

Prior SGLT2 Inhibitor and Metformin Use and Risk of Long COVID in Type 2 Diabetes: A Nationwide Population-based Cohort Study - Supplementary Materials

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Supplementary Table 1: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of patients age>60 years, with or without metformin

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	26060	1438 (5.5%)	1403	127 (9.1%)	0.77 (0.63, 0.93)	0.0082	-19.47 (-34.52, -4.42)
Cardiovascular	35214	794 (2.3%)	2151	74 (3.4%)	0.93 (0.72, 1.22)	0.6133	-1.99 (-9.57, 5.59)
Neurological	34914	978 (2.8%)	2413	111 (4.6%)	0.75 (0.60, 0.93)	0.0091	-10.75 (-19.13, -2.37)
Psychiatric	41002	127 (0.3%)	3170	16 (0.5%)	0.81 (0.45, 1.44)	0.4676	-0.89 (-3.33, 1.55)
Autoimmune	42390	31 (0.1%)	3290	2 (0.1%)	1.89 (0.41, 8.72)	0.4165	0.56 (-0.36, 1.47)
Dermatological	42015	69 (0.2%)	3271	11 (0.3%)	0.69 (0.34, 1.37)	0.2879	-1.05 (-3.09, 0.98)
Respiratory	39957	174 (0.4%)	3101	17 (0.5%)	0.96 (0.56, 1.66)	0.8953	-0.20 (-2.89, 2.50)
Gastrointestinal	40679	282 (0.7%)	3112	26 (0.8%)	1.13 (0.72, 1.77)	0.5976	0.95 (-2.19, 4.10)
Composite Symptoms	35533	963 (2.7%)	2540	101 (4.0%)	0.75 (0.60, 0.94)	0.0128	-9.58 (-17.35, -1.81)
Cardiovascular signs and symptoms	39183	289 (0.7%)	2971	37 (1.2%)	0.75 (0.51, 1.10)	0.1367	-2.90 (-6.86, 1.06)
Respiratory signs and symptoms	40773	262 (0.6%)	3082	34 (1.1%)	0.74 (0.50, 1.11)	0.1473	-2.68 (-6.37, 1.01)
Headache	42072	52 (0.1%)	3279	5 (0.2%)	0.95 (0.36, 2.46)	0.9081	-0.09 (-1.48, 1.31)
Musculoskeletal pain/stiffness	41154	330 (0.8%)	3154	31 (1.0%)	0.78 (0.52, 1.16)	0.2235	-2.22 (-5.83, 1.38)
Abdominal and pelvic pain	41481	252 (0.6%)	3197	25 (0.8%)	0.72 (0.47, 1.11)	0.1417	-2.28 (-5.51, 0.95)
Generalised pain	42485	12 (0.0%)	3314	2 (0.1%)	0.40 (0.09, 1.83)	0.2366	-0.41 (-1.30, 0.49)
Loss of smell or taste	42443	6 (0.0%)	3307	0 (0.0%)	-	-	0.18 (0.05, 0.30)
Memory and cognitive impairment	42450	15 (0.0%)	3309	2 (0.1%)	0.38 (0.08, 1.79)	0.2214	-0.43 (-1.34, 0.48)
Fatigue and malaise	42193	125 (0.3%)	3260	17 (0.5%)	0.82 (0.47, 1.43)	0.4888	-0.84 (-3.29, 1.60)

Supplementary Table 2: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of patients age<60 years, with or without metformin

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	16846	488 (2.9%)	904	33 (3.7%)	0.88 (0.60, 1.29)	0.5016	-4.35 (-16.82, 8.11)
Cardiovascular	21419	237 (1.1%)	1242	19 (1.5%)	0.76 (0.45, 1.28)	0.2969	-3.60 (-10.49, 3.29)
Neurological	21281	272 (1.3%)	1316	16 (1.2%)	1.31 (0.77, 2.25)	0.32	3.77 (-2.38, 9.92)
Psychiatric	23196	87 (0.4%)	1521	8 (0.5%)	0.57 (0.27, 1.23)	0.1514	-2.17 (-5.80, 1.46)
Autoimmune	24198	1 (0.0%)	1577	1 (0.1%)	0.08 (0.00, 1.25)	0.0717	-0.54 (-1.75, 0.66)
Dermatological	24067	16 (0.1%)	1581	1 (0.1%)	1.27 (0.16, 10.36)	0.824	0.19 (-1.18, 1.56)
Respiratory	22979	102 (0.4%)	1472	3 (0.2%)	3.43 (0.97, 12.07)	0.0551	3.63 (1.45, 5.82)
Gastrointestinal	23583	90 (0.4%)	1512	9 (0.6%)	0.66 (0.31, 1.38)	0.2706	-2.06 (-6.05, 1.92)
Composite Symptoms	20439	311 (1.5%)	1250	30 (2.4%)	0.76 (0.50, 1.15)	0.2009	-5.36 (-13.81, 3.10)
Cardiovascular signs and symptoms	22300	146 (0.7%)	1443	14 (1.0%)	0.68 (0.37, 1.24)	0.2084	-3.03 (-8.13, 2.06)
Respiratory signs and symptoms	23241	108 (0.5%)	1466	11 (0.8%)	0.78 (0.39, 1.54)	0.4704	-1.48 (-5.75, 2.79)
Headache	23979	32 (0.1%)	1577	3 (0.2%)	0.93 (0.26, 3.28)	0.9093	-0.13 (-2.33, 2.06)
Musculoskeletal pain/stiffness	23689	74 (0.3%)	1537	6 (0.4%)	1.17 (0.49, 2.81)	0.7304	0.70 (-2.65, 4.04)
Abdominal and pelvic pain	23568	80 (0.3%)	1512	8 (0.5%)	0.75 (0.34, 1.63)	0.4657	-1.34 (-5.10, 2.41)
Generalised pain	24260	1 (0.0%)	1590	1 (0.1%)	0.04 (0.00, 0.66)	0.0244	-0.66 (-1.95, 0.63)
Loss of smell or taste	24255	1 (0.0%)	1589	0 (0.0%)	-	-	0.17 (0.01, 0.33)
Memory and cognitive impairment	24257	0 (0.0%)	1591	0 (0.0%)	-	-	0.00 (0.00, 0.00)
Fatigue and malaise	24228	9 (0.0%)	1585	5 (0.3%)	0.18 (0.05, 0.69)	0.0122	-2.37 (-5.04, 0.30)

Supplementary Table 3: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of patients age>60 years, with or without SGLT2i

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	7014	375 (5.3%)	20449	1190 (5.8%)	0.97 (0.86, 1.10)	0.6699	-1.46 (-7.71, 4.79)
Cardiovascular	9003	214 (2.4%)	28362	654 (2.3%)	1.10 (0.93, 1.30)	0.2557	2.22 (-1.42, 5.87)
Neurological	10300	241 (2.3%)	27027	848 (3.1%)	0.75 (0.65, 0.87)	2e-04	-7.71 (-11.31, -4.12)
Psychiatric	11822	34 (0.3%)	32350	109 (0.3%)	0.86 (0.57, 1.30)	0.4807	-0.47 (-1.63, 0.70)
Autoimmune	12141	8 (0.1%)	33539	25 (0.1%)	0.87 (0.37, 2.06)	0.7555	-0.09 (-0.63, 0.44)
Dermatological	12037	15 (0.1%)	33249	65 (0.2%)	0.63 (0.35, 1.13)	0.1179	-0.78 (-1.59, 0.03)
Respiratory	11462	63 (0.5%)	31596	128 (0.4%)	1.47 (1.07, 2.03)	0.0186	1.83 (0.29, 3.37)
Gastrointestinal	11665	76 (0.7%)	32126	232 (0.7%)	0.92 (0.70, 1.21)	0.5484	-0.59 (-2.34, 1.17)
Composite Symptoms	9985	239 (2.4%)	28088	825 (2.9%)	0.81 (0.70, 0.95)	0.0079	-5.49 (-9.10, -1.87)
Cardiovascular signs and symptoms	10999	89 (0.8%)	31155	237 (0.8%)	1.09 (0.84, 1.41)	0.5206	0.68 (-1.28, 2.65)
Respiratory signs and symptoms	11626	70 (0.6%)	32229	226 (0.7%)	0.86 (0.65, 1.14)	0.3017	-0.97 (-2.65, 0.71)
Headache	12036	16 (0.1%)	33315	41 (0.1%)	1.13 (0.61, 2.07)	0.6983	0.17 (-0.62, 0.95)
Musculoskeletal pain/stiffness	11775	82 (0.7%)	32533	279 (0.9%)	0.78 (0.60, 1.01)	0.057	-2.00 (-3.83, -0.17)
Abdominal and pelvic pain	11849	63 (0.5%)	32829	214 (0.7%)	0.84 (0.63, 1.14)	0.2653	-0.97 (-2.53, 0.58)
Generalised pain	12169	3 (0.0%)	33630	11 (0.0%)	0.82 (0.22, 3.07)	0.7655	-0.07 (-0.44, 0.30)
Loss of smell or taste	12146	2 (0.0%)	33604	4 (0.0%)	1.70 (0.29, 10.04)	0.5563	0.05 (-0.17, 0.28)
Memory and cognitive impairment	12159	3 (0.0%)	33600	14 (0.0%)	0.51 (0.14, 1.81)	0.2988	-0.28 (-0.68, 0.12)
Fatigue and malaise	12115	22 (0.2%)	33338	120 (0.4%)	0.61 (0.38, 0.99)	0.0435	-1.18 (-2.14, -0.21)

Supplementary Table 4: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of patients age<60 years, with or without SGLT2i

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	6882	195 (2.8%)	10868	326 (3.0%)	0.90 (0.74, 1.08)	0.2642	-3.23 (-8.39, 1.92)
Cardiovascular	8563	95 (1.1%)	14098	161 (1.1%)	0.83 (0.63, 1.08)	0.168	-2.27 (-5.17, 0.62)
Neurological	9054	120 (1.3%)	13543	168 (1.2%)	0.98 (0.76, 1.26)	0.8826	-0.24 (-3.25, 2.76)
Psychiatric	10006	36 (0.4%)	14711	59 (0.4%)	0.90 (0.58, 1.39)	0.6309	-0.42 (-1.99, 1.15)
Autoimmune	10305	1 (0.0%)	15470	1 (0.0%)	3.17 (0.20, 50.63)	0.4149	0.09 (-0.15, 0.34)
Dermatological	10245	7 (0.1%)	15403	10 (0.1%)	1.05 (0.37, 2.97)	0.9302	0.03 (-0.61, 0.67)
Respiratory	9762	29 (0.3%)	14689	76 (0.5%)	0.56 (0.35, 0.89)	0.0149	-2.29 (-3.88, -0.70)
Gastrointestinal	10032	40 (0.4%)	15063	59 (0.4%)	0.95 (0.62, 1.47)	0.8317	-0.18 (-1.73, 1.37)
Composite Symptoms	8537	142 (1.7%)	13152	199 (1.5%)	1.05 (0.83, 1.32)	0.6856	0.76 (-2.69, 4.20)
Cardiovascular signs and symptoms	9350	68 (0.7%)	14393	92 (0.6%)	1.08 (0.77, 1.51)	0.6465	0.54 (-1.62, 2.70)
Respiratory signs and symptoms	9868	43 (0.4%)	14839	76 (0.5%)	0.76 (0.51, 1.13)	0.1803	-1.36 (-3.15, 0.42)
Headache	10201	14 (0.1%)	15355	21 (0.1%)	1.02 (0.50, 2.10)	0.9552	0.03 (-0.97, 1.03)
Musculoskeletal pain/stiffness	10053	37 (0.4%)	15173	43 (0.3%)	1.27 (0.79, 2.04)	0.3178	0.75 (-0.68, 2.17)
Abdominal and pelvic pain	10040	31 (0.3%)	15040	57 (0.4%)	0.77 (0.48, 1.23)	0.2757	-0.95 (-2.45, 0.56)
Generalised pain	10323	1 (0.0%)	15527	1 (0.0%)	0.83 (0.05, 13.34)	0.898	-0.01 (-0.22, 0.20)
Loss of smell or taste	10322	1 (0.0%)	15522	0 (0.0%)	-	-	0.07 (-0.09, 0.22)
Memory and cognitive impairment	10322	0 (0.0%)	15526	0 (0.0%)	-	-	0.00 (0.00, 0.00)
Fatigue and malaise	10311	5 (0.0%)	15502	9 (0.1%)	0.73 (0.23, 2.34)	0.6025	-0.16 (-0.72, 0.40)

Supplementary Table 5: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of male patients, with or without metformin

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	21572	1036 (4.8%)	1063	82 (7.7%)	0.78 (0.61, 1.00)	0.0497	-15.40 (-31.39, 0.59)
Cardiovascular	28268	609 (2.2%)	1514	54 (3.6%)	0.85 (0.62, 1.15)	0.286	-4.83 (-13.91, 4.25)
Neurological	29322	662 (2.3%)	1904	63 (3.3%)	0.87 (0.65, 1.15)	0.323	-4.16 (-12.19, 3.87)
Psychiatric	34074	93 (0.3%)	2387	9 (0.4%)	0.87 (0.41, 1.85)	0.7228	-0.44 (-2.87, 1.99)
Autoimmune	35051	16 (0.0%)	2475	2 (0.1%)	0.94 (0.16, 5.56)	0.9485	-0.05 (-1.20, 1.11)
Dermatological	34700	42 (0.1%)	2452	8 (0.3%)	0.44 (0.19, 1.05)	0.0634	-1.76 (-4.02, 0.50)
Respiratory	33334	146 (0.4%)	2349	8 (0.3%)	1.75 (0.81, 3.79)	0.1573	2.25 (-0.10, 4.61)
Gastrointestinal	33726	194 (0.6%)	2333	17 (0.7%)	0.98 (0.57, 1.68)	0.9376	-0.17 (-3.78, 3.44)
Composite Symptoms	29323	659 (2.2%)	1941	65 (3.3%)	0.77 (0.58, 1.01)	0.0602	-7.57 (-15.70, 0.57)
Cardiovascular signs and symptoms	32067	247 (0.8%)	2221	26 (1.2%)	0.80 (0.52, 1.25)	0.3343	-2.11 (-6.55, 2.32)
Respiratory signs and symptoms	33495	221 (0.7%)	2279	28 (1.2%)	0.67 (0.43, 1.05)	0.0779	-3.80 (-8.29, 0.69)
Headache	34831	33 (0.1%)	2468	2 (0.1%)	1.50 (0.35, 6.55)	0.5863	0.46 (-0.79, 1.71)
Musculoskeletal pain/stiffness	34217	181 (0.5%)	2398	12 (0.5%)	1.09 (0.60, 2.00)	0.7771	0.51 (-2.59, 3.61)
Abdominal and pelvic pain	34351	139 (0.4%)	2412	14 (0.6%)	0.79 (0.44, 1.42)	0.424	-1.18 (-4.22, 1.86)
Generalised pain	35110	4 (0.0%)	2482	1 (0.0%)	0.18 (0.02, 1.70)	0.1353	-0.37 (-1.22, 0.47)
Loss of smell or taste	35074	5 (0.0%)	2479	0 (0.0%)	-	-	0.17 (0.03, 0.30)
Memory and cognitive impairment	35077	8 (0.0%)	2482	2 (0.1%)	0.11 (0.02, 0.57)	0.0086	-0.84 (-2.05, 0.37)
Fatigue and malaise	34934	76 (0.2%)	2455	13 (0.5%)	0.69 (0.35, 1.34)	0.2732	-1.46 (-4.23, 1.31)

Supplementary Table 6: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of female patients, with or without metformin

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	21334	890 (4.2%)	1244	78 (6.3%)	0.82 (0.64, 1.06)	0.1261	-10.60 (-24.26, 3.06)
Cardiovascular	28365	422 (1.5%)	1879	39 (2.1%)	1.02 (0.71, 1.47)	0.9095	0.44 (-6.07, 6.95)
Neurological	26873	588 (2.2%)	1825	64 (3.5%)	0.79 (0.60, 1.05)	0.1007	-6.97 (-15.49, 1.55)
Psychiatric	30124	121 (0.4%)	2304	15 (0.7%)	0.70 (0.39, 1.26)	0.2364	-1.86 (-5.16, 1.43)
Autoimmune	31537	16 (0.1%)	2392	1 (0.0%)	1.90 (0.24, 15.25)	0.5452	0.38 (-0.50, 1.26)
Dermatological	31382	43 (0.1%)	2400	4 (0.2%)	1.23 (0.42, 3.62)	0.7069	0.42 (-1.37, 2.22)
Respiratory	29602	130 (0.4%)	2224	12 (0.5%)	0.90 (0.48, 1.69)	0.7418	-0.55 (-3.71, 2.62)
Gastrointestinal	30536	178 (0.6%)	2291	18 (0.8%)	0.93 (0.54, 1.60)	0.7995	-0.46 (-3.95, 3.03)
Composite Symptoms	26649	615 (2.3%)	1849	66 (3.6%)	0.78 (0.59, 1.03)	0.0765	-7.77 (-16.38, 0.84)
Cardiovascular signs and symptoms	29416	188 (0.6%)	2193	25 (1.1%)	0.69 (0.43, 1.11)	0.1218	-3.51 (-8.03, 1.02)
Respiratory signs and symptoms	30519	149 (0.5%)	2269	17 (0.7%)	0.93 (0.53, 1.63)	0.7969	-0.47 (-3.91, 2.97)
Headache	31220	51 (0.2%)	2388	6 (0.3%)	0.65 (0.27, 1.59)	0.3459	-0.90 (-3.00, 1.19)
Musculoskeletal pain/stiffness	30626	223 (0.7%)	2293	25 (1.1%)	0.71 (0.45, 1.11)	0.1349	-3.27 (-7.69, 1.16)
Abdominal and pelvic pain	30698	193 (0.6%)	2297	19 (0.8%)	0.77 (0.46, 1.26)	0.2962	-2.09 (-6.05, 1.87)
Generalised pain	31635	9 (0.0%)	2422	2 (0.1%)	0.35 (0.07, 1.69)	0.1936	-0.56 (-1.74, 0.63)
Loss of smell or taste	31624	2 (0.0%)	2417	0 (0.0%)	█	-	0.12 (-0.00, 0.24)
Memory and cognitive impairment	31630	7 (0.0%)	2418	0 (0.0%)	█	-	0.23 (0.06, 0.39)
Fatigue and malaise	31487	58 (0.2%)	2390	9 (0.4%)	0.69 (0.33, 1.44)	0.3177	-1.18 (-3.69, 1.33)

Supplementary Table 7: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of male patients, with or without SGLT2i

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	7288	326 (4.5%)	15347	792 (5.2%)	0.92 (0.81, 1.06)	0.262	-3.77 (-9.75, 2.20)
Cardiovascular	9135	197 (2.2%)	20647	466 (2.3%)	0.99 (0.83, 1.18)	0.9111	-0.23 (-3.91, 3.45)
Neurological	10795	215 (2.0%)	20431	510 (2.5%)	0.79 (0.66, 0.93)	0.0061	-5.26 (-8.64, -1.88)
Psychiatric	12396	32 (0.3%)	24065	70 (0.3%)	0.94 (0.60, 1.48)	0.7908	-0.17 (-1.29, 0.96)
Autoimmune	12678	5 (0.0%)	24848	13 (0.1%)	0.79 (0.26, 2.37)	0.6712	-0.10 (-0.52, 0.33)
Dermatological	12574	13 (0.1%)	24578	37 (0.2%)	0.63 (0.33, 1.24)	0.1817	-0.62 (-1.39, 0.15)
Respiratory	12115	55 (0.5%)	23568	99 (0.4%)	1.11 (0.78, 1.59)	0.5625	0.47 (-1.01, 1.95)
Gastrointestinal	12231	68 (0.6%)	23828	143 (0.6%)	0.93 (0.68, 1.26)	0.6359	-0.43 (-2.07, 1.21)
Composite Symptoms	10345	213 (2.1%)	20919	511 (2.4%)	0.89 (0.75, 1.06)	0.1959	-2.49 (-5.94, 0.96)
Cardiovascular signs and symptoms	11324	91 (0.8%)	22964	182 (0.8%)	1.01 (0.77, 1.33)	0.9348	0.09 (-1.91, 2.10)
Respiratory signs and symptoms	12067	81 (0.7%)	23707	168 (0.7%)	0.99 (0.75, 1.32)	0.9502	-0.06 (-1.88, 1.76)
Headache	12583	14 (0.1%)	24716	21 (0.1%)	1.36 (0.64, 2.86)	0.4214	0.33 (-0.40, 1.06)
Musculoskeletal pain/stiffness	12343	54 (0.4%)	24272	139 (0.6%)	0.80 (0.57, 1.12)	0.1887	-1.10 (-2.59, 0.39)
Abdominal and pelvic pain	12407	38 (0.3%)	24356	115 (0.5%)	0.65 (0.44, 0.96)	0.0311	-1.63 (-2.92, -0.33)
Generalised pain	12701	2 (0.0%)	24891	3 (0.0%)	1.19 (0.19, 7.43)	0.8496	0.02 (-0.22, 0.26)
Loss of smell or taste	12689	3 (0.0%)	24864	2 (0.0%)	2.65 (0.42, 16.61)	0.2987	0.12 (-0.14, 0.39)
Memory and cognitive impairment	12692	2 (0.0%)	24867	8 (0.0%)	0.54 (0.11, 2.63)	0.4492	-0.18 (-0.54, 0.18)
Fatigue and malaise	12656	18 (0.1%)	24733	71 (0.3%)	0.72 (0.42, 1.24)	0.2394	-0.61 (-1.52, 0.30)

Supplementary Table 8: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of female patients, with or without SGLT2i

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	6608	244 (3.7%)	15970	724 (4.5%)	0.97 (0.83, 1.14)	0.7164	-1.14 (-6.79, 4.51)
Cardiovascular	8431	112 (1.3%)	21813	349 (1.6%)	1.07 (0.85, 1.34)	0.5898	0.86 (-2.10, 3.83)
Neurological	8559	146 (1.7%)	20139	506 (2.5%)	0.82 (0.67, 0.99)	0.0401	-4.12 (-7.63, -0.61)
Psychiatric	9432	38 (0.4%)	22996	98 (0.4%)	0.89 (0.59, 1.33)	0.5641	-0.51 (-2.05, 1.04)
Autoimmune	9768	4 (0.0%)	24161	13 (0.1%)	1.21 (0.37, 3.98)	0.7571	0.09 (-0.43, 0.60)
Dermatological	9708	9 (0.1%)	24074	38 (0.2%)	0.76 (0.35, 1.63)	0.4751	-0.31 (-1.08, 0.45)
Respiratory	9109	37 (0.4%)	22717	105 (0.5%)	0.98 (0.65, 1.46)	0.9131	-0.10 (-1.71, 1.51)
Gastrointestinal	9466	48 (0.5%)	23361	148 (0.6%)	0.89 (0.63, 1.26)	0.525	-0.64 (-2.42, 1.14)
Composite Symptoms	8177	168 (2.1%)	20321	513 (2.5%)	0.86 (0.71, 1.03)	0.1065	-3.50 (-7.30, 0.30)
Cardiovascular signs and symptoms	9025	66 (0.7%)	22584	147 (0.7%)	1.18 (0.87, 1.61)	0.2911	1.19 (-0.90, 3.28)
Respiratory signs and symptoms	9427	32 (0.3%)	23361	134 (0.6%)	0.59 (0.39, 0.88)	0.0107	-2.48 (-4.05, -0.92)
Headache	9654	16 (0.2%)	23954	41 (0.2%)	0.90 (0.49, 1.66)	0.731	-0.21 (-1.23, 0.82)
Musculoskeletal pain/stiffness	9485	65 (0.7%)	23434	183 (0.8%)	0.94 (0.70, 1.27)	0.6816	-0.46 (-2.49, 1.57)
Abdominal and pelvic pain	9482	56 (0.6%)	23513	156 (0.7%)	0.97 (0.70, 1.35)	0.8424	-0.21 (-2.08, 1.66)
Generalised pain	9791	2 (0.0%)	24266	9 (0.0%)	0.74 (0.15, 3.61)	0.7134	-0.10 (-0.51, 0.32)
Loss of smell or taste	9779	0 (0.0%)	24262	2 (0.0%)	-	-	-0.03 (-0.11, 0.04)
Memory and cognitive impairment	9789	1 (0.0%)	24259	6 (0.0%)	0.39 (0.05, 3.28)	0.3842	-0.18 (-0.48, 0.12)
Fatigue and malaise	9770	9 (0.1%)	24107	58 (0.2%)	0.51 (0.24, 1.07)	0.0759	-0.90 (-1.71, -0.09)

Supplementary Table 9: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of optimal HbA1c (<6.5%), with or without metformin

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	14490	665 (4.6%)	771	56 (7.3%)	0.82 (0.61, 1.11)	0.1984	-12.02 (-30.21, 6.17)
Cardiovascular	19419	335 (1.7%)	1142	34 (3.0%)	0.91 (0.62, 1.36)	0.6604	-2.19 (-11.67, 7.28)
Neurological	19031	454 (2.4%)	1361	46 (3.4%)	0.91 (0.65, 1.27)	0.5671	-3.07 (-12.80, 6.67)
Psychiatric	22038	79 (0.4%)	1729	8 (0.5%)	0.96 (0.41, 2.25)	0.921	-0.16 (-3.09, 2.78)
Autoimmune	22889	9 (0.0%)	1799	1 (0.1%)	0.75 (0.09, 6.33)	0.7934	-0.13 (-1.20, 0.94)
Dermatological	22703	28 (0.1%)	1804	3 (0.2%)	0.83 (0.24, 2.88)	0.7682	-0.31 (-2.35, 1.73)
Respiratory	21708	98 (0.5%)	1692	9 (0.5%)	1.29 (0.61, 2.73)	0.5007	1.51 (-2.08, 5.10)
Gastrointestinal	22035	129 (0.6%)	1727	16 (0.9%)	0.82 (0.46, 1.48)	0.5138	-1.61 (-6.22, 3.00)
Composite Symptoms	19162	399 (2.1%)	1350	57 (4.2%)	0.59 (0.43, 0.81)	0.001	-16.70 (-27.54, -5.86)
Cardiovascular signs and symptoms	21146	145 (0.7%)	1609	22 (1.4%)	0.59 (0.35, 1.00)	0.0481	-4.92 (-10.38, 0.54)
Respiratory signs and symptoms	21946	124 (0.6%)	1652	22 (1.3%)	0.50 (0.30, 0.84)	0.009	-6.20 (-11.66, -0.75)
Headache	22704	24 (0.1%)	1797	3 (0.2%)	1.21 (0.35, 4.24)	0.7651	0.37 (-1.66, 2.39)
Musculoskeletal pain/stiffness	22270	130 (0.6%)	1733	18 (1.0%)	0.62 (0.36, 1.07)	0.0841	-4.11 (-9.13, 0.90)
Abdominal and pelvic pain	22386	114 (0.5%)	1743	12 (0.7%)	0.78 (0.41, 1.51)	0.4662	-1.58 (-5.70, 2.54)
Generalised pain	22948	5 (0.0%)	1819	2 (0.1%)	0.14 (0.02, 0.89)	0.0366	-1.06 (-2.69, 0.57)
Loss of smell or taste	22925	3 (0.0%)	1812	0 (0.0%)	-	-	0.11 (-0.02, 0.25)
Memory and cognitive impairment	22933	2 (0.0%)	1817	2 (0.1%)	0.09 (0.01, 0.78)	0.0291	-1.21 (-2.89, 0.47)
Fatigue and malaise	22804	47 (0.2%)	1791	8 (0.4%)	0.64 (0.28, 1.48)	0.2978	-1.37 (-4.30, 1.56)

Supplementary Table 10: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of suboptimal HbA1c (>6.5%), with or without metformin

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	20950	937 (4.5%)	822	56 (6.8%)	0.91 (0.68, 1.21)	0.5066	-5.78 (-22.88, 11.32)
Cardiovascular	27228	506 (1.9%)	1236	33 (2.7%)	1.07 (0.73, 1.58)	0.7177	1.77 (-6.92, 10.45)
Neurological	27308	603 (2.2%)	1228	48 (3.9%)	0.82 (0.60, 1.13)	0.2276	-6.44 (-17.09, 4.20)
Psychiatric	30934	104 (0.3%)	1566	9 (0.6%)	0.70 (0.34, 1.44)	0.3355	-1.76 (-5.64, 2.11)
Autoimmune	31960	16 (0.1%)	1620	1 (0.1%)	1.31 (0.16, 10.83)	0.8006	0.21 (-1.09, 1.50)
Dermatological	31690	40 (0.1%)	1610	7 (0.4%)	0.38 (0.16, 0.89)	0.0259	-2.65 (-5.86, 0.56)
Respiratory	30082	125 (0.4%)	1513	8 (0.5%)	0.91 (0.42, 1.94)	0.803	-0.47 (-4.16, 3.21)
Gastrointestinal	30886	183 (0.6%)	1535	11 (0.7%)	0.93 (0.50, 1.75)	0.8263	-0.49 (-4.81, 3.83)
Composite Symptoms	26848	670 (2.5%)	1279	39 (3.0%)	0.99 (0.71, 1.39)	0.9568	-0.29 (-9.98, 9.40)
Cardiovascular signs and symptoms	29379	219 (0.7%)	1476	15 (1.0%)	0.84 (0.49, 1.47)	0.5494	-1.60 (-6.87, 3.67)
Respiratory signs and symptoms	30780	194 (0.6%)	1537	11 (0.7%)	1.20 (0.63, 2.30)	0.5811	1.39 (-2.89, 5.66)
Headache	31703	49 (0.2%)	1618	4 (0.2%)	0.83 (0.28, 2.44)	0.7319	-0.37 (-2.68, 1.94)
Musculoskeletal pain/stiffness	31119	210 (0.7%)	1557	13 (0.8%)	1.01 (0.56, 1.83)	0.9776	0.07 (-4.61, 4.74)
Abdominal and pelvic pain	31163	168 (0.5%)	1566	10 (0.6%)	0.99 (0.51, 1.93)	0.9845	-0.04 (-4.14, 4.06)
Generalised pain	32023	7 (0.0%)	1632	0 (0.0%)	-	-	0.40 (0.18, 0.62)
Loss of smell or taste	32006	3 (0.0%)	1630	0 (0.0%)	-	-	0.10 (-0.01, 0.20)
Memory and cognitive impairment	32005	12 (0.0%)	1631	0 (0.0%)	-	-	0.39 (0.18, 0.61)
Fatigue and malaise	31897	64 (0.2%)	1613	5 (0.3%)	1.38 (0.54, 3.56)	0.5028	1.20 (-1.62, 4.02)

Supplementary Table 11: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of optimal HbA1c (<6.5%), with or without SGLT2i

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	3456	145 (4.2%)	11805	576 (4.9%)	0.99 (0.81, 1.20)	0.8954	-0.62 (-8.43, 7.19)
Cardiovascular	4431	80 (1.8%)	16130	289 (1.8%)	1.21 (0.93, 1.58)	0.1536	3.35 (-1.13, 7.84)
Neurological	5029	85 (1.7%)	15363	415 (2.7%)	0.68 (0.53, 0.87)	0.0019	-8.33 (-12.76, -3.90)
Psychiatric	5768	17 (0.3%)	17999	70 (0.4%)	0.80 (0.46, 1.40)	0.4399	-0.78 (-2.49, 0.94)
Autoimmune	5947	3 (0.1%)	18741	7 (0.0%)	1.44 (0.36, 5.74)	0.6062	0.15 (-0.48, 0.78)
Dermatological	5902	8 (0.1%)	18605	23 (0.1%)	1.19 (0.51, 2.77)	0.6939	0.24 (-0.88, 1.36)
Respiratory	5676	25 (0.4%)	17724	82 (0.5%)	0.97 (0.60, 1.57)	0.909	-0.13 (-2.13, 1.88)
Gastrointestinal	5757	32 (0.6%)	18005	113 (0.6%)	0.94 (0.62, 1.42)	0.7551	-0.40 (-2.66, 1.87)
Composite Symptoms	4816	108 (2.2%)	15696	348 (2.2%)	1.02 (0.81, 1.28)	0.8581	0.45 (-4.33, 5.23)
Cardiovascular signs and symptoms	5356	44 (0.8%)	17399	123 (0.7%)	1.13 (0.78, 1.63)	0.5107	0.94 (-1.78, 3.67)
Respiratory signs and symptoms	5658	25 (0.4%)	17940	121 (0.7%)	0.60 (0.38, 0.95)	0.0286	-2.89 (-5.01, -0.77)
Headache	5890	12 (0.2%)	18611	15 (0.1%)	3.20 (1.45, 7.05)	0.004	1.51 (0.26, 2.76)
Musculoskeletal pain/stiffness	5759	35 (0.6%)	18244	113 (0.6%)	1.03 (0.69, 1.55)	0.8698	0.19 (-2.07, 2.46)
Abdominal and pelvic pain	5804	31 (0.5%)	18325	95 (0.5%)	1.09 (0.71, 1.67)	0.7089	0.42 (-1.71, 2.55)
Generalised pain	5962	3 (0.1%)	18805	4 (0.0%)	2.48 (0.47, 13.22)	0.2859	0.26 (-0.30, 0.82)
Loss of smell or taste	5955	0 (0.0%)	18782	3 (0.0%)	-	-	-0.14 (-0.31, 0.03)
Memory and cognitive impairment	5962	1 (0.0%)	18788	3 (0.0%)	0.57 (0.06, 5.75)	0.6335	-0.12 (-0.52, 0.28)
Fatigue and malaise	5937	7 (0.1%)	18658	48 (0.3%)	0.56 (0.24, 1.31)	0.1832	-0.90 (-1.99, 0.18)

Supplementary Table 12: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of suboptimal HbA1c (>6.5%), with or without SGLT2i

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	8587	345 (4.0%)	13185	648 (4.9%)	0.90 (0.78, 1.03)	0.1337	-4.57 (-10.17, 1.03)
Cardiovascular	10851	184 (1.7%)	17613	355 (2.0%)	0.91 (0.76, 1.11)	0.3575	-1.66 (-4.88, 1.57)
Neurological	11587	223 (1.9%)	16949	428 (2.5%)	0.85 (0.71, 1.01)	0.0595	-3.48 (-6.89, -0.08)
Psychiatric	12994	49 (0.4%)	19506	64 (0.3%)	1.21 (0.82, 1.80)	0.3351	0.72 (-0.65, 2.08)
Autoimmune	13356	5 (0.0%)	20224	12 (0.1%)	0.81 (0.27, 2.46)	0.7166	-0.10 (-0.56, 0.37)
Dermatological	13252	11 (0.1%)	20048	36 (0.2%)	0.53 (0.26, 1.06)	0.073	-0.75 (-1.49, -0.01)
Respiratory	12561	54 (0.4%)	19034	79 (0.4%)	1.03 (0.71, 1.48)	0.8763	0.13 (-1.38, 1.64)
Gastrointestinal	12905	70 (0.5%)	19516	124 (0.6%)	0.90 (0.66, 1.23)	0.5053	-0.61 (-2.30, 1.07)
Composite Symptoms	11090	226 (2.0%)	17037	483 (2.8%)	0.80 (0.67, 0.94)	0.0078	-5.32 (-8.92, -1.71)
Cardiovascular signs and symptoms	12127	86 (0.7%)	18728	148 (0.8%)	0.94 (0.71, 1.25)	0.6697	-0.46 (-2.42, 1.51)
Respiratory signs and symptoms	12832	73 (0.6%)	19485	132 (0.7%)	0.92 (0.68, 1.24)	0.5705	-0.55 (-2.32, 1.21)
Headache	13228	12 (0.1%)	20093	41 (0.2%)	0.46 (0.24, 0.91)	0.0251	-1.11 (-1.93, -0.29)
Musculoskeletal pain/stiffness	13009	72 (0.6%)	19667	151 (0.8%)	0.82 (0.61, 1.10)	0.1772	-1.30 (-3.05, 0.45)
Abdominal and pelvic pain	13004	52 (0.4%)	19725	126 (0.6%)	0.68 (0.48, 0.96)	0.0302	-1.89 (-3.42, -0.35)
Generalised pain	13379	1 (0.0%)	20276	6 (0.0%)	0.38 (0.05, 3.22)	0.3756	-0.19 (-0.49, 0.11)
Loss of smell or taste	13366	3 (0.0%)	20270	0 (0.0%)	-	-	0.17 (-0.05, 0.40)
Memory and cognitive impairment	13371	2 (0.0%)	20265	10 (0.0%)	0.41 (0.09, 1.93)	0.2599	-0.31 (-0.71, 0.09)
Fatigue and malaise	13346	16 (0.1%)	20164	53 (0.3%)	0.66 (0.37, 1.19)	0.1705	-0.71 (-1.60, 0.19)

Supplementary Table 13: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of patients during period of Omicron predominant transmission, with or without metformin

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	37996	1719 (4.5%)	2077	140 (6.7%)	0.82 (0.68, 0.99)	0.043	-11.12 (-22.00, -0.24)
Cardiovascular	50157	929 (1.9%)	3040	82 (2.7%)	0.96 (0.75, 1.24)	0.7746	-0.85 (-6.57, 4.87)
Neurological	49727	1117 (2.2%)	3342	110 (3.3%)	0.85 (0.69, 1.05)	0.1382	-4.61 (-10.68, 1.45)
Psychiatric	56893	194 (0.3%)	4223	22 (0.5%)	0.74 (0.46, 1.21)	0.2349	-1.23 (-3.38, 0.92)
Autoimmune	58983	29 (0.0%)	4368	3 (0.1%)	1.36 (0.37, 5.00)	0.6476	0.24 (-0.57, 1.05)
Dermatological	58525	76 (0.1%)	4357	11 (0.3%)	0.65 (0.32, 1.31)	0.2319	-0.88 (-2.41, 0.65)
Respiratory	55807	239 (0.4%)	4097	18 (0.4%)	1.21 (0.72, 2.03)	0.4701	0.89 (-1.19, 2.98)
Gastrointestinal	56900	319 (0.6%)	4161	33 (0.8%)	0.91 (0.61, 1.35)	0.6366	-0.68 (-3.39, 2.02)
Composite Symptoms	49580	1134 (2.3%)	3392	122 (3.6%)	0.74 (0.60, 0.91)	0.0037	-9.06 (-15.41, -2.71)
Cardiovascular signs and symptoms	54464	378 (0.7%)	3955	47 (1.2%)	0.74 (0.53, 1.04)	0.0854	-2.87 (-6.23, 0.49)
Respiratory signs and symptoms	56745	329 (0.6%)	4085	42 (1.0%)	0.72 (0.50, 1.03)	0.0694	-2.69 (-5.75, 0.36)
Headache	58518	71 (0.1%)	4359	7 (0.2%)	0.85 (0.38, 1.91)	0.6946	-0.24 (-1.48, 0.99)
Musculoskeletal pain/stiffness	57429	366 (0.6%)	4203	34 (0.8%)	0.87 (0.60, 1.27)	0.4689	-1.09 (-3.94, 1.75)
Abdominal and pelvic pain	57625	305 (0.5%)	4229	31 (0.7%)	0.71 (0.48, 1.06)	0.0914	-2.20 (-4.91, 0.51)
Generalised pain	59119	12 (0.0%)	4403	3 (0.1%)	0.26 (0.07, 0.98)	0.046	-0.54 (-1.35, 0.27)
Loss of smell or taste	59077	7 (0.0%)	4396	0 (0.0%)	-	-	0.19 (0.08, 0.30)
Memory and cognitive impairment	59088	14 (0.0%)	4399	2 (0.0%)	0.31 (0.07, 1.48)	0.1426	-0.36 (-1.05, 0.32)
Fatigue and malaise	58822	111 (0.2%)	4347	19 (0.4%)	0.65 (0.38, 1.11)	0.1157	-1.35 (-3.23, 0.53)

Supplementary Table 14: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of patients during period of Omicron predominant transmission, with or without SGLT2i

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	12511	514 (4.1%)	27562	1345 (4.9%)	0.93 (0.83, 1.03)	0.168	-3.41 (-7.77, 0.95)
Cardiovascular	15806	281 (1.8%)	37391	730 (2.0%)	1.02 (0.88, 1.18)	0.8181	0.32 (-2.21, 2.84)
Neurological	17407	327 (1.9%)	35662	900 (2.5%)	0.79 (0.69, 0.91)	8e-04	-4.92 (-7.50, -2.33)
Psychiatric	19649	63 (0.3%)	41467	153 (0.4%)	0.87 (0.64, 1.19)	0.3837	-0.49 (-1.48, 0.50)
Autoimmune	20201	9 (0.0%)	43150	23 (0.1%)	1.12 (0.49, 2.57)	0.7852	0.05 (-0.31, 0.42)
Dermatological	20055	19 (0.1%)	42827	68 (0.2%)	0.64 (0.37, 1.09)	0.099	-0.57 (-1.14, 0.01)
Respiratory	19103	84 (0.4%)	40801	173 (0.4%)	1.06 (0.80, 1.40)	0.6925	0.26 (-0.90, 1.41)
Gastrointestinal	19526	103 (0.5%)	41535	249 (0.6%)	0.92 (0.72, 1.18)	0.508	-0.46 (-1.72, 0.79)
Composite Symptoms	16652	343 (2.1%)	36320	913 (2.5%)	0.87 (0.76, 0.99)	0.0404	-3.13 (-5.83, -0.42)
Cardiovascular signs and symptoms	18310	137 (0.7%)	40109	288 (0.7%)	1.06 (0.85, 1.33)	0.5765	0.46 (-1.05, 1.97)
Respiratory signs and symptoms	19356	99 (0.5%)	41474	272 (0.7%)	0.80 (0.62, 1.02)	0.0684	-1.34 (-2.63, -0.06)
Headache	20016	29 (0.1%)	42861	49 (0.1%)	1.26 (0.77, 2.07)	0.3619	0.34 (-0.32, 0.99)
Musculoskeletal pain/stiffness	19639	104 (0.5%)	41993	296 (0.7%)	0.81 (0.64, 1.02)	0.0778	-1.29 (-2.58, 0.00)
Abdominal and pelvic pain	19691	87 (0.4%)	42163	249 (0.6%)	0.80 (0.62, 1.04)	0.0996	-1.12 (-2.30, 0.07)
Generalised pain	20243	4 (0.0%)	43279	11 (0.0%)	0.91 (0.27, 3.05)	0.8723	-0.02 (-0.28, 0.23)
Loss of smell or taste	20220	3 (0.0%)	43253	4 (0.0%)	2.00 (0.40, 10.11)	0.3997	0.06 (-0.11, 0.23)
Memory and cognitive impairment	20234	3 (0.0%)	43253	13 (0.0%)	0.51 (0.14, 1.83)	0.3015	-0.18 (-0.44, 0.08)
Fatigue and malaise	20183	25 (0.1%)	42986	105 (0.2%)	0.68 (0.43, 1.08)	0.0996	-0.61 (-1.26, 0.03)

Supplementary Table 15: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of non-hospitalised individuals, with or without metformin

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	41070	1694 (4.1%)	2082	125 (6.0%)	0.79 (0.65, 0.96)	0.0169	-12.03 (-22.29, -1.76)
Cardiovascular	53100	849 (1.6%)	2903	62 (2.1%)	0.90 (0.68, 1.18)	0.4531	-2.04 (-7.36, 3.28)
Neurological	53056	1048 (2.0%)	3231	90 (2.8%)	0.83 (0.66, 1.05)	0.1137	-4.52 (-10.21, 1.17)
Psychiatric	59565	186 (0.3%)	3868	22 (0.6%)	0.61 (0.38, 1.00)	0.0497	-2.07 (-4.41, 0.28)
Autoimmune	61670	29 (0.0%)	4010	3 (0.1%)	1.18 (0.31, 4.53)	0.805	0.13 (-0.73, 0.99)
Dermatological	61177	65 (0.1%)	3996	8 (0.2%)	0.54 (0.24, 1.20)	0.131	-0.90 (-2.30, 0.50)
Respiratory	58503	239 (0.4%)	3777	15 (0.4%)	1.18 (0.68, 2.04)	0.5584	0.68 (-1.36, 2.71)
Gastrointestinal	59615	317 (0.5%)	3834	29 (0.8%)	0.85 (0.56, 1.29)	0.4396	-1.09 (-3.84, 1.66)
Composite Symptoms	52504	1089 (2.1%)	3171	103 (3.2%)	0.69 (0.56, 0.86)	0.001	-9.66 (-15.88, -3.44)
Cardiovascular signs and symptoms	57173	367 (0.6%)	3648	38 (1.0%)	0.71 (0.49, 1.02)	0.0636	-2.80 (-6.05, 0.44)
Respiratory signs and symptoms	59540	303 (0.5%)	3762	35 (0.9%)	0.63 (0.43, 0.93)	0.0212	-3.11 (-6.09, -0.13)
Headache	61198	72 (0.1%)	3993	7 (0.2%)	0.84 (0.37, 1.92)	0.6746	-0.28 (-1.60, 1.04)
Musculoskeletal pain/stiffness	60156	351 (0.6%)	3878	32 (0.8%)	0.78 (0.53, 1.15)	0.2144	-1.82 (-4.75, 1.10)
Abdominal and pelvic pain	60333	293 (0.5%)	3875	26 (0.7%)	0.74 (0.49, 1.14)	0.1759	-1.74 (-4.39, 0.91)
Generalised pain	61783	11 (0.0%)	4029	2 (0.0%)	0.31 (0.07, 1.43)	0.1328	-0.38 (-1.10, 0.35)
Loss of smell or taste	61731	6 (0.0%)	4021	0 (0.0%)	-	-	0.16 (0.06, 0.26)
Memory and cognitive impairment	61766	12 (0.0%)	4028	2 (0.0%)	0.16 (0.03, 0.75)	0.0201	-0.47 (-1.20, 0.26)
Fatigue and malaise	61603	76 (0.1%)	3997	10 (0.3%)	0.67 (0.32, 1.41)	0.2927	-0.77 (-2.29, 0.76)

Supplementary Table 16: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of non-hospitalised individuals, with or without SGLT2i

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	13542	530 (3.9%)	29610	1289 (4.4%)	0.95 (0.86, 1.06)	0.378	-2.03 (-6.11, 2.05)
Cardiovascular	16918	271 (1.6%)	39085	640 (1.6%)	1.00 (0.86, 1.16)	0.9955	-0.01 (-2.34, 2.31)
Neurological	18560	322 (1.7%)	37727	816 (2.2%)	0.82 (0.71, 0.94)	0.0041	-3.90 (-6.30, -1.51)
Psychiatric	20718	62 (0.3%)	42715	146 (0.3%)	0.85 (0.62, 1.17)	0.3236	-0.52 (-1.45, 0.41)
Autoimmune	21267	9 (0.0%)	44413	23 (0.1%)	1.02 (0.45, 2.32)	0.9635	0.01 (-0.34, 0.36)
Dermatological	21106	20 (0.1%)	44067	53 (0.1%)	0.79 (0.46, 1.36)	0.3954	-0.26 (-0.80, 0.27)
Respiratory	20176	82 (0.4%)	42104	172 (0.4%)	1.00 (0.75, 1.32)	0.9828	-0.01 (-1.11, 1.08)
Gastrointestinal	20580	102 (0.5%)	42869	244 (0.6%)	0.88 (0.68, 1.12)	0.2928	-0.71 (-1.91, 0.49)
Composite Symptoms	17762	340 (1.9%)	37913	852 (2.2%)	0.86 (0.75, 0.99)	0.0313	-3.06 (-5.58, -0.53)
Cardiovascular signs and symptoms	19393	138 (0.7%)	41428	267 (0.6%)	1.09 (0.87, 1.36)	0.4567	0.58 (-0.84, 2.00)
Respiratory signs and symptoms	20457	86 (0.4%)	42845	252 (0.6%)	0.71 (0.55, 0.92)	0.0096	-1.74 (-2.90, -0.58)
Headache	21081	28 (0.1%)	44110	51 (0.1%)	1.10 (0.67, 1.80)	0.7127	0.13 (-0.49, 0.76)
Musculoskeletal pain/stiffness	20723	108 (0.5%)	43311	275 (0.6%)	0.87 (0.69, 1.10)	0.2371	-0.81 (-2.04, 0.42)
Abdominal and pelvic pain	20763	84 (0.4%)	43445	235 (0.5%)	0.80 (0.61, 1.05)	0.106	-1.03 (-2.14, 0.08)
Generalised pain	21299	3 (0.0%)	44513	10 (0.0%)	0.67 (0.17, 2.62)	0.5603	-0.07 (-0.29, 0.14)
Loss of smell or taste	21275	3 (0.0%)	44477	3 (0.0%)	2.09 (0.40, 10.93)	0.3825	0.06 (-0.10, 0.22)
Memory and cognitive impairment	21290	1 (0.0%)	44504	13 (0.0%)	0.14 (0.02, 1.10)	0.0623	-0.31 (-0.52, -0.11)
Fatigue and malaise	21259	17 (0.1%)	44341	69 (0.2%)	0.58 (0.33, 1.02)	0.0602	-0.57 (-1.09, -0.06)

Supplementary Table 17: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of unboosted individuals, with or without metformin

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	6223	321 (5.2%)	424	28 (6.6%)	0.99 (0.65, 1.52)	0.9801	-0.20 (-24.08, 23.69)
Cardiovascular	8685	182 (2.1%)	671	18 (2.7%)	1.04 (0.61, 1.76)	0.8821	1.04 (-11.60, 13.69)
Neurological	8577	206 (2.4%)	752	27 (3.6%)	0.90 (0.58, 1.39)	0.6239	-3.25 (-16.36, 9.86)
Psychiatric	10016	48 (0.5%)	954	7 (0.7%)	0.86 (0.34, 2.14)	0.7383	-0.84 (-5.87, 4.19)
Autoimmune	10535	5 (0.0%)	1017	1 (0.1%)	0.66 (0.06, 7.13)	0.7344	-0.34 (-2.34, 1.67)
Dermatological	10464	22 (0.2%)	1010	3 (0.3%)	1.09 (0.31, 3.83)	0.8971	0.28 (-3.40, 3.96)
Respiratory	9764	58 (0.6%)	951	3 (0.3%)	2.27 (0.68, 7.55)	0.1797	3.64 (-0.11, 7.39)
Gastrointestinal	10156	73 (0.7%)	956	6 (0.6%)	1.53 (0.62, 3.80)	0.3569	2.31 (-2.16, 6.77)
Composite Symptoms	8637	201 (2.3%)	777	18 (2.3%)	1.24 (0.74, 2.10)	0.4165	5.39 (-5.59, 16.36)
Cardiovascular signs and symptoms	9637	86 (0.9%)	918	9 (1.0%)	1.13 (0.52, 2.46)	0.7541	1.24 (-5.34, 7.81)
Respiratory signs and symptoms	10027	56 (0.6%)	950	8 (0.8%)	0.91 (0.41, 2.01)	0.8114	-0.76 (-6.72, 5.21)
Headache	10426	16 (0.2%)	1004	3 (0.3%)	0.51 (0.13, 1.92)	0.3178	-1.64 (-5.29, 2.01)
Musculoskeletal pain/stiffness	10220	64 (0.6%)	979	5 (0.5%)	1.41 (0.54, 3.64)	0.4828	2.36 (-2.72, 7.44)
Abdominal and pelvic pain	10259	43 (0.4%)	977	4 (0.4%)	1.42 (0.48, 4.20)	0.5279	1.57 (-2.51, 5.64)
Generalised pain	10577	2 (0.0%)	1024	0 (0.0%)	-	-	0.27 (-0.04, 0.59)
Loss of smell or taste	10572	1 (0.0%)	1023	0 (0.0%)	-	-	0.04 (-0.08, 0.15)
Memory and cognitive impairment	10569	2 (0.0%)	1023	0 (0.0%)	-	-	0.12 (-0.09, 0.32)
Fatigue and malaise	10492	36 (0.3%)	1004	6 (0.6%)	0.72 (0.28, 1.86)	0.4958	-1.51 (-6.19, 3.17)

Supplementary Table 18: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of boosted individuals, with or without metformin

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	36683	1605 (4.4%)	1883	132 (7.0%)	0.76 (0.63, 0.93)	0.0063	-15.51 (-27.11, -3.92)
Cardiovascular	47948	849 (1.8%)	2722	75 (2.8%)	0.90 (0.69, 1.16)	0.4045	-2.56 (-8.60, 3.47)
Neurological	47618	1044 (2.2%)	2977	100 (3.4%)	0.82 (0.66, 1.03)	0.0845	-5.71 (-12.21, 0.80)
Psychiatric	54182	166 (0.3%)	3737	17 (0.5%)	0.71 (0.42, 1.21)	0.2131	-1.31 (-3.53, 0.90)
Autoimmune	56053	27 (0.0%)	3850	2 (0.1%)	1.74 (0.37, 8.30)	0.4857	0.39 (-0.38, 1.15)
Dermatological	55618	63 (0.1%)	3842	9 (0.2%)	0.54 (0.25, 1.16)	0.1152	-1.03 (-2.56, 0.49)
Respiratory	53172	218 (0.4%)	3622	17 (0.5%)	1.09 (0.64, 1.86)	0.7566	0.40 (-1.87, 2.67)
Gastrointestinal	54106	299 (0.6%)	3668	29 (0.8%)	0.88 (0.58, 1.34)	0.5453	-0.94 (-3.87, 1.98)
Composite Symptoms	47335	1073 (2.3%)	3013	113 (3.8%)	0.71 (0.57, 0.88)	0.0015	-10.54 (-17.41, -3.68)
Cardiovascular signs and symptoms	51846	349 (0.7%)	3496	42 (1.2%)	0.69 (0.49, 0.98)	0.0397	-3.47 (-7.05, 0.10)
Respiratory signs and symptoms	53987	314 (0.6%)	3598	37 (1.0%)	0.72 (0.49, 1.06)	0.097	-2.63 (-5.89, 0.62)
Headache	55625	68 (0.1%)	3852	5 (0.1%)	1.16 (0.45, 2.97)	0.7618	0.20 (-0.98, 1.38)
Musculoskeletal pain/stiffness	54623	340 (0.6%)	3712	32 (0.9%)	0.77 (0.52, 1.14)	0.1982	-1.99 (-5.08, 1.10)
Abdominal and pelvic pain	54790	289 (0.5%)	3732	29 (0.8%)	0.69 (0.46, 1.03)	0.0703	-2.54 (-5.50, 0.42)
Generalised pain	56168	11 (0.0%)	3880	3 (0.1%)	0.21 (0.06, 0.79)	0.0205	-0.65 (-1.55, 0.26)
Loss of smell or taste	56126	6 (0.0%)	3873	0 (0.0%)	-	-	0.21 (0.09, 0.33)
Memory and cognitive impairment	56138	13 (0.0%)	3877	2 (0.1%)	0.26 (0.05, 1.26)	0.0949	-0.43 (-1.20, 0.34)
Fatigue and malaise	55929	98 (0.2%)	3841	16 (0.4%)	0.65 (0.36, 1.17)	0.1535	-1.31 (-3.30, 0.67)

Supplementary Table 19: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of unboosted individuals, with or without SGLT2i

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	1688	80 (4.7%)	4959	269 (5.4%)	1.05 (0.81, 1.38)	0.7034	2.67 (-9.41, 14.74)
Cardiovascular	2225	42 (1.9%)	7131	158 (2.2%)	0.99 (0.69, 1.43)	0.9583	-0.21 (-6.93, 6.51)
Neurological	2568	53 (2.1%)	6761	180 (2.7%)	0.84 (0.60, 1.16)	0.2814	-4.12 (-10.87, 2.63)
Psychiatric	2957	15 (0.5%)	8013	40 (0.5%)	1.14 (0.61, 2.12)	0.6748	0.73 (-2.44, 3.89)
Autoimmune	3070	2 (0.1%)	8482	4 (0.0%)	1.16 (0.19, 7.07)	0.8706	0.11 (-1.03, 1.25)
Dermatological	3040	5 (0.2%)	8434	20 (0.2%)	0.72 (0.25, 2.07)	0.5445	-0.63 (-2.39, 1.13)
Respiratory	2861	13 (0.5%)	7854	48 (0.6%)	0.74 (0.39, 1.43)	0.376	-1.49 (-4.44, 1.46)
Gastrointestinal	2969	17 (0.6%)	8143	62 (0.8%)	0.77 (0.44, 1.36)	0.3703	-1.85 (-5.32, 1.61)
Composite Symptoms	2463	59 (2.4%)	6951	160 (2.3%)	1.10 (0.80, 1.51)	0.5731	2.18 (-4.93, 9.29)
Cardiovascular signs and symptoms	2744	30 (1.1%)	7811	65 (0.8%)	1.23 (0.77, 1.95)	0.3844	2.07 (-2.41, 6.56)
Respiratory signs and symptoms	2905	21 (0.7%)	8072	43 (0.5%)	1.27 (0.73, 2.22)	0.397	1.58 (-1.95, 5.12)
Headache	3032	6 (0.2%)	8398	13 (0.2%)	1.29 (0.46, 3.63)	0.6245	0.50 (-1.38, 2.38)
Musculoskeletal pain/stiffness	2967	20 (0.7%)	8232	49 (0.6%)	1.00 (0.58, 1.72)	0.9881	-0.03 (-3.53, 3.48)
Abdominal and pelvic pain	2983	12 (0.4%)	8253	35 (0.4%)	1.34 (0.67, 2.68)	0.4035	1.16 (-1.56, 3.88)
Generalised pain	3077	1 (0.0%)	8524	1 (0.0%)	3.76 (0.24, 60.09)	0.349	0.31 (-0.45, 1.07)
Loss of smell or taste	3072	1 (0.0%)	8523	0 (0.0%)	-	-	0.28 (-0.31, 0.88)
Memory and cognitive impairment	3076	1 (0.0%)	8516	1 (0.0%)	2.71 (0.17, 43.27)	0.481	0.30 (-0.52, 1.12)
Fatigue and malaise	3060	1 (0.0%)	8436	41 (0.5%)	0.10 (0.01, 0.71)	0.0214	-3.44 (-4.92, -1.96)

Supplementary Table 20: Adjusted hazards ratio of post-acute sequelae and symptoms in subgroup of patients boosted individuals, with or without SGLT2i

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Composite Outcomes	12208	490 (4.0%)	26358	1247 (4.7%)	0.92 (0.83, 1.03)	0.1573	-3.51 (-7.89, 0.87)
Cardiovascular	15341	267 (1.7%)	35329	657 (1.9%)	1.02 (0.88, 1.19)	0.7723	0.40 (-2.14, 2.95)
Neurological	16786	308 (1.8%)	33809	836 (2.5%)	0.79 (0.69, 0.91)	0.001	-4.90 (-7.52, -2.29)
Psychiatric	18871	55 (0.3%)	39048	128 (0.3%)	0.86 (0.61, 1.21)	0.3981	-0.45 (-1.40, 0.50)
Autoimmune	19376	7 (0.0%)	40527	22 (0.1%)	0.87 (0.35, 2.16)	0.7685	-0.05 (-0.39, 0.28)
Dermatological	19242	17 (0.1%)	40218	55 (0.1%)	0.67 (0.38, 1.19)	0.1688	-0.46 (-1.02, 0.10)
Respiratory	18363	79 (0.4%)	38431	156 (0.4%)	1.10 (0.82, 1.47)	0.5197	0.42 (-0.75, 1.59)
Gastrointestinal	18728	99 (0.5%)	39046	229 (0.6%)	0.94 (0.73, 1.21)	0.6138	-0.36 (-1.64, 0.92)
Composite Symptoms	16059	322 (2.0%)	34289	864 (2.5%)	0.84 (0.73, 0.96)	0.0121	-3.86 (-6.59, -1.13)
Cardiovascular signs and symptoms	17605	127 (0.7%)	37737	264 (0.7%)	1.05 (0.84, 1.32)	0.6732	0.35 (-1.16, 1.86)
Respiratory signs and symptoms	18589	92 (0.5%)	38996	259 (0.7%)	0.77 (0.59, 0.99)	0.0388	-1.55 (-2.85, -0.25)
Headache	19205	24 (0.1%)	40272	49 (0.1%)	1.00 (0.59, 1.70)	0.9853	0.01 (-0.63, 0.65)
Musculoskeletal pain/stiffness	18861	99 (0.5%)	39474	273 (0.7%)	0.83 (0.65, 1.07)	0.1473	-1.05 (-2.36, 0.25)
Abdominal and pelvic pain	18906	82 (0.4%)	39616	236 (0.6%)	0.78 (0.59, 1.02)	0.0674	-1.27 (-2.48, -0.07)
Generalised pain	19415	3 (0.0%)	40633	11 (0.0%)	0.62 (0.16, 2.38)	0.4824	-0.10 (-0.34, 0.14)
Loss of smell or taste	19396	2 (0.0%)	40603	4 (0.0%)	1.13 (0.18, 7.07)	0.8977	0.01 (-0.13, 0.15)
Memory and cognitive impairment	19405	2 (0.0%)	40610	13 (0.0%)	0.30 (0.07, 1.32)	0.1114	-0.27 (-0.52, -0.03)
Fatigue and malaise	19366	26 (0.1%)	40404	88 (0.2%)	0.82 (0.52, 1.31)	0.4121	-0.31 (-0.98, 0.36)

Supplementary Table 21: Sensitivity analyses of primary outcome with negative outcome control (new-incident diagnosis of leukaemia/lymphoma)

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	Excess burden (per 1000)
Leukemia or Lymphoma	66476	36 (0.1%)	4857	5 (0.1%)	0.60 (0.22, 1.61)	0.3095	-0.37 (-1.23, 0.50)
	22405	13 (0.1%)	48928	28 (0.1%)	1.03 (0.51, 2.07)	0.942	0.02 (-0.38, 0.41)
	31863	20 (0.1%)	39470	21 (0.1%)	1.16 (0.60, 2.24)	0.66	0.09 (-0.28, 0.47)
	16946	11 (0.1%)	54387	30 (0.1%)	1.01 (0.48, 2.13)	0.9729	0.01 (-0.42, 0.43)

Supplementary Table 22: Sensitivity analyses, considering main outcome of post-acute sequelae and symptoms in patients with or without DPP4-inhibitor use

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	eb_output
Composite Outcomes	10164	514 (5.1%)	35049	1572 (4.5%)	0.98 (0.88, 1.09)	0.6803	-1.06 (-5.86, 3.73)
Cardiovascular	13777	310 (2.3%)	46249	814 (1.8%)	1.01 (0.88, 1.17)	0.8496	0.27 (-2.46, 3.00)
Neurological	13879	328 (2.4%)	46045	1049 (2.3%)	0.90 (0.79, 1.03)	0.1143	-2.57 (-5.46, 0.33)
Psychiatric	16357	60 (0.4%)	52532	178 (0.3%)	1.02 (0.75, 1.40)	0.8813	0.08 (-0.96, 1.13)
Autoimmune	16980	9 (0.1%)	54475	26 (0.0%)	1.09 (0.49, 2.43)	0.8312	0.05 (-0.36, 0.45)
Dermatological	16831	33 (0.2%)	54103	64 (0.1%)	1.40 (0.90, 2.19)	0.1374	0.53 (-0.19, 1.25)
Respiratory	15977	72 (0.5%)	51532	224 (0.4%)	0.93 (0.70, 1.23)	0.5983	-0.35 (-1.54, 0.84)
Gastrointestinal	16257	112 (0.7%)	52629	295 (0.6%)	1.05 (0.84, 1.33)	0.6566	0.34 (-1.08, 1.75)
Composite Symptoms	13878	331 (2.4%)	45884	1074 (2.3%)	0.88 (0.77, 1.00)	0.0526	-3.15 (-6.05, -0.25)
Cardiovascular signs and symptoms	15394	119 (0.8%)	50503	367 (0.7%)	0.87 (0.70, 1.09)	0.2272	-1.06 (-2.63, 0.50)
Respiratory signs and symptoms	16272	99 (0.6%)	52290	316 (0.6%)	0.89 (0.70, 1.14)	0.3596	-0.73 (-2.13, 0.67)
Headache	16805	20 (0.1%)	54102	72 (0.1%)	0.67 (0.40, 1.13)	0.1306	-0.59 (-1.22, 0.04)
Musculoskeletal pain/stiffness	16450	113 (0.7%)	53084	328 (0.6%)	0.92 (0.73, 1.15)	0.4516	-0.58 (-1.99, 0.83)
Abdominal and pelvic pain	16551	92 (0.6%)	53207	273 (0.5%)	1.03 (0.80, 1.33)	0.7947	0.18 (-1.10, 1.46)
Generalised pain	17021	7 (0.0%)	54628	9 (0.0%)	2.56 (0.87, 7.49)	0.0871	0.28 (-0.06, 0.62)
Loss of smell or taste	17017	1 (0.0%)	54577	6 (0.0%)	0.24 (0.03, 2.05)	0.1924	-0.12 (-0.26, 0.02)
Memory and cognitive impairment	17006	4 (0.0%)	54601	13 (0.0%)	0.87 (0.28, 2.70)	0.8026	-0.04 (-0.31, 0.23)
Fatigue and malaise	16895	49 (0.3%)	54371	107 (0.2%)	1.17 (0.81, 1.69)	0.3926	0.38 (-0.48, 1.24)

Supplementary Table 23: Sensitivity analyses, considering main outcome of post-acute sequelae and symptoms in patients with or without sulfonylurea use

Outcomes	Cases	Cases with outcome	Controls	Controls with outcome	aHR	p.value	eb_output
Composite Outcomes	20692	952 (4.6%)	24521	1134 (4.6%)	0.94 (0.86, 1.03)	0.1717	-2.95 (-6.86, 0.97)
Cardiovascular	27021	532 (2.0%)	33005	592 (1.8%)	0.99 (0.88, 1.13)	0.9111	-0.13 (-2.33, 2.08)
Neurological	27158	615 (2.3%)	32766	762 (2.3%)	0.97 (0.87, 1.09)	0.6006	-0.70 (-3.12, 1.72)
Psychiatric	30865	109 (0.4%)	38024	129 (0.3%)	1.11 (0.84, 1.46)	0.4589	0.36 (-0.53, 1.26)
Autoimmune	31926	10 (0.0%)	39529	25 (0.1%)	0.39 (0.18, 0.86)	0.0196	-0.43 (-0.75, -0.11)
Dermatological	31644	46 (0.1%)	39290	51 (0.1%)	0.99 (0.65, 1.51)	0.9488	-0.02 (-0.57, 0.53)
Respiratory	30177	134 (0.4%)	37332	162 (0.4%)	0.99 (0.78, 1.27)	0.9504	-0.04 (-1.04, 0.97)
Gastrointestinal	30760	196 (0.6%)	38126	211 (0.6%)	1.12 (0.91, 1.38)	0.2678	0.69 (-0.46, 1.84)
Composite Symptoms	27052	660 (2.4%)	32710	745 (2.3%)	1.05 (0.94, 1.17)	0.3975	1.12 (-1.34, 3.58)
Cardiovascular signs and symptoms	29519	222 (0.8%)	36378	264 (0.7%)	0.97 (0.80, 1.17)	0.729	-0.25 (-1.58, 1.08)
Respiratory signs and symptoms	30846	179 (0.6%)	37716	236 (0.6%)	0.93 (0.76, 1.14)	0.4985	-0.43 (-1.61, 0.74)
Headache	31695	43 (0.1%)	39212	49 (0.1%)	1.12 (0.72, 1.72)	0.6185	0.14 (-0.39, 0.68)
Musculoskeletal pain/stiffness	31130	217 (0.7%)	38404	224 (0.6%)	1.15 (0.94, 1.40)	0.1645	0.90 (-0.30, 2.11)
Abdominal and pelvic pain	31206	151 (0.5%)	38552	214 (0.6%)	0.87 (0.70, 1.09)	0.2196	-0.72 (-1.78, 0.35)
Generalised pain	31997	3 (0.0%)	39652	13 (0.0%)	0.26 (0.07, 0.95)	0.0409	-0.26 (-0.47, -0.05)
Loss of smell or taste	31973	5 (0.0%)	39621	2 (0.0%)	4.35 (0.80, 23.51)	0.0879	0.13 (-0.02, 0.29)
Memory and cognitive impairment	31975	13 (0.0%)	39632	4 (0.0%)	2.94 (0.93, 9.33)	0.0671	0.28 (0.02, 0.53)
Fatigue and malaise	31834	67 (0.2%)	39432	89 (0.2%)	0.84 (0.60, 1.18)	0.3226	-0.37 (-1.06, 0.31)

Supplementary Table 24: List of ICD-10 codes used for outcomes of interest, diagnosis codes

Pre-specified cardiovascular and thrombotic outcomes	Outcome	ICD 10 Code	Description
	Atrial fibrillation	I48	Atrial fibrillation and flutter
	Sinus tachycardia	I47	Paroxysmal tachycardia
		R00.0	Tachycardia, unspecified
	Sinus bradycardia	R00.1	Bradycardia, unspecified
	Other arrhythmias	I44	Atrioventricular and left bundle-branch block
		R00.2	Palpitations
		R00.8	Other abnormalities of heart beat
		R00.9	Unspecified abnormalities of heart beat
		I45	Other conduction disorders
		I49	Other cardiac arrhythmias
	Pericarditis	I30	Acute pericarditis
		B33.23	Viral pericarditis
	Myocarditis	B33.20	Viral carditis, unspecified
		B33.21	Viral endocarditis
		B33.22	Viral myocarditis
		B33.24	Viral cardiomyopathy
		I40	Acute myocarditis
	Myocardial infarction	I21	Acute myocardial infarction

		I22	Subsequent ST elevation (STEMI) and non-ST elevation (NSTEMI) myocardial infarction
	Acute coronary disease	I24	Other acute ischemic heart diseases
		I25.10	Atherosclerotic heart disease of native coronary artery without angina pectoris
		I25.11	Atherosclerotic heart disease of native coronary artery with angina pectoris
	Ischemic cardiomyopathy	I25.5	Ischemic cardiomyopathy
	Angina	I20	Angina pectoris
	Heart failure	I50	Heart failure
		I50.21	Acute systolic (congestive) heart failure
		I50.23	Acute on chronic systolic (congestive) heart failure
		I50.31	Acute diastolic (congestive) heart failure
		I50.33	Acute on chronic diastolic (congestive) heart failure
		I50.41	Acute combined systolic (congestive) and diastolic (congestive) heart failure
		I50.43	Acute on chronic combined systolic (congestive) and diastolic (congestive) heart failure
		I50.811	Acute right heart failure
		I50.813	Acute on chronic right heart failure
	Non-ischemic cardiomyopathy	I42	Cardiomyopathy
	Cardiac arrest	I46	Cardiac arrest
	Cardiogenic shock	R57.0	Cardiogenic shock
	Pulmonary embolism	I26	Pulmonary embolism
	Deep venous thrombosis	I80.1	Phlebitis and thrombophlebitis of femoral vein

		I80.2	Phlebitis and thrombophlebitis of other and unspecified deep vessels of lower extremities
		I80.8	Phlebitis and thrombophlebitis of other sites
		I81	Portal vein thrombosis
		I82	Other venous embolism and thrombosis
		I67.6	Nonpyogenic thrombosis of intracranial venous system
	Superficial venous thrombosis	I80.0	Phlebitis and thrombophlebitis of superficial vessels of lower extremities
		I80.3	Phlebitis and thrombophlebitis of lower extremities, unspecified
		I80.9	Phlebitis and thrombophlebitis of unspecified site
	Arterial thromboses	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 the upper extremities
		I74.3	Embolism and thrombosis of arteries of the 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
Pre-specified neurological and psychiatric outcomes	Outcome	ICD 10 Code	Description
	Ischemic stroke	I63	Cerebral infarction
		G46	Vascular syndromes of brain in cerebrovascular diseases

	Transient ischemic attack (TIA)	G45	Transient cerebral ischaemic attacks and related syndromes	
		I65	Occlusion and stenosis of precerebral arteries not resulting in cerebral infarction	
		I66	Occlusion and stenosis of cerebral arteries not resulting in cerebral infarction	
	Haemorrhagic stroke	I60	Nontraumatic subarachnoid hemorrhage	
		I61	Intracerebral hemorrhage	
		I62	Other non-traumatic intracranial hemorrhage	
	Cerebral venous thrombosis	I63.6	Cerebral infarction due to cerebral venous thrombosis, nonpyogenic	
	Memory problems	R41.1	Anterograde amnesia	
		R41.2	Retrograde amnesia	
		R41.4	Other amnesia	
		G31	Other degenerative diseases of nervous system, not elsewhere classified	
		F01	Vascular dementia	
		F02	Dementia in other diseases classified elsewhere	
		F03	Unspecified dementia	
		F44	Dissociative and conversion disorders	
		G45.4	Transient global amnesia	
	Alzheimer's disease	G30	Alzheimer's disease	
	Peripheral neuropathy	G61.1	Serum neuropathy	
		G61.8	Other inflammatory polyneuropathies	
		G61.9	Inflammatory polyneuropathy, unspecified	

		G62	Other and unspecified polyneuropathies	
		G56	Mononeuropathies of upper limbs	
		G57	Mononeuropathies of lower limbs	
	Paresthesia	R20.1	Hypoesthesia of skin	
		R20.2	Paraesthesia of skin	
		R20.3	Hyperesthesia	
	Dysautonomia	G90.0	Idiopathic peripheral autonomic neuropathy	
		G90.3	Multi-system degeneration of the autonomic nervous system	
		G90.4	Autonomic dysreflexia	
		G90.8	Other disorders of autonomic nervous system	
		G90.9	Disorder of the autonomic nervous system	
	Bell's palsy	G51	Facial nerve disorders	
	Migraine	G43	Migraine	
	Headache disorders	G44.0	Cluster headaches and other trigeminal autonomic cephalgias	
		G44.1	Vascular headache, not elsewhere classified	
		G44.2	Tension-type headache	
		G44.5	Complicated headache syndromes	
		G44.8	Other unspecified headache syndromes	
	Epilepsy and seizures	G40	Epilepsy and seizures	
	Abnormal involuntary movements	R25	Other abnormal involuntary movements	

	Tremor	G25.0	Essential tremor	
		G25.2	Other specified forms of tremor	
	Parkinson's disease	G20	Parkinson's disease	
	Dystonia	G24	Dystonia	
	Myoclonus	G25.3	Myoclonus	
	Joint pain	M25.5	Pain in joint	
	Myalgia	M79.1	Myalgia	
		M62.81	Generalised muscle weakness	
		M79.7	Fibromyalgia	
	Myopathy	G72.3	Periodic paralysis	
		G72.4	Inflammatory and immune myopathies, not elsewhere classified	
		G72.89	Other specified myopathies	
		G72.9	Myopathy, unspecified	
	Hearing abnormalities or tinnitus	H90	Conductive and sensorineural hearing loss	
		H91	Other and unspecified hearing loss	
		H93	Other disorders of ear, not elsewhere classified	
		H93.1	Tinnitus	
	Visual abnormalities	H53	Visual disturbances	
		H54	Blindness and low vision	
		H34	Retinal vascular occlusions	

		H35.6	Retinal hemorrhage	
	Loss of smell or taste	R43.0	Anosmia	
		R43.1	Parosmia	
		R43.2	Parageusia	
		R43.8	Other disturbances of smell and taste	
		R43.9	Unspecified disturbances of smell and taste	
	Dizziness	R42	Dizziness and giddiness	
	Sleep disorders	G47.0	Insomnia	
		G47.1	Hypersomnia	
		G47.2	Circadian rhythm sleep disorder	
		G47.3	Sleep apnea	
		G47.4	Narcolepsy and cataplexy	
		G47.5	Parasomnia	
		G47.6	Sleep-related movement disorders	
		F51	Sleep disorders not due to a substance or known physiological condition	
	Somnolence, malaise and fatigue	R53.1	Weakness	
		R53.82	Chronic fatigue, unspecified	
		R53.83	Other fatigue and malaise	
		G93.3	Post-viral fatigue syndrome	
	Guillain-Barre syndrome	G61.0	Guillain-Barre syndrome	

	Encephalitis or encephalopathy	G04.0	Acute disseminated encephalitis and encephalomyelitis	
		G04.3	Acute necrotizing hemorrhagic encephalopathy	
		G04.8	Other encephalitis, myelitis and encephalomyelitis	
		G04.9	Encephalitis, myelitis and encephalomyelitis, unspecified	
	Transverse myelitis	G35	Multiple sclerosis	
		G36.0	Neuromyelitis optica	
		G37.3	Acute transverse myelitis in demyelinating disease of central nervous system	
		G04.82	Acute flaccid myelitis	
		G04.91	Myelitis, unspecified	
	Major depressive disorder	F32	Major depressive disorder, single episode	
		F33	Major depressive disorder, recurrent	
		R45.81	Suicidal ideation	
	Other mood disorders	F30	Manic episode	
		F31	Bipolar disorder	
		F34.0	Cyclothymic disorder	
		F34.1	Dysthymic disorder	
		F34.8	Other persistent mood/affective disorders	
		F34.9	Persistent mood/affective disorder, unspecified	
	Stress/adjustment disorders	F43.0	Acute stress reaction	
		F43.1	Post-traumatic stress disorder	

		F43.2	Adjustment disorder	
	Anxiety disorders	F41.0	Generalised anxiety disorder	
		F41.1	Anxiety disorder, unspecified	
		F41.3	Other mixed anxiety disorders	
		F41.8	Other specified anxiety disorders	
		F41.9	Panic disorder	
		F42.0	Obsessive-compulsive disorder	
	Psychotic disorders	F20	Schizophrenia	
		F21	Schizotypal disorder	
		F22	Delusional disorders	
		F23	Brief psychotic disorder	
		F24	Shared psychotic disorder	
		F25	Schizoaffective disorder	
		F28	Other psychotic disorder not due to a substance or known physiological condition	
		F29	Unspecified psychosis not due to a substance or known physiological condition	
Pre-specified autoimmune outcomes	Outcome	ICD 10 Code	Description	
	Systemic lupus erythematosus	M32	Systemic lupus erythematosus	
	Rheumatoid arthritis	M05	Rheumatoid arthritis with rheumatoid factor	
		M06	Other rheumatoid arthritis	
	Sjogren syndrome	M35.0	Sjogren syndrome	

	Systemic sclerosis	M34	Systemic sclerosis	
	Dermatopolymyositis	M33.0	Juvenile dermatomyositis	
		M33.1	Other dermatomyositis	
		M33.2	Polymyositis	
		M33.9	Dermatopolymyositis, unspecified	
	Other connective tissue diseases	M35.1	Mixed connective tissue disease, other overlap syndromes	
		M35.2	Behcet's disease	
		M35.3	Polymyalgia rheumatica	
	Vasculitis	M30.0	Polyarteritis nodosa	
		M30.1	Polyarteritis with lung involvement [Churg-Strauss]	
		M30.2	Juvenile polyarteritis	
		M30.8	Other conditions related to polyarteritis nodosa	
		M31.1	Thrombotic microangiopathy	
		M31.3	Wegener's granulomatosis	
		M31.4	Aortic arch syndrome [Takayasu]	
		M31.5	Giant cell arteritis with polymyalgia rheumatica	
		M31.6	Other giant cell arteritis	
		M31.7	Microscopic polyangiitis	
		M31.8	Other specified necrotizing vasculopathies	
		M31.9	Necrotizing vasculopathy, unspecified	

	L95	Vasculitis limited to skin, not elsewhere classified	
	I77.82	Antineutrophilic cytoplasmic antibody [ANCA] vasculitis	
	I79.1	Aortitis in diseases classified elsewhere (isolated aortitis)	
	D69.0	Allergic purpura (Henoch-Schonlein purpura)	
Inflammatory bowel disease	K50	Crohn's disease	
	K51	Ulcerative colitis	
	K52	Other and unspecified noninfective gastroenteritis and colitis	
Spondyloarthropathies	M45	Ankylosing spondylitis	
	M46	Other inflammatory spondylopathies	
	M02.30	Reiter's disease	
	M02.1	Postdysenteric arthropathy	
Psoriasis	L40.0	Psoriasis vulgaris	
	L40.1	Generalised pustular psoriasis	
	L40.3	Pustulosis palmaris et plantaris	
	L40.4	Guttate psoriasis	
	L40.5	Arthropathic psoriasis	
	L40.51	Distal interphalangeal psoriatic arthropathy	
	L40.52	Psoriatic arthritis mutilans	
	L40.52	Psoriatic spondylitis	
	L40.54	Psoriatic juvenile arthropathy	
	L40.59	Other psoriatic arthropathy	

		L40.8	Other psoriasis	
		L40.9	Psoriasis, unspecified	
	Bullous skin disorders	L10	Pemphigus	
		L12	Pemphigoid	
	Autoimmune thyroiditis	E06.3	Autoimmune thyroiditis	
		E05.0	Thyrotoxicosis	
Pre-specified respiratory outcomes	Outcome	ICD 10 Code	Description	
	Chronic obstructive pulmonary disease and bronchiectasis	J410	Simple chronic bronchitis	
		J411	Mucopurulent chronic bronchitis	
		J418	Mixed simple and mucopurulent chronic bronchitis	
		J42	Unspecified chronic bronchitis	
		J43	Emphysema	
		J431	Panlobular emphysema	
		J432	Centrilobular emphysema	
		J438	Other emphysema	
		J439	Emphysema, unspecified	
		J44	Other chronic obstructive pulmonary disease	
		J47	Bronchiectasis	
		J470	Bronchiectasis with acute lower respiratory infection	

		J471	Bronchiectasis with (acute) exacerbation	
		J479	Bronchiectasis, uncomplicated	
	Asthma	J45	Asthma	
	Pulmonary fibrosis	J8410	Pulmonary fibrosis, unspecified	
		J84111	Idiopathic interstitial pneumonia, not otherwise specified	
		J84112	Idiopathic pulmonary fibrosis	
		J84113	Idiopathic non-specific interstitial pneumonitis	
		J84114	Acute interstitial pneumonitis	
		J84115	Respiratory bronchiolitis interstitial lung disease	
		J84116	Cryptogenic organizing pneumonia	
		J8489	Other specified interstitial pulmonary diseases	
		J849	Interstitial pulmonary disease, unspecified	

Supplementary Table 25: List of ICD-10 codes used for outcomes of interest, symptom-based diagnoses

Outcome	ICD 10 Code	Description
Palpitations	R00.0	Tachycardia, unspecified
	R00.1	Bradycardia, unspecified
	R00.2	Palpitations
	R00.8	Other abnormalities of heart beat
	R00.9	Unspecified abnormalities of heart beat
Chest pain	R07.1	Chest pain on breathing
	R07.2	Precordial pain
	R07.3	Other chest pain
	R07.4	Chest pain, unspecified
Cough	R05	Cough
Dyspnea/breathlessness	R06.0	Dyspnea
	R06.00	Dyspnea, unspecified
	R06.01	Orthopnea
	R06.02	Shortness of breath
	R06.03	Acute respiratory distress
	R06.09	Other forms of dyspnea
	R06.1	Stridor
	R06.2	Wheezing
	R06.4	Hyperventilation

	R06.9	Unspecified abnormalities of breathing
Headache	R51	Headache
	R51.0	Headache with orthostatic component, not elsewhere classified
	R51.9	Headache, unspecified
Joint pain/myalgia	M25.5	Pain in joint
	M25.50	Pain in unspecified joint
	M25.51	Pain in shoulder
	M25.52	Pain in elbow
	M25.53	Pain in wrist
	M25.54	Pain in joints of hand
	M25.55	Pain in hip
	M25.56	Pain in knee
	M25.57	Pain in ankle and joints of foot
	M25.59	Pain in other specified joint
	M79.0	Rheumatism, unspecified
	M79.1	Myalgia
	M79.2	Neuralgia and neuritis, unspecified
	M79.6	Pain in limb, hand, foot, fingers and toes
	M79.60	Pain in limb
	M79.62	Pain in upper arm
	M79.63	Pain in forearm

	M79.64	Pain in hand and fingers
	M79.65	Pain in thigh
	M79.66	Pain in lower leg
	M79.67	Pain in foot and toes
	M79.7	Fibromyalgia
	M79.0	Rheumatism, unspecified
Loss of smell or taste	R43.0	Anosmia
	R43.1	Parosmia
	R43.2	Parageusia
	R43.8	Other disturbances of smell and taste
	R43.9	Unspecified disturbances of smell and taste
Memory and cognitive impairment	R41.0	Disorientation, unspecified
	R41.1	Anterograde amnesia
	R41.2	Retrograde amnesia
	R41.3	Other amnesia
	R41.81	Age-related cognitive decline
	R41.82	Altered mental status, unspecified
	R41.840	Attention and concentration deficit
	R41.841	Cognitive communication deficit
	R41.842	Visuospatial deficit

	R41.843	Psychomotor deficit
	R41.844	Frontal lobe and executive function deficit
	R41.89	Other symptoms and signs involving cognitive functions and awareness
	R41.9	Unspecified symptoms and signs involving cognitive functions and awareness
Fatigue, malaise, weakness	R53	Malaise and fatigue
	R53.1	Weakness
	R53.81	Other malaise
	R53.82	Chronic fatigue, unspecified
	R53.83	Other fatigue and malaise
	G93.3	Post-viral fatigue syndrome