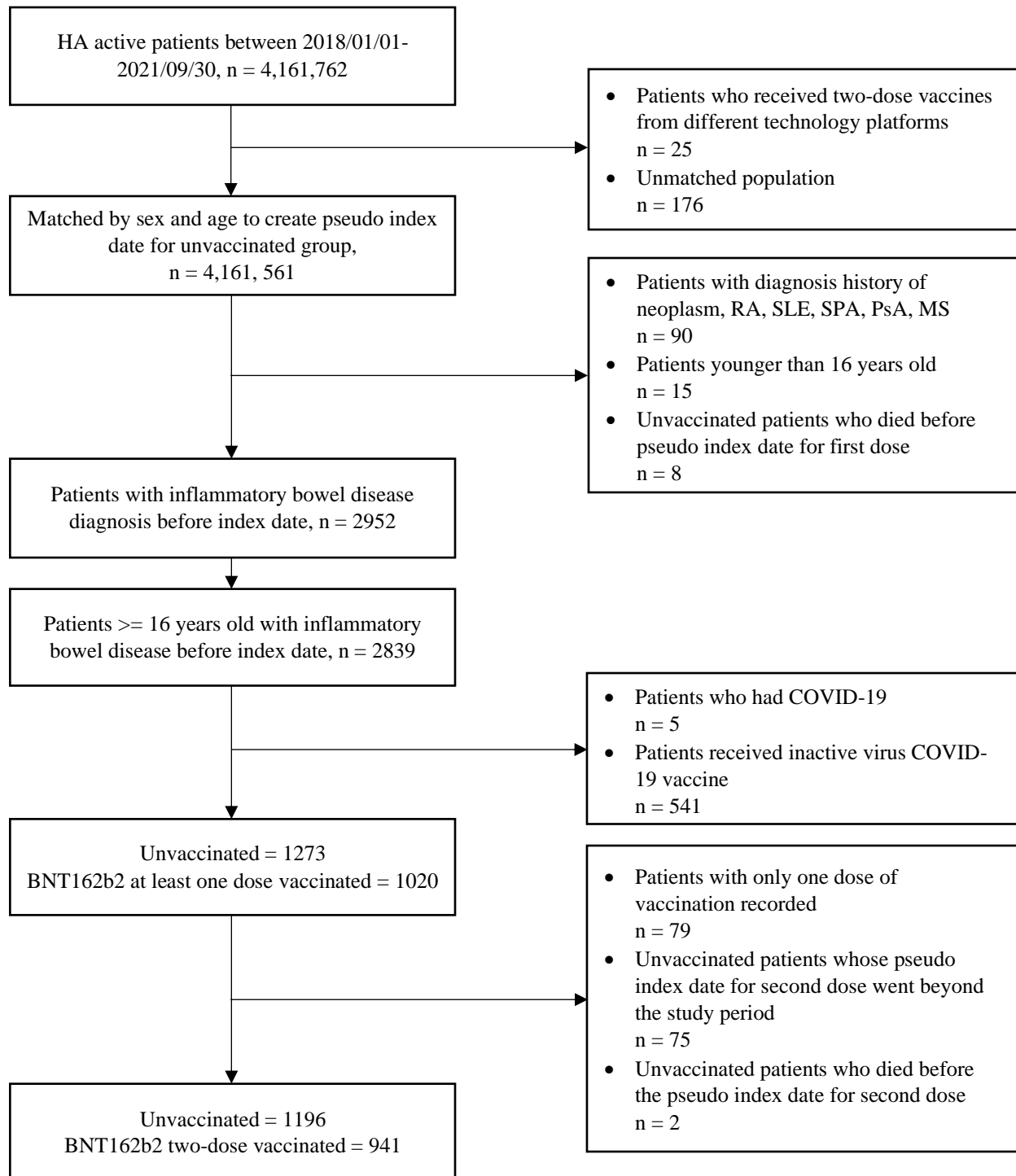


### Supplementary Figure 1 Flow chart of record linkage, matching and cohort identification



\*Active patients were defined as patients who used Hospital Authority service (emergency, outpatient or inpatient settings) between January 1, 2018 and September 30, 2021.

Abbreviation: HA: Hospital Authority of Hong Kong; DH: Department of Health of Hong Kong government; RA: rheumatoid arthritis; SLE: systemic lupus erythematosus; SPA: spondylarthritis; PsA: psoriasis; MS: multiple sclerosis.

**Supplementary Table 1 Baseline characteristics of two-dose BNT162b2 recipients versus unvaccinated patients, before and after weighting**

	Before weighting			After weighting		
	BNT162b2	Unvaccinated	SMD	BNT162b2	Unvaccinated	SMD
N	941	1196		2131.00	2138.07	
Male [N (%)]	604 (64.2)	705 (58.9)	0.108	1307.9 (61.4)	1314.6 (61.5)	0.002
Age [mean (SD)]	46.05 (15.03)	49.34 (18.32)	0.196	47.77 (15.72)	47.73 (17.92)	0.003
<b>IBD Classification</b>						
Ulcerative colitis	378 (40.2)	560 (46.8)	0.134	960.0 (45.0)	943.9 (44.1)	0.018
Crohn's disease	553 (58.8)	615 (51.4)	0.148	1143.3 (53.7)	1163.5 (54.4)	0.015
Indeterminate colitis	10 (1.1)	21 (1.8)	0.059	27.7 (1.3)	30.7 (1.4)	0.011
<b>Comorbidities [N (%)]</b>						
Asthma	8 (0.9)	17 (1.4)	0.054	20.7 (1.0)	24.2 (1.1)	0.016
Cerebrovascular disease	4 (0.4)	37 (3.1)	0.204	40.3 (1.9)	41.2 (1.9)	0.003
Congestive heart failure	3 (0.3)	12 (1.0)	0.085	10.6 (0.5)	15.3 (0.7)	0.028
Chronic obstructive pulmonary disease	8 (0.9)	27 (2.3)	0.114	20.7 (1.0)	34.2 (1.6)	0.056
Chronic renal failure	1 (0.1)	14 (1.2)	0.134	32.0 (1.5)	15.1 (0.7)	0.076
Dementia	0 (0.0)	3 (0.3)	0.071	0.0 (0.0)	3.0 (0.1)	0.053
Diabetes	21 (2.2)	59 (4.9)	0.146	97.4 (4.6)	80.1 (3.7)	0.041
Liver disease	2 (0.2)	6 (0.5)	0.048	8.9 (0.4)	8.3 (0.4)	0.005
Myocardial infarction	2 (0.2)	7 (0.6)	0.059	7.6 (0.4)	8.9 (0.4)	0.009
Peripheral vascular disease	0 (0.0)	4 (0.3)	0.082	0.0 (0.0)	4.0 (0.2)	0.061
Paralysis	0 (0.0)	2 (0.2)	0.058	0.0 (0.0)	2.0 (0.1)	0.043
Stroke or systemic embolism	2 (0.2)	12 (1.0)	0.102	13.0 (0.6)	14.2 (0.7)	0.007
Ulcers	13 (1.4)	26 (2.2)	0.060	35.8 (1.7)	39.2 (1.8)	0.012

<b>Frequency of health service utilisation in the recent year [Mean (SD)]</b>						
Hospital admission	1.50 (2.75)	1.99 (3.87)	0.147	1.72 (2.82)	1.77 (3.48)	0.016
Accident and emergency admission	0.33 (0.79)	0.59 (1.39)	0.230	0.45 (1.06)	0.48 (1.17)	0.024
Specialist Out-patient Clinics visits	4.35 (3.15)	5.01 (3.84)	0.186	4.66 (3.43)	4.70 (3.69)	0.011
General Out-patient Clinics visits	0.62 (2.05)	0.66 (1.82)	0.024	0.65 (1.99)	0.64 (1.82)	0.004
<b>Medication usage in recent year [N (%)]</b>						
Antibiotics	180 (19.1)	347 (29.0)	0.233	517.7 (24.3)	526.2 (24.6)	0.007
Immunosuppressant*	454 (48.2)	633 (52.9)	0.094	1104.4 (51.8)	1088.1 (50.9)	0.019
Mesalazine/ Sulphasalazine	642 (68.2)	771 (64.5)	0.080	1377.2 (64.6)	1401.6 (65.6)	0.019
Corticosteroids	208 (22.1)	330 (27.6)	0.127	528.4 (24.8)	534.6 (25.0)	0.005
Biologics**	192 (20.4)	287 (24.0)	0.087	480.4 (22.5)	482.9 (22.6)	0.001

Abbreviation: SD: standard deviation; SMD: standard mean difference; IBD: inflammatory bowel disease.

\*Immunosuppressants include: azathioprine, mercaptopurine, methotrexate, ciclosporin/ cyclosporin, and tacrolimus.

\*\*Biologics include: infliximab, adalimumab, vedolizumab and ustekinumab.

**Supplementary Table 2 Incidence of unplanned hospitalisations and 28-day emergency department attendance within 28 days following the first or second dose vaccination**

	Cases/N	Follow-up time (person-years)	Crude incidence (per 100 person-years, 95% CI)	Adjusted IRR (95% CI)	P-value
<b>First-dose</b>					
<b>Unplanned IBD-related hospitalisation</b>					
BNT162b2	3/1020	61.70	4.86 (1.24, 13.23)	0.51 (0.20, 1.26)	0.145
Unvaccinated	10/1273	85.54	11.69 (5.94, 20.84)	Ref	-
<b>Unplanned all-cause hospitalisation</b>					
BNT162b2	12/1020	61.31	19.57 (10.69, 33.15)	0.63 (0.40, 1.01)	0.055
Unvaccinated	32/1273	84.62	37.82 (26.35, 52.69)	Ref	-
<b>28-day emergency department attendance</b>					
BNT162b2	29/1020	60.79	47.71 (32.62, 67.54)	1.00 (0.73, 1.38)	0.992
Unvaccinated	50/1273	83.90	59.59 (44.71, 77.93)	Ref	-
<b>Second-dose</b>					
<b>Unplanned IBD-related hospitalisation</b>					
BNT162b2	2/941	64.93	3.08 (0.52, 10.18)	0.44 (0.15, 1.32)	0.145
Unvaccinated	6/1196	83.55	7.18 (2.91, 14.94)	Ref	-
<b>Unplanned all-cause hospitalisation</b>					
BNT162b2	8/941	64.61	12.38 (5.84, 23.37)	0.88 (0.51, 1.51)	0.633
Unvaccinated	18/1196	82.94	21.7 (13.32, 33.56)	Ref	-
<b>28-day emergency department attendance</b>					
BNT162b2	25/941	63.93	39.11 (25.87, 56.88)	1.00 (0.71, 1.41)	0.996
Unvaccinated	39/1196	82.12	47.49 (34.24, 64.27)	Ref	-

Abbreviation: CI: confidence interval; IBD: inflammatory bowel disease; IRR: incidence rate ratio.