

Supplementary materials to: Wee LE, Loy EX, Lim JT, et al. Omicron SARS-CoV-2 outcomes in vaccinated individuals with heart failure and ischaemic heart disease. *Ann Acad Med Singap* 2025;54: Online First.
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Supplementary Table S1. Vaccination rates in patients with ischaemic heart disease/heart failure compared to controls and the general adult population.

	Start of Omicron wave, 1 st Jan 2022, N(%)			End of Omicron wave, 20 th Dec 2023, N(%)		
	Ischaemic heart disease	Controls	Whole adult population	Ischaemic heart disease	Controls	Whole adult population
Received any mRNA vaccine dose	102614 (97.4%)	297223 (97.3%)	3154894 (92.7%)	102829 (97.6%)	297692 (97.5%)	3163834 (93.0%)
0 doses	2695 (2.6%)	8140 (2.7%)	248043 (7.3%)	2480 (2.4%)	7671 (2.5%)	239103 (7.0%)
1-dose (mRNA-based)	237 (0.2%)	496 (0.2%)	10201 (0.3%)	202 (0.2%)	498 (0.2%)	4433 (0.1%)
2-doses (mRNA-based)	23980 (22.8%)	66552 (21.8%)	1342936 (39.5%)	2885 (2.7%)	7910 (2.6%)	91533 (2.7%)
3 doses (mRNA-based) ^a	78397 (74.4%)	230175 (75.4%)	1801663 (52.9%)	48390 (46.0%)	141493 (46.3%)	1935922 (56.9%)
4 doses (mRNA-based) ^b	NA	NA	94 (0.0%)	51352 (48.8%)	147791 (48.4%)	1131946 (33.3%)
Total	105309 (100%)	305363 (100%)	3402937 (100%)	105309 (100%)	305363 (100%)	3402937 (100%)
	Heart failure	Controls	Whole adult population	Heart failure	Controls	Whole adult population
Received any mRNA vaccine dose	13517 (95.0%)	38974 (94.1%)	3154894 (92.7%)	13598 (95.6%)	39138 (94.5%)	3163834 (93.0%)
0 doses	707 (5.0%)	2427 (5.9%)	248043 (7.3%)	626 (4.4%)	2263 (5.5%)	239103 (7.0%)
1-dose (mRNA-based)	97 (0.7%)	180 (0.4%)	10201 (0.3%)	77 (0.5%)	159 (0.4%)	4433 (0.1%)
2-doses (mRNA-based)	5012 (35.2%)	14057 (34.0%)	1342936 (39.5%)	986 (6.9%)	2825 (6.8%)	91533 (2.7%)
3 doses (mRNA-based) ^a	8408 (59.1%)	24737 (59.7%)	1801663 (52.9%)	7056 (49.6%)	20589 (49.7%)	1935922 (56.9%)
4 doses (mRNA-based) ^b	NA	NA	94 (0.0%)	5479 (38.5%)	15565 (37.6%)	1131946 (33.3%)
Total	14224 (100%)	41401 (100%)	3402937 (100%)	14224 (100%)	41401 (100%)	3402937 (100%)

NA: not applicable

^a First boosters (third mRNA vaccine doses) were only rolled out from end-September 2021 onwards, after the start of the Delta waves.

^b Second boosters (fourth mRNA vaccine doses) were only rolled out from April 2022 onwards, after the start of the Omicron wave.

Supplementary Table S2. Incidence rate of COVID-19 infection, hospitalisation and severe disease, by unvaccinated or partially vaccinated, fully vaccinated, and boosted subgroups.

	Person-days		COVID-19 incidence (Incidence rate/million person-days)		COVID-19 hospitalisation (Incidence rate/million person-days)		COVID-19 severe disease (Incidence rate/million person-days)	
	Any ischaemic heart disease	Control	Any ischaemic heart disease	Control	Any ischaemic heart disease	Control	Any ischaemic heart disease	Control
Omicron wave								
0/1 dose	1376149.0	4545984.0	553.0	393.5	274.0	168.3	87.2	59.2
2 doses	1962668.0	5763737.0	1445.0	1183.4	390.3	261.8	104.4	64.5
3 doses	30675105.0	93119417.0	1118.4	1004.7	104.0	65.5	19.1	11.3
4 doses	15406266.0	46334466.0	442.0	384.4	62.1	41.5	8.9	6.2
	Any heart failure	Control	Any heart failure	Control	Any heart failure	Control	Any heart failure	Control
Omicron wave								
0/1 dose	285718.0	1273544.0	966.0	471.9	682.5	226.9	280.0	90.3
2 doses	489492.0	1595197.0	1618.0	1275.1	751.8	349.8	267.6	90.3
3 doses	3851017.0	12076398.0	1055.6	958.6	262.0	100.9	75.6	18.7
4 doses	1629879.0	4953603.0	478.6	416.3	157.7	65.2	33.7	9.9

Supplementary Table S3. Risk of SARS-CoV-2 infection, COVID-19 related hospitalisation and severe disease in heart failure/ischaemic heart disease cases, stratified by hospitalisation for heart failure/ischaemic heart disease in the year prior to SARS-CoV-2 infection.

Omicron wave	SARS-CoV-2 infection, aHR (95% CI) ^a	COVID-19 hospitalisation, aHR (95% CI) ^a	Severe COVID-19 disease, aHR (95% CI) ^a
Hospitalised in preceding year, any heart failure			
No	1.00 (NA)	1.00 (NA)	1.00 (NA)
Yes	1.11 (1.03–1.19)	1.27 (1.13–1.42)	1.45 (1.19–1.77)
Omicron wave	SARS-CoV-2 infection, aHR (95% CI)^a	COVID-19 hospitalisation, aHR (95% CI)^a	Severe COVID-19 disease, aHR (95% CI)^a
Hospitalised in preceding year, any ischaemic heart disease			
No	1.00 (NA)	1.00 (NA)	1.00 (NA)
Yes	1.08 (1.04–1.11)	1.11 (1.01–1.23)	1.01 (0.81–1.26)

aHR: adjusted hazard ratio; CI: confidence interval; NA: not applicable

^a Calendar-time scale cox regression, controlling for age, sex, ethnicity, socioeconomic status (housing type), comorbidities, vaccination status, and any prior hospitalisation for ischaemic heart disease/heart failure in the year prior to study start date.

^b Restricted to infected individuals only.