

Supplementary Material

Supplementary Tables

Supplementary Table I: Baseline characteristics of the AVR+CABG cases included in pre-COVID-19 and during-COVID-19 groups, as defined in the methods section. AVR: Aortic Valve Replacement; CABG: coronary artery bypass graft. Note: this only included cases in February-November each year, and the numbers in some categories might not sum to the total due to missing data.

	Pre-Covid-19	During-Covid-19	p-value
n	6216	980	
Age, years (mean (SD))	72.46 (8.17)	71.03 (8.49)	<0.001
Female (%)	1400 (22.5)	186 (19.0)	0.014
CCS Angina status (%)			<0.001
No angina	1847 (29.8)	287 (29.3)	
Class I	645 (10.4)	85 (8.7)	
Class II	2214 (35.8)	313 (32.0)	
Class III or IV	1483 (24.0)	294 (30.0)	
NYHA (%)			<0.001
Class I	658 (10.7)	92 (9.5)	
Class II	2622 (42.8)	350 (36.1)	
Class III or IV	2848 (46.5)	527 (54.4)	
Previous MI (%)	1546 (25.0)	254 (25.9)	0.551
Previous PCI (%)	706 (11.5)	97 (10.0)	0.176
Previous Cardiac Surgery (%)	153 (2.6)	18 (2.1)	0.371
Diabetic (%)	1825 (29.5)	275 (28.1)	0.404
Current/Ex-Smoker (%)	3822 (61.9)	580 (59.4)	0.140
Creatinine, umol/L (mean (SD))	95.93 (54.61)	96.69 (54.82)	0.688
History of neurological disease (%)	639 (10.3)	102 (10.5)	0.923

Extracardiac Arteriopathy (%)	842 (13.6)	132 (13.5)	1.000
Atrial Fibrillation or Flutter (%)	851 (13.7)	108 (11.3)	0.043
One or more vessel with >50% diameter stenosis (%)	5472 (96.8)	811 (96.4)	0.592
PA Systolic (mean (SD))	28.19 (22.05)	32.42 (22.04)	0.014
LV Function (%)			0.205
Good (LVEF > 50%)	4427 (71.7)	675 (69.4)	
Moderate (LVEF 31 - 50%)	1390 (22.5)	244 (25.1)	
Poor (LVEF < 30%)	360 (5.8)	54 (5.5)	
Height, m (mean (SD))	1.70 (0.09)	1.71 (0.10)	<0.001
Weight, kg (mean (SD))	83.36 (16.54)	85.28 (17.68)	0.001
Non-Elective (%)	1873 (30.1)	379 (38.7)	<0.001
Logistic EuroSCORE (mean (SD))	10.71 (11.15)	10.48 (11.24)	0.557

Supplementary Table II: Baseline characteristics of the AVR+Other cases included in pre-COVID-19 and during-COVID-19 groups, as defined in the methods section. AVR: Aortic Valve Replacement. Note: this only included cases in February-November each year, and the numbers in some categories might not sum to the total due to missing data.

	Pre-Covid-19	During-Covid-19	p-value
n	4684	1068	
Age, years (mean (SD))	63.01 (14.10)	62.37 (14.04)	0.183
Female (%)	1620 (34.6)	315 (29.5)	0.002
CCS Angina status (%)			0.052
No angina	3121 (66.8)	700 (65.7)	
Class I	518 (11.1)	97 (9.1)	
Class II	669 (14.3)	167 (15.7)	
Class III or IV	365 (7.8)	102 (9.6)	
NYHA (%)			<0.001
Class I	709 (15.4)	198 (18.8)	
Class II	1660 (36.1)	292 (27.8)	
Class III or IV	2235 (48.5)	562 (53.4)	
Previous MI (%)	222 (4.8)	58 (5.5)	0.389
Previous PCI (%)	156 (3.4)	34 (3.2)	0.859
Previous Cardiac Surgery (%)	648 (14.9)	139 (14.2)	0.617
Diabetic (%)	550 (11.8)	122 (11.4)	0.810
Current/Ex-Smoker (%)	2327 (50.0)	509 (48.1)	0.265
Creatinine, umol/L (mean (SD))	95.74 (57.46)	95.81 (56.85)	0.973
History of neurological disease (%)	459 (9.9)	123 (11.6)	0.097
Extracardiac Arteriopathy (%)	355 (7.6)	64 (6.0)	0.084
Atrial Fibrillation or Flutter (%)	1124 (24.2)	252 (24.1)	0.963
One or more vessel with >50% diameter stenosis (%)	191 (5.1)	39 (4.7)	0.655
PA Systolic (mean (SD))	38.57 (21.91)	39.75 (22.51)	0.434
LV Function (%)			0.521
Good (LVEF > 50%)	3311 (71.3)	739 (69.5)	
Moderate (LVEF 31 - 50%)	1056 (22.7)	255 (24.0)	

Poor (LVEF < 30%)	279 (6.0)	69 (6.5)	
Height, m (mean (SD))	1.70 (0.11)	1.71 (0.11)	0.008
Weight, kg (mean (SD))	82.00 (18.69)	83.90 (20.56)	0.003
Non-Elective (%)	1518 (32.4)	435 (40.7)	<0.001
Logistic EuroSCORE (mean (SD))	14.05 (14.55)	13.92 (14.04)	0.787

Supplementary Table III: Baseline characteristics of the Isolated AVR cases included in the pre-COVID-19 (2019 only) and during-COVID-19 groups, as defined in the methods section. AVR: Aortic Valve Replacement. Note: this only included cases in February-November each year, and the numbers in some categories might not sum to the total due to missing data.

	Pre-Covid-19	During-Covid-19	p-value
n	3271	1549	
Age, years (mean (SD))	67.44 (11.57)	66.05 (11.22)	<0.001
Female (%)	1196 (36.6)	539 (34.8)	0.245
CCS Angina status (%)			0.136
No angina	1955 (59.9)	895 (57.9)	
Class I	378 (11.6)	175 (11.3)	
Class II	627 (19.2)	299 (19.3)	
Class III or IV	306 (9.4)	178 (11.5)	
NYHA (%)			0.003
Class I	308 (9.6)	138 (9.0)	
Class II	1230 (38.1)	512 (33.5)	
Class III or IV	1687 (52.3)	878 (57.5)	
Previous MI (%)	194 (6.0)	77 (5.0)	0.198
Previous PCI (%)	155 (4.8)	80 (5.2)	0.597
Previous Cardiac Surgery (%)	227 (7.5)	116 (8.1)	0.498
Diabetic (%)	585 (17.9)	334 (21.6)	0.003
Current/Ex-Smoker (%)	1748 (53.9)	800 (52.2)	0.281
Creatinine, umol/L (mean (SD))	89.72 (47.15)	89.12 (47.34)	0.685
History of neurological disease (%)	297 (9.1)	123 (8.0)	0.215
Extracardiac Arteriopathy (%)	165 (5.1)	72 (4.7)	0.600
Atrial Fibrillation or Flutter (%)	295 (9.1)	100 (6.6)	0.004
One or more vessel with >50% diameter stenosis (%)	138 (4.8)	78 (5.9)	0.153
PA Systolic (mean (SD))	26.69 (17.23)	32.75 (26.93)	<0.001
LV Function (%)			0.285
Good (LVEF > 50%)	2605 (80.2)	1206 (78.3)	
Moderate (LVEF 31 - 50%)	490 (15.1)	259 (16.8)	

Poor (LVEF < 30%)	154 (4.7)	75 (4.9)	
Height, m (mean (SD))	1.69 (0.10)	1.70 (0.11)	0.064
Weight, kg (mean (SD))	83.23 (18.22)	84.53 (19.60)	0.024
Non-Elective (%)	697 (21.3)	462 (29.8)	<0.001
Logistic EuroSCORE (mean (SD))	7.29 (8.30)	6.98 (8.73)	0.226

Supplementary Table IV: Baseline characteristics of the AVR+CABG cases included in pre-COVID-19 (2019 only) and during-COVID-19 groups, as defined in the methods section. AVR: Aortic Valve Replacement; CABG: coronary artery bypass graft. Note: this only included cases in February-November each year, and the numbers in some categories might not sum to the total due to missing data.

	Pre-Covid-19	During-Covid-19	p-value
n	2006	980	
Age, years (mean (SD))	72.40 (7.92)	71.03 (8.49)	<0.001
Female (%)	427 (21.3)	186 (19.0)	0.156
CCS Angina status (%)			0.029
No angina	615 (30.7)	287 (29.3)	
Class I	219 (10.9)	85 (8.7)	
Class II	658 (32.9)	313 (32.0)	
Class III or IV	509 (25.4)	294 (30.0)	
NYHA (%)			0.020
Class I	208 (10.5)	92 (9.5)	
Class II	801 (40.6)	350 (36.1)	
Class III or IV	965 (48.9)	527 (54.4)	
Previous MI (%)	477 (23.9)	254 (25.9)	0.244
Previous PCI (%)	249 (12.5)	97 (10.0)	0.047
Previous Cardiac Surgery (%)	55 (2.9)	18 (2.1)	0.228
Diabetic (%)	603 (30.1)	275 (28.1)	0.268
Current/Ex-Smoker (%)	1211 (60.6)	580 (59.4)	0.541
Creatinine, umol/L (mean (SD))	93.41 (41.27)	96.69 (54.82)	0.072
History of neurological disease (%)	219 (10.9)	102 (10.5)	0.768
Extracardiac Arteriopathy (%)	240 (12.0)	132 (13.5)	0.260
Atrial Fibrillation or Flutter (%)	295 (14.8)	108 (11.3)	0.011
One or more vessel with >50% diameter stenosis (%)	1777 (96.8)	811 (96.4)	0.667
PA Systolic (mean (SD))	27.76 (21.62)	32.42 (22.04)	0.015
LV Function (%)			0.465
Good (LVEF > 50%)	1423 (71.2)	675 (69.4)	
Moderate (LVEF 31 - 50%)	460 (23.0)	244 (25.1)	

Poor (LVEF < 30%)	115 (5.8)	54 (5.5)	
Height, m (mean (SD))	1.70 (0.10)	1.71 (0.10)	<0.001
Weight, kg (mean (SD))	83.65 (16.61)	85.28 (17.68)	0.014
Non-Elective (%)	609 (30.4)	379 (38.7)	<0.001
Logistic EuroSCORE (mean (SD))	10.57 (11.43)	10.48 (11.24)	0.837

Supplementary Table V: Baseline characteristics of the AVR+Other cases included in pre-COVID-19 (2019 only) and during-COVID-19 groups, as defined in the methods section. AVR: Aortic Valve Replacement. Note: this only included cases in February-November each year, and the numbers in some categories might not sum to the total due to missing data.

	Pre-Covid-19	During-Covid-19	p-value
n	1638	1068	
Age, years (mean (SD))	63.16 (13.91)	62.37 (14.04)	0.150
Female (%)	538 (32.8)	315 (29.5)	0.073
CCS Angina status (%)			0.335
No angina	1105 (67.5)	700 (65.7)	
Class I	166 (10.1)	97 (9.1)	
Class II	222 (13.6)	167 (15.7)	
Class III or IV	145 (8.9)	102 (9.6)	
NYHA (%)			<0.001
Class I	258 (16.0)	198 (18.8)	
Class II	561 (34.9)	292 (27.8)	
Class III or IV	789 (49.1)	562 (53.4)	
Previous MI (%)	64 (3.9)	58 (5.5)	0.077
Previous PCI (%)	53 (3.3)	34 (3.2)	1.000
Previous Cardiac Surgery (%)	229 (15.1)	139 (14.2)	0.611
Diabetic (%)	189 (11.6)	122 (11.4)	0.981
Current/Ex-Smoker (%)	799 (49.1)	509 (48.1)	0.624
Creatinine, umol/L (mean (SD))	96.31 (54.06)	95.81 (56.85)	0.820
History of neurological disease (%)	159 (9.8)	123 (11.6)	0.136
Extracardiac Arteriopathy (%)	122 (7.5)	64 (6.0)	0.169
Atrial Fibrillation or Flutter (%)	389 (24.1)	252 (24.1)	1.000
One or more vessel with >50% diameter stenosis (%)	54 (4.0)	39 (4.7)	0.511
PA Systolic (mean (SD))	37.55 (21.64)	39.75 (22.51)	0.204
LV Function (%)			0.942
Good (LVEF > 50%)	1126 (69.4)	739 (69.5)	
Moderate (LVEF 31 - 50%)	396 (24.4)	255 (24.0)	

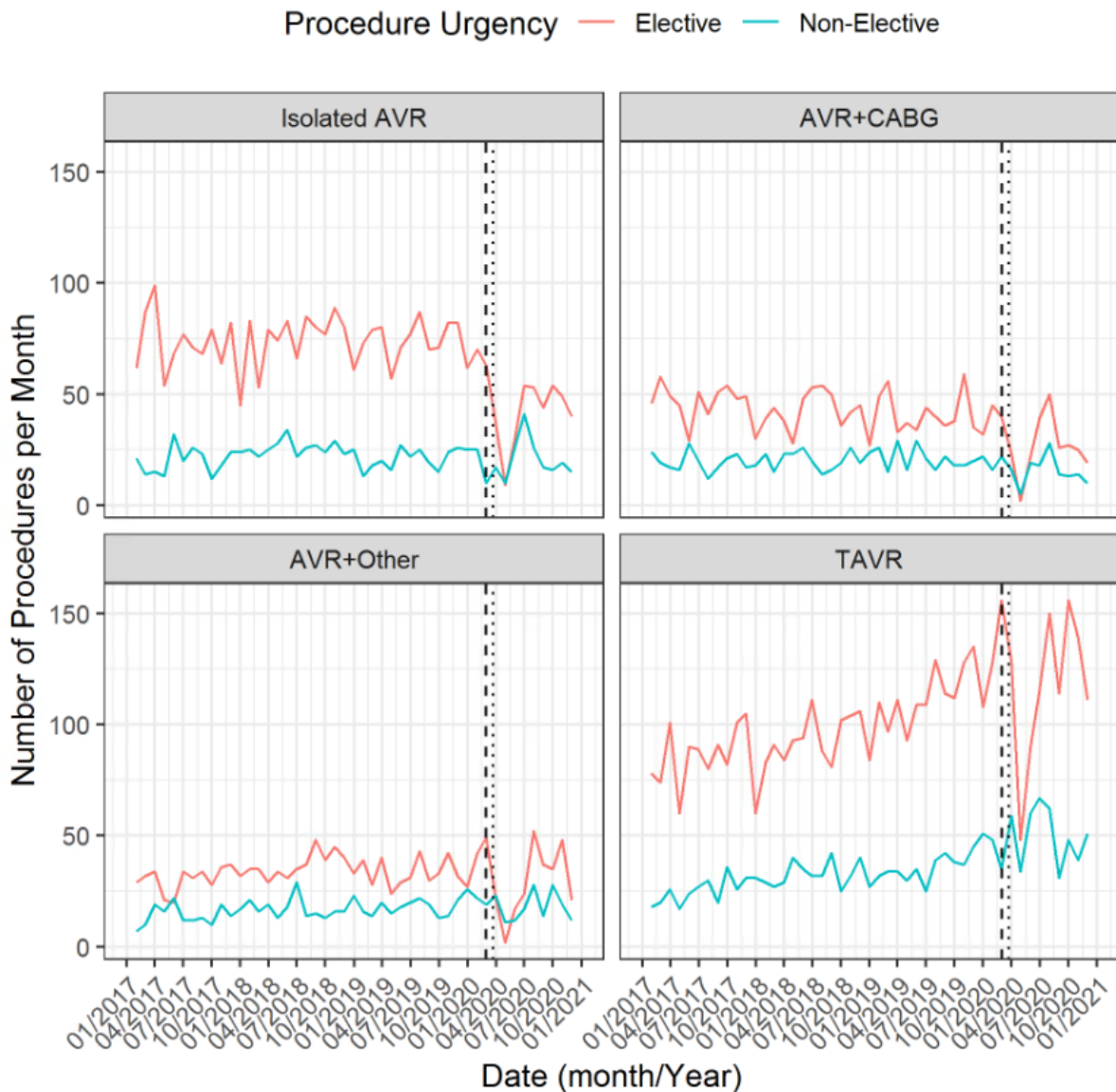
Poor (LVEF < 30%)	101 (6.2)	69 (6.5)	
Height, m (mean (SD))	1.71 (0.12)	1.71 (0.11)	0.159
Weight, kg (mean (SD))	83.11 (19.55)	83.90 (20.56)	0.313
Non-Elective (%)	551 (33.6)	435 (40.7)	<0.001
Logistic EuroSCORE (mean (SD))	14.31 (14.42)	13.92 (14.04)	0.483

Supplementary Table VI: Baseline characteristics of the TAVR cases included in pre-COVID-19 (2019 only) and during-COVID-19 groups, as defined in the methods section. AVR: Aortic Valve Replacement. Note: this only included cases in February-November each year, and the numbers in some categories might not sum to the total due to missing data.

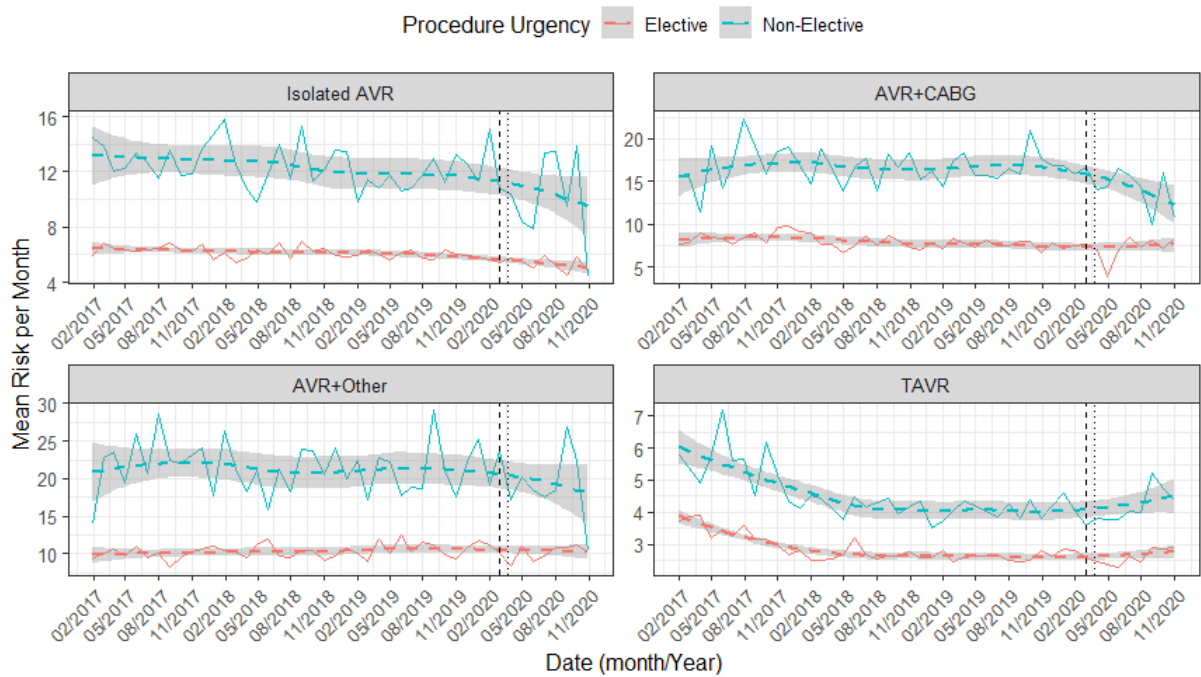
	Pre-Covid-19	During-Covid-19	p-value
n	3868	2922	
Age, years (mean (SD))	81.24 (7.18)	80.78 (7.06)	0.009
Female (%)	1736 (44.9)	1278 (43.7)	0.336
CCS Angina status (%)			0.149
No angina	2657 (75.3)	2043 (76.5)	
Class I	293 (8.3)	182 (6.8)	
Class II	407 (11.5)	323 (12.1)	
Class III or IV	171 (4.8)	122 (4.6)	
NYHA (%)			<0.001
Class I	234 (6.6)	246 (9.1)	
Class II	915 (25.8)	532 (19.7)	
Class III or IV	2402 (67.6)	1925 (71.2)	
Previous MI (%)	520 (14.3)	314 (11.6)	0.002
Previous PCI (%)	593 (16.8)	401 (14.9)	0.042
Previous Cardiac Surgery (%)	572 (16.3)	403 (14.8)	0.108
Diabetic (%)	900 (25.1)	663 (24.6)	0.666
Current/Ex-Smoker (%)	1586 (48.5)	1079 (45.0)	0.010
Creatinine, umol/L (mean (SD))	105.68 (64.15)	103.09 (61.96)	0.117
History of neurological disease (%)	574 (15.8)	405 (14.9)	0.346
Extracardiac Arteriopathy (%)	398 (11.2)	302 (11.3)	1.000
Atrial Fibrillation or Flutter (%)	956 (27.1)	760 (29.6)	0.033
One or more vessel with >50% diameter stenosis (%)	962 (30.8)	679 (28.1)	0.032
PA Systolic (mean (SD))	36.57 (15.36)	37.46 (14.89)	0.146
LV Function (%)			0.051
Good (LVEF > 50%)	2645 (74.3)	1915 (72.7)	
Moderate (LVEF 31 - 50%)	617 (17.3)	451 (17.1)	
Poor (LVEF < 30%)	298 (8.4)	268 (10.2)	

Height, m (mean (SD))	1.65 (0.10)	1.66 (0.10)	0.001
Weight, kg (mean (SD))	76.15 (17.80)	77.11 (17.47)	0.035
Non-Elective (%)	710 (18.4)	758 (25.9)	<0.001
UK TAVR CPM (mean (SD))	2.90 (2.01)	2.96 (1.95)	0.231

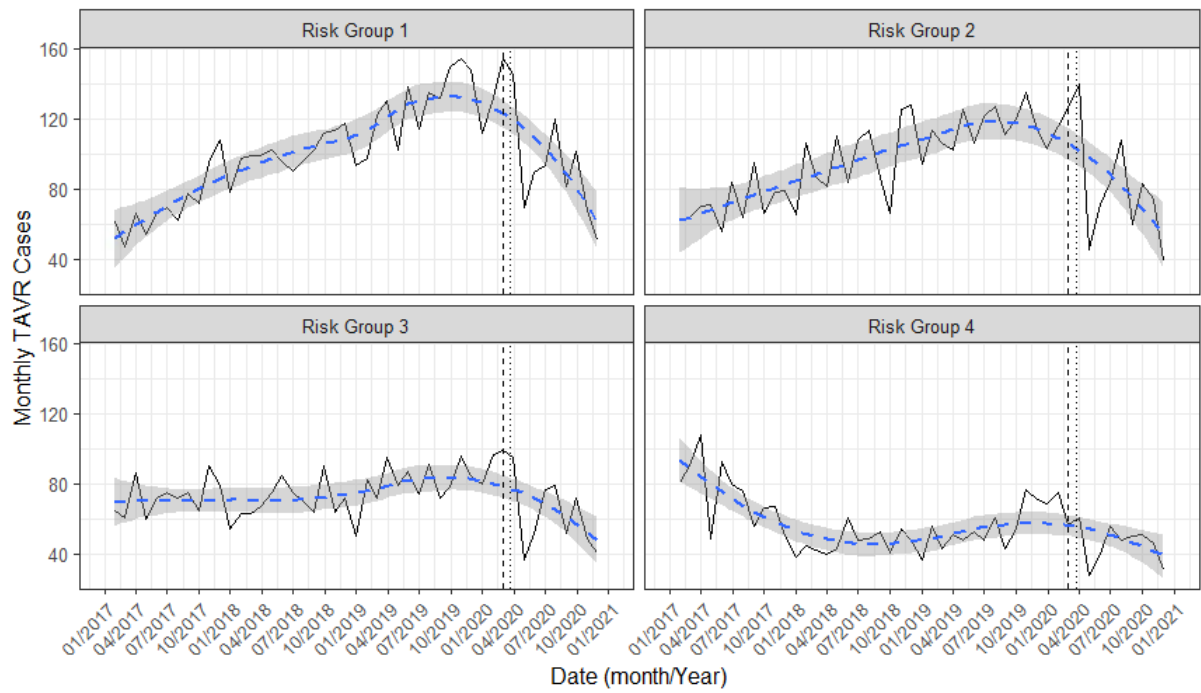
Supplementary Figures



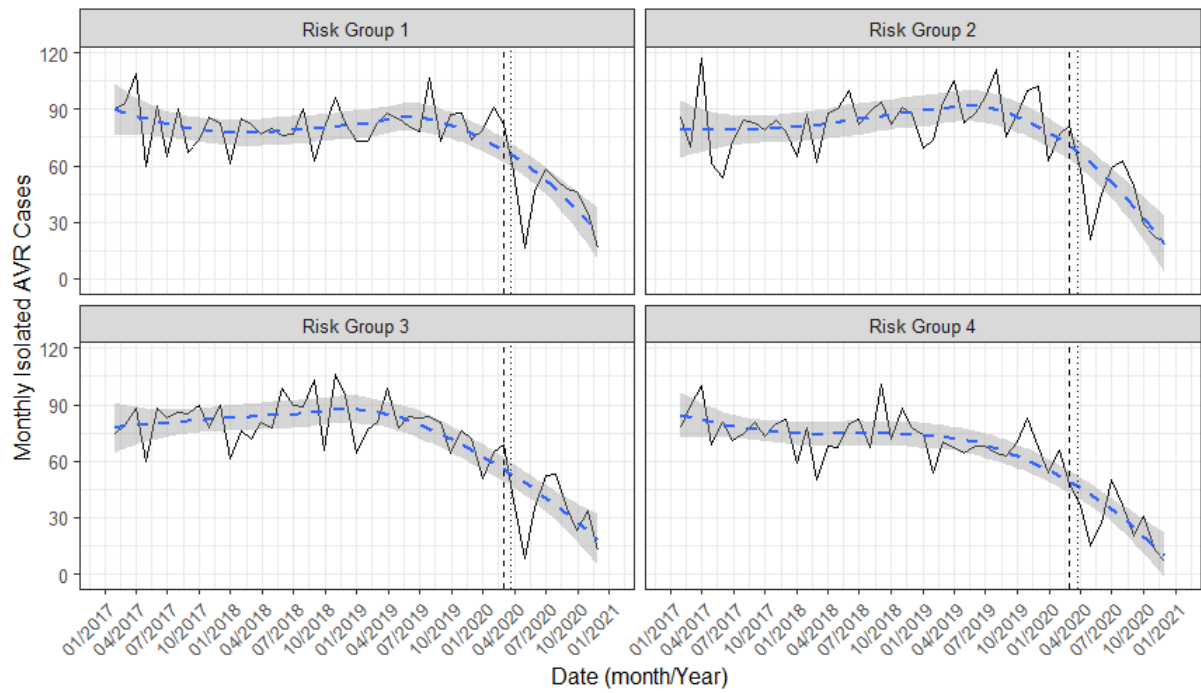
Supplementary Figure I: Sensitivity analysis subletting on only the centres that submitted data rapidly (defined as submitting at least one case in November 2020, given this was latest month of analysis). Temporal plot of the number of TAVR and SAVR procedures per month, stratified according to procedure urgency. The vertical dotted line denotes 23rd March 2020 (date of UK lockdown) with 1st March denoted by the vertical dashed line. TAVR: Transcatheter Aortic Valve Replacement; SAVR: Surgical Aortic Valve Replacement.



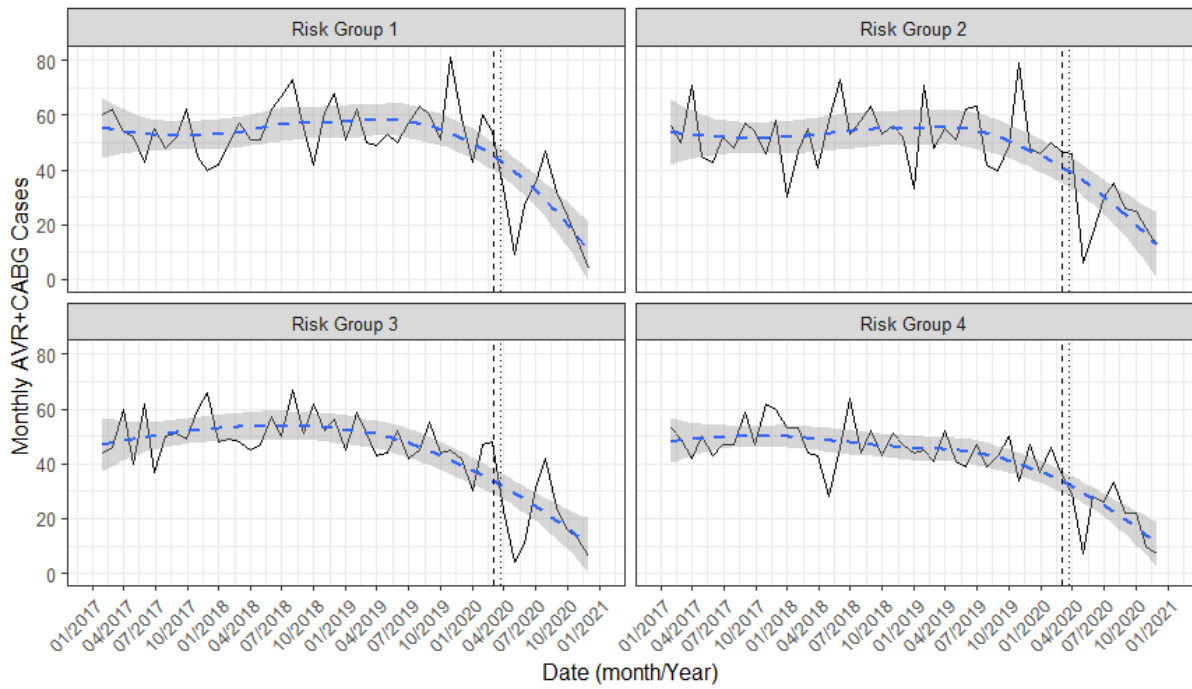
Supplementary Figure II: Temporal plot of the mean procedural risk in each month (Logistic EuroSCORE for AVR, and UK TAVR prediction model for TAVR cases). The vertical dotted line denotes 23rd March 2020 (date of UK lockdown) with 1st March denoted by the vertical dashed line. TAVR: Transcatheter Aortic Valve Replacement; SAVR: Surgical Aortic Valve Replacement.



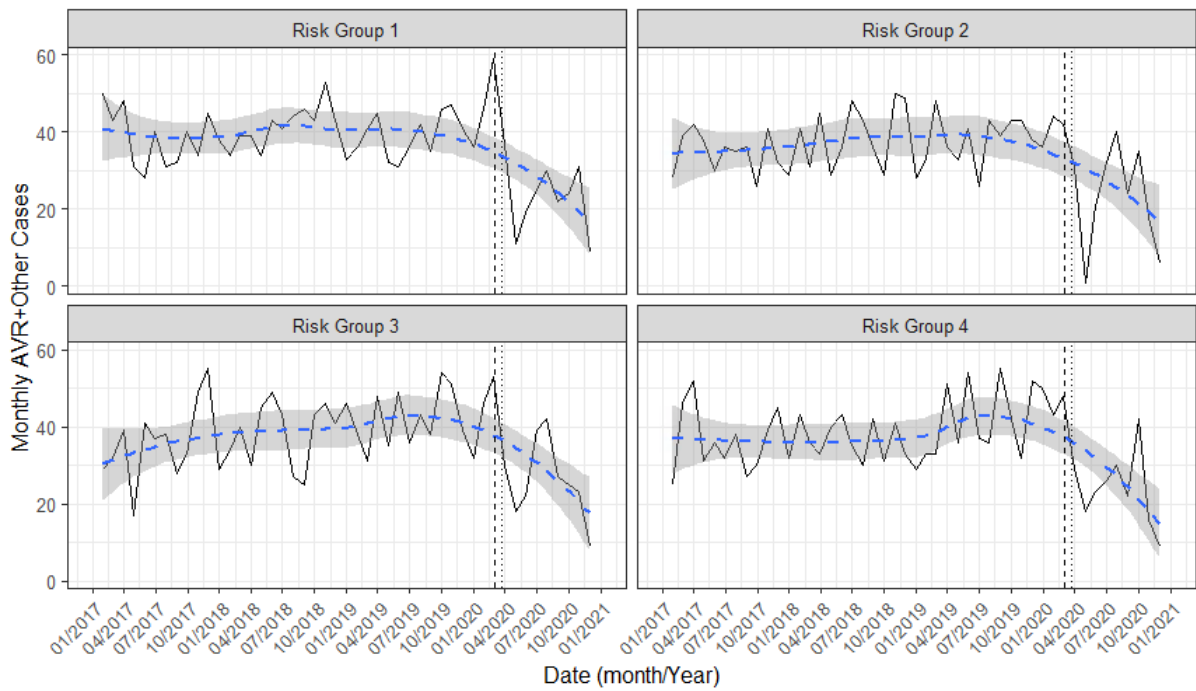
Supplementary Figure III: Temporal plot of the number of TAVR procedures per month stratified by quantile of risk according to the UK TAVR prediction model. Risk groups were derived based on the quantiles of the first year of data. The dashed line represents a loess smoother through the data. TAVR: Transcatheter Aortic Valve Replacement.



Supplementary Figure IV: Temporal plot of the number of Isolated AVR procedures per month stratified by quantile of risk according to the Logistic EuroSCORE. Risk groups were derived based on the quantiles of the first year of data. The dashed line represents a loess smoother through the data. AVR: Surgical Aortic Valve Replacement.



Supplementary Figure V: Temporal plot of the number of AVR+CABG procedures per month stratified by quantile of risk according to the Logistic EuroSCORE. Risk groups were derived based on the quantiles of the first year of data. The dashed line represents a loess smoother through the data. AVR: Aortic Valve Replacement; CABG: coronary artery bypass graft.



Supplementary Figure VI: Temporal plot of the number of AVR+Other procedures per month stratified by quantile of risk according to the Logistic EuroSCORE. Risk groups were derived based on the quantiles of the first year of data. The dashed line represents a loess smoother through the data. AVR: Aortic Valve Replacement.