Subarachnoid haemorrhage from carotid siphon and bifurcation I60.1 Subarachnoid haemorrhage from middle cerebral artery I60.2 Subarachnoid haemorrhage from anterior communicating artery I60.3 Subarachnoid haemorrhage from posterior communicating artery I60.4 Subarachnoid haemorrhage from basilar artery I60.5 Subarachnoid haemorrhage from vertebral artery I60.6 Subarachnoid haemorrhage from other intracranial arteries I60.7 Subarachnoid haemorrhage from intracranial artery, unspecified I60.8 Other subarachnoid haemorrhage I60.9 Subarachnoid haemorrhage, unspecified I61.0 Intracerebral haemorrhage in hemisphere, subcortical I61.1 Intracerebral haemorrhage in hemisphere, cortical I61.2 Intracerebral haemorrhage in hemisphere, unspecified I61.3 Intracerebral haemorrhage in brain stem I61.4 Intracerebral haemorrhage in cerebellum I61.5 Intracerebral haemorrhage, intraventricular I61.6 Intracerebral haemorrhage, multiple localised I61.8 Other intracerebral haemorrhage I61.9 Intracerebral haemorrhage, unspecified I62.0 Subdural haemorrhage (acute)(nontraumatic) I62.1 Nontraumatic extradural haemorrhage I62.9 Intracranial haemorrhage (nontraumatic), unspecified 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, nonpyogenic I63.8 Other cerebral infarction I63.9 Cerebral infarction, unspecified I64 Stroke, not specified as haemorrhage or infarction
Haemorrhage	^I60-I62, K25.0, K25.2,	I60.0 Subarachnoid haemorrhage from carotid siphon and bifurcation I60.1 Subarachnoid haemorrhage from middle cerebral artery I60.2 Subarachnoid haemorrhage from anterior communicating

	K25.4, K26.0, K26.2, K26.4, K26.6, K27.0, K27.4, K27.6, K29.0, K92.0, K92.1, K92.2 I85.0 R04, R58, D68.3,	artery I60.3 Subarachnoid haemorrhage from posterior communicating artery I60.4 Subarachnoid haemorrhage from basilar artery I60.5 Subarachnoid haemorrhage from vertebral artery I60.6 Subarachnoid haemorrhage from other intracranial arteries I60.7 Subarachnoid haemorrhage from intracranial artery, unspecified I60.8 Other subarachnoid haemorrhage I60.9 Subarachnoid haemorrhage, unspecified I61.0 Intracerebral haemorrhage in hemisphere, subcortical I61.1 Intracerebral haemorrhage in hemisphere, cortical I61.2 Intracerebral haemorrhage in hemisphere, unspecified I61.3 Intracerebral haemorrhage in brain stem I61.4 Intracerebral haemorrhage in cerebellum I61.5 Intracerebral haemorrhage, intraventricular I61.6 Intracerebral haemorrhage, multiple localised I61.8 Other intracerebral haemorrhage I61.9 Intracerebral haemorrhage, unspecified I62.0 Subdural haemorrhage (acute)(nontraumatic) I62.1 Nontraumatic extradural haemorrhage I62.9 Intracranial haemorrhage (nontraumatic), unspecified K25.0 Gastric ulcer, acute with haemorrhage K25.2 Gastric ulcer, acute with both haemorrhage and perforation K25.4 Gastric ulcer, chronic or unspecified with haemorrhage K26.0 Duodenal ulcer, acute with haemorrhage K26.2 Duodenal ulcer, acute with both haemorrhage and perforation K26.4 Duodenal ulcer, chronic or unspecified with haemorrhage K26.6 Duodenal ulcer, chronic or unspecified with both haemorrhage and perforation K27.0 Peptic ulcer, acute with haemorrhage K27.4 Peptic ulcer, chronic or unspecified with haemorrhage K27.6 Peptic ulcer, chronic or unspecified with both haemorrhage and perforation K29.0 Acute haemorrhagic gastritis K92.0 Haematemesis K92.2 Gastrointestinal haemorrhage, unspecified R04.0 Epistaxis R04.2 Haemoptysis R04.8 Haemorrhage from other sites in respiratory passages R58 Haemorrhage, not elsewhere classified D68.3 Haemorrhagic disorder due to circulating anticoagulants
Thromboembolism	I26, I63, I74, I80-I82	I26.0 Pulmonary embolism with mention of acute cor pulmonale I26.9 Pulmonary embolism without mention of acute cor pulmonale 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, nonpyogenic I63.8 Other cerebral infarction I63.9 Cerebral infarction, unspecified 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 upper extremities I74.3 Embolism and thrombosis of arteries of 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 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 I82.0 Budd-Chiari syndrome I82.2 Embolism and thrombosis of vena cava I82.8 Embolism and thrombosis of other specified veins I82.9 Embolism and thrombosis of unspecified vein
<b>Cause of death</b>	<b>ICD-10-AM code</b>	<b>ICD-10-AM diagnosis description</b>
<b>Cardiovascular mortality</b>	^I00-99	Any death with underlying cause of death starting with ICD code "I" from I00-I99

^ indicates codes starting with

**Supplementary Table 2: Patient and clinical characteristics over time**

	Financial year ending												
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
No. of patients n (%)													
BV	488 (57.01)	561 (61.31)	559 (59.91)	641 (64.94)	730 (70.46)	773 (71.44)	816 (72.73)	856 (71.87)	900 (74.50)	1000 (76.16)	1011 (77.41)	1165 (81.58)	9500 (71.02)
MV	368 (42.99)	354 (38.69)	374 (40.09)	346 (35.06)	306 (29.54)	309 (28.56)	306 (27.27)	335 (28.13)	308 (25.50)	313 (23.84)	295 (22.59)	263 (18.42)	3877 (28.98)
Age median (IQR)													
BV	76 (11)	75 (9)	76 (11)	76 (11)	76 (11)	75 (12)	76 (12)	76 (12)	75 (12)	76 (13)	75 (12)	75 (12)	76 (12)
MV	64 (17)	65 (17)	65 (18)	65 (18)	64 (20)	63 (19)	65 (19)	64 (21)	65 (22)	67 (19)	63 (21)	66 (21)	65 (19)
Under 65 age group n (%)													
BV	77 (15.78)	73 (13.01)	81 (14.49)	84 (13.10)	108 (14.8)	118 (15.2)	139 (17.0)	132 (15.4)	151 (16.8)	167 (16.7)	161 (15.9)	177 (15.2)	1468 (42.38)
MV	199 (54.08)	183 (51.69)	190 (50.80)	179 (51.73)	161 (52.6)	166 (53.5)	159 (52.1)	177 (52.8)	153 (49.7)	133 (42.7)	166 (56.3)	130 (49.4)	1996 (57.62)
Female n (%)													
BV	185 (37.91)	210 (37.43)	223 (39.98)	228 (35.56)	245 (33.56)	276 (35.71)	258 (31.62)	307 (35.86)	348 (38.67)	343 (34.30)	334 (33.04)	393 (33.73)	3350 (35.26)
MV	121 (32.88)	122 (34.46)	123 (32.89)	111 (32.08)	120 (39.22)	113 (36.57)	104 (33.99)	126 (37.61)	124 (40.26)	105 (33.55)	103 (34.92)	85 (32.32)	1357 (35.00)
CCI Score >= 1 n (%)													
BV	292 (59.84)	370 (65.95)	332 (59.39)	411 (64.12)	407 (55.75)	436 (56.40)	470 (57.60)	462 (53.97)	466 (51.78)	490 (49.00)	495 (48.96)	689 (59.14)	5320 (56.00)
MV	200 (54.35)	207 (58.47)	209 (55.88)	195 (56.36)	161 (52.61)	158 (51.13)	151 (49.35)	159 (47.46)	151 (49.03)	149 (47.60)	140 (47.46)	128 (48.67)	2008 (51.79)
Elective procedure n (%)													
BV	374 (76.64)	419 (74.69)	417 (74.60)	480 (74.88)	571 (78.22)	570 (73.74)	607 (74.39)	620 (72.43)	700 (77.78)	756 (75.60)	749 (74.09)	895 (76.82)	7158 (75.35)
MV	286 (77.72)	272 (76.84)	294 (78.61)	267 (77.17)	214 (69.93)	225 (72.82)	220 (71.90)	251 (74.93)	240 (77.92)	230 (73.48)	218 (73.90)	200 (76.05)	2917 (75.24)
Public facility n (%)													

BV	236 (48.36)	258 (45.99)	258 (46.15)	304 (47.43)	334 (45.75)	381 (49.29)	405 (49.63)	416 (48.60)	432 (48.00)	483 (48.30)	527 (52.13)	563 (48.33)	4597 (48.39)
MV	233 (63.32)	244 (68.93)	217 (58.02)	204 (58.96)	179 (58.50)	168 (54.37)	186 (60.78)	178 (53.13)	164 (53.25)	180 (57.51)	179 (60.68)	165 (62.74)	2297 (59.25)
Public patient n (%)													
BV	199 (40.78)	216 (38.50)	229 (40.97)	272 (42.43)	295 (40.41)	344 (44.50)	367 (44.98)	374 (43.69)	400 (44.44)	436 (43.60)	465 (45.99)	498 (42.75)	4095 (43.11)
MV	194 (52.72)	207 (58.47)	188 (50.27)	171 (49.42)	150 (49.02)	145 (46.93)	165 (53.92)	153 (45.67)	145 (47.08)	159 (50.80)	164 (55.59)	142 (53.99)	1983 (51.15)

**Supplementary Table 3: Age standardised rates of bioprosthetic and mechanical aortic valve implantations between financial years ending in 2002 and 2013**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>18-64 years</b>												
BV	1.53	1.42	1.55	1.56	1.93	2.10	2.36	2.16	2.42	2.64	2.52	2.75
MV	3.96	3.58	3.66	3.38	2.99	3.01	2.83	3.06	2.68	2.26	2.81	2.21
ALL	5.50	4.99	5.21	4.94	4.92	5.11	5.19	5.21	5.11	4.90	5.33	4.96
<b>65+ years</b>												
BV	7.86	9.29	8.88	10.29	11.29	11.73	11.89	12.43	12.52	13.48	13.50	15.38
MV	3.27	3.26	3.50	3.11	2.68	2.61	2.58	2.68	2.57	2.90	2.03	1.99
ALL	11.13	12.55	12.38	13.40	13.96	14.34	14.46	15.11	15.09	16.38	15.53	17.37
<b>Total</b>												
BV	9.39	10.70	10.43	11.85	13.22	13.84	14.25	14.59	14.94	16.12	16.02	18.13
MV	7.24	6.84	7.16	6.49	5.67	5.62	5.41	5.74	5.26	5.17	4.84	4.20
ALL	16.62	17.54	17.59	18.34	18.88	19.45	19.65	20.32	20.19	21.28	20.86	22.33

**Supplementary Table 4: Crude incident event rates of reoperation and outcomes following index AVR procedure per 100 person-years of follow-up**

	≤5 years follow-up		6-10 years follow-up		0-10 years follow-up	
	Rate per 100 person-years (95% CI)		Rate per 100 person-years (95% CI)		Rate per 100 person-years (95% CI)	
	BV	MV	BV	MV	BV	MV
<b>18-64 years</b>						
Reoperation	1.63 (1.15-2.32)	2.15 (1.61-2.87)	0.63 (0.44-0.91)	0.12 (0.07-0.21)	0.92 (0.69-1.15)	0.50 (0.37-0.62)
Readmissions						
AMI	0.95 (0.60-1.51)	1.70 (1.23-2.36)	0.21 (0.11-0.38)	0.29 (0.20-0.42)	0.42 (0.26-0.57)	0.55 (0.41-0.68)
Stroke	1.16 (0.77-1.77)	2.74 (2.12-3.54)	0.33 (0.20-0.54)	0.31 (0.21-0.44)	0.56 (0.39-0.74)	0.76 (0.60-0.92)
Haemorrhage	1.74 (1.24-2.45)	4.73 (3.90-5.74)	0.38 (0.24-0.60)	0.61 (0.47-0.79)	0.76 (0.55-0.97)	1.40 (1.18-1.61)
Thromboembolism	1.12 (0.73-1.71)	1.74 (1.26-2.39)	0.29 (0.17-0.49)	0.24 (0.16-0.36)	0.52 (0.35-0.69)	0.52 (0.39-0.65)
Mortality (cardiovascular)	0.04 (0.03-0.05)	0.04 (0.03-0.05)	0.49 (0.33-0.74)	0.29 (0.20-0.43)	1.41 (1.13-1.70)	1.00 (0.81-1.18)
Mortality (all-cause)	6.63 (5.56-7.90)	6.89 (5.85-8.11)	1.13 (0.87-1.47)	0.82 (0.66-1.03)	2.66 (2.27-3.05)	1.90 (1.65-2.15)
<b>65+ years</b>						
Reoperation	0.50 (0.38-0.65)	0.90 (0.59-1.38)	0.08 (0.05-0.13)	0.13 (0.07-0.25)	0.22 (0.17-0.27)	0.33 (0.21-0.45)
Readmissions						
AMI	2.25 (1.99-2.55)	3.01 (2.38-3.81)	0.53 (0.44-0.63)	0.55 (0.40-0.75)	1.11 (1.00-1.23)	1.18 (0.95-1.40)
Stroke	3.12 (2.81-3.47)	3.74 (3.04-4.60)	0.62 (0.53-0.74)	0.66 (0.49-0.88)	1.48 (1.35-1.62)	1.48 (1.23-1.74)
Haemorrhage	4.25 (3.88-4.65)	5.58 (4.71-6.61)	0.79 (0.68-0.93)	0.72 (0.54-0.96)	2.01 (1.85-2.16)	2.04 (1.74-2.34)
Thromboembolism	2.25 (1.99-2.55)	2.56 (1.98-3.29)	0.39 (0.31-0.48)	0.27 (0.17-0.42)	1.02 (0.91-1.13)	0.86 (0.67-1.05)
Mortality (cardiovascular)	0.08 (0.08-0.09)	0.10 (0.09-0.11)	1.45 (1.29-1.63)	1.74 (1.44-2.11)	3.93 (3.71-4.15)	4.07 (3.64-4.50)
Mortality (all-cause)	15.17 (14.46-15.92)	17.82 (16.19-19.62)	3.63 (3.39-3.89)	3.64 (3.22-4.12)	7.48 (7.19-7.76)	7.22 (6.67-7.76)
<b>Total</b>						
Reoperation	0.67 (0.54-0.82)	1.50 (1.18-1.91)	0.18 (0.13-0.24)	0.12 (0.08-0.19)	0.34 (0.28-0.40)	0.42 (0.33-0.51)
Readmissions						
AMI	2.06 (1.83-2.33)	2.39 (1.97-2.89)	0.47 (0.39-0.56)	0.40 (0.31-0.51)	0.99 (0.90-1.09)	0.82 (0.70-0.95)
Stroke	2.84 (2.56-3.14)	3.27 (2.78-3.84)	0.57 (0.48-0.67)	0.45 (0.36-0.57)	1.33 (1.21-1.44)	1.08 (0.94-1.22)
Haemorrhage	3.88 (3.56-4.24)	5.18 (4.55-5.88)	0.72 (0.62-0.83)	0.66 (0.54-0.80)	1.79 (1.66-1.92)	1.68 (1.50-1.86)
Thromboembolism	2.09 (1.85-2.35)	2.17 (1.77-2.64)	0.37 (0.30-0.45)	0.25 (0.19-0.34)	0.94 (0.84-1.03)	0.67 (0.56-0.78)
Mortality (cardiovascular)	7.59 (7.13-8.07)	6.97 (6.25-7.77)	1.26 (1.13-1.41)	0.88 (0.74-1.05)	3.48 (3.29-3.67)	2.33 (2.12-2.54)
Mortality (all-cause)	13.92 (13.29-14.58)	12.65 (11.64-13.74)	3.18 (2.97-3.40)	2.00 (1.79-2.22)	6.66 (6.41-6.91)	4.23 (3.96-4.51)

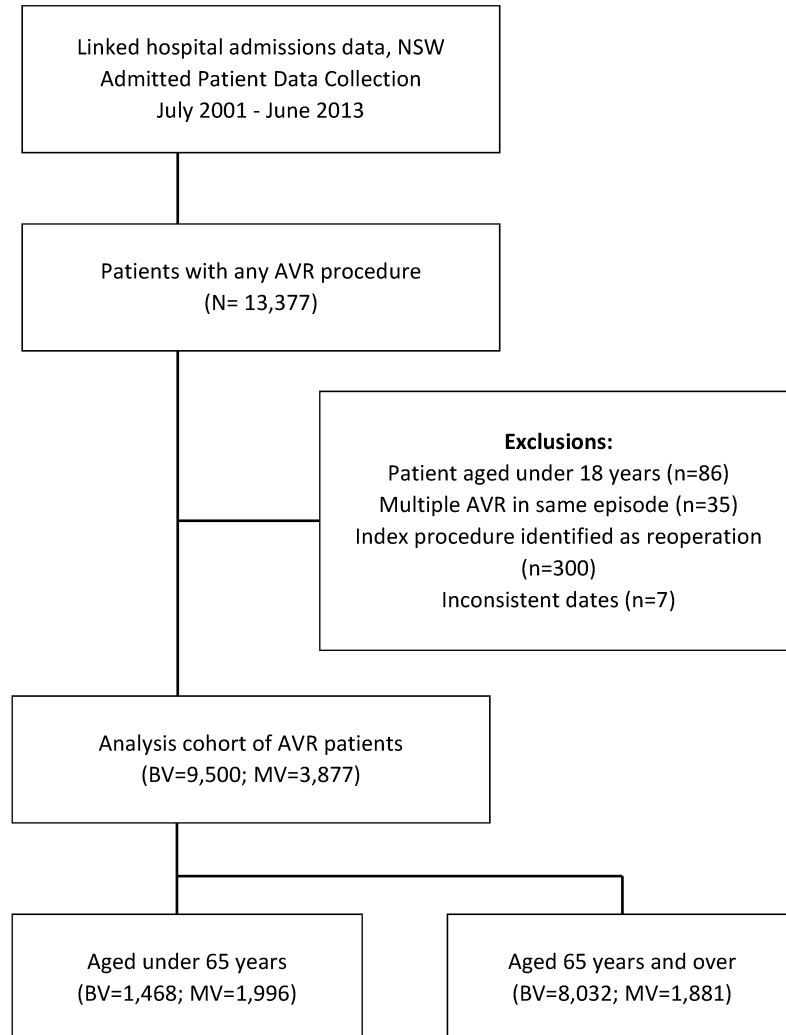


**Supplementary Table 5: Sensitivity analysis of incident rate ratios (IRR) of outcomes following index AVR procedure between patients implanted with BV or MV, overall and stratified by follow-up time, and adjusted for age, sex and Charlson comorbidity index score group**

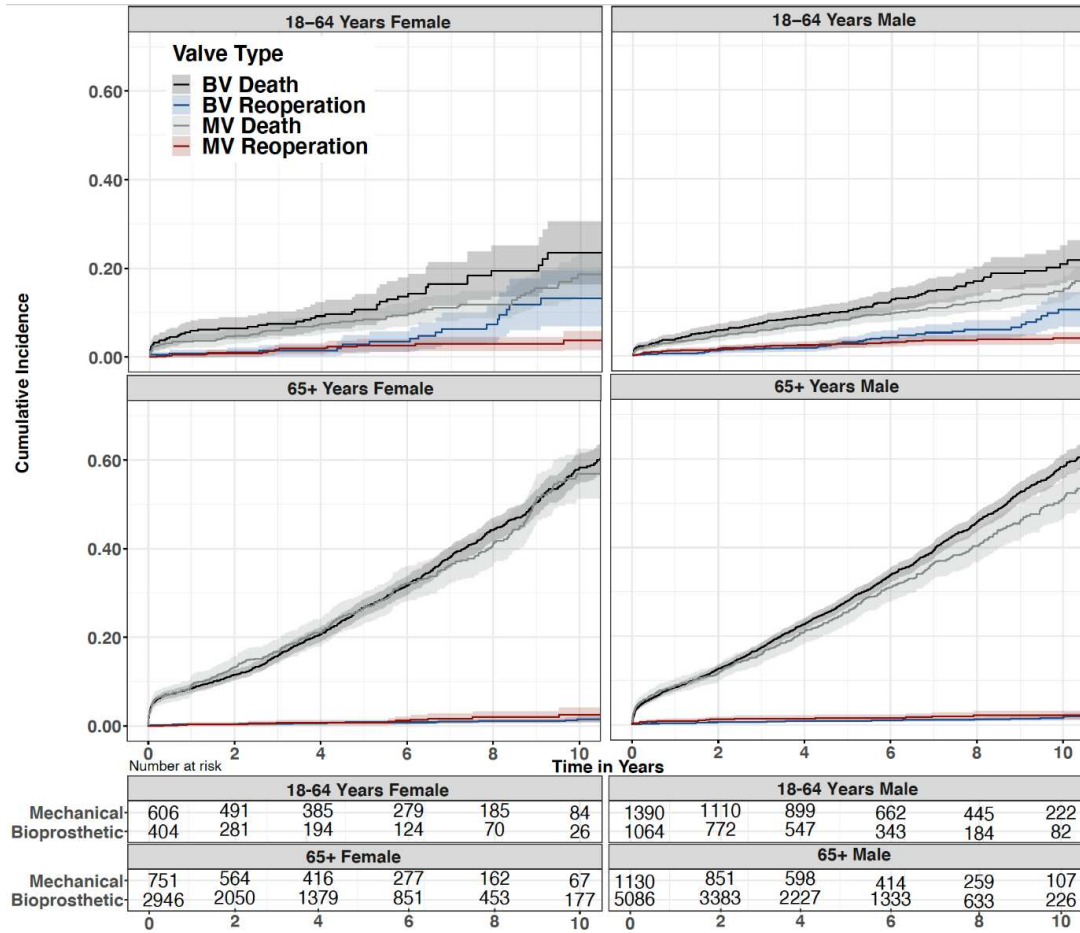
	≤5 years follow-up			6-10 years follow-up			0-10 years follow-up		
	Number of events		Incidence Rate Ratio (95% CIs)	Number of events		Incidence Rate Ratio (95% CIs)	Number of events		Incidence Rate Ratio (95% CIs)
	BV	MV		BV	MV		BV	MV	
<b>18-64 years</b>									
Reoperation	31	46	0.77 (0.52-1.14)	30	11	5.48 (2.38-12.62)	61	57	1.88 (1.29-2.74)
Readmissions									
AMI	16	34	0.75 (0.38-1.48)	10	28	0.49 (0.26-0.94)	26	62	0.66 (0.41-1.06)
Stroke	21	58	0.39 (0.27-0.56)	16	29	1.00 (0.50-2.04)	37	87	0.69 (0.49-0.96)
Haemorrhage	33	101	0.37 (0.27-0.51)	18	59	0.58 (0.32-1.05)	51	157	0.53 (0.41-0.70)
Thromboembolism	18	37	0.57 (0.31-1.04)	14	23	1.14 (0.66-1.96)	32	60	0.91 (0.58-1.43)
Mortality (cardiovascular)	48	62	0.88 (0.62-1.26)	23	26	1.50 (0.99-2.27)	71	88	1.28 (1.02-1.61)
Mortality (all-cause)	94	110	0.85 (0.66-1.08)	55	80	1.25 (0.93-1.69)	149	190	1.25 (1.09-1.43)
<b>65+ years</b>									
Reoperation	54	21	0.60 (0.36-1.00)	17	9	0.86 (0.45-1.65)	71	30	0.78 (0.52-1.16)
Readmissions									
AMI	229	67	0.67 (0.51-0.89)	113	37	0.95 (0.66-1.36)	342	104	0.84 (0.66-1.07)
Stroke	337	86	0.83 (0.64-1.09)	132	43	0.85 (0.60-1.21)	469	129	0.91 (0.75-1.11)
Haemorrhage	469	133	0.77 (0.62-0.94)	163	46	1.00 (0.69-1.44)	632	179	0.92 (0.75-1.12)
Thromboembolism	244	58	0.89 (0.65-1.21)	82	18	1.34 (0.84-2.14)	326	76	1.11 (0.90-1.36)
Mortality (cardiovascular)	681	174	0.81 (0.68-0.95)	280	105	0.69 (0.59-0.81)	961	279	0.81 (0.70-0.95)
Mortality (all-cause)	1,368	336	0.83 (0.74-0.92)	798	252	0.85 (0.75-0.95)	2,166	588	0.89 (0.81-0.98)
<b>Total</b>									
Reoperation	85	67	0.65 (0.51-0.82)	47	20	2.75 (1.00-7.55)	132	87	1.25 (0.77-2.02)
Readmissions									
AMI	245	101	0.73 (0.57-0.93)	123	65	0.93 (0.71-1.23)	368	166	0.89 (0.72-1.11)
Stroke	358	144	0.75 (0.62-0.91)	148	72	0.98 (0.78-1.23)	506	216	0.95 (0.83-1.09)
Haemorrhage	502	234	0.66 (0.54-0.81)	181	102	0.94 (0.73-1.20)	683	336	0.86 (0.70-1.06)
Thromboembolism	262	95	0.82 (0.66-1.02)	96	41	1.35 (1.05-1.72)	358	136	1.13 (0.98-1.31)
Mortality (cardiovascular)	729	236	0.89 (0.79-1.00)	303	131	0.92 (0.73-1.16)	1,032	367	1.02 (0.88-1.19)
Mortality (all-cause)	1,462	446	0.90 (0.83-0.98)	853	332	1.05 (0.94-1.18)	2,315	778	1.09 (0.98-1.21)

**Supplementary Table 6: Sensitivity analysis crude incident event rates of reoperation and outcomes following index AVR procedure per 100 person-years of follow-up**

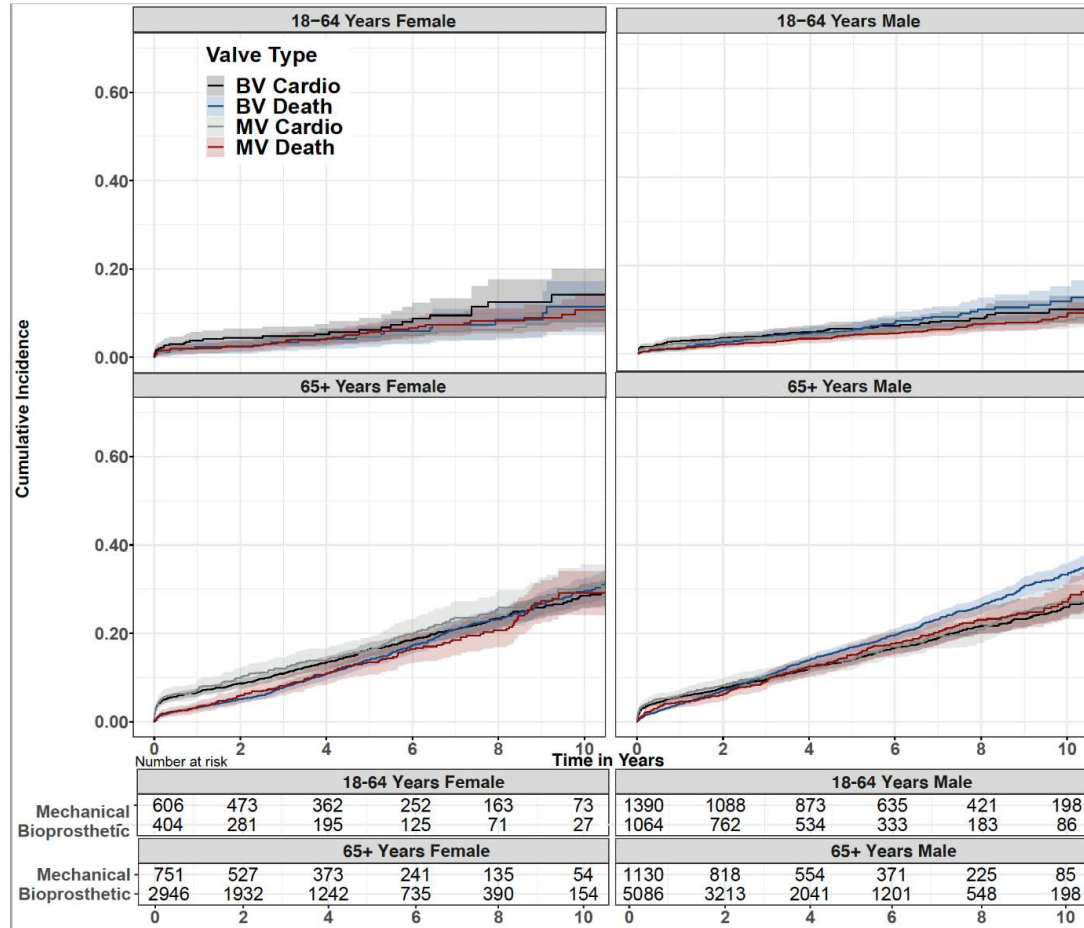
	≤5 years follow-up		6-10 years follow-up		0-10 years follow-up	
	Rate per 100 person-years (95% CI)		Rate per 100 person-years (95% CI)		Rate per 100 person-years (95% CI)	
	BV	MV	BV	MV	BV	MV
<b>18-64 years</b>						
Reoperation	1.63 (1.15-2.32)	2.15 (1.61-2.88)	0.63 (0.44-0.91)	0.12 (0.07-0.21)	0.92 (0.69-1.15)	0.50 (0.37-0.62)
Readmissions						
AMI	0.85 (0.52-1.39)	1.61 (1.15-2.25)	0.21 (0.11-0.38)	0.29 (0.20-0.42)	0.39 (0.24-0.54)	0.53 (0.40-0.66)
Stroke	1.11 (0.72-1.70)	2.69 (2.08-3.49)	0.33 (0.20-0.54)	0.31 (0.21-0.44)	0.55 (0.37-0.73)	0.75 (0.60-0.91)
Haemorrhage	1.74 (1.24-2.45)	4.69 (3.86-5.69)	0.38 (0.24-0.60)	0.61 (0.47-0.79)	0.76 (0.55-0.97)	1.39 (1.17-1.60)
Thromboembolism	0.96 (0.60-1.52)	1.74 (1.26-2.40)	0.29 (0.17-0.49)	0.24 (0.16-0.36)	0.48 (0.31-0.64)	0.52 (0.39-0.65)
Mortality (cardiovascular)	2.52 (1.90-3.35)	2.80 (2.18-3.59)	0.49 (0.33-0.74)	0.29 (0.20-0.43)	1.08 (0.83-1.33)	0.80 (0.63-0.96)
Mortality (all-cause)	4.98 (4.07-6.10)	5.27 (4.37-6.35)	1.13 (0.87-1.47)	0.82 (0.66-1.03)	2.20 (1.85-2.56)	1.61 (1.38-1.84)
<b>65+ years</b>						
Reoperation	0.49 (0.38-0.64)	0.90 (0.59-1.38)	0.08 (0.05-0.13)	0.13 (0.07-0.25)	0.22 (0.17-0.27)	0.33 (0.21-0.45)
Readmissions						
AMI	2.07 (1.82-2.36)	2.89 (2.27-3.67)	0.53 (0.44-0.63)	0.55 (0.40-0.75)	1.05 (0.94-1.16)	1.14 (0.92-1.36)
Stroke	3.03 (2.73-3.37)	3.58 (2.90-4.42)	0.62 (0.53-0.74)	0.66 (0.49-0.88)	1.45 (1.32-1.59)	1.44 (1.19-1.69)
Haemorrhage	4.23 (3.87-4.64)	5.58 (4.71-6.62)	0.79 (0.68-0.93)	0.72 (0.54-0.96)	2.00 (1.84-2.16)	2.04 (1.74-2.34)
Thromboembolism	2.21 (1.95-2.51)	2.47 (1.91-3.20)	0.39 (0.31-0.48)	0.27 (0.17-0.42)	1.01 (0.90-1.12)	0.84 (0.65-1.03)
Mortality (cardiovascular)	6.12 (5.68-6.60)	7.19 (6.20-8.34)	1.45 (1.29-1.63)	1.74 (1.44-2.11)	3.15 (2.95-3.35)	3.30 (2.91-3.69)
Mortality (all-cause)	12.44 (11.80-13.12)	14.44 (12.98-16.07)	3.63 (3.39-3.89)	3.64 (3.22-4.12)	6.57 (6.29-6.84)	6.36 (5.85-6.88)
<b>Total</b>						
Reoperation	0.66 (0.53-0.81)	1.50 (1.18-1.91)	0.18 (0.13-0.24)	0.12 (0.08-0.19)	0.34 (0.28-0.39)	0.42 (0.33-0.51)
Readmissions						
AMI	1.89 (1.67-2.15)	2.28 (1.87-2.77)	0.47 (0.39-0.56)	0.40 (0.31-0.51)	0.94 (0.84-1.03)	0.80 (0.68-0.92)
Stroke	2.75 (2.48-3.05)	3.16 (2.68-3.72)	0.57 (0.48-0.67)	0.45 (0.36-0.57)	1.30 (1.18-1.41)	1.05 (0.91-1.19)
Haemorrhage	3.87 (3.55-4.22)	5.16 (4.54-5.86)	0.72 (0.62-0.83)	0.66 (0.54-0.80)	1.78 (1.65-1.91)	1.67 (1.49-1.85)
Thromboembolism	2.03 (1.80-2.29)	2.12 (1.74-2.59)	0.37 (0.30-0.45)	0.25 (0.19-0.34)	0.92 (0.82-1.01)	0.66 (0.55-0.77)
Mortality (cardiovascular)	5.60 (5.20-6.02)	5.09 (4.48-5.79)	1.26 (1.13-1.41)	0.88 (0.74-1.05)	2.78 (2.61-2.95)	1.88 (1.69-2.07)
Mortality (all-cause)	11.35 (10.78-11.94)	10.10 (9.21-11.08)	3.18 (2.97-3.40)	2.00 (1.79-2.22)	5.82 (5.59-6.06)	3.70 (3.44-3.96)

**Supplementary Figure 1: Flowchart of patient selection criteria**

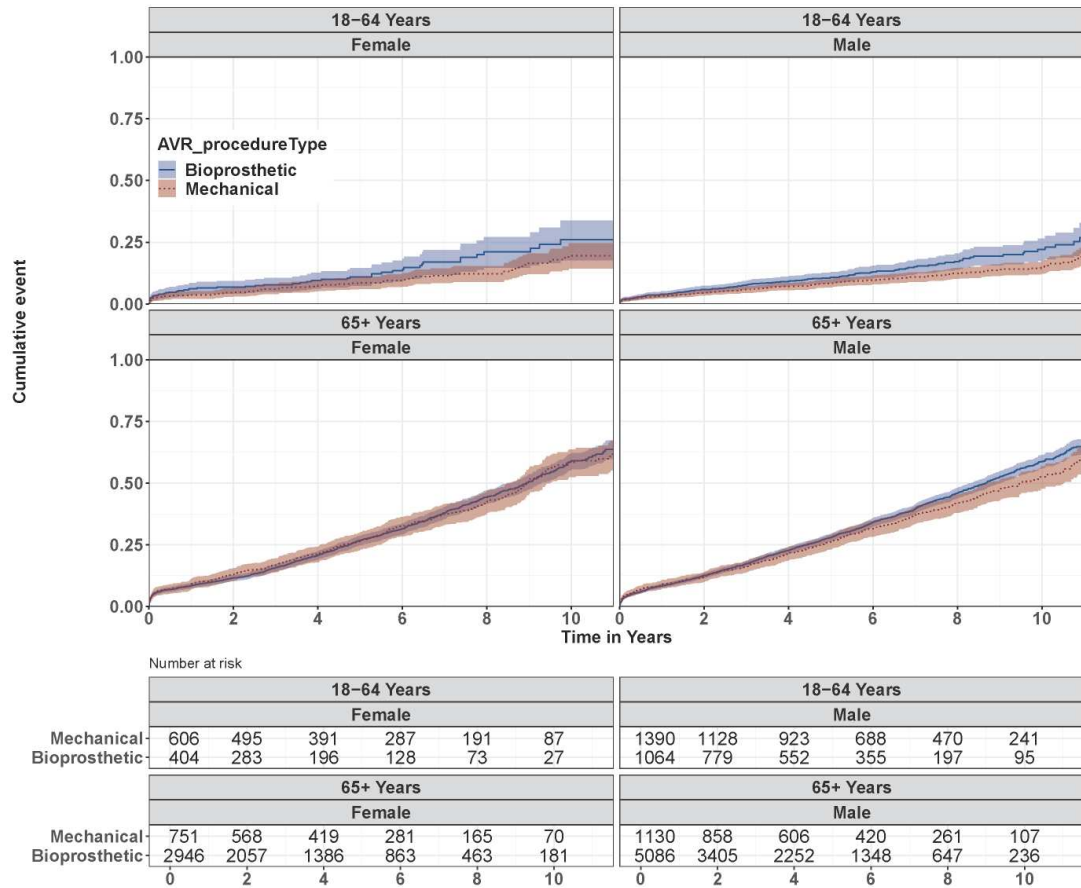
**Supplementary Figure 2: Cumulative incidence function curve of reoperation following index AVR procedure, by valve type, age group and sex**



**Supplementary Figure 3: Cumulative incidence function curve of cardiovascular mortality following index AVR procedure, by valve type, age group and sex**



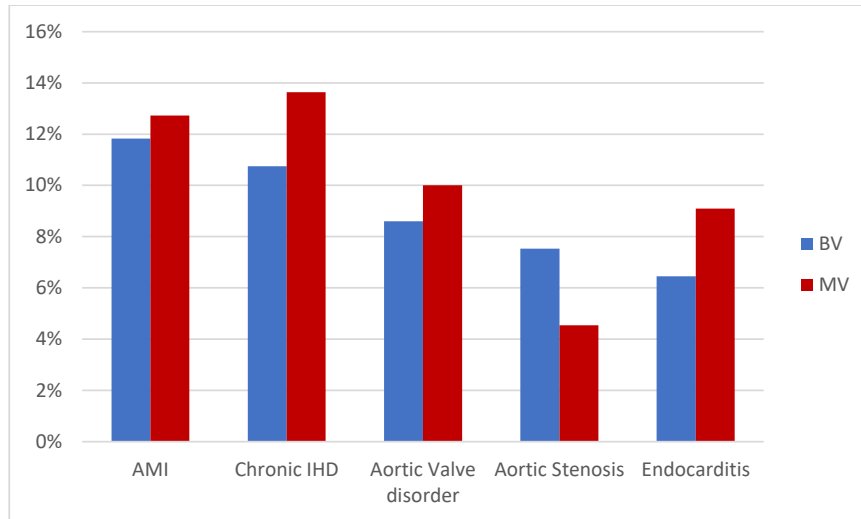
**Supplementary Figure 4: Time to all-cause mortality following index AVR procedure, by valve type, age group and sex**



Number at risk

		18-64 Years						18-64 Years					
		Female						Male					
		0	2	4	6	8	10	0	2	4	6	8	10
Mechanical		606	495	391	287	191	87	1390	1128	923	688	470	241
	Bioprosthetic	404	283	196	128	73	27	1064	779	552	355	197	95
		65+ Years						65+ Years					
		Female						Male					
		0	2	4	6	8	10	0	2	4	6	8	10
Mechanical		751	568	419	281	165	70	1130	858	606	420	261	107
	Bioprosthetic	2946	2057	1386	863	463	181	5086	3405	2252	1348	647	236

**Supplementary Figure 5: The top 5 causes of cardiovascular mortality by valve type, for patients aged less than 65 years**



**Supplementary Figure 6: The top 5 causes of cardiovascular mortality by valve type, for patients aged 65 years and over**

