

**Supplementary Table S1. Read codes used for SLE and diagnosed COVID-19**

<b>Diagnosis</b>	<b>Read Codes</b>
<b>SLE</b>	N000.00, N000000, N000100, N000300, N000400, N000600, N000z00, Nyu4300, M154.00, M154000, M154100, M154200, M154300, M154400, M154500, M154600, M154700, M154z00, Myu7800, F371000, F4D3300, H57y400, K01x400, K01x411
<b>Diagnosed COVID-19</b>	43hF.00, 43kB100, 4J3R100, A076400, A795.00, A795100, A795200, A795300, A795400, A795500, A7y0000, AyuDC00, AyuJC00, AyuKL00, F289.00, F529.00, G520800, G558500, H051100, H204.00

SLE, systematic lupus erythematosus.

**Supplementary Table S2. Association between SLE and the risk of SARS-COV-2 breakthrough infection, COVID-19 hospitalization and death in individuals beginning on Day 14 after vaccination**

	Breakthrough infection	
	SLE (N=2,849)	General population (N=1,380,975)
Event, N	103	51,373
Mean follow-up, months	7.28	6.51
Weighted IR*, per 1000 person-months	4.97	5
HR* (95% CI)	1.03 (0.85, 1.25)	1.00 (ref)
	COVID-19 hospitalization	
	SLE (N=2,849)	General population (N=1,380,975)
Event, N	8	1,949
Mean follow-up, months	7.4	6.63
Weighted IR*, per 1000 person-months	0.38	0.29
HR* (95% CI)	1.25 (0.62, 2.50)	1.00 (ref)
	COVID-19 death	
	SLE (N=2,849)	General population (N=1,380,975)
Event, N	2	142
Mean follow-up, months	7.4	6.64
Weighted IR*, per 1000 person-months	0.09	0.07
HR* (95% CI)	1.56 (0.26, 9.50)	1.00 (ref)
	COVID-19 combined severe outcomes	
	SLE (N=2,849)	General population (N=1,380,975)
Event, N	9	2,043
Mean follow-up, months	7.4	6.63
Weighted IR*, per 1000 person-months	0.42	0.35
HR* (95% CI)	1.18 (0.60, 2.32)	1.00 (ref)

N, number; SLE, systemic lupus erythematosus; COVID-19, Coronavirus Disease 2019; IR: incidence rate; HR hazard ratio; CI, confidence interval.

\*Estimates were time-stratified overlap weighted of propensity score, weighted cox regression using coxphw method were applied if proportional hazard assumption was violated.