

Appendix 1 (as supplied by the authors)

Supplemental materials to:

Diagnosis-wide analysis of COVID-19 complications: An exposure-crossover study

William Murk, PhD MPH^{1,2*}, Monica Gierada, MPH^{2*}, Michael Fralick, MD PhD SM FRCPC^{3*}, Andrew Weckstein, BA², Reyna Klesh, MS⁴, Jeremy A. Rassen, ScD FISPE²

1 Jacobs School of Medicine & Biological Sciences, University at Buffalo, Buffalo, NY.

2 Aetion, Inc., New York, NY.

3 Department of Medicine, University of Toronto, Toronto, ON, Canada.

4 HealthVerity, Inc. Philadelphia, PA.

* These first authors contributed equally to this article.

Table of contents

Supplemental Methods	2
eFigure 1. Open and closed claims	5
eFigure 2. Timing of COVID-19 complications relative to the index date	6
eFigure 3. Study design	7
eFigure 4. Patient selection	8
eTable 1. Number of unique diagnosis codes in the baseline period (pre-COVID-19) and hazard period (with COVID-19).....	9
eTable 2. Candidate COVID-19 complications, by ICD-10 header code (primary analysis)	10
eTable 3. Codes that significantly decreased in odds upon being diagnosed with COVID-19 (primary analysis)	13
eTable 4. Candidate COVID-19 complications: codes identified in the primary analysis, examined at the individual code level	26
eTable 5. Candidate COVID-19 complications, by individual ICD-10 code (secondary analysis)	30
eTable 6. Risk estimates for acute kidney failure, respiratory failure/ARDS, pneumonia, and SIRS/sepsis/septic shock	31
eTable 7. Risks of candidate COVID-19 complications, by age.....	33
eTable 8. Risks of candidate COVID-19 complications, by sex	35
eTable 9. Risks of candidate COVID-19 complications, by hospitalization status.....	37
eTable 10. Sensitivity analysis (38-day baseline period).....	39

Supplemental Methods

Dataset description

This study included the medical claims subset of the HealthVerity Marketplace, which captures data concerning diagnoses, dates of service, place of service, revenue codes, and patient demographics. Claims for both inpatient and outpatient services are included. These data originate from a variety of sources in the U.S., including:

- *Practice management systems, or billing systems / revenue cycle management vendors.* These sources measure all activity happening within a covered provider, and have coverage across all payers and pay types, including patients paying with cash. Generally, these sources provide pre-adjudication data, but may also report post-adjudicated data including reimbursed amounts. Similar to electronic health records, plan enrollment data is not captured, but “activity” within the system can be used as a proxy for enrollment. Patients can be lost from the sample if they see providers outside of the covered systems.
- *Clearinghouses/switches.* These capture claims being transmitted between the data provider and the payer for adjudication. They have broad coverage across all payers and pay types, including patients paying with cash. Generally, these sources provide pre-adjudication data, but may also report post-adjudicated data including reimbursed amounts. They may measure all activity within a provider, or less than all, depending on the source and the payer, as many clearinghouses have interchange agreements to route claims. Plan enrollment data is not captured, but “activity” within the system can be used as a proxy for enrollment. Patients can be lost from the sample if they see providers outside of these systems.
- *Payers (i.e., insurance companies).* These sources provide adjudicated claims. Typically, these sources are more heavily weighted towards commercial lines of business. Patients paying with cash are not included. Typically, these sources have more reporting latency as data are released post-adjudication. Data may include enrollment information for the covered population. Generally, they include 100% of reimbursed activity for patients while enrolled. Patients can be lost from the sample if they disenroll or change to plans outside the covered data providers.

These data sources can be categorized depending on whether they provide “open” or “closed” claims.

- *Open claims.* Open claims are sourced from practice management systems, billing systems, and claims clearinghouses/switches. These claims are generally submitted by providers for consideration by payers, and as such represent a “first draft” (and for the vast majority, also the “final draft”) of claims that insurers will pay. A minority of claims can be changed during adjudication if disputed by a payer (e.g., if there are disputes over covered services, or if diagnosis codes are not specified to the correct level of detail, etc.). Open claims are generally available in near real-time (as recently as 1-2 days after the date of service).
- *Closed claims.* Closed claims are those that are accepted by and paid by an insurance company. Because insurers generally pay for all of a patients’ care, or at least track all care, closed claims present a complete view of services. Claims are generally lagged by 2-3 months.

The HealthVerity Marketplace dataset also includes pharmacy benefit claims data for patients included in the medical claims dataset. Demographic information for patients (specifically, year of birth and sex) were drawn from this pharmacy data, because these variables were more complete in the pharmacy data as compared to medical claims for the same patients. No other pharmacy data was used.

In general, open claims are automatically updated on a daily or weekly basis, depending on the specific source, while closed claims are updated on a monthly basis. For the present study, the time period of dates of service covered by the data was November 1, 2019 through May 30, 2020. Data were last extracted on June 16, 2020, meaning that there was a claims lag period (time available to submit a claim after its date of service) of at least 17 days. **eFigure1** shows the distribution of observations (number of rows in the database) on each date of service in 2020 pertaining to open and closed claims for patients included in this study.

A complete claims history for each patient was constructed by linking patient records across all available data sources. This was performed using methodology developed by HealthVerity, Inc. Linkage accuracy was 99.7% (0.3% false positives), and 96% of possible linkages were made (4% false negative). All linkage was performed according to HIPAA regulations.

During data transfer, file integrity was validated by verifying file hashes, patient counts, and observation counts. Accuracy of diagnostic data in the submitted claims information cannot be directly determined, as the underlying ‘ground truth’ of patient health status is not available. However, validity of the aggregate data was assessed by confirming that prevalences of common (e.g. hypertension, diabetes, asthma, COPD, etc.) and uncommon medical conditions were within expected ranges for different demographic groups.

Data missingness

Key variables from the cut of the HealthVerity database used in this study, as well as their percentage missing, are described below.

Variable	Variable description	Dataset	N. Observations	% Missing
CLAIM_TYPE	Claim type	Medical claims	11,529,256,134	4.4%
DIAGNOSIS_CODE	Diagnosis code	Medical claims	11,529,256,134	49.5%
DATE_SERVICE	Date of service	Medical claims	11,529,256,134	0.0%
HVID	HealthVerity Patient ID	Medical claims	11,529,256,134	0.0%
INST_TYPE_OF_BILL_STD_ID	Bill Type (Standard)	Medical claims	11,529,256,134	93.5%
PLACE_OF_SERVICE_STD_ID	Place of Service (Standard)	Medical claims	11,529,256,134	78.3%
REVENUE_CODE	Revenue Code	Medical claims	11,529,256,134	93.1%
PATIENT_YEAR_OF_BIRTH	Year of Birth	Pharmacy claims	1,542,496,628	<0.1%
PATIENT_GENDER	Gender	Pharmacy claims	1,542,496,628	1.5%

The denominator (“N. Observations”) for these counts is the total number of rows in the database cut. A single medical claim for a single patient can be represented across multiple rows in the database. For example, if a medical claim has two diagnosis codes listed on it, that will be captured in two rows in the database.

Note that a missing value does *not* necessarily imply that a value should have been present but was unknown. Rather, it could indicate that the variable was not applicable for a given claim line, provider, or facility.

Patients were excluded if they had missing PATIENT_YEAR_OF_BIRTH. No imputation of missing data was performed.

Definition of outpatients, inpatients, and ICU patients

Outpatients were those who did not have an inpatient claim at any time in the hazard period. Inpatients were those who had any inpatient claim at any time in the hazard period, with or without outpatient activity at other times in the hazard period. ICU patients were those who had any ICU claim in the hazard period, with or without outpatient activity or other inpatient activity at other times in the hazard period. The outpatient and inpatient subgroups were mutually exclusive, while the inpatient subgroup included ICU patients. An ICU claim was any claim with an ICU-related revenue code (0200, 0201, 0202, 0203, 0204, 0206, 0207, 0208, 0209).

Definition of baseline (pre-COVID-19) conditions

Baseline conditions reported in Table 1 of the main manuscript were defined as the occurrence of a medical claim in the baseline period with at least one of the respective ICD-10 codes listed below.

Acute kidney failure: N17

Asthma: J45

Atrial fibrillation or flutter: I48

Bipolar disorder or depression: F31 - F33

Cerebral infarction: I63

Chronic kidney disease: N18

Chronic liver disease: K72.1, K72.9, K73, B18

Chronic obstructive pulmonary disease: J43, J44

Dementia: F01, F02, F03, G30, G31.0

Diabetes mellitus, type 1: E10

Diabetes mellitus, type 2: E11

Dyslipidemia: E78

Heart failure: I50

Hypertension, essential: I10

Inflammatory bowel disease: K50, K51

Ischemic heart disease: I20 - I25

Malignancy: C00 - C96

Peripheral vascular disease: I70, I73

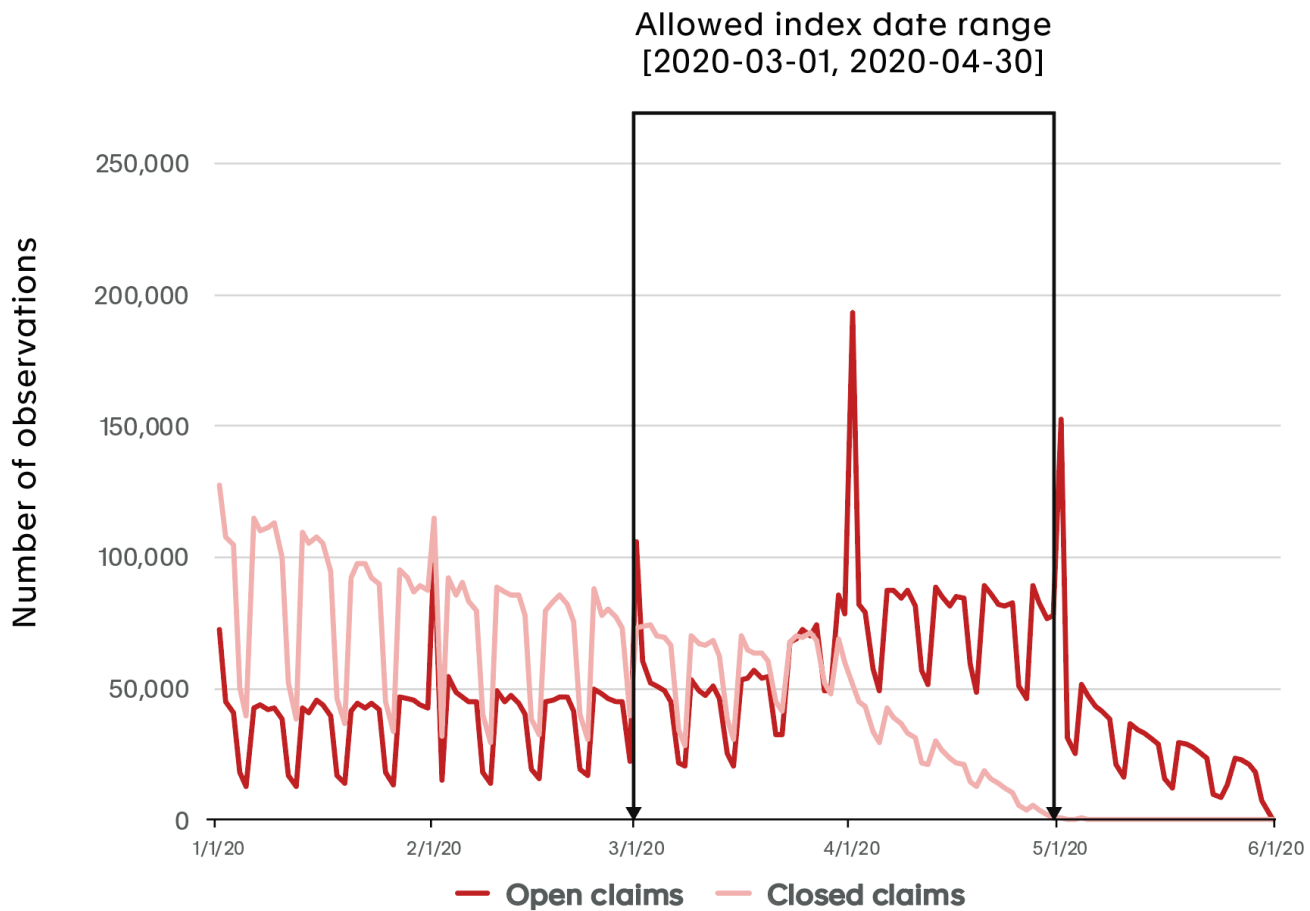
Psychotic disorders: F20 - F29

Rheumatic disease: M05, M06, M30 - M36

Venous thromboembolism: I26, I82

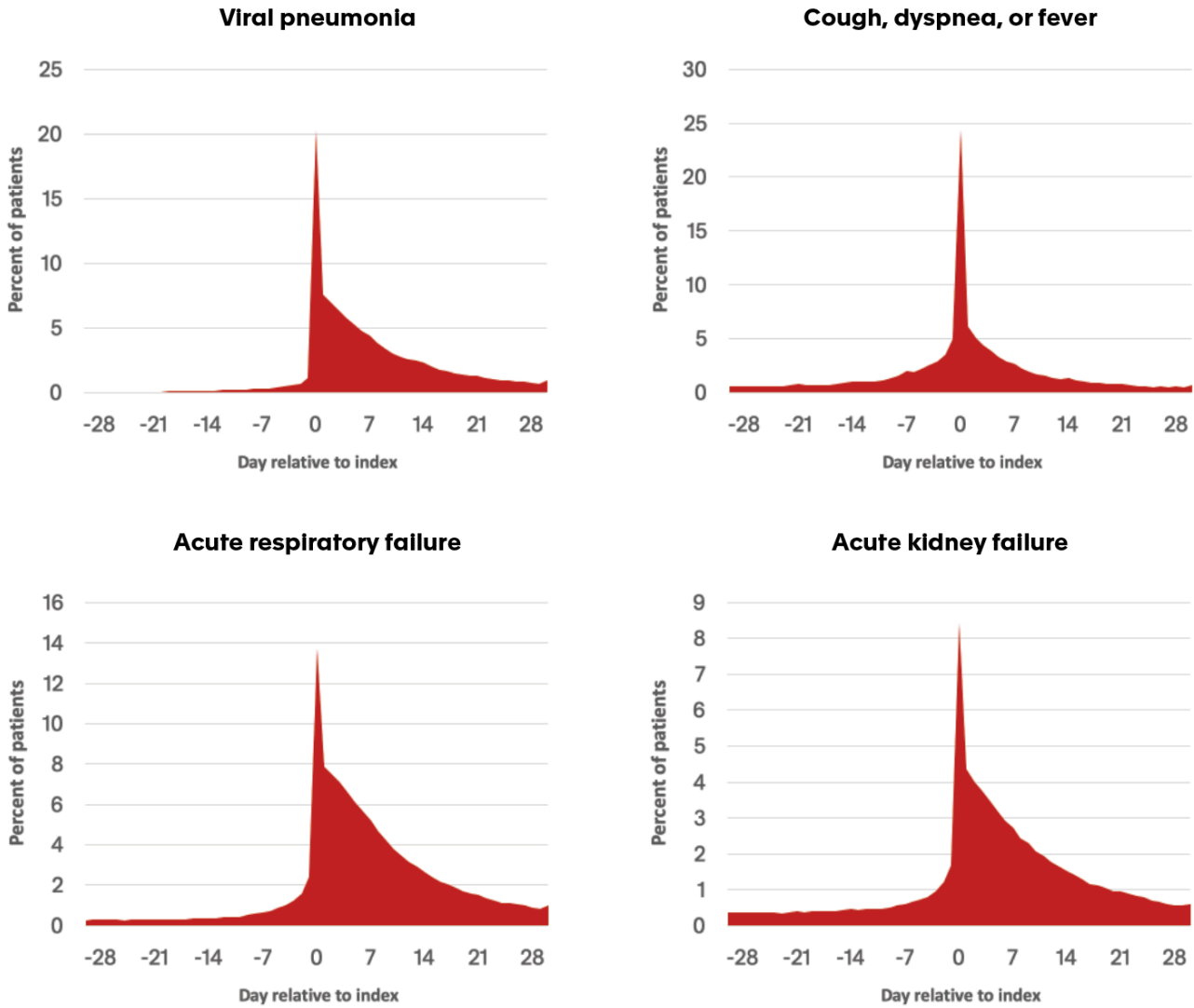
eFigure 1. Open and closed claims

This figure shows the distribution of observations (number of rows in the database) on each date of service in 2020 pertaining to open and closed claims for patients included in this study. During the allowed index date range when COVID-19 cases were identified, most patients had open claims, while closed claims were more prevalent prior to this time. 87.7% of patients had their index event identified from an open claim.



eFigure 2. Timing of COVID-19 complications relative to the index date

Using viral pneumonia, cough/dyspnea/fever, acute respiratory failure, and acute kidney failure as representative, expected complications of COVID-19, we sought to assess the time frame (relative to the index date) over which COVID-19 complications tend to occur. Here, we can see that these complications exhibit the sharpest increase in frequency on the index date, but also exhibit a rise in frequency that begins approximately a week prior to index. The index date was the date of first COVID-19 diagnosis.



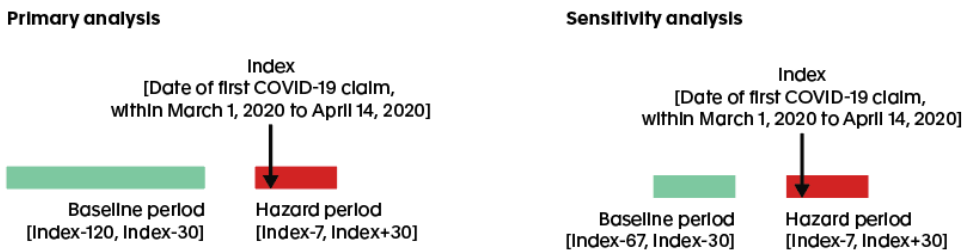
eFigure 3. Study design

Study design diagrams: The boxes below illustrate the durations of the study time windows. The hazard period was defined as day 7 before index to day 30 after index (38 days total, when the index date is included). The primary analysis involved a baseline period that was defined as days 120 to 30 prior to index (90 days total), while the sensitivity analyses involved a baseline period that was defined as days 68 to 30 prior to index (38 days total, identical in duration to the hazard period).

The purpose of the baseline period is to detect conditions already present in the patient just before SARS-CoV-2 infection, as such conditions cannot be attributed to SARS-CoV-2. Longer baseline periods are more sensitive in detecting chronic conditions. For example, for a patient who infrequently seeks care for hypertension, their last recorded claim related to hypertension may have occurred months in the past and thus may only be detected with longer baseline periods. Since the disease is a chronic condition, it would nonetheless likely still be present by the time of COVID-19 onset and therefore it would appropriately qualify as a pre-existing condition that cannot be attributable to COVID-19. However, longer baseline periods may also be more likely to detect acute conditions that occurred in the past and have since resolved. Since an acute condition that resolved is no longer actually present in a patient just before SARS-CoV-2 infection, it should not qualify as a pre-existing condition. For example, a patient who had a single claim for respiratory infection that occurred 12 months ago likely had the infection eventually resolve. For this patient, the infection is probably no longer present just prior to COVID-19 infection. Thus, longer baseline periods may over-estimate the prevalence of acute conditions present in a patient just prior to SARS-CoV-2 infection, since there is more time to accrue old events that have actually resolved. Correspondingly, this would under-estimate the odds ratio of association with COVID-19. For this reason, we conducted a sensitivity analysis to evaluate the effect of decreasing the length of the baseline period.

Statistical calculations: For every ICD-10 diagnosis code, a two-by-two table can be constructed where the table cells A, B, C, and D are defined as shown below. Since observations were matched, the odds ratio was defined as C/B. Risk was calculated only among patients who were at-risk of newly onset disease (i.e., only among patients who did not have the code present in the baseline period), and therefore was defined as C/(C+D). Baseline prevalence (as described for selected conditions in Table 1 and Figure 2) was calculated as (A+B)/(A+B+C+D).

Study design diagrams



Statistical calculations

Odds ratio and risk calculations

		Hazard period	
		Code present	Code absent
Baseline period	Code present	A	B
	Code absent	C	D

A = Number of patients with the code in the baseline and hazard period

B = Number of patients with the code in the baseline but not hazard period

C = Number of patients with the code in the hazard but not baseline period

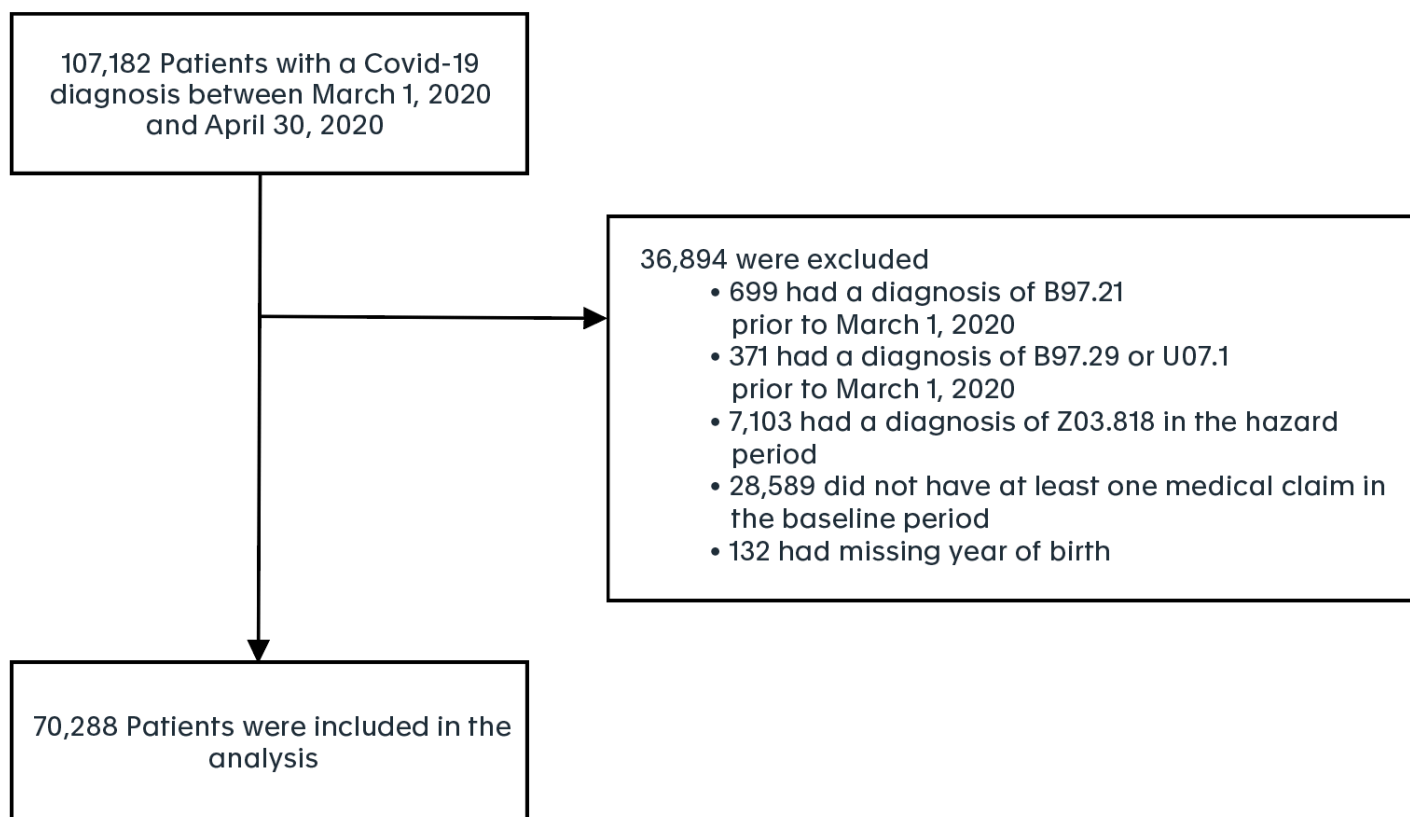
D = Number of patients without the code in either the baseline or hazard periods

Odds ratio = C/B

Risk = C / (C + D)

Prevalence = (A + B) / (A + B + C + D)

eFigure 4. Patient selection



Descriptions of ICD-10 codes mentioned above:

B97.21: SARS-associated coronavirus

B97.29: Other coronavirus as the cause of disease classified elsewhere

U07.1: COVID-19, virus identified

Z03.818: Encounter for observation for suspected exposure to other biological agents ruled out.
Note: this code is used when exposure to COVID-10 was suspected but ruled out after evaluation (<https://www.cdc.gov/nchs/data/icd/COVID-19-guidelines-final.pdf>).

eTable 1. Number of unique diagnosis codes in the baseline period (pre-COVID-19) and hazard period (with COVID-19)

Subgroup	Number of unique diagnosis codes – median [IQR]	
	Baseline period	Hazard period
All patients	9 [4, 18]	9 [4, 17]
Outpatients	7 [3, 14]	5 [3, 8]
Inpatients	11 [5, 22]	15 [9, 23]
ICU patients	13 [6, 27]	29 [21, 40]
Age < 18	5 [3, 10]	5 [3, 9]
Age 18 to < 65	7 [3, 15]	7 [3, 13]
Age >= 65	11 [5, 21]	12 [6, 20]

eTable 2. Candidate COVID-19 complications, by ICD-10 header code (primary analysis)

This table shows findings for all header-level codes that increased in odds with COVID-19, with $P < 0.05$. White shading: candidate COVID-19 complications (i.e., codes that increased in odds with $P < \text{Bonferroni-corrected threshold}$); these codes correspond to Figures 2 and 3 in the main manuscript. Gray shading: nominally significant codes ($P < 0.05$ but not $< \text{Bonferroni-corrected threshold}$). OR (Est.): odds ratio for association with COVID-19, point estimate. OR (LI) and OR (UI): 95% lower and upper confidence intervals for the odds ratio. OR, Risk, A, B, C, and D are defined in eFigure 3. P-value: p-value from McNemar test (null hypothesis: OR = 1). The Bonferroni-corrected significance threshold for this analysis was $0.05/1,724 = 2.9\text{E-}05$.

eTable 2 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
A41 - Other sepsis	4.23	4.01	4.46	10.4%	727	1,676	7,086	60,799	0.00E+00
B33 - Other viral diseases, NEC	10.88	6.55	18.05	0.2%	3	16	174	70,095	4.69E-30
B34 - Viral infection of unspecified site	8.47	7.86	9.12	9.5%	150	781	6,612	62,745	0.00E+00
B87 - Myiasis	14.00	2.13	591.97	0.0%	0	1	14	70,273	9.77E-04
B96 - Other bacterial agents, CE	1.25	1.16	1.35	2.2%	152	1,190	1,489	67,457	8.54E-09
B99 - Other infectious diseases	2.94	2.42	3.57	0.6%	11	135	397	69,745	1.10E-29
D61 - Other aplastic anemias / bone marrow	1.50	1.28	1.75	0.5%	115	254	380	69,539	6.89E-07
D65 - Disseminated intravascular coagulation	11.83	5.26	26.62	0.1%	0	6	71	70,211	3.02E-13
D69 - Purpura/other hemorrhagic conditions	1.52	1.40	1.65	2.0%	331	896	1,362	67,699	1.30E-22
D72 - Other disorders of white blood cells	1.67	1.57	1.78	4.0%	303	1,618	2,704	65,663	3.44E-61
D76 - Other specified diseases with lymphoreticular ...	5.00	1.07	46.93	0.0%	0	2	10	70,276	3.86E-02
E43 - Unspecified severe malnutrition	2.11	1.86	2.38	1.1%	188	374	788	68,938	8.73E-34
E44 - Malnutrition (moderate & mild)	1.20	1.06	1.36	0.8%	155	476	572	69,085	3.34E-03
E46 - Unspecified malnutrition	1.32	1.18	1.48	1.0%	219	523	691	68,855	1.64E-06
G72 - Other & unspecified myopathies	2.70	2.17	3.36	0.4%	29	109	294	69,856	4.92E-20
G92 - Toxic encephalopathy	1.73	1.51	1.98	0.8%	42	338	585	69,323	5.62E-16
G93 - Other disorders of brain	1.93	1.82	2.04	4.9%	787	1,725	3,328	64,448	1.82E-112
I21 - Acute myocardial infarction	1.59	1.45	1.74	1.8%	249	773	1,228	68,038	3.34E-24
I24 - Other acute ischemic heart diseases	1.79	1.53	2.09	0.6%	44	241	431	69,572	3.08E-13
I26 - Pulmonary embolism	1.66	1.47	1.87	1.0%	195	427	709	68,957	7.61E-17
I40 - Acute myocarditis	8.17	3.58	18.62	0.1%	0	6	49	70,233	1.49E-08
I45 - Other conduction disorders	1.39	1.26	1.54	1.3%	151	640	891	68,606	1.67E-10
I46 - Cardiac arrest	10.43	8.23	13.21	1.1%	28	75	782	69,403	1.68E-128
I48 - Atrial fibrillation & flutter	1.19	1.13	1.26	4.6%	3,178	2,489	2,973	61,648	6.34E-11
I95 - Hypotension	1.80	1.68	1.92	3.8%	466	1,432	2,572	65,818	1.94E-72
J06 - Acute upper respiratory infections	1.29	1.23	1.36	5.9%	440	3,069	3,969	62,810	8.56E-27
J12 - Viral pneumonia, NEC	177.63	147.19	214.37	27.6%	75	109	19,362	50,742	0.00E+00
J13 - Pneumonia due to Streptococcus pneumoniae	2.15	1.36	3.42	0.1%	2	26	56	70,204	1.36E-03
J15 - Bacterial pneumonia, NEC	3.46	3.09	3.87	2.0%	77	398	1,376	68,437	4.97E-119
J16 - Pneumonia due to other organisms	6.26	4.65	8.43	0.4%	10	50	313	69,915	4.99E-43
J17 - Pneumonia in diseases, CE	3.83	2.05	7.16	0.1%	5	12	46	70,225	1.47E-05
J18 - Pneumonia, unspecified organism	5.68	5.44	5.94	20.4%	1,370	2,391	13,591	52,936	0.00E+00
J22 - Unspecified acute lower resp. infection	28.77	23.75	34.84	4.4%	9	108	3,107	67,064	0.00E+00
J40 - Bronchitis, not specified acute/chronic	1.16	1.06	1.27	1.4%	57	849	983	68,399	1.89E-03
J69 - Pneumonitis due to solids & liquids	1.17	1.03	1.32	0.8%	124	465	544	69,155	1.41E-02
J80 - Acute respiratory distress syndrome	41.60	33.00	52.45	4.3%	20	73	3,037	67,158	0.00E+00
J81 - Pulmonary edema	1.16	1.05	1.28	1.2%	138	723	839	68,588	3.62E-03
J82 - Pulmonary eosinophilia	4.20	1.64	10.75	0.0%	6	5	21	70,256	3.26E-03
J84 - Other interstitial pulmonary diseases	1.36	1.20	1.55	0.8%	162	399	544	69,183	2.74E-06
J90 - Pleural effusion, NEC	1.56	1.45	1.68	2.8%	425	1,237	1,932	66,694	6.39E-35
J93 - Pneumothorax & air leak	3.38	2.68	4.26	0.4%	9	92	311	69,876	1.80E-27
J95 - Procedural complications of resp. system	1.72	1.39	2.12	0.3%	20	136	234	69,898	4.59E-07

eTable 2 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
J96 - Respiratory failure, NEC	11.36	10.74	12.02	22.6%	1,921	1,332	15,133	51,902	0.00E+00
J98 - Other respiratory disorders	3.43	3.27	3.60	10.6%	597	2,091	7,178	60,422	0.00E+00
J99 - Respiratory disorders in diseases, CE	4.13	1.94	8.77	0.0%	2	8	33	70,245	1.78E-04
K72 - Hepatic failure, NEC	1.48	1.21	1.81	0.3%	69	162	240	69,817	1.23E-04
L89 - Pressure ulcer	1.14	1.05	1.23	2.0%	851	1,181	1,345	66,911	1.18E-03
N07 - Hereditary nephropathy	Inf			0.0%	0	0	10	70,278	1.95E-03
N17 - Acute kidney failure	3.50	3.34	3.66	11.8%	1,558	2,240	7,833	58,657	0.00E+00
O07 - Failed attempted termination of pregnancy	8.00	1.88	71.72	0.0%	0	2	16	70,270	1.31E-03
O41 - Other disorders of amniotic fluid / membranes	2.92	1.53	5.56	0.0%	1	12	35	70,240	1.33E-03
O48 - Late pregnancy	4.75	2.25	10.01	0.1%	0	8	38	70,242	1.90E-05
O62 - Abnormalities of forces of labor	2.69	1.44	5.04	0.0%	0	13	35	70,240	2.44E-03
O66 - Other obstructed labor	6.00	1.34	55.20	0.0%	0	2	12	70,274	1.29E-02
O69 - Labor and delivery complicated by umbilical ...	2.83	1.48	5.41	0.0%	1	12	34	70,241	1.96E-03
O70 - Perineal laceration during delivery	3.71	2.08	6.65	0.1%	0	14	52	70,222	5.25E-06
O72 - Postpartum hemorrhage	4.67	1.30	25.33	0.0%	0	3	14	70,271	1.27E-02
O75 - Other complications of labor and delivery	3.00	1.14	9.23	0.0%	0	6	18	70,264	2.27E-02
O76 - Abnormality in fetal heart rate and rhythm ...	2.95	1.76	4.93	0.1%	2	19	56	70,211	3.23E-05
O77 - Other fetal stress complicating labor ...	3.57	1.58	8.07	0.0%	0	7	25	70,256	2.65E-03
O80 - Encounter for full-term uncomplicated delivery	1.86	1.25	2.77	0.1%	0	37	69	70,182	2.60E-03
O82 - Encounter for cesarean delivery without ...	5.00	2.14	11.71	0.0%	0	6	30	70,252	1.26E-04
O86 - Other puerperal infections	5.75	2.08	15.90	0.0%	0	4	23	70,261	5.32E-04
O98 - Maternal infectious diseases	9.84	6.86	14.13	0.4%	18	32	315	69,923	9.02E-02
R00 - Abnormalities of heart beat	1.21	1.15	1.27	5.4%	623	2,979	3,596	63,090	3.03E-14
R05 - Cough	2.79	2.70	2.88	22.0%	2,350	4,965	13,838	49,135	0.00E+00
R06 - Abnormalities of breathing	3.42	3.31	3.53	26.2%	3,607	4,741	16,202	45,738	0.00E+00
R09 - Other s/s circulatory/respiratory system	3.10	2.97	3.23	14.0%	1,071	3,001	9,296	56,920	0.00E+00
R19 - Other s/s digestive system & abdomen	1.26	1.19	1.33	4.4%	368	2,361	2,970	64,589	8.28E-17
R34 - Anuria & oliguria	3.81	2.77	5.24	0.3%	3	47	179	70,059	2.93E-18
R40 - Somnolence, stupor & coma	1.37	1.26	1.48	1.9%	142	977	1,334	67,835	1.31E-13
R41 - Other s/s involving cognitive functions	1.21	1.16	1.26	7.3%	1,987	3,918	4,729	59,654	3.02E-18
R43 - Disturbances of smell & taste	14.62	10.06	21.25	0.6%	2	29	424	69,833	1.66E-76
R50 - Fever of other & unknown origin	6.52	6.24	6.82	22.2%	1,066	2,274	14,832	52,116	0.00E+00
R53 - Malaise & fatigue	1.21	1.17	1.25	12.7%	2,800	6,424	7,781	53,283	5.43E-30
R57 - Shock, NEC	4.76	4.09	5.54	1.4%	20	201	956	69,111	7.17E-109
R62 - Lack of expected normal development	1.44	1.29	1.60	1.1%	319	547	785	68,637	8.37E-11
R65 - S/s of systemic inflammation/infection	4.83	4.45	5.23	4.9%	173	705	3,403	66,007	0.00E+00
R68 - Other general s/s	2.00	1.89	2.11	6.0%	616	2,024	4,042	63,606	7.14E-148
R74 - Abnormal serum enzyme levels	1.79	1.65	1.94	2.3%	122	910	1,627	67,629	7.37E-46
R78 - Findings of drugs & other substances	1.41	1.27	1.56	1.2%	120	599	842	68,727	1.83E-10
R79 - Other abnormal findings of blood	1.15	1.09	1.21	4.2%	405	2,439	2,799	64,645	7.04E-07
R91 - Abnormal findings on imaging of lung	3.70	3.53	3.87	12.8%	1,001	2,315	8,560	58,412	0.00E+00
R94 - Abnormal results of function studies	1.06	1.01	1.11	4.5%	431	2,862	3,028	63,967	3.16E-02
T37 - Poisoning by ... anti-infectives ...	2.73	1.38	5.37	0.0%	0	11	30	70,247	4.94E-03
T38 - Adverse effects hormones, NEC	1.66	1.35	2.04	0.3%	14	144	239	69,891	1.56E-06
Y71 - Cardiovascular devices associated with ...	1.86	1.12	3.11	0.1%	3	22	41	70,222	2.33E-02
Z20 - Exposure to communicable diseases	22.10	20.28	24.08	17.3%	174	545	12,043	57,526	0.00E+00
Z29 - Other prophylactic measures	1.59	1.31	1.95	0.4%	32	158	252	69,846	4.37E-06
Z37 - Outcome of delivery	3.19	2.45	4.16	0.3%	2	72	230	69,984	1.65E-19
Z45 - Management of implanted device	1.89	1.75	2.04	2.8%	190	1,021	1,931	67,146	7.87E-63
Z46 - Fitting/adjustment of other devices	3.38	3.12	3.66	3.7%	133	765	2,584	66,806	1.26E-216
Z51 - Encounter for other medical care	1.43	1.35	1.52	3.7%	513	1,753	2,512	65,510	3.81E-31

eTable 2 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
Z60 - Problems of social environment	1.66	1.30	2.12	0.2%	13	103	171	70,001	5.17E-05
Z66 - Do not resuscitate	5.51	4.92	6.17	2.8%	134	353	1,946	67,855	9.84E-242
Z74 - Problems of provider dependency	1.28	1.22	1.34	6.7%	2,092	3,375	4,316	60,505	8.33E-27
Z97 - Presence of other devices	1.35	1.11	1.65	0.3%	13	169	228	69,878	3.60E-03
Z99 - Dependence on devices, NEC	2.38	2.26	2.50	7.3%	2,170	2,032	4,829	61,257	8.90E-250

eTable 3. Codes that significantly decreased in odds upon being diagnosed with COVID-19 (primary analysis)

This table shows findings for header-level codes that significantly decreased in odds with COVID-19 at a Bonferroni-corrected level of significance. OR (Est.): odds ratio for association with COVID-19, point estimate. OR (LI) and OR (UI): 95% lower and upper confidence intervals for the odds ratio. OR, Risk, A, B, C, and D are defined in eFigure 3. P-value: p-value from McNemar test (null hypothesis: OR = 1). The significance threshold for this analysis was $0.05/1,724 = 2.9E-05$.

Authors' interpretation: There are two possible reasons why these codes appear to decrease in odds with COVID-19. The first is that, during the initial stages of COVID-19 treatment, chronic conditions (e.g., “C18 – Malignant neoplasm of colon”) and less severe conditions (e.g., “B35 – Dermatophytosis”) were not considered priorities for care, and therefore these conditions were less likely to be captured in a claim. The second possible reason is that, for acute conditions, the baseline period (90 days in duration) could be accruing more events than the hazard period (38 days in duration) because it is longer in duration. This could explain why “I63 – Cerebral Infarction” appears to decrease in odds with COVID-19 in this analysis (OR: 0.58, 95% CI: 0.54-0.63), while it slightly increases in odds (OR: 1.13, 95% CI: 1.04-1.23) when using a shorter baseline period, as seen later in eTable 10.

eTable 3 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
A63 - Other predominantly sexually transmitted ...	0.23	0.12	0.45	0.0%	1	44	10	70,233	7.10E-06
A64 - Unspecified sexually transmitted disease	0.07	0.02	0.22	0.0%	2	41	3	70,242	2.43E-08
A74 - Other diseases caused by ...	0.11	0.03	0.33	0.0%	0	28	3	70,257	1.63E-05
B00 - Herpesviral [herpes simplex] infections	0.26	0.20	0.35	0.1%	29	222	58	69,979	2.01E-22
B02 - Zoster [herpes zoster]	0.31	0.24	0.39	0.1%	44	252	77	69,915	8.56E-22
B07 - Viral warts	0.03	0.02	0.07	0.0%	5	202	7	70,074	4.66E-41
B18 - Chronic viral hepatitis	0.46	0.38	0.55	0.2%	138	334	153	69,663	3.45E-16
B19 - Unspecified viral hepatitis	0.47	0.38	0.57	0.2%	82	298	139	69,769	4.09E-14
B20 - Human immunodeficiency virus [HIV] ...	0.52	0.41	0.66	0.1%	260	200	104	69,724	5.08E-08
B35 - Dermatophytosis	0.04	0.04	0.05	0.3%	192	4,936	215	64,945	0.00E+00
B36 - Other superficial mycoses	0.26	0.17	0.39	0.0%	11	111	29	70,137	7.61E-12
B37 - Candidiasis	0.66	0.60	0.73	0.9%	102	895	592	68,699	4.82E-15
B85 - Pediculosis and phthiriasis	0.00	0.00	0.23	0.0%	0	18	0	70,270	7.63E-06
B86 - Scabies	0.19	0.09	0.38	0.0%	0	48	9	70,231	4.82E-07
C18 - Malignant neoplasm of colon	0.27	0.20	0.37	0.1%	123	177	48	69,940	1.42E-17
C20 - Malignant neoplasm of rectum	0.29	0.16	0.52	0.0%	28	48	14	70,198	2.78E-05
C43 - Malignant melanoma of skin	0.25	0.13	0.48	0.0%	17	44	11	70,216	1.60E-05
C44 - Other and unspecified malignant ...	0.16	0.12	0.21	0.1%	47	337	53	69,851	1.42E-46
C50 - Malignant neoplasm of breast	0.30	0.24	0.36	0.2%	240	404	120	69,524	4.15E-35
C54 - Malignant neoplasm of corpus ...	0.30	0.17	0.52	0.0%	23	53	16	70,196	1.46E-05
C61 - Malignant neoplasm of prostate	0.27	0.22	0.32	0.2%	284	613	163	69,228	1.90E-58
C64 - Malignant neoplasm of kidney, ...	0.38	0.26	0.54	0.1%	49	109	41	70,089	4.49E-08
C67 - Malignant neoplasm of bladder	0.20	0.14	0.30	0.0%	61	161	33	70,033	7.65E-20
C73 - Malignant neoplasm of thyroid ...	0.16	0.09	0.28	0.0%	13	82	13	70,180	3.02E-12
C77 - Secondary and unspecified malignant ...	0.22	0.15	0.34	0.0%	26	129	29	70,104	3.38E-15
C78 - Secondary malignant neoplasm of ...	0.57	0.45	0.74	0.1%	76	169	97	69,946	1.34E-05
C79 - Secondary malignant neoplasm of ...	0.46	0.37	0.57	0.2%	169	240	110	69,769	5.37E-12
C80 - Malignant neoplasm without specification ...	0.41	0.29	0.59	0.1%	17	102	42	70,127	8.80E-07
C83 - Non-follicular lymphoma	0.24	0.14	0.40	0.0%	66	71	17	70,134	1.61E-08
D03 - Melanoma in situ	0.05	0.00	0.30	0.0%	2	21	1	70,264	1.10E-05
D04 - Carcinoma in situ of ...	0.03	0.01	0.13	0.0%	3	58	2	70,225	1.24E-12
D05 - Carcinoma in situ of ...	0.23	0.13	0.40	0.0%	11	62	14	70,201	7.00E-08
D12 - Benign neoplasm of colon, ...	0.08	0.06	0.10	0.1%	8	597	45	69,638	7.50E-105
D13 - Benign neoplasm of other ...	0.16	0.08	0.33	0.0%	1	51	8	70,228	4.55E-08
D17 - Benign lipomatous neoplasm	0.13	0.08	0.21	0.0%	8	136	17	70,127	1.43E-21
D18 - Hemangioma and lymphangioma, any ...	0.12	0.07	0.18	0.0%	11	181	21	70,075	4.71E-29

eTable 3 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
D21 - Other benign neoplasms of ...	0.20	0.10	0.40	0.0%	0	49	10	70,229	7.53E-07
D22 - Melanocytic nevi	0.04	0.03	0.07	0.0%	3	492	21	69,772	1.20E-95
D23 - Other benign neoplasms of ...	0.04	0.02	0.07	0.0%	1	233	9	70,045	1.32E-46
D24 - Benign neoplasm of breast	0.08	0.02	0.23	0.0%	2	40	3	70,243	4.02E-08
D25 - Leiomyoma of uterus	0.14	0.10	0.19	0.1%	18	295	41	69,934	2.47E-43
D27 - Benign neoplasm of ovary	0.00	0.00	0.24	0.0%	0	17	0	70,271	1.53E-05
D29 - Benign neoplasm of male ...	0.12	0.04	0.33	0.0%	6	33	4	70,245	4.16E-06
D31 - Benign neoplasm of eye ...	0.07	0.03	0.16	0.0%	4	86	6	70,192	1.78E-16
D32 - Benign neoplasm of meninges	0.36	0.24	0.54	0.0%	28	86	31	70,143	5.97E-07
D35 - Benign neoplasm of other ...	0.22	0.15	0.33	0.0%	25	127	28	70,108	3.50E-15
D36 - Benign neoplasm of other ...	0.12	0.05	0.27	0.0%	1	51	6	70,230	5.61E-09
D41 - Neoplasm of uncertain behavior ...	0.16	0.07	0.35	0.0%	5	44	7	70,232	4.63E-07
D46 - Myelodysplastic syndromes	0.41	0.28	0.58	0.1%	65	101	41	70,081	7.38E-07
D47 - Other neoplasms of uncertain ...	0.56	0.47	0.68	0.2%	71	308	173	69,736	9.97E-10
D48 - Neoplasm of uncertain behavior ...	0.07	0.05	0.10	0.1%	11	519	37	69,721	1.71E-92
D49 - Neoplasms of unspecified behavior	0.20	0.15	0.27	0.1%	19	274	55	69,940	2.83E-33
D50 - Iron deficiency anemia	0.37	0.34	0.40	1.5%	793	2,742	1,012	65,741	3.38E-175
D51 - Vitamin B12 deficiency anemia	0.23	0.19	0.27	0.2%	156	652	148	69,332	9.45E-71
D52 - Folate deficiency anemia	0.24	0.16	0.35	0.0%	14	133	32	70,109	6.97E-15
D59 - Acquired hemolytic anemia	0.34	0.21	0.54	0.0%	16	68	23	70,181	3.98E-06
D62 - Acute posthemorrhagic anemia	0.73	0.65	0.83	0.7%	91	666	489	69,042	2.23E-07
D63 - Anemia in chronic diseases ...	0.66	0.62	0.71	1.9%	1,244	1,889	1,249	65,906	3.85E-30
D64 - Other anemias	0.69	0.66	0.72	5.4%	2,306	4,930	3,414	59,638	8.89E-62
D75 - Other and unspecified diseases ...	0.58	0.45	0.73	0.1%	21	177	102	69,988	9.41E-06
E03 - Other hypothyroidism	0.47	0.44	0.50	2.7%	2,649	3,746	1,754	62,139	9.23E-159
E04 - Other nontoxic goiter	0.25	0.21	0.29	0.2%	70	693	171	69,354	2.70E-70
E05 - Thyrotoxicosis [hyperthyroidism]	0.39	0.32	0.49	0.2%	90	271	107	69,820	5.12E-17
E06 - Thyroiditis	0.29	0.22	0.39	0.1%	34	207	60	69,987	4.07E-19
E07 - Other disorders of thyroid	0.38	0.30	0.48	0.1%	47	274	104	69,863	3.55E-18
E08 - Diabetes mellitus due to ...	0.45	0.38	0.53	0.3%	139	485	218	69,446	1.10E-23
E10 - Type 1 diabetes mellitus	0.33	0.29	0.38	0.4%	326	762	252	68,948	1.64E-57
E11 - Type 2 diabetes mellitus	0.50	0.48	0.52	7.5%	11,833	7,619	3,799	47,037	9.46E-280
E13 - Other specified diabetes mellitus	0.52	0.44	0.60	0.4%	105	497	256	69,430	2.21E-18
E21 - Hyperparathyroidism and other disorders ...	0.27	0.21	0.35	0.1%	74	301	82	69,831	8.08E-29
E28 - Ovarian dysfunction	0.12	0.07	0.19	0.0%	12	160	19	70,097	1.26E-25
E29 - Testicular dysfunction	0.08	0.06	0.12	0.0%	58	349	29	69,852	1.69E-60
E34 - Other endocrine disorders	0.17	0.10	0.29	0.0%	11	94	16	70,167	2.11E-13
E53 - Deficiency of other B ...	0.20	0.17	0.23	0.3%	161	985	194	68,948	3.92E-117
E55 - Vitamin D deficiency	0.21	0.20	0.23	1.4%	716	4,203	885	64,484	0.00E+00
E61 - Deficiency of other nutrient ...	0.34	0.27	0.44	0.1%	25	243	83	69,937	1.29E-18
E66 - Overweight and obesity	0.50	0.48	0.52	4.4%	2,258	5,560	2,765	59,705	6.23E-206
E72 - Other disorders of amino-acid ...	0.37	0.27	0.51	0.1%	16	139	51	70,082	2.76E-10
E78 - Disorders of lipoprotein metabolism ...	0.43	0.41	0.44	10.3%	7,253	12,226	5,234	45,575	0.00E+00
E79 - Disorders of purine and ...	0.23	0.16	0.33	0.1%	14	157	36	70,081	5.73E-18
E83 - Disorders of mineral metabolism	0.45	0.32	0.63	0.1%	22	107	48	70,111	3.18E-06
F01 - Vascular dementia	0.47	0.42	0.54	0.5%	529	792	375	68,592	4.10E-34
F02 - Dementia in other diseases ...	0.62	0.57	0.67	1.4%	1,021	1,537	957	66,773	4.42E-31
F03 - Unspecified dementia	0.76	0.72	0.81	3.4%	3,008	2,875	2,199	62,206	2.64E-21
F06 - Other mental disorders due ...	0.28	0.24	0.33	0.3%	256	679	191	69,162	3.07E-61
F07 - Personality and behavioral disorders ...	0.18	0.10	0.31	0.0%	11	74	13	70,190	1.25E-10
F10 - Alcohol related disorders	0.34	0.29	0.38	0.4%	435	868	292	68,693	6.04E-64

eTable 3 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
F11 - Opioid related disorders	0.26	0.21	0.31	0.2%	230	571	147	69,340	3.87E-56
F12 - Cannabis related disorders	0.28	0.21	0.36	0.1%	41	239	66	69,942	6.94E-23
F13 - Sedative, hypnotic, or anxiolytic ...	0.17	0.11	0.26	0.0%	20	131	22	70,115	2.52E-18
F14 - Cocaine related disorders	0.27	0.21	0.36	0.1%	70	249	68	69,901	5.00E-24
F15 - Other stimulant related disorders	0.31	0.21	0.46	0.0%	29	112	35	70,112	3.65E-10
F17 - Nicotine dependence	0.45	0.41	0.49	1.1%	556	1,606	726	67,400	4.95E-74
F19 - Other psychoactive substance related ...	0.34	0.27	0.42	0.2%	83	340	115	69,750	8.52E-26
F20 - Schizophrenia	0.39	0.34	0.45	0.4%	705	748	292	68,543	3.35E-45
F22 - Delusional disorders	0.26	0.19	0.35	0.1%	71	213	55	69,949	8.78E-22
F23 - Brief psychotic disorder	0.40	0.28	0.55	0.1%	15	124	49	70,100	1.84E-08
F25 - Schizoaffective disorders	0.26	0.22	0.30	0.3%	544	682	176	68,886	1.32E-66
F28 - Other psychotic disorder not ...	0.20	0.10	0.40	0.0%	10	49	10	70,219	7.53E-07
F29 - Unspecified psychosis not due ...	0.38	0.32	0.43	0.4%	314	672	252	69,050	3.18E-43
F31 - Bipolar disorder	0.33	0.29	0.37	0.5%	837	1,133	369	67,949	2.76E-86
F32 - Major depressive disorder, single ...	0.50	0.47	0.53	3.2%	2,007	4,140	2,071	62,070	9.21E-152
F33 - Major depressive disorder, recurrent	0.33	0.31	0.35	1.7%	1,705	3,357	1,108	64,118	4.04E-248
F34 - Persistent mood [affective] disorders	0.22	0.18	0.28	0.1%	100	362	81	69,745	2.22E-40
F39 - Unspecified mood [affective] disorder	0.41	0.33	0.50	0.2%	102	314	129	69,743	2.29E-18
F40 - Phobic anxiety disorders	0.30	0.20	0.45	0.0%	21	102	31	70,134	1.28E-09
F41 - Other anxiety disorders	0.55	0.53	0.58	4.3%	2,786	4,926	2,718	59,858	1.35E-140
F42 - Obsessive-compulsive disorder	0.31	0.22	0.43	0.1%	42	144	44	70,058	5.19E-13
F43 - Reaction to severe stress, ...	0.29	0.26	0.32	0.8%	533	1,960	568	67,227	1.82E-168
F45 - Somatoform disorders	0.22	0.13	0.37	0.0%	7	81	18	70,182	4.63E-10
F48 - Other nonpsychotic mental disorders	0.35	0.23	0.52	0.0%	36	84	29	70,139	3.78E-07
F51 - Sleep disorders not due ...	0.30	0.25	0.35	0.3%	139	598	178	69,373	3.94E-51
F52 - Sexual dysfunction not due ...	0.12	0.05	0.27	0.0%	8	51	6	70,223	5.61E-09
F60 - Specific personality disorders	0.26	0.20	0.35	0.1%	84	209	55	69,940	4.66E-21
F63 - Impulse disorders	0.28	0.18	0.44	0.0%	17	86	24	70,161	6.02E-09
F70 - Mild intellectual disabilities	0.21	0.14	0.33	0.0%	35	113	24	70,116	5.55E-14
F71 - Moderate intellectual disabilities	0.15	0.08	0.28	0.0%	22	74	11	70,181	1.76E-11
F72 - Severe intellectual disabilities	0.19	0.11	0.35	0.0%	16	67	13	70,192	3.11E-09
F73 - Profound intellectual disabilities	0.21	0.10	0.42	0.0%	28	43	9	70,208	4.73E-06
F79 - Unspecified intellectual disabilities	0.52	0.41	0.67	0.1%	60	183	96	69,949	2.62E-07
F80 - Specific developmental disorders of ...	0.31	0.21	0.45	0.0%	48	108	33	70,099	4.61E-10
F84 - Pervasive developmental disorders	0.43	0.29	0.62	0.1%	57	87	37	70,107	1.08E-05
F90 - Attention-deficit hyperactivity disorders	0.20	0.15	0.25	0.1%	148	410	80	69,650	5.76E-50
F91 - Conduct disorders	0.28	0.22	0.37	0.1%	41	239	68	69,940	2.94E-22
F98 - Other behavioral and emotional ...	0.39	0.25	0.61	0.0%	24	69	27	70,168	2.86E-05
F99 - Mental disorder, not otherwise ...	0.44	0.35	0.56	0.1%	27	220	97	69,944	7.27E-12
G20 - Parkinson's disease	0.61	0.53	0.71	0.4%	803	478	293	68,714	3.44E-11
G21 - Secondary parkinsonism	0.29	0.18	0.48	0.0%	29	68	20	70,171	5.44E-07
G24 - Dystonia	0.21	0.14	0.32	0.0%	38	128	27	70,095	9.57E-16
G25 - Other extrapyramidal and movement ...	0.53	0.46	0.61	0.4%	223	533	283	69,249	2.86E-18
G30 - Alzheimer's disease	0.63	0.57	0.69	1.1%	1,192	1,159	729	67,208	5.44E-23
G31 - Other degenerative diseases of ...	0.52	0.47	0.59	0.7%	318	877	459	68,634	3.79E-30
G35 - Multiple sclerosis	0.36	0.27	0.48	0.1%	301	168	60	69,759	1.38E-12
G40 - Epilepsy and recurrent seizures	0.67	0.62	0.74	1.1%	1,058	1,137	767	67,326	2.75E-17
G43 - Migraine	0.33	0.29	0.37	0.4%	193	891	292	68,912	1.05E-67
G44 - Other headache syndromes	0.43	0.36	0.52	0.2%	29	383	166	69,710	3.01E-20
G45 - Transient cerebral ischemic attacks ...	0.33	0.28	0.39	0.3%	122	563	185	69,418	3.16E-43
G47 - Sleep disorders	0.45	0.42	0.47	3.2%	2,461	4,538	2,020	61,269	4.33E-212

eTable 3 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
G50 - Disorders of trigeminal nerve	0.42	0.29	0.62	0.1%	31	88	37	70,132	7.74E-06
G51 - Facial nerve disorders	0.35	0.23	0.53	0.0%	15	86	30	70,157	3.28E-07
G54 - Nerve root and plexus ...	0.22	0.14	0.35	0.0%	21	100	22	70,145	3.14E-12
G56 - Mononeuropathies of upper limb	0.10	0.08	0.14	0.1%	67	544	56	69,621	5.86E-88
G57 - Mononeuropathies of lower limb	0.22	0.16	0.31	0.1%	19	189	42	70,038	7.54E-22
G58 - Other mononeuropathies	0.19	0.10	0.34	0.0%	16	64	12	70,196	4.91E-09
G60 - Hereditary and idiopathic neuropathy	0.19	0.15	0.25	0.1%	66	367	70	69,785	1.63E-45
G62 - Other and unspecified polyneuropathies	0.39	0.35	0.44	0.7%	373	1,157	455	68,303	2.91E-68
G63 - Polyneuropathy in diseases classified ...	0.30	0.19	0.48	0.0%	17	74	22	70,175	1.94E-07
G81 - Hemiplegia and hemiparesis	0.44	0.38	0.52	0.3%	223	540	240	69,285	9.55E-27
G82 - Paraplegia (paraparesis) and quadriplegia ...	0.51	0.40	0.64	0.2%	222	223	113	69,730	2.74E-09
G83 - Other paralytic syndromes	0.36	0.26	0.50	0.1%	29	134	48	70,077	2.96E-10
G89 - Pain, not elsewhere classified	0.33	0.31	0.35	1.7%	1,667	3,460	1,133	64,028	3.80E-258
G90 - Disorders of autonomic nervous ...	0.43	0.35	0.51	0.2%	126	355	151	69,656	1.81E-19
G95 - Other and unspecified diseases ...	0.36	0.26	0.51	0.1%	41	125	45	70,077	1.37E-09
H00 - Hordeolum and chalazion	0.10	0.06	0.17	0.0%	5	175	18	70,090	2.93E-29
H01 - Other inflammation of eyelid	0.05	0.03	0.08	0.0%	20	314	15	69,939	1.18E-60
H02 - Other disorders of eyelid	0.07	0.05	0.10	0.0%	17	397	27	69,847	8.20E-72
H04 - Disorders of lacrimal system	0.11	0.10	0.14	0.2%	84	1,281	146	68,777	5.49E-198
H10 - Conjunctivitis	0.25	0.22	0.30	0.3%	35	780	198	69,275	4.81E-77
H11 - Other disorders of conjunctiva	0.09	0.06	0.14	0.0%	4	275	25	69,984	7.32E-47
H15 - Disorders of sclera	0.06	0.02	0.22	0.0%	4	34	2	70,248	2.38E-07
H16 - Keratitis	0.04	0.02	0.07	0.0%	13	303	13	69,959	1.98E-59
H17 - Corneal scars and opacities	0.04	0.01	0.11	0.0%	0	80	3	70,205	7.30E-17
H18 - Other disorders of cornea	0.03	0.02	0.06	0.0%	9	259	8	70,012	7.67E-53
H20 - Iridocyclitis	0.15	0.08	0.27	0.0%	11	81	12	70,184	1.77E-12
H21 - Other disorders of iris ...	0.06	0.02	0.17	0.0%	0	64	4	70,220	8.38E-13
H25 - Age-related cataract	0.04	0.04	0.05	0.1%	129	2,223	100	67,836	0.00E+00
H26 - Other cataract	0.17	0.14	0.21	0.1%	72	595	100	69,521	2.40E-78
H27 - Other disorders of lens	0.10	0.04	0.28	0.0%	1	39	4	70,244	2.16E-07
H31 - Other disorders of choroid	0.07	0.03	0.15	0.0%	0	98	7	70,183	1.59E-18
H33 - Retinal detachments and breaks	0.06	0.03	0.12	0.0%	7	143	9	70,129	3.93E-27
H34 - Retinal vascular occlusions	0.05	0.03	0.10	0.0%	14	167	9	70,098	2.59E-32
H35 - Other retinal disorders	0.08	0.07	0.10	0.2%	231	1,736	142	68,179	8.24E-296
H40 - Glaucoma	0.17	0.16	0.19	0.6%	484	2,357	408	67,039	2.08E-300
H43 - Disorders of vitreous body	0.04	0.03	0.05	0.1%	28	989	37	69,234	1.04E-193
H44 - Disorders of globe	0.19	0.11	0.34	0.0%	14	72	14	70,188	7.92E-10
H47 - Other disorders of optic ...	0.08	0.05	0.13	0.0%	16	206	17	70,049	2.41E-36
H50 - Other strabismus	0.07	0.03	0.16	0.0%	9	84	6	70,189	4.80E-16
H52 - Disorders of refraction and ...	0.02	0.02	0.03	0.1%	18	1,714	36	68,520	0.00E+00
H53 - Visual disturbances	0.17	0.14	0.20	0.2%	29	682	114	69,463	7.87E-90
H54 - Blindness and low vision	0.42	0.36	0.51	0.2%	175	405	172	69,536	4.53E-22
H57 - Other disorders of eye ...	0.19	0.14	0.25	0.1%	5	297	55	69,931	9.13E-38
H60 - Otitis externa	0.21	0.15	0.28	0.1%	7	237	49	69,995	2.02E-28
H61 - Other disorders of external ...	0.09	0.07	0.11	0.1%	27	963	86	69,212	4.16E-161
H65 - Nonsuppurative otitis media	0.25	0.19	0.33	0.1%	14	247	62	69,965	1.22E-25
H66 - Suppurative and unspecified otitis ...	0.33	0.28	0.39	0.2%	36	493	163	69,596	9.14E-38
H69 - Other and unspecified disorders ...	0.19	0.14	0.26	0.1%	8	240	45	69,995	1.45E-30
H72 - Perforation of tympanic membrane	0.13	0.06	0.31	0.0%	1	45	6	70,236	1.03E-07
H81 - Disorders of vestibular function	0.25	0.19	0.32	0.1%	44	322	80	69,842	2.79E-33
H90 - Conductive and sensorineural hearing ...	0.08	0.06	0.10	0.1%	70	897	73	69,248	7.08E-154

eTable 3 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
H91 - Other and unspecified hearing ...	0.56	0.48	0.64	0.4%	119	541	301	69,327	1.77E-16
H92 - Otaglia and effusion of ...	0.37	0.31	0.45	0.2%	5	405	150	69,728	4.20E-27
H93 - Other disorders of ear, ...	0.14	0.10	0.19	0.1%	13	340	47	69,888	7.70E-50
I05 - Rheumatic mitral valve diseases	0.36	0.25	0.52	0.1%	6	103	37	70,142	3.94E-08
I07 - Rheumatic tricuspid valve diseases	0.53	0.41	0.69	0.1%	16	162	86	70,024	1.91E-06
I08 - Multiple valve diseases	0.44	0.35	0.54	0.2%	22	277	121	69,868	7.88E-15
I10 - Essential (primary) hypertension	0.55	0.54	0.57	18.3%	14,990	13,756	7,583	33,959	0.00E+00
I11 - Hypertensive heart disease	0.63	0.59	0.67	2.3%	937	2,410	1,524	65,417	3.30E-45
I13 - Hypertensive heart and chronic ...	0.83	0.76	0.89	1.7%	818	1,382	1,143	66,945	2.18E-06
I16 - Hypertensive crisis	0.59	0.52	0.68	0.4%	75	526	312	69,375	1.87E-13
I20 - Angina pectoris	0.33	0.27	0.39	0.2%	84	476	156	69,572	6.79E-37
I25 - Chronic ischemic heart disease	0.70	0.67	0.73	4.8%	3,930	4,304	3,000	59,054	1.74E-52
I27 - Other pulmonary heart diseases	0.61	0.55	0.68	0.8%	338	850	521	68,579	8.12E-19
I34 - Nonrheumatic mitral valve disorders	0.41	0.37	0.46	0.6%	166	986	405	68,731	1.56E-54
I35 - Nonrheumatic aortic valve disorders	0.41	0.37	0.47	0.5%	274	887	367	68,760	1.23E-48
I36 - Nonrheumatic tricuspid valve disorders	0.48	0.42	0.56	0.4%	47	527	255	69,459	3.29E-22
I42 - Cardiomyopathy	0.60	0.54	0.67	0.8%	414	926	560	68,388	2.84E-21
I50 - Heart failure	0.89	0.85	0.94	5.0%	4,581	3,491	3,121	59,095	5.68E-06
I61 - Nontraumatic intracerebral hemorrhage	0.49	0.39	0.63	0.1%	77	188	93	69,930	2.05E-08
I63 - Cerebral infarction	0.58	0.54	0.63	1.5%	942	1,784	1,036	66,526	6.07E-45
I65 - Occlusion and stenosis of ...	0.31	0.27	0.36	0.4%	116	837	261	69,074	1.88E-67
I66 - Occlusion and stenosis of ...	0.37	0.23	0.57	0.0%	6	71	26	70,185	7.91E-06
I67 - Other cerebrovascular diseases	0.50	0.45	0.55	0.8%	321	1,063	531	68,373	2.32E-40
I69 - Sequelae of cerebrovascular disease	0.70	0.64	0.76	1.5%	1,615	1,448	1,011	66,214	1.46E-18
I70 - Atherosclerosis	0.21	0.19	0.23	0.8%	310	2,570	549	66,859	1.83E-286
I71 - Aortic aneurysm and dissection	0.50	0.43	0.59	0.3%	140	412	207	69,529	2.41E-16
I72 - Other aneurysm	0.42	0.30	0.60	0.1%	15	104	44	70,125	1.24E-06
I77 - Other disorders of arteries ...	0.49	0.42	0.56	0.4%	62	599	292	69,335	1.17E-24
I78 - Diseases of capillaries	0.04	0.01	0.12	0.0%	1	77	3	70,207	3.30E-16
I79 - Disorders of arteries, arterioles ...	0.03	0.01	0.19	0.0%	4	31	1	70,252	2.95E-07
I83 - Varicose veins of lower ...	0.15	0.12	0.19	0.1%	65	548	84	69,591	9.57E-76
I85 - Esophageal varices	0.25	0.16	0.37	0.0%	18	113	28	70,129	1.50E-12
I86 - Varicose veins of other ...	0.17	0.09	0.32	0.0%	5	64	11	70,208	1.92E-09
I87 - Other disorders of veins	0.23	0.21	0.26	0.5%	342	1,464	343	68,139	5.49E-153
I89 - Other noninfective disorders of ...	0.30	0.25	0.37	0.2%	181	387	118	69,602	8.68E-33
I96 - Gangrene, not elsewhere classified	0.36	0.28	0.46	0.1%	52	235	85	69,916	8.13E-17
I97 - Intraoperative and postprocedural comp. ...	0.31	0.19	0.50	0.0%	10	68	21	70,189	1.08E-06
I99 - Other and unspecified disorders ...	0.53	0.40	0.70	0.1%	12	145	77	70,054	6.90E-06
J00 - Acute nasopharyngitis [common cold]	0.40	0.32	0.49	0.2%	22	301	120	69,845	1.74E-18
J01 - Acute sinusitis	0.29	0.26	0.32	0.8%	130	1,796	523	67,839	9.42E-154
J02 - Acute pharyngitis	0.71	0.66	0.77	1.8%	165	1,770	1,264	67,089	4.81E-20
J03 - Acute tonsillitis	0.28	0.19	0.42	0.0%	9	116	33	70,130	1.85E-11
J04 - Acute laryngitis and tracheitis	0.34	0.23	0.48	0.1%	3	113	38	70,134	1.72E-09
J09 - Influenza due to certain ...	0.26	0.20	0.35	0.1%	16	253	67	69,952	4.56E-25
J10 - Influenza due to other ...	0.27	0.23	0.31	0.4%	33	979	263	69,013	1.63E-91
J11 - Influenza due to unidentified ...	0.53	0.47	0.58	0.8%	26	1,022	537	68,703	1.52E-34
J30 - Vasomotor and allergic rhinitis	0.48	0.44	0.52	1.3%	443	1,867	894	67,084	2.13E-76
J31 - Chronic rhinitis, nasopharyngitis and ...	0.27	0.21	0.33	0.2%	52	400	106	69,730	8.77E-39
J32 - Chronic sinusitis	0.32	0.28	0.37	0.4%	84	821	266	69,117	2.31E-63
J33 - Nasal polyp	0.09	0.03	0.23	0.0%	8	47	4	70,229	4.07E-09
J34 - Other and unspecified disorders ...	0.37	0.32	0.43	0.3%	26	598	221	69,443	1.98E-39

eTable 3 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
J35 - Chronic diseases of tonsils ...	0.24	0.14	0.39	0.0%	4	80	19	70,185	1.64E-09
J37 - Chronic laryngitis and laryngotracheitis	0.10	0.04	0.26	0.0%	0	41	4	70,243	8.03E-08
J38 - Diseases of vocal cords ...	0.43	0.31	0.59	0.1%	16	115	49	70,108	3.86E-07
J41 - Simple and mucopurulent chronic ...	0.54	0.41	0.72	0.1%	27	137	74	70,050	1.97E-05
K02 - Dental caries	0.24	0.15	0.38	0.0%	7	96	23	70,162	4.11E-11
K04 - Diseases of pulp and ...	0.30	0.20	0.44	0.0%	2	110	33	70,143	2.08E-10
K08 - Other disorders of teeth ...	0.21	0.16	0.29	0.1%	8	233	50	69,997	2.80E-27
K11 - Diseases of salivary glands	0.42	0.30	0.58	0.1%	10	121	51	70,106	1.43E-07
K12 - Stomatitis and related lesions	0.43	0.30	0.61	0.1%	7	102	44	70,135	2.39E-06
K13 - Other diseases of lip ...	0.50	0.36	0.69	0.1%	1	112	56	70,119	2.20E-05
K20 - Esophagitis	0.25	0.19	0.32	0.1%	21	286	71	69,910	9.75E-30
K21 - Gastro-esophageal reflux disease	0.54	0.51	0.56	5.1%	2,786	5,828	3,127	58,547	4.71E-179
K22 - Other diseases of esophagus	0.28	0.23	0.33	0.2%	95	559	156	69,478	4.40E-51
K25 - Gastric ulcer	0.27	0.21	0.36	0.1%	30	233	64	69,961	1.87E-22
K27 - Peptic ulcer, site unspecified	0.51	0.39	0.67	0.1%	26	157	80	70,025	7.94E-07
K29 - Gastritis and duodenitis	0.26	0.23	0.30	0.5%	119	1,218	318	68,633	1.92E-116
K30 - Functional dyspepsia	0.30	0.22	0.40	0.1%	21	188	56	70,023	5.01E-17
K31 - Other diseases of stomach ...	0.24	0.20	0.28	0.2%	96	717	169	69,306	2.01E-75
K40 - Inguinal hernia	0.25	0.19	0.34	0.1%	32	230	58	69,968	7.03E-24
K42 - Umbilical hernia	0.38	0.29	0.49	0.1%	18	208	78	69,984	2.39E-14
K43 - Ventral hernia	0.23	0.17	0.31	0.1%	28	223	52	69,985	1.17E-24
K44 - Diaphragmatic hernia	0.42	0.37	0.48	0.4%	71	662	279	69,276	1.35E-35
K46 - Unspecified abdominal hernia	0.30	0.19	0.47	0.0%	10	80	24	70,174	6.92E-08
K51 - Ulcerative colitis	0.48	0.36	0.63	0.1%	77	154	74	69,983	1.68E-07
K52 - Other and unspecified noninfective ...	0.52	0.46	0.59	0.6%	72	823	430	68,963	1.67E-28
K55 - Vascular disorders of intestine	0.41	0.29	0.57	0.1%	13	113	46	70,116	1.66E-07
K56 - Paralytic ileus and intestinal ...	0.70	0.61	0.80	0.5%	102	516	361	69,309	1.99E-07
K57 - Diverticular disease of intestine	0.39	0.35	0.43	0.7%	188	1,298	505	68,297	1.21E-77
K58 - Irritable bowel syndrome	0.45	0.38	0.54	0.3%	127	386	175	69,600	7.57E-19
K59 - Other functional intestinal disorders	0.52	0.49	0.55	2.6%	939	3,327	1,740	64,282	5.69E-110
K60 - Fissure and fistula of ...	0.22	0.12	0.40	0.0%	6	59	13	70,210	1.14E-07
K62 - Other diseases of anus ...	0.31	0.26	0.36	0.3%	41	662	204	69,381	2.19E-54
K63 - Other diseases of intestine	0.25	0.22	0.29	0.3%	45	782	197	69,264	9.59E-78
K64 - Hemorrhoids and perianal venous ...	0.15	0.12	0.18	0.2%	53	945	140	69,150	1.39E-131
K70 - Alcoholic liver disease	0.56	0.43	0.72	0.1%	129	153	85	69,921	1.41E-05
K73 - Chronic hepatitis, not elsewhere ...	0.10	0.03	0.31	0.0%	4	30	3	70,251	6.01E-06
K74 - Fibrosis and cirrhosis of ...	0.49	0.41	0.59	0.3%	232	358	176	69,522	4.78E-15
K75 - Other inflammatory liver diseases	0.60	0.47	0.75	0.2%	56	183	109	69,940	1.94E-05
K76 - Other diseases of liver	0.43	0.39	0.48	0.7%	138	1,171	504	68,475	1.54E-59
K80 - Cholelithiasis	0.50	0.44	0.57	0.5%	80	680	343	69,185	8.18E-26
K83 - Other diseases of biliary ...	0.48	0.37	0.60	0.1%	37	208	99	69,944	7.10E-10
K86 - Other diseases of pancreas	0.47	0.38	0.58	0.2%	68	270	126	69,824	6.67E-13
K90 - Intestinal malabsorption	0.22	0.15	0.32	0.0%	15	142	31	70,100	6.11E-17
K91 - Intraoperative and postprocedural comp. ...	0.25	0.17	0.37	0.0%	20	126	32	70,110	1.38E-13
K92 - Other diseases of digestive ...	0.81	0.74	0.89	1.3%	252	1,112	904	68,020	4.02E-06
K94 - Complications of artificial openings ...	0.44	0.36	0.55	0.2%	49	257	114	69,868	1.68E-13
L01 - Impetigo	0.24	0.13	0.44	0.0%	0	54	13	70,221	1.02E-06
L02 - Cutaneous abscess, furuncle and ...	0.28	0.24	0.33	0.3%	86	666	189	69,347	1.39E-59
L03 - Cellulitis and acute lymphangitis	0.28	0.26	0.31	0.8%	417	1,819	515	67,537	3.25E-160
L08 - Other local infections of ...	0.28	0.23	0.34	0.2%	44	447	125	69,672	4.51E-41
L20 - Atopic dermatitis	0.22	0.17	0.29	0.1%	29	266	59	69,934	3.07E-30

eTable 3 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
L21 - Seborrheic dermatitis	0.12	0.09	0.17	0.1%	26	300	37	69,925	3.27E-46
L23 - Allergic contact dermatitis	0.24	0.16	0.37	0.0%	6	108	26	70,148	2.61E-12
L24 - Irritant contact dermatitis	0.32	0.20	0.52	0.0%	3	71	23	70,191	1.25E-06
L25 - Unspecified contact dermatitis	0.21	0.16	0.29	0.1%	15	224	48	70,001	2.65E-26
L28 - Lichen simplex chronicus and ...	0.13	0.07	0.23	0.0%	5	100	13	70,170	5.96E-16
L29 - Pruritus	0.21	0.17	0.25	0.2%	43	597	124	69,524	3.62E-69
L30 - Other and unspecified dermatitis	0.25	0.22	0.29	0.3%	85	948	237	69,018	1.63E-94
L40 - Psoriasis	0.21	0.17	0.27	0.1%	92	359	76	69,761	1.18E-41
L50 - Urticaria	0.22	0.16	0.31	0.1%	26	189	42	70,031	7.54E-22
L53 - Other erythematous conditions	0.26	0.19	0.35	0.1%	6	203	52	70,027	5.81E-21
L57 - Skin changes due to ...	0.07	0.05	0.09	0.1%	16	623	43	69,606	1.76E-111
L60 - Nail disorders	0.04	0.03	0.06	0.1%	55	1,550	67	68,616	2.46E-297
L63 - Alopecia areata	0.06	0.02	0.22	0.0%	3	34	2	70,249	2.38E-07
L64 - Androgenic alopecia	0.05	0.00	0.28	0.0%	2	22	1	70,263	5.72E-06
L65 - Other nonscarring hair loss	0.09	0.05	0.16	0.0%	9	127	11	70,141	1.25E-22
L66 - Cicatricial alopecia [scarring hair ...	0.03	0.01	0.18	0.0%	3	33	1	70,251	1.06E-07
L68 - Hypertrichosis	0.04	0.01	0.21	0.0%	3	28	1	70,256	1.38E-06
L70 - Acne	0.13	0.09	0.18	0.1%	33	296	37	69,922	2.21E-45
L71 - Rosacea	0.15	0.09	0.24	0.0%	15	122	18	70,133	3.17E-18
L72 - Follicular cysts of skin ...	0.06	0.04	0.10	0.0%	10	288	17	69,973	6.44E-54
L73 - Other follicular disorders	0.12	0.08	0.18	0.0%	14	227	27	70,020	8.86E-36
L76 - Intraoperative and postprocedural comp. ...	0.24	0.14	0.42	0.0%	2	66	16	70,204	6.26E-08
L81 - Other disorders of pigmentation	0.08	0.06	0.11	0.1%	7	466	38	69,777	1.16E-80
L82 - Seborrheic keratosis	0.07	0.05	0.09	0.1%	9	687	48	69,544	1.88E-122
L83 - Acanthosis nigricans	0.04	0.01	0.24	0.0%	1	24	1	70,262	1.08E-05
L84 - Corns and callosities	0.04	0.03	0.06	0.1%	37	899	36	69,316	7.66E-175
L85 - Other epidermal thickening	0.09	0.07	0.11	0.1%	41	1,004	90	69,153	1.01E-167
L90 - Atrophic disorders of skin	0.11	0.07	0.18	0.0%	7	177	20	70,084	1.07E-28
L91 - Hypertrophic disorders of skin	0.06	0.04	0.12	0.0%	4	185	12	70,087	1.59E-34
L92 - Granulomatous disorders of skin ...	0.14	0.07	0.27	0.0%	2	71	10	70,205	2.62E-11
L97 - Non-pressure chronic ulcer of ...	0.25	0.22	0.28	0.5%	468	1,259	311	68,250	3.05E-126
L98 - Other disorders of skin ...	0.29	0.25	0.33	0.3%	98	737	211	69,242	3.42E-65
M05 - Rheumatoid arthritis with rheumatoid ...	0.24	0.19	0.32	0.1%	91	277	67	69,853	1.88E-29
M06 - Other rheumatoid arthritis	0.50	0.43	0.57	0.4%	403	618	306	68,961	1.44E-24
M10 - Gout	0.54	0.49	0.60	0.9%	477	1,088	588	68,135	3.56E-34
M12 - Other and unspecified arthropathy	0.28	0.22	0.36	0.1%	84	291	81	69,832	2.32E-27
M13 - Other arthritis	0.38	0.30	0.48	0.1%	87	249	94	69,858	9.16E-17
M14 - Arthropathies in other diseases ...	0.18	0.10	0.33	0.0%	26	67	12	70,183	1.24E-09
M15 - Polyosteoarthritis	0.32	0.29	0.36	0.5%	585	1,162	373	68,168	5.70E-90
M16 - Osteoarthritis of hip	0.24	0.20	0.28	0.3%	110	831	197	69,150	9.26E-87
M18 - Osteoarthritis of first carpometacarpal ...	0.12	0.07	0.20	0.0%	7	133	16	70,132	2.04E-21
M19 - Other and unspecified osteoarthritis	0.37	0.35	0.39	2.1%	1,138	3,696	1,358	64,096	5.32E-237
M1A - Chronic gout	0.35	0.27	0.46	0.1%	32	209	74	69,973	1.65E-15
M20 - Acquired deformities of fingers ...	0.06	0.05	0.08	0.1%	23	808	49	69,408	8.03E-148
M21 - Other acquired deformities of ...	0.12	0.09	0.15	0.1%	62	580	67	69,579	4.13E-90
M22 - Disorder of patella	0.06	0.03	0.12	0.0%	2	107	6	70,173	5.09E-21
M23 - Internal derangement of knee	0.09	0.05	0.16	0.0%	5	154	14	70,115	7.85E-27
M24 - Other specific joint derangements	0.28	0.23	0.33	0.2%	177	545	152	69,414	7.16E-50
M25 - Other joint disorder, not ...	0.17	0.16	0.18	2.0%	1,193	7,454	1,233	60,408	0.00E+00
M26 - Dentofacial anomalies [including malocclusion]	0.24	0.15	0.37	0.0%	12	105	25	70,146	4.25E-12
M32 - Systemic lupus erythematosus (SLE)	0.59	0.46	0.75	0.1%	158	169	99	69,862	2.50E-05

eTable 3 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
M35 - Other systemic involvement of ...	0.36	0.28	0.46	0.1%	119	253	91	69,825	3.94E-18
M40 - Kyphosis and lordosis	0.23	0.14	0.35	0.0%	25	102	23	70,138	3.03E-12
M41 - Scoliosis	0.33	0.26	0.42	0.1%	55	247	81	69,905	8.19E-20
M43 - Other deforming dorsopathies	0.17	0.14	0.22	0.1%	63	499	86	69,640	4.59E-65
M46 - Other inflammatory spondylopathies	0.19	0.15	0.24	0.1%	95	451	86	69,656	1.34E-55
M47 - Spondylosis	0.20	0.18	0.22	0.6%	746	1,981	388	67,173	1.18E-234
M48 - Other spondylopathies	0.26	0.24	0.29	0.6%	394	1,560	409	67,925	4.35E-148
M50 - Cervical disc disorders	0.15	0.12	0.18	0.1%	79	691	103	69,415	2.23E-96
M51 - Thoracic, thoracolumbar, and lumbosacral ...	0.15	0.13	0.17	0.4%	236	1,679	254	68,119	3.95E-230
M53 - Other and unspecified dorsopathies, ...	0.18	0.14	0.24	0.1%	39	377	69	69,803	7.08E-48
M54 - Dorsalgia	0.22	0.21	0.23	2.6%	1,673	7,164	1,592	59,859	0.00E+00
M60 - Myositis	0.16	0.11	0.23	0.0%	11	203	32	70,042	1.41E-28
M62 - Other disorders of muscle	0.58	0.56	0.60	5.8%	4,077	6,044	3,502	56,665	4.10E-149
M65 - Synovitis and tenosynovitis	0.07	0.05	0.10	0.0%	18	407	28	69,835	2.07E-73
M66 - Spontaneous rupture of synovium ...	0.06	0.02	0.23	0.0%	0	33	2	70,253	3.96E-07
M67 - Other disorders of synovium ...	0.09	0.05	0.14	0.0%	3	198	17	70,070	1.22E-34
M70 - Soft tissue disorders related ...	0.10	0.07	0.14	0.0%	22	318	31	69,917	6.63E-53
M71 - Other bursopathies	0.20	0.14	0.29	0.0%	11	169	34	70,074	5.21E-21
M72 - Fibroblastic disorders	0.09	0.07	0.13	0.1%	35	466	43	69,744	4.52E-78
M75 - Shoulder lesions	0.09	0.07	0.11	0.1%	52	734	64	69,438	5.48E-124
M76 - Enthesopathies, lower limb, excluding ...	0.08	0.05	0.12	0.0%	14	314	25	69,935	3.77E-55
M77 - Other enthesopathies	0.09	0.07	0.12	0.1%	25	577	51	69,635	1.88E-97
M79 - Other and unspecified soft ...	0.26	0.25	0.28	3.4%	1,072	7,866	2,082	59,268	0.00E+00
M80 - Osteoporosis with current pathological ...	0.34	0.24	0.48	0.1%	28	118	40	70,102	9.02E-10
M81 - Osteoporosis without current pathological ...	0.39	0.35	0.43	0.8%	573	1,410	550	67,755	7.30E-84
M84 - Disorder of continuity of ...	0.33	0.24	0.46	0.1%	28	153	51	70,056	1.53E-12
M85 - Other disorders of bone ...	0.23	0.20	0.28	0.3%	106	796	187	69,199	8.98E-84
M86 - Osteomyelitis	0.37	0.31	0.44	0.2%	227	466	173	69,422	7.27E-31
M87 - Osteonecrosis	0.27	0.17	0.43	0.0%	30	81	22	70,155	1.10E-08
M89 - Other disorders of bone	0.40	0.32	0.50	0.2%	29	268	108	69,883	2.41E-16
M94 - Other disorders of cartilage	0.35	0.27	0.47	0.1%	6	185	65	70,032	5.22E-14
M95 - Other acquired deformities of ...	0.18	0.09	0.38	0.0%	3	44	8	70,233	1.21E-06
M96 - Intraoperative and postprocedural comp. ...	0.15	0.10	0.22	0.0%	47	211	32	69,998	3.37E-30
M99 - Biomechanical lesions, not elsewhere ...	0.07	0.05	0.09	0.1%	55	749	49	69,435	3.57E-135
N04 - Nephrotic syndrome	0.32	0.19	0.55	0.0%	14	53	17	70,204	2.87E-05
N10 - Acute pyelonephritis	0.55	0.42	0.71	0.1%	23	150	82	70,033	1.09E-05
N13 - Obstructive and reflux uropathy	0.50	0.44	0.57	0.5%	252	721	363	68,952	2.15E-27
N18 - Chronic kidney disease (CKD)	0.88	0.84	0.92	5.3%	6,219	3,637	3,202	57,230	1.54E-07
N20 - Calculus of kidney and ...	0.34	0.30	0.39	0.4%	140	908	311	68,929	2.46E-65
N21 - Calculus of lower urinary ...	0.23	0.12	0.43	0.0%	8	52	12	70,216	1.09E-06
N23 - Unspecified renal colic	0.20	0.11	0.38	0.0%	2	55	11	70,220	1.20E-07
N25 - Disorders resulting from impaired ...	0.30	0.27	0.34	0.5%	437	1,108	337	68,406	3.14E-91
N26 - Unspecified contracted kidney	0.39	0.27	0.57	0.1%	11	95	37	70,145	7.01E-07
N28 - Other disorders of kidney ...	0.53	0.48	0.57	1.2%	155	1,589	836	67,708	1.20E-52
N30 - Cystitis	0.63	0.57	0.70	0.9%	134	963	610	68,581	6.98E-19
N31 - Neuromuscular dysfunction of bladder, ...	0.44	0.37	0.53	0.2%	282	382	168	69,456	1.06E-19
N32 - Other disorders of bladder	0.37	0.33	0.43	0.4%	191	772	288	69,037	8.67E-50
N34 - Urethritis and urethral syndrome	0.18	0.09	0.36	0.0%	0	50	9	70,229	1.91E-07
N35 - Urethral stricture	0.24	0.15	0.39	0.0%	11	79	19	70,179	2.52E-09
N39 - Other disorders of urinary ...	0.59	0.56	0.62	4.5%	1,859	4,820	2,849	60,760	4.59E-112
N40 - Benign prostatic hyperplasia	0.53	0.49	0.56	1.9%	1,257	2,404	1,263	65,364	4.66E-79

eTable 3 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
N41 - Inflammatory diseases of prostate	0.21	0.14	0.31	0.0%	11	134	28	70,115	1.59E-16
N42 - Other and unspecified disorders ...	0.14	0.09	0.24	0.0%	13	111	16	70,148	7.36E-17
N43 - Hydrocele and spermatocele	0.09	0.05	0.17	0.0%	11	112	10	70,155	6.01E-20
N45 - Orchitis and epididymitis	0.23	0.12	0.46	0.0%	6	43	10	70,229	1.10E-05
N47 - Disorders of prepuce	0.22	0.12	0.40	0.0%	1	59	13	70,215	1.14E-07
N48 - Other disorders of penis	0.23	0.16	0.35	0.0%	7	124	29	70,128	2.97E-14
N50 - Other and unspecified disorders ...	0.22	0.16	0.31	0.1%	9	196	44	70,039	1.90E-22
N52 - Male erectile dysfunction	0.10	0.07	0.13	0.1%	35	620	60	69,573	6.08E-102
N60 - Benign mammary dysplasia	0.06	0.04	0.10	0.0%	3	230	14	70,041	4.20E-43
N61 - Inflammatory disorders of breast	0.24	0.13	0.46	0.0%	6	49	12	70,221	4.04E-06
N62 - Hypertrophy of breast	0.17	0.09	0.32	0.0%	2	60	10	70,216	4.72E-09
N63 - Unspecified lump in breast	0.12	0.09	0.17	0.1%	16	326	39	69,907	1.15E-50
N64 - Other disorders of breast	0.08	0.06	0.12	0.0%	5	412	34	69,837	2.82E-71
N72 - Inflammatory disease of cervix ...	0.05	0.01	0.18	0.0%	1	42	2	70,243	4.12E-09
N73 - Other female pelvic inflammatory ...	0.24	0.12	0.48	0.0%	2	41	10	70,235	2.66E-05
N76 - Other inflammation of vagina ...	0.15	0.12	0.19	0.1%	19	600	89	69,580	4.35E-84
N77 - Vulvovaginal ulceration and inflammation ...	0.05	0.00	0.30	0.0%	2	21	1	70,264	1.10E-05
N80 - Endometriosis	0.08	0.04	0.18	0.0%	6	75	6	70,201	4.17E-14
N81 - Female genital prolapse	0.11	0.07	0.18	0.0%	15	160	18	70,095	4.18E-26
N83 - Noninflammatory disorders of ovary, ...	0.21	0.16	0.28	0.1%	5	308	66	69,909	1.21E-35
N84 - Polyp of female genital ...	0.04	0.01	0.13	0.0%	0	72	3	70,213	4.10E-15
N85 - Other noninflammatory disorders of ...	0.25	0.17	0.37	0.0%	1	123	31	70,133	2.25E-13
N87 - Dysplasia of cervix uteri	0.10	0.04	0.25	0.0%	1	48	5	70,234	7.97E-09
N88 - Other noninflammatory disorders of ...	0.18	0.09	0.37	0.0%	2	49	9	70,228	3.04E-07
N89 - Other noninflammatory disorders of ...	0.13	0.09	0.17	0.1%	7	424	53	69,804	2.24E-64
N90 - Other noninflammatory disorders of ...	0.08	0.03	0.19	0.0%	1	62	5	70,220	7.84E-12
N91 - Absent, scanty and rare ...	0.12	0.08	0.19	0.0%	5	168	20	70,095	8.11E-27
N92 - Excessive, frequent and irregular ...	0.10	0.07	0.13	0.1%	17	450	44	69,777	3.46E-74
N93 - Other abnormal uterine and ...	0.24	0.19	0.31	0.1%	21	306	74	69,887	2.15E-32
N94 - Pain and other conditions ...	0.16	0.11	0.22	0.1%	9	228	36	70,015	6.64E-32
N95 - Menopausal and other perimenopausal ...	0.11	0.08	0.15	0.1%	28	440	49	69,771	1.29E-69
N97 - Female infertility	0.06	0.02	0.19	0.0%	0	48	3	70,237	7.22E-10
N99 - Intraoperative and postprocedural comp. ...	0.31	0.19	0.50	0.0%	10	71	22	70,185	6.45E-07
O09 - Supervision of high risk ...	0.18	0.13	0.25	0.1%	106	201	36	69,945	1.69E-26
O20 - Hemorrhage in early pregnancy	0.16	0.09	0.29	0.0%	0	85	14	70,189	1.99E-12
O26 - Maternal care for other ...	0.48	0.37	0.60	0.1%	71	208	99	69,910	7.10E-10
O28 - Abnormal findings on antenatal ...	0.12	0.04	0.33	0.0%	2	33	4	70,249	4.16E-06
O35 - Maternal care for known ...	0.24	0.15	0.36	0.0%	11	110	26	70,141	1.10E-12
Q44 - Congenital malformations of gallbladder, ...	0.00	0.00	0.24	0.0%	8	17	0	70,263	1.53E-05
Q66 - Congenital deformities of feet	0.04	0.01	0.15	0.0%	4	51	2	70,231	4.30E-11
Q82 - Other congenital malformations of ...	0.09	0.04	0.23	0.0%	3	53	5	70,227	6.77E-10
Q84 - Other congenital malformations of ...	0.09	0.03	0.26	0.0%	1	35	3	70,249	4.93E-07
R01 - Cardiac murmurs and other ...	0.25	0.20	0.32	0.1%	27	397	101	69,763	6.79E-40
R03 - Abnormal blood-pressure reading, without ...	0.54	0.48	0.61	0.6%	57	800	433	68,998	1.94E-25
R07 - Pain in throat & ...	0.92	0.88	0.95	6.9%	1,106	4,858	4,453	59,871	2.83E-05
R10 - Abdominal and pelvic pain	0.44	0.42	0.46	3.5%	774	5,217	2,280	62,017	4.94E-252
R12 - Heartburn	0.22	0.16	0.30	0.1%	17	228	50	69,993	2.52E-26
R13 - Aphagia and dysphagia	0.82	0.78	0.87	3.5%	1,851	2,756	2,272	63,409	9.65E-12
R14 - Flatulence and related conditions	0.58	0.51	0.65	0.6%	46	699	403	69,140	6.31E-19
R15 - Fecal incontinence	0.63	0.51	0.77	0.2%	70	238	149	69,831	7.70E-06
R16 - Hepatomegaly and splenomegaly, not ...	0.45	0.37	0.55	0.2%	22	341	154	69,771	6.27E-17

eTable 3 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
R18 - Ascites	0.61	0.51	0.74	0.3%	116	309	190	69,673	1.27E-07
R20 - Disturbances of skin sensation	0.20	0.17	0.23	0.3%	34	977	192	69,085	2.32E-116
R21 - Rash and other nonspecific ...	0.38	0.33	0.43	0.5%	55	829	313	69,091	1.93E-52
R22 - Localized swelling, mass and ...	0.32	0.28	0.35	0.6%	55	1,242	393	68,598	1.19E-97
R23 - Other skin changes	0.38	0.32	0.45	0.3%	48	481	184	69,575	1.69E-30
R25 - Abnormal involuntary movements	0.30	0.25	0.35	0.3%	72	674	199	69,343	6.45E-58
R26 - Abnormalities of gait and ...	0.44	0.42	0.46	4.7%	3,795	6,426	2,812	57,255	0.00E+00
R27 - Other lack of coordination	0.52	0.48	0.56	1.6%	930	2,091	1,086	66,181	5.65E-71
R29 - Other symptoms and signs ...	0.47	0.44	0.51	1.8%	1,019	2,539	1,202	65,528	9.06E-106
R30 - Pain associated with micturition	0.29	0.26	0.32	0.5%	53	1,174	338	68,723	2.73E-102
R31 - Hematuria	0.34	0.31	0.38	0.6%	115	1,298	444	68,431	7.78E-93
R32 - Unspecified urinary incontinence	0.34	0.30	0.38	0.6%	426	1,116	382	68,364	5.48E-80
R33 - Retention of urine	0.57	0.52	0.62	1.0%	430	1,238	703	67,917	8.20E-34
R35 - Polyuria	0.17	0.15	0.20	0.3%	93	1,392	240	68,563	1.49E-178
R39 - Other and unspecified symptoms ...	0.25	0.21	0.28	0.4%	195	1,051	258	68,784	3.20E-106
R42 - Dizziness and giddiness	0.47	0.44	0.51	1.5%	205	2,139	1,003	66,941	3.66E-91
R44 - Other symptoms and signs ...	0.40	0.32	0.50	0.2%	58	267	106	69,857	1.19E-16
R45 - Symptoms and signs involving ...	0.67	0.61	0.75	0.9%	273	945	637	68,433	1.18E-14
R46 - Symptoms and signs involving ...	0.51	0.39	0.65	0.1%	19	177	90	70,002	1.42E-07
R47 - Speech disturbances, not elsewhere ...	0.57	0.50	0.64	0.6%	286	785	445	68,772	4.20E-22
R48 - Dyslexia and other symbolic ...	0.35	0.29	0.42	0.2%	249	444	157	69,438	1.90E-31
R49 - Voice and resonance disorders	0.30	0.23	0.39	0.1%	31	230	69	69,958	2.18E-20
R51 - Headache	0.82	0.77	0.87	2.6%	214	2,160	1,765	66,149	3.20E-10
R52 - Pain, unspecified	0.78	0.72	0.85	1.6%	282	1,372	1,077	67,557	2.83E-09
R55 - Syncope and collapse	0.75	0.69	0.81	1.5%	256	1,415	1,063	67,554	1.78E-12
R56 - Convulsions, not elsewhere classified	0.53	0.48	0.59	0.8%	398	1,081	575	68,234	2.32E-35
R58 - Hemorrhage, not elsewhere classified	0.40	0.31	0.51	0.1%	0	222	89	69,977	7.15E-14
R59 - Enlarged lymph nodes	0.46	0.39	0.54	0.3%	36	477	220	69,555	3.11E-22
R60 - Edema, not elsewhere classified	0.29	0.27	0.31	1.5%	675	3,327	962	65,324	2.54E-285
R63 - Symptoms and signs concerning ...	0.86	0.80	0.92	2.4%	492	1,912	1,644	66,240	7.55E-06
R69 - Illness, unspecified	0.27	0.24	0.31	0.4%	771	920	249	68,348	1.67E-85
R70 - Elevated erythrocyte sedimentation rate ...	0.44	0.31	0.63	0.1%	4	98	43	70,143	5.43E-06
R73 - Elevated blood glucose level	0.39	0.37	0.42	1.7%	347	2,876	1,127	65,938	5.14E-168
R76 - Other abnormal immunological findings ...	0.44	0.36	0.54	0.2%	34	327	145	69,782	8.00E-17
R80 - Proteinuria	0.26	0.22	0.31	0.2%	72	627	166	69,423	5.56E-60
R82 - Other and unspecified abnormal ...	0.40	0.34	0.46	0.3%	21	575	228	69,464	2.75E-34
R87 - Abnormal findings in specimens ...	0.07	0.04	0.11	0.0%	6	221	15	70,046	1.28E-40
R89 - Abnormal findings in specimens ...	0.34	0.23	0.49	0.0%	8	104	35	70,141	8.04E-09
R90 - Abnormal findings on diagnostic ...	0.47	0.38	0.60	0.2%	10	226	107	69,945	1.00E-10
R92 - Abnormal and inconclusive findings ...	0.04	0.03	0.06	0.0%	9	577	25	69,677	1.09E-111
R93 - Abnormal findings on diagnostic ...	0.58	0.52	0.64	0.9%	50	1,047	605	68,586	1.99E-27
R97 - Abnormal tumor markers	0.10	0.08	0.13	0.1%	39	600	60	69,589	9.88E-98
S00 - Superficial injury of head	0.32	0.28	0.38	0.3%	20	599	194	69,475	1.12E-46
S01 - Open wound of head	0.44	0.37	0.52	0.3%	29	448	198	69,613	1.16E-22
S02 - Fracture of skull and ...	0.50	0.38	0.67	0.1%	30	137	69	70,052	3.04E-06
S05 - Injury of eye and ...	0.22	0.15	0.33	0.0%	4	134	30	70,120	8.77E-16
S06 - Intracranial injury	0.51	0.43	0.60	0.3%	145	384	195	69,564	5.58E-15
S09 - Other and unspecified injuries ...	0.45	0.41	0.50	0.8%	68	1,259	569	68,392	2.00E-58
S12 - Fracture of cervical vertebra ...	0.41	0.28	0.62	0.0%	26	82	34	70,146	1.28E-05
S13 - Dislocation and sprain of ...	0.08	0.04	0.15	0.0%	5	126	10	70,147	6.13E-23
S14 - Injury of nerves and ...	0.30	0.17	0.53	0.0%	16	50	15	70,207	2.47E-05

eTable 3 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
S16 - Injury of muscle, fascia ...	0.16	0.10	0.24	0.0%	5	160	25	70,098	6.73E-23
S19 - Other specified and unspecified ...	0.38	0.31	0.46	0.2%	5	383	145	69,755	6.08E-25
S20 - Superficial injury of thorax	0.20	0.14	0.30	0.0%	4	147	30	70,107	2.80E-18
S21 - Open wound of thorax	0.32	0.19	0.53	0.0%	13	60	19	70,196	6.78E-06
S22 - Fracture of rib(s), sternum ...	0.44	0.37	0.52	0.3%	125	411	180	69,572	3.05E-21
S23 - Dislocation and sprain of ...	0.14	0.07	0.28	0.0%	3	58	8	70,219	1.62E-09
S29 - Other and unspecified injuries ...	0.37	0.30	0.45	0.2%	7	379	139	69,763	8.54E-26
S30 - Superficial injury of abdomen, ...	0.41	0.32	0.52	0.1%	6	215	88	69,979	4.54E-13
S31 - Open wound of abdomen, ...	0.51	0.41	0.62	0.2%	52	278	141	69,817	3.05E-11
S32 - Fracture of lumbar spine ...	0.42	0.34	0.50	0.2%	154	356	148	69,630	2.96E-20
S33 - Dislocation and sprain of ...	0.05	0.02	0.10	0.0%	6	168	8	70,106	4.25E-33
S39 - Other and unspecified injuries ...	0.29	0.24	0.34	0.2%	11	526	151	69,600	7.54E-47
S40 - Superficial injury of shoulder ...	0.36	0.26	0.49	0.1%	6	142	51	70,089	9.27E-11
S41 - Open wound of shoulder ...	0.21	0.13	0.35	0.0%	7	89	19	70,173	3.15E-11
S42 - Fracture of shoulder and ...	0.40	0.32	0.50	0.1%	113	258	103	69,814	5.26E-16
S43 - Dislocation and sprain of ...	0.12	0.08	0.19	0.0%	11	166	20	70,091	2.12E-26
S46 - Injury of muscle, fascia ...	0.09	0.06	0.14	0.0%	12	219	20	70,037	1.49E-37
S49 - Other and unspecified injuries ...	0.25	0.18	0.35	0.1%	2	168	42	70,076	6.36E-18
S50 - Superficial injury of elbow ...	0.31	0.22	0.44	0.1%	4	140	44	70,100	2.50E-12
S51 - Open wound of elbow ...	0.43	0.32	0.59	0.1%	10	136	59	70,083	5.25E-08
S52 - Fracture of forearm	0.25	0.18	0.36	0.1%	35	161	41	70,051	5.63E-17
S53 - Dislocation and sprain of ...	0.05	0.00	0.28	0.0%	1	22	1	70,264	5.72E-06
S59 - Other and unspecified injuries ...	0.29	0.18	0.45	0.0%	2	83	24	70,179	2.06E-08
S60 - Superficial injury of wrist, ...	0.23	0.16	0.32	0.1%	5	189	43	70,051	1.74E-21
S61 - Open wound of wrist, ...	0.17	0.12	0.24	0.1%	6	235	40	70,007	1.30E-31
S62 - Fracture at wrist and ...	0.33	0.24	0.44	0.1%	25	181	59	70,023	5.70E-15
S63 - Dislocation and sprain of ...	0.13	0.08	0.22	0.0%	6	122	16	70,144	3.96E-19
S69 - Other and unspecified injuries ...	0.19	0.13	0.28	0.0%	1	152	29	70,106	1.21E-19
S70 - Superficial injury of hip ...	0.28	0.21	0.39	0.1%	4	165	47	70,072	9.31E-16
S72 - Fracture of femur	0.46	0.40	0.53	0.4%	357	630	291	69,010	8.24E-29
S76 - Injury of muscle, fascia ...	0.13	0.07	0.24	0.0%	2	79	10	70,197	5.68E-13
S79 - Other and unspecified injuries ...	0.31	0.24	0.40	0.1%	2	235	73	69,978	4.57E-20
S80 - Superficial injury of knee ...	0.26	0.21	0.33	0.1%	25	390	103	69,770	5.77E-38
S81 - Open wound of knee ...	0.31	0.25	0.37	0.2%	65	434	134	69,655	4.19E-36
S82 - Fracture of lower leg, ...	0.33	0.27	0.41	0.2%	145	338	111	69,694	1.47E-26
S83 - Dislocation and sprain of ...	0.08	0.05	0.13	0.0%	20	269	22	69,977	3.83E-47
S86 - Injury of muscle, fascia ...	0.10	0.05	0.21	0.0%	1	79	8	70,200	6.15E-14
S88 - Traumatic amputation of lower ...	0.23	0.15	0.37	0.0%	21	95	22	70,150	2.81E-11
S89 - Other and unspecified injuries ...	0.16	0.11	0.21	0.1%	4	281	44	69,959	3.71E-39
S90 - Superficial injury of ankle, ...	0.18	0.14	0.24	0.1%	15	285	52	69,936	1.31E-36
S91 - Open wound of ankle, ...	0.26	0.21	0.32	0.2%	65	434	113	69,676	1.30E-42
S92 - Fracture of foot and ...	0.20	0.14	0.28	0.1%	25	203	41	70,019	6.55E-25
S93 - Dislocation and sprain of ...	0.10	0.07	0.15	0.0%	8	280	29	69,971	6.69E-46
S98 - Traumatic amputation of ankle ...	0.22	0.13	0.37	0.0%	23	78	17	70,170	7.47E-10
S99 - Other and unspecified injuries ...	0.27	0.20	0.37	0.1%	3	173	47	70,065	3.53E-17
T14 - Injury of unspecified body ...	0.49	0.43	0.55	0.6%	57	795	390	69,046	8.33E-32
T15 - Foreign body on external ...	0.00	0.00	0.23	0.0%	0	18	0	70,270	7.63E-06
T16 - Foreign body in ear	0.03	0.01	0.18	0.0%	0	33	1	70,254	1.06E-07
T18 - Foreign body in alimentary ...	0.16	0.08	0.32	0.0%	6	56	9	70,217	1.16E-08
T45 - Poisoning by, adverse effect ...	0.55	0.43	0.68	0.2%	25	211	115	69,937	1.43E-07
T74 - Adult and child abuse, ...	0.16	0.07	0.37	0.0%	3	37	6	70,242	4.76E-06

eTable 3 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
T78 - Adverse effects, not elsewhere ...	0.37	0.30	0.46	0.2%	31	327	122	69,808	6.13E-22
T81 - Complications of procedures, not ...	0.40	0.34	0.47	0.3%	90	449	179	69,570	7.03E-27
T82 - Complications of cardiac and ...	0.31	0.27	0.35	0.4%	138	877	271	69,002	2.60E-71
T83 - Complications of genitourinary prosthetic ...	0.53	0.44	0.64	0.2%	56	309	164	69,759	3.56E-11
T84 - Complications of internal orthopedic ...	0.33	0.25	0.44	0.1%	50	191	63	69,984	1.60E-15
T85 - Complications of other internal ...	0.60	0.48	0.76	0.2%	18	190	114	69,966	1.70E-05
T87 - Complications peculiar to reattachment ...	0.31	0.21	0.46	0.0%	19	103	32	70,134	1.69E-09
T88 - Other complications of surgical ...	0.39	0.25	0.60	0.0%	3	72	28	70,185	1.71E-05
W00 - Fall due to ice ...	0.04	0.01	0.21	0.0%	2	28	1	70,257	1.38E-06
W01 - Fall on same level ...	0.31	0.25	0.39	0.2%	14	340	106	69,828	2.65E-28
W05 - Fall from non-moving wheelchair, ...	0.22	0.12	0.41	0.0%	0	54	12	70,222	4.49E-07
W10 - Fall on and from ...	0.15	0.08	0.28	0.0%	4	73	11	70,200	2.82E-11
W18 - Other slipping, tripping and ...	0.40	0.33	0.49	0.2%	11	331	132	69,814	3.52E-20
W19 - Unspecified fall	0.47	0.43	0.52	1.0%	178	1,497	707	67,906	2.20E-63
W22 - Striking against or struck ...	0.15	0.08	0.28	0.0%	0	73	11	70,204	2.82E-11
W54 - Contact with dog	0.04	0.01	0.22	0.0%	1	26	1	70,260	3.86E-06
X32 - Exposure to sunlight	0.07	0.02	0.28	0.0%	0	27	2	70,259	8.32E-06
X50 - Overexertion and strenuous or ...	0.09	0.05	0.19	0.0%	0	87	8	70,193	1.22E-15
X58 - Exposure to other specified ...	0.30	0.23	0.38	0.1%	1	271	80	69,936	3.62E-24
Y83 - Surgical operation and other ...	0.47	0.34	0.66	0.1%	5	112	53	70,118	6.32E-06
Y90 - Evidence of alcohol involvement ...	0.24	0.13	0.47	0.0%	6	45	11	70,226	1.03E-05
Y92 - Place of occurrence of ...	0.44	0.38	0.51	0.3%	16	526	231	69,515	1.19E-26
Y93 - Activity codes	0.28	0.21	0.37	0.1%	3	218	60	70,007	4.68E-21
Y99 - External cause status	0.33	0.23	0.48	0.1%	2	114	38	70,134	1.18E-09
Z00 - Encounter for general examination ...	0.11	0.10	0.12	1.2%	249	6,495	732	62,812	0.00E+00
Z01 - Encounter for other special ...	0.10	0.10	0.12	0.7%	108	4,128	433	65,619	0.00E+00
Z02 - Encounter for administrative examination	0.31	0.26	0.37	0.2%	102	489	150	69,547	8.92E-41
Z03 - Observation for conditions ruled ...	0.54	0.47	0.63	0.4%	22	469	255	69,542	2.45E-15
Z04 - Encounter for examination and ...	0.52	0.45	0.59	0.5%	53	685	353	69,197	9.25E-25
Z08 - Encounter for follow-up examination ...	0.07	0.04	0.12	0.0%	2	198	14	70,074	3.15E-36
Z11 - Encounter for screening for ...	0.58	0.54	0.63	1.5%	79	1,725	1,007	67,477	7.96E-43
Z12 - Encounter for screening for ...	0.04	0.04	0.05	0.3%	56	4,581	197	65,454	0.00E+00
Z13 - Encounter for screening for ...	0.23	0.21	0.24	1.1%	168	3,395	767	65,958	0.00E+00
Z17 - Estrogen receptor status	0.17	0.11	0.26	0.0%	41	142	24	70,081	1.08E-19
Z23 - Encounter for immunization	0.09	0.08	0.10	0.5%	385	3,829	344	65,730	0.00E+00
Z28 - Immunization not carried out ...	0.23	0.17	0.31	0.1%	8	246	57	69,977	3.43E-27
Z30 - Encounter for contraceptive management	0.11	0.09	0.15	0.1%	43	598	68	69,579	2.23E-93
Z31 - Encounter for procreative management	0.04	0.02	0.11	0.0%	2	92	4	70,190	6.72E-19
Z32 - Encounter for pregnancy test ...	0.11	0.08	0.16	0.1%	19	376	43	69,850	3.69E-59
Z33 - Pregnant state	0.38	0.27	0.54	0.1%	9	112	43	70,124	4.71E-08
Z34 - Encounter for supervision of ...	0.15	0.11	0.21	0.1%	174	320	49	69,745	7.11E-45
Z36 - Encounter for antenatal screening ...	0.11	0.08	0.16	0.0%	41	295	33	69,919	4.39E-47
Z3A - Weeks of gestation	0.59	0.48	0.72	0.2%	396	247	145	69,500	3.37E-07
Z43 - Encounter for attention to ...	0.71	0.61	0.82	0.4%	179	423	301	69,385	6.89E-06
Z47 - Orthopedic aftercare	0.27	0.24	0.32	0.3%	199	778	213	69,098	8.84E-72
Z48 - Encounter for other postprocedural ...	0.33	0.29	0.38	0.5%	157	992	330	68,809	7.48E-74
Z53 - Persons encountering health services ...	0.39	0.31	0.48	0.2%	10	284	110	69,884	2.89E-18
Z59 - Problems related to housing ...	0.41	0.34	0.49	0.2%	114	388	158	69,628	1.12E-22
Z63 - Other problems related to ...	0.50	0.37	0.67	0.1%	15	123	61	70,089	6.89E-06
Z68 - Body mass index [BMI]	0.24	0.23	0.25	3.6%	1,892	8,954	2,149	57,293	0.00E+00
Z70 - Counseling related to sexual ...	0.05	0.01	0.19	0.0%	3	39	2	70,244	1.88E-08

eTable 3 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
Z71 - Persons encountering health services ...	0.80	0.75	0.85	2.8%	363	2,346	1,873	65,706	3.68E-13
Z72 - Problems related to lifestyle	0.34	0.29	0.39	0.4%	106	734	247	69,201	2.67E-54
Z73 - Problems related to life ...	0.39	0.31	0.50	0.1%	94	240	94	69,860	2.12E-15
Z76 - Persons encountering health services ...	0.42	0.37	0.47	0.6%	133	943	396	68,816	2.40E-50
Z79 - Long term (current) drug ...	0.61	0.59	0.64	8.8%	4,195	8,241	5,064	52,788	6.84E-167
Z80 - Family history of primary ...	0.23	0.19	0.27	0.2%	32	639	145	69,472	2.17E-69
Z81 - Family history of mental ...	0.40	0.27	0.61	0.0%	4	77	31	70,176	1.49E-05
Z82 - Family history of certain ...	0.65	0.58	0.73	0.6%	51	665	432	69,140	2.48E-12
Z83 - Family history of other ...	0.50	0.42	0.59	0.3%	22	414	205	69,647	6.26E-17
Z85 - Personal history of malignant ...	0.63	0.58	0.68	1.5%	546	1,619	1,013	67,110	4.26E-32
Z86 - Personal history of certain ...	0.76	0.72	0.80	3.8%	1,173	3,333	2,532	63,250	1.53E-25
Z87 - Personal history of other ...	0.75	0.72	0.79	4.5%	1,258	3,879	2,921	62,230	3.87E-31
Z88 - Allergy status to drugs, ...	0.79	0.73	0.86	1.5%	310	1,300	1,033	67,645	3.65E-08
Z89 - Acquired absence of limb	0.37	0.32	0.44	0.3%	377	536	199	69,176	2.83E-35
Z90 - Acquired absence of organs, ...	0.68	0.62	0.74	1.2%	268	1,210	823	67,987	1.12E-17
Z91 - Personal risk factors, not ...	0.55	0.52	0.58	2.9%	1,100	3,423	1,876	63,889	4.26E-100
Z93 - Artificial opening status	0.70	0.62	0.80	0.6%	393	562	394	68,939	6.62E-08
Z94 - Transplanted organ and tissue ...	0.59	0.47	0.73	0.2%	411	220	129	69,528	1.45E-06
Z95 - Presence of cardiac and ...	0.68	0.64	0.73	2.0%	1,269	1,966	1,341	65,712	1.97E-27
Z96 - Presence of other functional ...	0.32	0.29	0.35	1.0%	423	2,078	668	67,119	3.02E-159
Z98 - Other postprocedural states	0.36	0.33	0.39	1.1%	299	2,063	748	67,178	1.35E-135

eTable 4. Candidate COVID-19 complications: codes identified in the primary analysis, examined at the individual code level

This table shows findings for individual-level codes, selected from among the 69 candidate ICD-10 complications identified when analyzed at the code header level. Only codes with a p-value < 0.05 and OR > 1 are shown. OR (Est.): odds ratio for association with COVID-19, point estimate. OR (LI) and OR (UI): 95% lower and upper confidence intervals for the odds ratio. Risk, A, B, C, and D are defined in eFigure 3. P-value: p-value from McNemar test (null hypothesis: OR = 1).

eTable 4 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
A4189 - Other specified sepsis	15.44	13.25	17.99	3.9%	33	175	2,702	67,378	0.00E+00
A419 - Sepsis, unspecified organism	3.41	3.23	3.61	8.0%	560	1,595	5,446	62,687	0.00E+00
B3324 - Viral cardiomyopathy	16.00	2.49	670.96	0.0%	0	1	16	70,271	2.75E-04
B338 - Other specified viral diseases	11.54	6.60	20.19	0.2%	3	13	150	70,122	1.70E-26
B340 - Adenovirus infection, unspecified	2.42	1.25	4.68	0.0%	0	12	29	70,247	1.25E-02
B341 - Enterovirus infection, unspecified	2.83	1.07	8.78	0.0%	2	6	17	70,263	3.47E-02
B342 - Coronavirus infection, unspecified	57.20	45.19	72.41	5.7%	21	70	4,004	66,193	0.00E+00
B348 - Other viral infections of unspecified site	1.73	1.28	2.34	0.2%	12	66	114	70,096	4.60E-04
B349 - Viral infection, unspecified	4.16	3.83	4.52	4.2%	72	699	2,910	66,607	2.94E-296
B960 - Mycoplasma pneumoniae [M. pneumoniae] ...	3.25	1.00	13.68	0.0%	0	4	13	70,271	4.90E-02
B9689 - Other specified bacterial agents ...	1.80	1.61	2.01	1.2%	37	482	868	68,901	1.09E-25
B999 - Unspecified infectious disease	3.02	2.48	3.69	0.6%	10	129	390	69,759	3.61E-30
D61818 - Other pancytopenia	1.63	1.38	1.93	0.5%	89	214	349	69,636	1.63E-08
D65 - Disseminated intravascular coagulation	11.83	5.26	26.62	0.1%	0	6	71	70,211	3.02E-13
D6959 - Other secondary thrombocytopenia	1.65	1.25	2.19	0.2%	14	78	129	70,067	5.10E-04
D696 - Thrombocytopenia, unspecified	1.75	1.60	1.92	1.8%	250	710	1,244	68,084	1.77E-33
D72810 - Lymphocytopenia	49.75	30.48	81.21	1.1%	2	16	796	69,474	1.52E-164
D72819 - Decreased white blood cell count, unspecified	3.08	2.60	3.65	0.8%	23	174	536	69,555	8.13E-42
D72825 - Bandemia	2.46	1.57	3.87	0.1%	2	26	64	70,196	9.61E-05
E43 - Unspecified severe malnutrition	2.11	1.86	2.38	1.1%	188	374	788	68,938	8.73E-34
E46 - Unspecified malnutrition	1.32	1.18	1.48	1.0%	219	523	691	68,855	1.64E-06
G7281 - Critical illness myopathy	5.00	3.71	6.75	0.4%	11	51	255	69,971	3.90E-31
G92 - Toxic encephalopathy	1.73	1.51	1.98	0.8%	42	338	585	69,323	5.62E-16
G931 - Anoxic brain damage, not elsewhere classified	2.14	1.59	2.89	0.2%	38	63	135	70,052	4.52E-07
G933 - Postviral fatigue syndrome	3.19	2.06	4.94	0.1%	2	26	83	70,177	8.15E-08
G9340 - Encephalopathy, unspecified	1.81	1.65	1.97	2.0%	256	785	1,417	67,830	3.21E-41
G9341 - Metabolic encephalopathy	2.32	2.14	2.52	2.8%	304	826	1,915	67,243	6.38E-96
G9349 - Other encephalopathy	1.69	1.38	2.07	0.4%	22	147	248	69,871	4.87E-07
G9382 - Brain death	Inf			0.0%	0	0	8	70,280	7.81E-03
I2119 - ST elevation (STEMI) myocardial infarction ...	2.13	1.39	3.25	0.1%	4	31	66	70,187	5.56E-04
I214 - Non-ST elevation (NSTEMI) myocardial infarction	1.48	1.33	1.65	1.2%	158	543	804	68,783	1.40E-12
I21A1 - Myocardial infarction type 2	2.68	2.19	3.27	0.5%	18	130	348	69,792	3.23E-23
I248 - Other forms of acute ischemic heart disease	2.43	2.01	2.93	0.5%	18	150	364	69,756	5.72E-21
I2699 - Other pulmonary embolism without acute cor pulmonale	1.64	1.45	1.86	0.9%	178	401	659	69,050	2.93E-15
I400 - Infective myocarditis	36.00	6.23	207.90	0.1%	0	1	36	70,251	2.28E-08
I4519 - Other right bundle-branch block	1.64	1.14	2.35	0.1%	2	47	77	70,162	9.21E-03
I454 - Nonspecific intraventricular block	2.22	1.36	3.61	0.1%	10	23	51	70,204	1.70E-03
I4581 - Long QT syndrome	2.49	2.06	3.01	0.5%	18	150	374	69,746	2.00E-22
I462 - Cardiac arrest due to underlying cardiac condition	2.33	1.20	4.53	0.0%	1	12	28	70,247	1.77E-02
I468 - Cardiac arrest due to other underlying condition	6.00	3.43	10.49	0.1%	0	14	84	70,190	3.17E-12
I469 - Cardiac arrest, cause unspecified	10.20	7.97	13.06	1.0%	26	69	704	69,489	4.24E-115
I4891 - Unspecified atrial fibrillation	1.09	1.03	1.16	3.7%	1,986	2,245	2,458	63,599	1.99E-03
I9589 - Other hypotension	1.55	1.26	1.91	0.3%	27	145	225	69,891	4.01E-05
I959 - Hypotension, unspecified	2.04	1.90	2.20	3.2%	255	1,065	2,177	66,791	8.64E-85

eTable 4 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
J069 - Acute upper respiratory infection, unspecified	1.30	1.24	1.36	5.9%	433	3,048	3,959	62,848	1.58E-27
J120 - Adenoviral pneumonia	7.50	1.74	67.59	0.0%	1	2	15	70,270	2.35E-03
J1281 - Pneumonia due to SARS-associated coronavirus	499.67	169.76	1470.67	2.1%	1	3	1,499	68,785	0.00E+00
J1289 - Other viral pneumonia	766.74	510.81	1150.90	25.1%	20	23	17,635	52,610	0.00E+00
J129 - Viral pneumonia, unspecified	44.36	34.06	57.76	3.5%	10	56	2,484	67,738	0.00E+00
J150 - Pneumonia due to Klebsiella pneumoniae	2.45	1.50	4.01	0.1%	5	22	54	70,207	3.77E-04
J151 - Pneumonia due to Pseudomonas	2.86	1.88	4.35	0.1%	7	29	83	70,169	5.50E-07
J1520 - Pneumonia due to staphylococcus, unspecified	5.00	1.41	26.94	0.0%	1	3	15	70,269	7.54E-03
J15211 - Pneumonia due to Methicillin susceptible S. aureus	3.35	2.04	5.49	0.1%	0	20	67	70,201	8.15E-07
J15212 - Pneumonia due to Methicillin resistant S. aureus	4.03	2.69	6.04	0.2%	7	29	117	70,135	6.01E-13
J156 - Pneumonia due to other Gram-negative bacteria	2.24	1.65	3.05	0.2%	5	58	130	70,095	2.24E-07
J157 - Pneumonia due to Mycoplasma pneumoniae	2.33	1.35	4.03	0.1%	1	18	42	70,227	2.98E-03
J158 - Pneumonia due to other specified bacteria	1.95	1.41	2.69	0.2%	8	55	107	70,118	6.15E-05
J159 - Unspecified bacterial pneumonia	4.13	3.54	4.82	1.2%	30	198	818	69,242	5.25E-84
J168 - Pneumonia due to other specified infectious organisms	6.40	4.72	8.66	0.4%	10	48	307	69,923	1.11E-42
J17 - Pneumonia in diseases, CE	3.83	2.05	7.16	0.1%	5	12	46	70,225	1.47E-05
J180 - Bronchopneumonia, unspecified organism	2.19	1.68	2.86	0.2%	11	79	173	70,025	4.67E-09
J181 - Lobar pneumonia, unspecified organism	2.96	2.71	3.23	2.8%	86	651	1,926	67,625	5.44E-139
J188 - Other pneumonia, unspecified organism	3.99	3.26	4.88	0.7%	18	118	471	69,681	1.14E-47
J189 - Pneumonia, unspecified organism	5.73	5.48	6.00	18.9%	1,155	2,204	12,638	54,291	0.00E+00
J22 - Unspecified acute lower resp. infection	28.77	23.75	34.84	4.4%	9	108	3,107	67,064	0.00E+00
J80 - Acute respiratory distress syndrome	41.60	33.00	52.45	4.3%	20	73	3,037	67,158	0.00E+00
J84114 - Acute interstitial pneumonitis	2.78	1.32	5.85	0.0%	0	9	25	70,254	1.01E-02
J8489 - Other specified interstitial pulmonary diseases	1.85	1.26	2.71	0.1%	6	40	74	70,168	2.00E-03
J849 - Interstitial pulmonary disease, unspecified	1.51	1.26	1.81	0.4%	69	195	295	69,729	7.74E-06
J90 - Pleural effusion, NEC	1.56	1.45	1.68	2.8%	425	1,237	1,932	66,694	6.39E-35
J930 - Spontaneous tension pneumothorax	14.00	3.69	53.12	0.0%	0	2	28	70,258	5.01E-06
J9311 - Primary spontaneous pneumothorax	6.33	1.86	33.42	0.0%	0	3	19	70,266	8.55E-04
J9383 - Other pneumothorax	2.61	1.62	4.20	0.1%	2	23	60	70,203	7.77E-05
J939 - Pneumothorax, unspecified	3.08	2.41	3.93	0.4%	6	85	262	69,935	3.45E-21
J95811 - Postprocedural pneumothorax	1.85	1.08	3.17	0.1%	0	20	37	70,231	3.41E-02
J95851 - Ventilator associated pneumonia	12.40	6.58	23.37	0.2%	0	10	124	70,154	1.64E-22
J95859 - Other complication of respirator [ventilator]	6.00	1.34	55.20	0.0%	0	2	12	70,274	1.29E-02
J9600 - Acute respiratory failure, unspecified ...	6.07	5.54	6.66	4.5%	169	521	3,165	66,433	0.00E+00
J9601 - Acute respiratory failure with hypoxia	13.12	12.28	14.01	18.1%	638	950	12,464	56,236	0.00E+00
J9602 - Acute respiratory failure with hypercapnia	2.46	2.14	2.84	0.9%	50	266	655	69,317	1.99E-37
J9620 - Acute and chronic respiratory failure, unspecified ...	1.74	1.46	2.08	0.5%	44	191	333	69,720	7.29E-10
J9621 - Acute and chronic respiratory failure with hypoxia	2.47	2.20	2.78	1.4%	231	388	960	68,709	1.54E-54
J9690 - Respiratory failure, unspecified, unspecified ...	6.73	6.04	7.51	3.6%	90	371	2,497	67,330	0.00E+00
J9691 - Respiratory failure, unspecified with hypoxia	7.73	6.54	9.15	1.7%	36	153	1,183	68,916	2.25E-174
J9811 - Atelectasis	1.19	1.11	1.28	2.5%	192	1,445	1,720	66,931	1.11E-06
J982 - Interstitial emphysema	5.80	3.62	9.28	0.2%	2	20	116	70,150	3.76E-16
J984 - Other disorders of lung	2.91	2.66	3.19	2.7%	124	636	1,853	67,675	3.25E-131
J986 - Disorders of diaphragm	1.41	1.09	1.81	0.2%	7	101	142	70,038	1.03E-02
J988 - Other specified respiratory disorders	28.54	24.03	33.89	5.5%	25	134	3,824	66,305	0.00E+00
J989 - Respiratory disorder, unspecified	4.75	3.53	6.40	0.4%	2	52	247	69,987	3.28E-29
N170 - Acute kidney failure with tubular necrosis	4.64	4.07	5.29	1.8%	43	275	1,276	68,694	3.10E-142
N171 - Acute kidney failure with acute cortical necrosis	2.50	1.36	4.60	0.0%	0	14	35	70,239	4.27E-03
N178 - Other acute kidney failure	1.99	1.65	2.41	0.4%	25	157	313	69,793	8.70E-13
N179 - Acute kidney failure, unspecified	3.36	3.20	3.52	11.1%	1,458	2,202	7,392	59,236	0.00E+00
O480 - Post-term pregnancy	4.75	2.25	10.01	0.1%	0	8	38	70,242	1.90E-05

eTable 4 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
O701 - Second degree perineal laceration during delivery	5.00	2.14	11.71	0.0%	0	6	30	70,252	1.26E-04
O98511 - Other viral ... complicating pregnancy, first trimester	3.00	1.04	10.55	0.0%	0	5	15	70,268	4.14E-02
O98512 - Other viral ... complicating pregnancy, second trimester	8.25	4.02	16.92	0.1%	0	8	66	70,214	3.45E-11
O98513 - Other viral ... complicating pregnancy, third trimester	20.33	9.15	45.17	0.2%	2	6	122	70,158	2.85E-24
O98519 - Other viral ... complicating pregnancy, unspecified ...	9.00	1.25	394.48	0.0%	0	1	9	70,278	2.15E-02
O9852 - Other viral ... complicating childbirth	116.00	20.35	661.10	0.2%	0	1	116	70,171	5.69E-26
O9853 - Other viral ... complicating the puerperium	23.00	3.73	947.45	0.0%	0	1	23	70,264	2.98E-06
R000 - Tachycardia, unspecified	1.87	1.76	1.99	4.0%	310	1,481	2,774	65,723	2.60E-87
R05 - Cough	2.79	2.70	2.88	22.0%	2,350	4,965	13,838	49,135	0.00E+00
R0600 - Dyspnea, unspecified	2.43	2.30	2.57	6.0%	397	1,687	4,104	64,100	3.35E-221
R0602 - Shortness of breath	3.55	3.42	3.69	19.9%	2,061	3,621	12,861	51,745	0.00E+00
R0603 - Acute respiratory distress	5.05	4.48	5.69	2.3%	36	320	1,616	68,316	2.15E-190
R0682 - Tachypnea, not elsewhere classified	4.08	3.31	5.03	0.6%	4	110	449	69,725	2.32E-46
R0689 - Other abnormalities of breathing	2.06	1.86	2.28	1.6%	54	543	1,118	68,573	4.76E-45
R069 - Unspecified abnormalities of breathing	2.46	2.10	2.89	0.7%	34	213	525	69,516	2.40E-30
R0902 - Hypoxemia	7.07	6.63	7.53	11.3%	449	1,096	7,746	60,997	0.00E+00
R091 - Pleurisy	1.97	1.32	2.94	0.1%	1	36	71	70,180	1.01E-03
R092 - Respiratory arrest	5.44	3.21	9.21	0.1%	3	16	87	70,182	5.30E-12
R0989 - Other symptoms ... circulatory & respiratory systems	1.17	1.09	1.26	2.4%	189	1,416	1,660	67,023	1.18E-05
R197 - Diarrhea, unspecified	1.60	1.50	1.70	4.0%	250	1,712	2,733	65,593	7.76E-53
R34 - Anuria & oliguria	3.81	2.77	5.24	0.3%	3	47	179	70,059	2.93E-18
R401 - Stupor	1.76	1.45	2.15	0.4%	7	153	270	69,858	1.70E-08
R4020 - Unspecified coma	1.63	1.33	2.00	0.3%	2	150	245	69,891	2.25E-06
R402114 - Coma scale, eyes open, never, ...	10.00	1.42	433.98	0.0%	0	1	10	70,277	1.17E-02
R402123 - Coma scale, eyes open, to pain, ...	8.00	1.07	354.98	0.0%	0	1	8	70,279	3.91E-02
R402124 - Coma scale, eyes open, to pain, ...	Inf			0.0%	0	0	6	70,282	3.13E-02
R402214 - Coma scale, best verbal response, none, ...	13.00	1.95	552.47	0.0%	0	1	13	70,274	1.83E-03
R402314 - Coma scale, best motor response, none, ...	Inf			0.0%	0	0	8	70,280	7.81E-03
R402344 - Coma scale, best motor response, flexion withdrawal ...	9.00	1.25	394.48	0.0%	0	1	9	70,278	2.15E-02
R402431 - Glasgow coma scale score 3-8, in the field ...	3.00	1.37	6.55	0.0%	0	8	24	70,256	8.01E-03
R404 - Transient alteration of awareness	1.20	1.06	1.36	0.8%	59	466	559	69,204	4.06E-03
R4182 - Altered mental status, unspecified	1.50	1.42	1.57	5.7%	977	2,542	3,804	62,965	1.95E-56
R430 - Anosmia	18.00	10.14	31.94	0.3%	2	12	216	70,058	3.34E-41
R432 - Parageusia	11.00	5.82	20.79	0.2%	0	10	110	70,168	1.60E-19
R438 - Other disturbances of smell and taste	12.29	5.79	26.07	0.1%	0	7	86	70,195	6.05E-16
R439 - Unspecified disturbances of smell and taste	21.25	8.10	55.77	0.1%	0	4	85	70,199	2.25E-17
R502 - Drug induced fever	2.56	1.20	5.42	0.0%	0	9	23	70,256	2.16E-02
R5081 - Fever presenting with conditions, CE	4.90	4.11	5.86	1.0%	23	146	716	69,403	1.13E-83
R5084 - Febrile nonhemolytic transfusion reaction	Inf			0.0%	0	0	18	70,270	7.63E-06
R509 - Fever, unspecified	6.42	6.14	6.71	21.6%	1,004	2,254	14,477	52,553	0.00E+00
R531 - Weakness	1.21	1.16	1.26	7.2%	1,357	3,894	4,698	60,339	4.60E-18
R532 - Functional quadriplegia	1.83	1.43	2.33	0.3%	26	99	181	69,982	1.29E-06
R5381 - Other malaise	1.22	1.15	1.30	3.3%	548	1,830	2,237	65,673	1.94E-10
R5383 - Other fatigue	1.13	1.07	1.19	4.0%	344	2,369	2,677	64,898	1.55E-05
R570 - Cardiogenic shock	2.21	1.66	2.93	0.2%	5	68	150	70,065	4.11E-08
R571 - Hypovolemic shock	2.03	1.49	2.77	0.2%	5	60	122	70,101	6.14E-06
R578 - Other shock	4.29	2.97	6.18	0.2%	1	35	150	70,102	5.23E-17
R579 - Shock, unspecified	7.42	5.93	9.29	0.9%	4	86	638	69,560	3.40E-93
R627 - Adult failure to thrive	1.57	1.40	1.77	1.0%	256	461	726	68,845	1.82E-14
R6510 - SIRS of non-infectious origin without acute organ ...	2.24	1.87	2.68	0.5%	24	170	381	69,713	3.68E-19
R6511 - SIRS of non-infectious origin with acute organ dysfunction	2.25	1.26	4.02	0.1%	0	16	36	70,236	8.42E-03

eTable 4 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
R6520 - Severe sepsis without septic shock	3.81	3.39	4.28	1.9%	40	352	1,341	68,555	2.08E-127
R6521 - Severe sepsis with septic shock	6.40	5.68	7.21	2.8%	62	310	1,983	67,933	4.14E-267
R680 - Hypothermia, not associated with low ... temperature	1.73	1.07	2.79	0.1%	4	26	45	70,213	3.27E-02
R6883 - Chills (without fever)	1.71	1.43	2.05	0.5%	5	189	324	69,770	3.29E-09
R6889 - Other general symptoms and signs	2.27	2.14	2.41	5.4%	557	1,622	3,684	64,425	4.10E-176
R740 - Nonspecific elevation of levels of transaminase and LDH	3.07	2.72	3.46	1.5%	47	351	1,077	68,813	4.89E-82
R7881 - Bacteremia	1.55	1.39	1.73	1.2%	113	518	802	68,855	6.74E-15
R791 - Abnormal coagulation profile	1.57	1.35	1.82	0.7%	45	290	455	69,498	1.87E-09
R7981 - Abnormal blood-gas level	2.74	2.11	3.56	0.3%	8	76	208	69,996	7.64E-15
R7982 - Elevated C-reactive protein (CRP)	2.33	1.84	2.94	0.3%	5	100	233	69,950	4.71E-13
R7989 - Other specified abnormal findings of blood chemistry	1.10	1.03	1.17	2.8%	235	1,767	1,935	66,351	6.06E-03
R918 - Other nonspecific abnormal finding of lung field	4.16	3.96	4.37	12.5%	875	2,031	8,447	58,935	0.00E+00
T380X5A - Adverse effect of glucocorticoids and synthetic ...	2.35	1.83	3.01	0.3%	10	89	209	69,980	5.44E-12
Z20818 - Contact with and (suspected) exposure to other bacterial ...	7.94	5.51	11.44	0.4%	2	32	254	70,000	5.02E-39
Z20820 - Contact with and (suspected) exposure to varicella	4.67	1.30	25.33	0.0%	0	3	14	70,271	1.27E-02
Z20828 - Contact with and (suspected) exposure to other viral ...	38.97	34.73	43.72	16.6%	90	297	11,573	58,328	0.00E+00
Z2089 - Contact with and (suspected) exposure to other ...	7.96	5.17	12.23	0.3%	3	23	183	70,079	1.60E-28
Z209 - Contact with and (suspected) exposure to unspecified ...	8.32	5.64	12.29	0.3%	2	28	233	70,025	1.49E-36
Z299 - Encounter for prophylactic measures, unspecified	2.73	2.11	3.54	0.3%	18	79	216	69,975	2.41E-15
Z370 - Single live birth	3.17	2.43	4.15	0.3%	1	70	222	69,995	9.87E-19
Z452 - Encounter for adjustment and management of vascular ...	2.42	2.22	2.62	2.8%	139	792	1,913	67,444	7.40E-103
Z4659 - Encounter for fitting / adjustment of other gastrointestinal ...	2.61	2.18	3.12	0.6%	9	165	430	69,684	2.68E-27
Z4682 - Encounter for fitting / adjustment of non-vascular catheter	5.23	4.72	5.79	3.2%	59	431	2,253	67,545	1.18E-270
Z4689 - Encounter for fitting / adjustment of other specified devices	1.98	1.41	2.78	0.1%	6	50	99	70,133	8.41E-05
Z515 - Encounter for palliative care	5.47	4.91	6.09	3.0%	134	389	2,127	67,638	9.14E-263
Z66 - Do not resuscitate	5.51	4.92	6.17	2.8%	134	353	1,946	67,855	9.84E-242
Z743 - Need for continuous supervision	1.75	1.65	1.85	4.9%	983	1,909	3,334	64,062	4.20E-86
Z9911 - Dependence on respirator [ventilator] status	8.30	7.04	9.78	1.9%	36	159	1,319	68,774	1.17E-199
Z9981 - Dependence on supplemental oxygen	3.59	3.32	3.90	3.9%	342	753	2,707	66,486	1.01E-241
Z9989 - Dependence on other enabling machines and devices	1.47	1.31	1.65	1.1%	83	498	733	68,974	2.57E-11

eTable 5. Candidate COVID-19 complications, by individual ICD-10 code (secondary analysis)

This table shows findings for individual-level codes that increased in odds with COVID-19 at a Bonferroni-corrected level of significance, excluding those already reported in eTable 4. OR (Est.): odds ratio for association with COVID-19, point estimate. OR (LI) and OR (UI): 95% lower and upper confidence intervals for the odds ratio. OR, Risk, A, B, C, and D are defined in eFigure 3. P-value: p-value from McNemar test (null hypothesis: OR = 1). The significance threshold for this analysis was $0.05/64,931 = 7.7E-07$.

Authors' interpretation: Some diagnosis codes identified in this secondary analysis (e.g., A0839) had header codes (e.g. A08) that were not identified in the primary analysis. This can occur when there are other individual codes within the same header code that have opposing strengths of association. For example, while A0839 here has an OR of 18.00, the code A0811 had an OR of 0.35 and A084 had an OR of 0.55 (data not shown); on balance, this resulted in the header code of all of these individual codes (A08) having an OR of 1.14, which was not significant in the primary analysis.

eTable 5 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
A0839 - Other viral enteritis	18.00	8.96	36.16	0.2%	2	8	144	70,134	6.65E-28
E1110 - Type 2 diabetes mellitus with ketoacidosis without coma	3.12	2.50	3.89	0.5%	27	103	321	69,837	5.74E-26
G4736 - Sleep related hypoventilation in conditions, CE	5.47	3.28	9.12	0.1%	3	17	93	70,175	8.62E-13
I514 - Myocarditis, unspecified	9.25	3.44	24.91	0.1%	0	4	37	70,247	5.81E-07
J208 - Acute bronchitis due to other specified organisms	3.08	2.64	3.60	0.9%	17	212	653	69,406	1.33E-50
J218 - Acute bronchiolitis due to other specified organisms	3.89	2.33	6.49	0.1%	8	18	70	70,192	5.43E-08
J440 - Chronic obstructive pulmonary disease with acute lower resp. infection	3.08	2.74	3.47	1.6%	119	362	1,115	68,692	2.95E-85
M6282 - Rhabdomyolysis	1.96	1.65	2.33	0.5%	70	195	383	69,640	7.36E-15
M7910 - Myalgia, unspecified site	1.54	1.38	1.73	1.1%	42	501	773	68,972	3.14E-14
O99513 - Diseases of the resp. system complicating pregnancy, third trimester	3.68	2.23	6.08	0.1%	0	19	70	70,199	1.16E-07
R042 - Hemoptysis	1.63	1.35	1.98	0.4%	8	166	271	69,843	6.52E-07
R630 - Anorexia	2.19	1.95	2.46	1.3%	94	413	906	68,875	8.25E-42
R638 - Other symptoms and signs concerning food and fluid intake	2.28	1.88	2.76	0.5%	55	148	337	69,748	1.38E-17
R9431 - Abnormal electrocardiogram [ECG] [EKG]	1.26	1.19	1.34	3.6%	308	1,960	2,472	65,548	1.64E-14
Z1159 - Encounter for screening for other viral diseases	2.73	2.40	3.10	1.3%	12	321	877	69,078	7.30E-58
Z1383 - Encounter for screening for respiratory disorder NEC	5.82	4.03	8.40	0.3%	0	33	192	70,063	6.06E-26
Z3A39 - 39 weeks gestation of pregnancy	3.29	2.09	5.18	0.1%	2	24	79	70,183	1.03E-07
Z604 - Social exclusion and rejection	6.63	3.94	11.14	0.2%	5	16	106	70,161	7.78E-16
Z655 - Exposure to disaster, war and other hostilities	Inf			0.1%	0	0	43	70,245	1.50E-10
Z7189 - Other specified counseling	1.59	1.46	1.73	2.0%	102	863	1,375	67,948	3.38E-27
Z781 - Physical restraint status	1.91	1.55	2.37	0.3%	6	128	245	69,909	1.90E-09
Z8619 - Personal history of other infectious and parasitic diseases	2.67	2.32	3.08	1.0%	37	265	708	69,278	1.41E-45
Z978 - Presence of other specified devices	2.62	2.02	3.39	0.3%	8	79	207	69,994	5.93E-14

eTable 6. Risk estimates for acute kidney failure, respiratory failure/ARDS, pneumonia, and SIRS/sepsis/septic shock

These data correspond to Figure 4 in the main manuscript. Some conditions listed here are composites of more than one ICD-10 header code. Pneumonia: defined as J12 (viral pneumonia, not elsewhere classified) or J18 (pneumonia, unspecified organism). Respiratory failure or ARDS: defined as J96 (respiratory failure, not elsewhere classified) or J80 (acute respiratory distress syndrome). Acute kidney failure: defined as N17 (acute kidney failure). SIRS, sepsis, or septic shock: defined as A41 (other sepsis) or R65 (symptoms and signs specifically associated with systemic inflammation and infection). SIRS: systemic inflammatory response syndrome. Risk, A, B, C, and D are defined in eFigure 3.

eTable 6 / Condition	Hosp. status	Age group	Risk	A	B	C	D
Acute Kidney Failure	All	All	11.8%	1,558	2,240	7,833	58,657
Acute Kidney Failure	All	<18	0.7%	4	7	10	1,350
Acute Kidney Failure	All	18 - 65	7.2%	444	686	2,340	29,977
Acute Kidney Failure	All	>= 65	16.7%	1,110	1,547	5,483	27,330
Acute Kidney Failure	Inpatient	All	21.2%	1,423	1,544	7,347	27,229
Acute Kidney Failure	Inpatient	<18	3.7%	4	5	10	261
Acute Kidney Failure	Inpatient	18 - 65	17.9%	394	442	2,179	10,011
Acute Kidney Failure	Inpatient	>= 65	23.3%	1,025	1,097	5,158	16,957
Acute Kidney Failure	ICU	All	50.7%	245	78	1,495	1,451
Acute Kidney Failure	ICU	<18	11.1%	1	1	8	64
Acute Kidney Failure	ICU	18 - 65	41.0%	59	31	408	587
Acute Kidney Failure	ICU	>= 65	57.4%	185	46	1,079	800
Respiratory failure or ARDS	All	All	23.5%	1,957	1,323	15,729	51,279
Respiratory failure or ARDS	All	<18	5.9%	18	14	79	1,260
Respiratory failure or ARDS	All	18 - 65	17.9%	606	465	5,806	26,570
Respiratory failure or ARDS	All	>= 65	29.6%	1,333	844	9,844	23,449
Respiratory failure or ARDS	Inpatient	All	41.3%	1,762	790	14,464	20,527
Respiratory failure or ARDS	Inpatient	<18	28.7%	13	9	74	184
Respiratory failure or ARDS	Inpatient	18 - 65	42.7%	538	278	5,214	6,996
Respiratory failure or ARDS	Inpatient	>= 65	40.7%	1,211	503	9,176	13,347
Respiratory failure or ARDS	ICU	All	79.2%	256	28	2,364	621
Respiratory failure or ARDS	ICU	<18	65.1%	9	2	41	22
Respiratory failure or ARDS	ICU	18 - 65	75.8%	74	9	760	242
Respiratory failure or ARDS	ICU	>= 65	81.4%	173	17	1,563	357
Pneumonia	All	All	36.6%	2,043	1,794	24,315	42,136
Pneumonia	All	<18	9.9%	15	40	130	1,186
Pneumonia	All	18 - 65	31.0%	606	635	9,982	22,224
Pneumonia	All	>= 65	43.1%	1,422	1,119	14,203	18,726
Pneumonia	Inpatient	All	57.6%	1,724	949	20,081	14,789
Pneumonia	Inpatient	<18	33.1%	11	12	85	172
Pneumonia	Inpatient	18 - 65	62.1%	488	285	7,603	4,650
Pneumonia	Inpatient	>= 65	55.4%	1,225	652	12,393	9,967
Pneumonia	ICU	All	88.4%	211	26	2,679	353
Pneumonia	ICU	<18	53.1%	6	4	34	30
Pneumonia	ICU	18 - 65	88.8%	51	6	913	115
Pneumonia	ICU	>= 65	89.3%	154	16	1,732	208
SIRS, sepsis, or septic shock	All	All	11.2%	826	1,759	7,559	60,144
SIRS, sepsis, or septic shock	All	<18	1.7%	3	7	23	1,338
SIRS, sepsis, or septic shock	All	18 - 65	8.9%	309	593	2,911	29,634
SIRS, sepsis, or septic shock	All	>= 65	13.7%	514	1,159	4,625	29,172
SIRS, sepsis, or septic shock	Inpatient	All	20.1%	767	1,209	7,135	28,432
SIRS, sepsis, or septic shock	Inpatient	<18	8.1%	3	5	22	250

eTable 6 / Condition	Hosp. status	Age group	Risk	A	B	C	D
SIRS, sepsis, or septic shock	Inpatient	18 - 65	22.0%	281	383	2,721	9,641
SIRS, sepsis, or septic shock	Inpatient	>= 65	19.2%	483	821	4,392	18,541
SIRS, sepsis, or septic shock	ICU	All	55.3%	129	52	1,708	1,380
SIRS, sepsis, or septic shock	ICU	<18	15.7%	3	1	11	59
SIRS, sepsis, or septic shock	ICU	18 - 65	55.3%	39	14	571	461
SIRS, sepsis, or septic shock	ICU	>= 65	56.7%	87	37	1,126	860

eTable 7. Risks of candidate COVID-19 complications, by age

Risk, A, B, C, and D are defined in eFigure 3.

eTable 7 / Code	Age < 18					Age 18 to <65					Age >= 65				
	Risk	A	B	C	D	Risk	A	B	C	D	Risk	A	B	C	D
A41 - Other sepsis	1.6%	3	5	22	1,341	8.3%	273	565	2,706	29,903	12.9%	451	1,106	4,358	29,555
B33 - Other viral diseases, NEC	1.5%	1	2	21	1,347	0.3%	2	5	91	33,349	0.2%	0	9	62	35,399
B34 - Viral infection of unspecified site	15.3%	31	101	190	1,049	10.9%	91	492	3,595	29,269	8.0%	28	188	2,827	32,427
B96 - Other bacterial agents, CE	2.0%	2	11	27	1,331	1.3%	39	526	416	32,466	3.0%	111	653	1,046	33,660
B99 - Other infectious diseases	0.3%	1	0	4	1,366	0.4%	3	61	131	33,252	0.7%	7	74	262	35,127
D61 - Other aplastic anemias / bone marrow	0.3%	4	4	4	1,359	0.4%	51	97	132	33,167	0.7%	60	153	244	35,013
D65 - Disseminated intravascular coagulation	0.0%	0	0	0	1,371	0.1%	0	4	20	33,423	0.1%	0	2	51	35,417
D69 - Purpura/other hemorrhagic conditions	0.9%	3	8	12	1,348	1.5%	99	299	489	32,560	2.5%	229	589	861	33,791
D72 - Other disorders of white blood cells	2.4%	3	8	32	1,328	3.2%	102	646	1,045	31,654	4.7%	198	964	1,627	32,681
E43 - Unspecified severe malnutrition	0.4%	4	2	6	1,359	0.6%	55	120	191	33,081	1.7%	129	252	591	34,498
E46 - Unspecified malnutrition	0.5%	1	1	7	1,362	0.4%	50	154	149	33,094	1.5%	168	368	535	34,399
G72 - Other & unspecified myopathies	0.0%	0	0	0	1,371	0.3%	9	35	113	33,290	0.5%	20	74	181	35,195
G92 - Toxic encephalopathy	0.0%	0	0	0	1,371	0.4%	7	92	146	33,202	1.2%	35	246	439	34,750
G93 - Other disorders of brain	0.7%	9	18	10	1,334	2.5%	215	547	821	31,864	7.4%	563	1,160	2,497	31,250
I21 - Acute myocardial infarction	0.0%	0	0	0	1,371	0.9%	61	232	301	32,853	2.7%	188	541	927	33,814
I24 - Other acute ischemic heart diseases	0.0%	1	0	0	1,370	0.3%	12	70	94	33,271	1.0%	31	171	337	34,931
I26 - Pulmonary embolism	0.2%	0	0	3	1,368	1.0%	55	187	319	32,886	1.1%	140	240	387	34,703
I40 - Acute myocarditis	0.0%	0	0	0	1,371	0.1%	0	2	21	33,424	0.1%	0	4	28	35,438
I45 - Other conduction disorders	0.1%	0	2	2	1,367	0.9%	38	198	286	32,925	1.7%	113	440	603	34,314
I46 - Cardiac arrest	0.4%	1	2	5	1,363	0.7%	15	39	243	33,150	1.5%	12	34	534	34,890
I48 - Atrial fibrillation & flutter	0.0%	0	0	0	1,371	1.4%	416	459	463	32,109	8.2%	2,762	2,030	2,510	28,168
I95 - Hypotension	0.6%	1	7	8	1,355	2.5%	124	424	823	32,076	5.1%	341	1,001	1,741	32,387
J06 - Acute upper respiratory infections	17.7%	79	241	186	865	8.1%	264	1,926	2,527	28,730	3.6%	97	902	1,256	33,215
J12 - Viral pneumonia, NEC	5.7%	5	6	78	1,282	23.6%	23	40	7,878	25,506	32.3%	47	63	11,406	23,954
J15 - Bacterial pneumonia, NEC	1.3%	1	8	18	1,344	1.5%	30	159	515	32,743	2.4%	46	231	843	34,350
J16 - Pneumonia due to other organisms	0.2%	0	0	3	1,368	0.5%	2	22	154	33,269	0.4%	8	28	156	35,278
J17 - Pneumonia in diseases, CE	0.0%	0	1	0	1,370	0.1%	2	6	17	33,422	0.1%	3	5	29	35,433
J18 - Pneumonia, unspecified organism	7.5%	11	36	99	1,225	17.8%	382	834	5,729	26,502	23.5%	977	1,521	7,763	25,209
J22 - Unspecified acute lower resp. infection	3.1%	0	1	42	1,328	5.3%	7	69	1,783	31,588	3.6%	2	38	1,282	34,148
J80 - Acute respiratory distress syndrome	0.9%	0	2	12	1,357	3.9%	11	32	1,301	32,103	4.9%	9	39	1,724	33,698
J84 - Other interstitial pulmonary diseases	0.1%	2	2	2	1,365	0.6%	47	120	197	33,083	1.0%	113	277	345	34,735
J90 - Pleural effusion, NEC	1.0%	1	8	14	1,348	2.0%	121	375	646	32,305	3.7%	303	854	1,272	33,041
J93 - Pneumothorax & air leak	0.1%	1	0	2	1,368	0.4%	5	31	135	33,276	0.5%	3	61	174	35,232
J95 - Procedural complications of resp. system	0.1%	1	2	1	1,367	0.3%	9	60	93	33,285	0.4%	10	74	140	35,246
J96 - Respiratory failure, NEC	5.6%	18	13	75	1,265	17.2%	592	471	5,573	26,811	28.5%	1,311	848	9,485	23,826
J98 - Other respiratory disorders	17.0%	36	33	221	1,081	10.5%	209	789	3,407	29,042	10.5%	352	1,269	3,550	30,299
N17 - Acute kidney failure	0.7%	4	7	10	1,350	7.2%	444	686	2,340	29,977	16.7%	1,110	1,547	5,483	27,330
O48 - Late pregnancy	0.1%	0	0	2	1,369	0.1%	0	8	36	33,403	0.0%	0	0	0	35,470
O70 - Perineal laceration during delivery	0.1%	0	0	2	1,369	0.1%	0	14	50	33,383	0.0%	0	0	0	35,470
O98 - Maternal infectious diseases	0.2%	1	0	3	1,367	0.9%	17	32	312	33,086	0.0%	0	0	0	35,470
R00 - Abnormalities of heart beat	4.3%	7	22	58	1,284	5.5%	300	1,420	1,746	29,981	5.3%	316	1,537	1,792	31,825
R05 - Cough	25.9%	114	147	287	823	26.3%	1,275	2,396	7,835	21,941	17.8%	961	2,422	5,716	26,371
R06 - Abnormalities of breathing	13.4%	53	79	166	1,073	26.9%	1,561	2,067	8,035	21,784	25.9%	1,993	2,595	8,001	22,881
R09 - Other s/s circulatory/respiratory system	9.1%	48	86	112	1,125	11.9%	356	1,335	3,790	27,966	16.2%	667	1,580	5,394	27,829
R19 - Other s/s digestive system & abdomen	3.8%	13	60	49	1,249	4.5%	143	1,076	1,442	30,786	4.3%	212	1,225	1,479	32,554
R34 - Anuria & oliguria	0.2%	0	0	3	1,368	0.2%	0	23	69	33,355	0.3%	3	24	107	35,336

eTable 7 / Code	Age < 18					Age 18 to <65					Age >= 65				
R40 - Somnolence, stupor & coma	0.7%	0	8	9	1,354	1.1%	48	340	356	32,703	2.8%	94	629	969	33,778
R41 - Other s/s involving cognitive functions	1.2%	1	7	17	1,346	3.2%	333	963	1,029	31,122	11.9%	1,653	2,948	3,683	27,186
R43 - Disturbances of smell & taste	0.7%	0	0	9	1,362	1.1%	2	20	367	33,058	0.1%	0	9	48	35,413
R50 - Fever of other & unknown origin	29.2%	123	166	316	766	22.4%	454	1,114	7,125	24,754	21.7%	489	994	7,391	26,596
R53 - Malaise & fatigue	3.1%	5	20	42	1,304	9.1%	726	2,421	2,765	27,535	16.9%	2,069	3,983	4,974	24,444
R57 - Shock, NEC	0.1%	0	0	1	1,370	1.2%	11	83	397	32,956	1.6%	9	118	558	34,785
R62 - Lack of expected normal development	1.0%	48	62	12	1,249	0.3%	40	114	104	33,189	1.9%	231	371	669	34,199
R65 - S/s of systemic inflammation/infection	0.8%	1	3	11	1,356	3.9%	67	261	1,283	31,836	6.0%	105	441	2,109	32,815
R68 - Other general s/s	3.7%	1	45	49	1,276	6.6%	267	1,041	2,121	30,018	5.5%	348	938	1,872	32,312
R74 - Abnormal serum enzyme levels	0.7%	2	7	10	1,352	2.1%	45	466	700	32,236	2.6%	75	437	917	34,041
R78 - Findings of drugs & other substances	0.7%	1	9	9	1,352	1.0%	45	237	318	32,847	1.5%	74	353	515	34,528
R79 - Other abnormal findings of blood	1.3%	3	17	17	1,334	2.9%	130	976	936	31,405	5.5%	272	1,446	1,846	31,906
R91 - Abnormal findings on imaging of lung	6.2%	19	28	82	1,242	12.1%	343	814	3,913	28,377	13.7%	639	1,473	4,565	28,793
T38 - Adverse effects hormones, NEC	0.2%	1	0	3	1,367	0.3%	5	69	88	33,285	0.4%	8	75	148	35,239
Z20 - Exposure to communicable diseases	18.5%	1	16	251	1,103	19.9%	107	386	6,551	26,403	14.9%	66	143	5,241	30,020
Z29 - Other prophylactic measures	0.1%	2	16	2	1,351	0.2%	10	74	53	33,310	0.6%	20	68	197	35,185
Z37 - Outcome of delivery	0.2%	1	0	3	1,367	0.7%	1	72	227	33,147	0.0%	0	0	0	35,470
Z45 - Management of implanted device	1.0%	7	21	14	1,329	2.6%	95	408	869	32,075	3.0%	88	592	1,048	33,742
Z46 - Fitting/adjustment of other devices	1.3%	8	14	17	1,332	3.4%	45	292	1,124	31,986	4.1%	80	459	1,443	33,488
Z51 - Encounter for other medical care	0.7%	17	14	9	1,331	1.6%	142	715	518	32,072	5.8%	354	1,024	1,985	32,107
Z66 - Do not resuscitate	0.1%	1	0	1	1,369	0.6%	5	44	207	33,191	5.0%	128	309	1,738	33,295
Z74 - Problems of provider dependency	1.8%	9	17	24	1,321	3.9%	509	898	1,242	30,798	9.7%	1,574	2,460	3,050	28,386
Z99 - Dependence on devices, NEC	1.6%	16	10	21	1,324	4.9%	869	739	1,547	30,292	9.9%	1,285	1,283	3,261	29,641

eTable 8. Risks of candidate COVID-19 complications, by sex

Risk, A, B, C, and D are defined in eFigure 3.

eTable 8 / Code	Male					Female				
	Risk	A	B	C	D	Risk	A	B	C	D
A41 - Other sepsis	12.5%	392	819	3,607	25,224	8.9%	324	837	3,394	34,658
B33 - Other viral diseases, NEC	0.3%	3	7	77	29,955	0.2%	0	9		39,107
B34 - Viral infection of unspecified site	10.1%	62	302	2,983	26,695	9.2%	88	467	3,563	35,095
B96 - Other bacterial agents, CE	2.1%	54	453	626	28,909	2.2%	97	716	843	37,557
B99 - Other infectious diseases	0.5%	3	75	162	29,802	0.6%	8	60	232	38,913
D61 - Other aplastic anemias / bone marrow	0.7%	58	138	210	29,636	0.4%	57	112	167	38,877
D65 - Disseminated intravascular coagulation	0.2%	0	1	46	29,995	0.1%	0	5	25	39,183
D69 - Purpura/other hemorrhagic conditions	2.5%	164	486	726	28,666	1.6%	163	406	622	38,022
D72 - Other disorders of white blood cells	4.5%	152	759	1,322	27,809	3.5%	149	836	1,350	36,878
E43 - Unspecified severe malnutrition	1.3%	98	196	377	29,371	1.0%	87	172	406	38,548
E46 - Unspecified malnutrition	1.0%	112	237	289	29,404	1.0%	102	281	391	38,439
G72 - Other & unspecified myopathies	0.5%	16	58	149	29,819	0.4%	12	51	143	39,007
G92 - Toxic encephalopathy	0.9%	16	145	280	29,601	0.8%	25	188	300	38,700
G93 - Other disorders of brain	5.4%	376	831	1,568	27,267	4.5%	401	880	1,715	36,217
I21 - Acute myocardial infarction	2.1%	121	412	624	28,885	1.5%	124	354	590	38,145
I24 - Other acute ischemic heart diseases	0.8%	28	132	227	29,655	0.5%	16	107	200	38,890
I26 - Pulmonary embolism	1.1%	82	186	330	29,444	1.0%	108	239	374	38,492
I40 - Acute myocarditis	0.1%	0	5	19	30,018	0.1%	0	1	28	39,184
I45 - Other conduction disorders	1.7%	86	350	497	29,109	1.0%	59	281	379	38,494
I46 - Cardiac arrest	1.4%	18	46	417	29,561	0.9%	10	28	354	38,821
I48 - Atrial fibrillation & flutter	5.7%	1,491	1,260	1,559	25,732	3.7%	1,644	1,205	1,359	35,005
I95 - Hypotension	4.4%	245	708	1,269	27,820	3.3%	212	701	1,272	37,028
J06 - Acute upper respiratory infections	5.7%	163	1,162	1,631	27,086	6.2%	272	1,868	2,287	34,786
J12 - Viral pneumonia, NEC	31.0%	33	53	9,277	20,679	25.1%	42	53	9,820	29,298
J15 - Bacterial pneumonia, NEC	2.5%	45	200	742	29,055	1.6%	29	197	618	38,369
J16 - Pneumonia due to other organisms	0.5%	3	27	141	29,871	0.4%	7	21	169	39,016
J17 - Pneumonia in disease, CE	0.1%	1	10	23	30,008	0.1%	4	2	23	39,184
J18 - Pneumonia, unspecified organism	23.4%	655	1,130	6,609	21,648	18.3%	700	1,229	6,807	30,477
J22 - Unspecified acute lower resp. infection	4.8%	4	36	1,429	28,573	4.2%	4	70	1,657	37,482
J80 - Acute respiratory distress syndrome	5.5%	8	30	1,653	28,351	3.4%	12	42	1,347	37,812
J84 - Other interstitial pulmonary diseases	0.9%	70	177	258	29,537	0.7%	89	216	276	38,632
J90 - Pleural effusion, NEC	3.3%	207	624	962	28,249	2.5%	211	603	949	37,450
J93 - Pneumothorax & air leak	0.6%	5	63	179	29,795	0.3%	4	28	126	39,055
J95 - Procedural complications of resp. system	0.5%	13	80	141	29,808	0.2%	7	52	90	39,064
J96 - Respiratory failure, NEC	26.3%	831	632	7,530	21,049	19.8%	1,053	683	7,410	30,067
J98 - Other respiratory disorders	11.4%	292	964	3,274	25,512	10.1%	296	1,106	3,818	33,993
N17 - Acute kidney failure	15.1%	830	1,147	4,238	23,827	9.3%	708	1,059	3,496	33,950
O48 - Late pregnancy	0.0%	0	0	0	30,042	0.1%	0	8	38	39,167
O70 - Perineal laceration during delivery	0.0%	0	0	0	30,042	0.1%	0	14	52	39,147
O98 - Maternal infectious diseases	0.0%	0	1	1	30,040	0.8%	18	31	307	38,857
R00 - Abnormalities of heart beat	6.1%	250	1,296	1,731	26,765	4.9%	367	1,642	1,822	35,382
R05 - Cough	21.7%	917	1,991	5,879	21,255	22.3%	1,420	2,897	7,780	27,116
R06 - Abnormalities of breathing	27.7%	1,583	2,114	7,310	19,035	25.1%	1,988	2,559	8,697	25,969
R09 - Other s/s circulatory/respiratory system	15.6%	487	1,305	4,417	23,833	12.9%	573	1,663	4,766	32,211
R19 - Other s/s digestive system & abdomen	3.9%	142	913	1,137	27,850	4.8%	219	1,422	1,788	35,784
R34 - Anuria & oliguria	0.3%	1	26	98	29,917	0.2%	2	21	79	39,111

eTable 8 / Code	Male					Female				
R40 - Somnolence, stupor & coma	2.1%	67	482	605	28,888	1.8%	73	480	712	37,948
R41 - Other s/s involving cognitive functions	8.0%	856	1,790	2,190	25,206	6.9%	1,114	2,079	2,486	33,534
R43 - Disturbances of smell & taste	0.4%	0	10	127	29,905	0.7%	2	19	290	38,902
R50 - Fever of other & unknown origin	24.2%	508	1,001	6,915	21,618	20.7%	545	1,243	7,760	29,665
R53 - Malaise & fatigue	13.2%	1,183	2,715	3,440	22,704	12.5%	1,578	3,633	4,239	29,763
R57 - Shock, NEC	1.8%	16	101	541	29,384	1.0%	4	99	405	38,705
R62 - Lack of expected normal development	1.1%	146	240	340	29,316	1.1%	169	303	435	38,306
R65 - S/s of systemic inflammation/infection	6.1%	98	348	1,801	27,795	4.0%	73	350	1,564	37,226
R68 - Other general s/s	6.4%	240	822	1,854	27,126	5.7%	375	1,175	2,134	35,529
R74 - Abnormal serum enzyme levels	3.0%	65	432	872	28,673	1.9%	54	469	744	37,946
R78 - Findings of drugs & other substances	1.4%	75	315	401	29,251	1.1%	43	276	425	38,469
R79 - Other abnormal findings of blood	4.7%	206	1,163	1,358	27,315	3.7%	195	1,248	1,409	36,361
R91 - Abnormal findings on imaging of lung	14.7%	501	1,068	4,174	24,299	11.5%	489	1,218	4,295	33,211
T38 - Adverse effects hormones, NEC	0.4%	4	66	129	29,843	0.3%	10	77	107	39,019
Z20 - Exposure to communicable diseases	16.9%	79	251	5,023	24,689	17.7%	94	288	6,858	31,973
Z29 - Other prophylactic measures	0.4%	10	67	121	29,844	0.3%	22	90	129	38,972
Z37 - Outcome of delivery	0.0%	1	0	0	30,041	0.6%	1	72	229	38,911
Z45 - Management of implanted device	3.6%	99	536	1,052	28,355	2.2%	90	475	856	37,792
Z46 - Fitting/adjustment of other devices	4.9%	67	422	1,445	28,108	2.9%	66	337	1,112	37,698
Z51 - Encounter for other medical care	4.2%	224	774	1,217	27,827	3.3%	285	963	1,269	36,696
Z66 - Do not resuscitate	3.0%	48	115	901	28,978	2.6%	83	234	1,023	37,873
Z74 - Problems of provider dependency	7.1%	921	1,508	1,971	25,642	6.3%	1,131	1,834	2,276	33,972
Z99 - Dependence on devices, NEC	8.5%	1,035	919	2,374	25,714	6.5%	1,102	1,091	2,396	34,624

eTable 9. Risks of candidate COVID-19 complications, by hospitalization status

Risk, A, B, C, and D are defined in eFigure 3.

eTable 9 / Code	Outpatient					Inpatient					ICU				
	Risk	A	B	C	D	Risk	A	B	C	D	Risk	A	B	C	D
A41 - Other sepsis	1.2%	54	517	401	31,773	18.7%	673	1,159	6,685	29,026	54.1%	116	50	1,679	1,424
B33 - Other viral diseases, NEC	0.2%	1	8	69	32,667	0.3%	2	8	105	37,428	1.1%	1	1	35	3,232
B34 - Viral infection of unspecified site	8.3%	77	540	2,667	29,461	10.6%	73	241	3,945	33,284	17.8%	9	24	576	2,660
B96 - Other bacterial agents, CE	1.1%	20	413	342	31,970	3.1%	132	777	1,147	35,487	7.1%	26	83	223	2,937
B99 - Other infectious diseases	0.3%	2	42	110	32,591	0.8%	9	93	287	37,154	0.9%	2	5	28	3,234
D61 - Other aplastic anemias / bone marrow	0.1%	12	68	27	32,638	0.9%	103	186	353	36,901	2.8%	12	22	91	3,144
D65 - Disseminated intravascular coagulation	0.0%	0	2	1	32,742	0.2%	0	4	70	37,469	0.9%	0	1	31	3,237
D69 - Purpura/other hemorrhagic conditions	0.3%	34	266	101	32,344	3.4%	297	630	1,261	35,355	11.7%	43	73	368	2,785
D72 - Other disorders of white blood cells	0.8%	46	528	269	31,902	6.7%	257	1,090	2,435	33,761	19.4%	42	94	607	2,526
E43 - Unspecified severe malnutrition	0.1%	14	79	24	32,628	2.1%	174	295	764	36,310	6.2%	24	26	201	3,018
E46 - Unspecified malnutrition	0.1%	27	145	35	32,538	1.8%	192	378	656	36,317	4.6%	13	27	147	3,082
G72 - Other & unspecified myopathies	0.0%	6	24	15	32,700	0.7%	23	85	279	37,156	2.4%	5	4	77	3,183
G92 - Toxic encephalopathy	0.0%	2	67	14	32,662	1.5%	40	271	571	36,661	7.1%	10	39	229	2,991
G93 - Other disorders of brain	0.7%	86	518	223	31,918	8.7%	701	1,207	3,105	32,530	24.9%	93	87	769	2,320
I21 - Acute myocardial infarction	0.3%	28	192	89	32,436	3.1%	221	581	1,139	35,602	8.1%	32	62	257	2,918
I24 - Other acute ischemic heart diseases	0.1%	4	45	17	32,679	1.1%	40	196	414	36,893	4.4%	7	30	142	3,090
I26 - Pulmonary embolism	0.3%	42	144	100	32,459	1.6%	153	283	609	36,498	3.1%	9	30	99	3,131
I40 - Acute myocarditis	0.0%	0	0	1	32,744	0.1%	0	6	48	37,489	0.5%	0	0	16	3,253
I45 - Other conduction disorders	0.3%	18	190	98	32,439	2.1%	133	450	793	36,167	5.3%	24	51	169	3,025
I46 - Cardiac arrest	0.4%	3	15	116	32,611	1.8%	25	60	666	36,792	6.6%	3	6	216	3,044
I48 - Atrial fibrillation & flutter	1.2%	583	945	372	30,845	7.8%	2,595	1,544	2,601	30,803	16.1%	310	71	465	2,423
I95 - Hypotension	1.1%	75	423	354	31,893	6.1%	391	1,009	2,218	33,925	17.3%	49	81	542	2,597
J06 - Acute upper respiratory infections	7.2%	278	1,971	2,193	28,303	4.9%	162	1,098	1,776	34,507	9.1%	27	117	285	2,840
J12 - Viral pneumonia, NEC	8.1%	13	45	2,663	30,024	44.6%	62	64	16,699	20,718	81.0%	10	3	2,636	620
J15 - Bacterial pneumonia, NEC	0.3%	10	121	114	32,500	3.4%	67	277	1,262	35,937	12.2%	11	17	396	2,845
J16 - Pneumonia due to other organisms	0.2%	2	15	68	32,660	0.7%	8	35	245	37,255	1.6%	0	3	53	3,213
J17 - Pneumonia in diseases, CE	0.0%	1	6	10	32,728	0.1%	4	6	36	37,497	0.1%	1	1	3	3,264
J18 - Pneumonia, unspecified organism	7.3%	202	933	2,305	29,305	32.3%	1,168	1,458	11,286	23,631	52.4%	139	91	1,593	1,446
J22 - Unspecified acute lower resp. infection	3.4%	5	55	1,100	31,585	5.4%	4	53	2,007	35,479	8.8%	0	9	287	2,973
J80 - Acute respiratory distress syndrome	0.7%	3	20	235	32,487	7.5%	17	53	2,802	34,671	26.0%	3	4	849	2,413
J84 - Other interstitial pulmonary diseases	0.3%	29	119	99	32,498	1.2%	133	280	445	36,685	2.0%	18	30	65	3,156
J90 - Pleural effusion, NEC	0.5%	44	345	168	32,188	4.9%	381	892	1,764	34,506	11.3%	56	71	356	2,786
J93 - Pneumothorax & air leak	0.0%	0	32	8	32,705	0.8%	9	60	303	37,171	2.6%	2	12	84	3,171
J95 - Procedural complications of resp. system	0.0%	4	27	8	32,706	0.6%	16	109	226	37,192	3.3%	1	14	106	3,148
J96 - Respiratory failure, NEC	3.6%	191	525	1,148	30,881	40.0%	1,730	807	13,985	21,021	75.3%	253	31	2,248	737
J98 - Other respiratory disorders	7.1%	93	712	2,282	29,658	13.7%	504	1,379	4,896	30,764	24.7%	85	130	753	2,301
N17 - Acute kidney failure	1.5%	135	696	486	31,428	21.2%	1,423	1,544	7,347	27,229	50.7%	245	78	1,495	1,451
O48 - Late pregnancy	0.0%	0	7	1	32,737	0.1%	0	1	37	37,505	0.0%	0	0	0	3,269
O70 - Perineal laceration during delivery	0.0%	0	13	0	32,732	0.1%	0	1	52	37,490	0.0%	0	0	0	3,269
O98 - Maternal infectious diseases	0.3%	5	22	97	32,621	0.6%	13	10	218	37,302	0.3%	0	3	9	3,257
R00 - Abnormalities of heart beat	2.8%	144	1,208	875	30,518	7.7%	479	1,771	2,721	32,572	18.3%	72	181	551	2,465
R05 - Cough	24.3%	1,249	2,387	7,063	22,046	20.0%	1,101	2,578	6,775	27,089	30.5%	162	197	887	2,023
R06 - Abnormalities of breathing	18.3%	913	2,012	5,447	24,373	33.5%	2,694	2,729	10,755	21,365	55.0%	412	170	1,477	1,210
R09 - Other s/s circulatory/respiratory system	6.6%	235	1,326	2,048	29,136	20.7%	836	1,675	7,248	27,784	34.3%	112	134	1,037	1,986
R19 - Other s/s digestive system & abdomen	3.3%	106	1,010	1,028	30,601	5.4%	262	1,351	1,942	33,988	10.8%	35	119	335	2,780

eTable 9 / Code	Outpatient					Inpatient					ICU				
R34 - Anuria & oliguria	0.0%	0	13	10	32,722	0.5%	3	34	169	37,337	1.5%	0	3	50	3,216
R40 - Somnolence, stupor & coma	0.7%	26	292	240	32,187	3.0%	116	685	1,094	35,648	5.9%	14	65	189	3,001
R41 - Other s/s involving cognitive functions	2.6%	313	1,272	802	30,358	11.8%	1,674	2,646	3,927	29,296	16.4%	136	172	486	2,475
R43 - Disturbances of smell & taste	1.1%	2	18	373	32,352	0.1%	0	11	51	37,481	0.1%	0	0	3	3,266
R50 - Fever of other & unknown origin	17.8%	384	1,153	5,540	25,668	26.0%	682	1,121	9,292	26,448	35.0%	64	65	1,100	2,040
R53 - Malaise & fatigue	8.8%	735	2,482	2,608	26,920	16.4%	2,065	3,942	5,173	26,363	25.4%	231	278	701	2,059
R57 - Shock, NEC	0.1%	0	47	32	32,666	2.5%	20	154	924	36,445	9.5%	2	21	308	2,938
R62 - Lack of expected normal development	0.4%	73	196	134	32,342	1.8%	246	351	651	36,295	2.8%	28	40	89	3,112
R65 - S/s of systemic inflammation/infection	0.4%	10	175	124	32,436	8.9%	163	530	3,279	33,571	34.4%	49	35	1,096	2,089
R68 - Other general s/s	4.4%	222	1,031	1,394	30,098	7.3%	394	993	2,648	33,508	11.9%	51	108	370	2,740
R74 - Abnormal serum enzyme levels	0.5%	22	338	155	32,230	4.0%	100	572	1,472	35,399	10.6%	13	57	338	2,861
R78 - Findings of drugs & other substances	0.2%	12	163	55	32,515	2.1%	108	436	787	36,212	4.0%	11	46	127	3,085
R79 - Other abnormal findings of blood	1.6%	103	898	503	31,241	6.4%	302	1,541	2,296	33,404	14.3%	50	163	436	2,620
R91 - Abnormal findings on imaging of lung	4.7%	158	845	1,505	30,237	20.0%	843	1,470	7,055	28,175	34.6%	115	111	1,052	1,991
T38 - Adverse effects hormones, NEC	0.0%	1	33	8	32,703	0.6%	13	111	231	37,188	3.7%	1	26	120	3,122
Z20 - Exposure to communicable diseases	18.9%	108	383	6,083	26,171	16.0%	66	162	5,960	31,355	22.8%	4	9	741	2,515
Z29 - Other prophylactic measures	0.3%	5	77	84	32,579	0.4%	27	81	168	37,267	0.2%	2	6	7	3,254
Z37 - Outcome of delivery	0.0%	0	60	3	32,682	0.6%	2	12	227	37,302	0.2%	0	3	7	3,259
Z45 - Management of implanted device	0.5%	24	294	147	32,280	4.9%	166	727	1,784	34,866	12.9%	24	63	412	2,770
Z46 - Fitting/adjustment of other devices	0.6%	13	235	182	32,315	6.5%	120	530	2,402	34,491	17.9%	18	48	574	2,629
Z51 - Encounter for other medical care	0.7%	119	582	240	31,804	6.3%	394	1,171	2,272	33,706	19.7%	56	103	612	2,498
Z66 - Do not resuscitate	0.1%	5	93	43	32,604	5.1%	129	260	1,903	35,251	25.0%	27	14	808	2,420
Z74 - Problems of provider dependency	3.4%	384	1,011	1,051	30,299	9.8%	1,708	2,364	3,265	30,206	10.2%	96	143	310	2,720
Z99 - Dependence on devices, NEC	2.5%	336	575	791	31,043	11.8%	1,834	1,457	4,038	30,214	24.5%	244	97	717	2,211

eTable 10. Sensitivity analysis (38-day baseline period)

To assess the impact of the duration of the baseline period, we performed a sensitivity analysis where the baseline period was defined as days 68 through 30 before index (i.e., 38 days in duration, identical in length to the hazard period). Results with OR > 1 and P < 0.05 are shown below. OR (Est.): odds ratio for association with COVID-19, point estimate. OR (LI) and OR (UI): 95% lower and upper confidence intervals for the odds ratio. OR, Risk, A, B, C, and D are defined in eFigure 3. P-value: from McNemar test (null hypothesis: OR = 1). The Bonferroni-corrected significance threshold was 0.05/1,724 = 2.9E-05.

Authors' interpretation: All 69 ICD-10 codes identified in the primary analysis were also identified in this sensitivity analysis. Numerous additional codes were also identified, many of which are chronic conditions (e.g., G30 - Alzheimer's disease; OR: 1.32, 95% CI: 1.20-1.46, Q90 - Down Syndrome; OR: 4.64, 95% CI: 2.44-8.80) that are unlikely to have been true complications caused by COVID-19. This suggests that a 38-day baseline period is insufficient time to identify pre-existing chronic condition, since a patient who has a disease such as Alzheimer's disease or Down Syndrome may not have a healthcare encounter related to these conditions within this relatively short time period. This supports the use of the longer (120 day) baseline period in the primary analysis. However, some conditions that may have been acute events (e.g., I82 – Other venous embolism and thrombosis; OR: 1.74, 95% CI: 1.58-1.93) were also identified using this approach, suggesting that the primary analysis may have lower sensitivity to detect acute conditions that could be moderately associated with COVID-19.

Green shading: The 69 ICD-10 codes that were also identified in the primary analysis (i.e., Bonferroni significant in both this sensitivity analysis and the primary analysis). White shading: ICD-10 codes that were Bonferroni-significant in this sensitivity analysis but not in the primary analysis. Gray shading: nominally significant codes in this sensitivity analysis (P < 0.05 but not < Bonferroni-corrected threshold).

eTable 10 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
A04 - Other bacterial intestinal infections	1.44	1.21	1.72	0.4%	88	206	297	69,697	6.00E-05
A08 - Viral & other intestinal infections	2.27	1.81	2.84	0.4%	9	109	247	69,923	3.84E-13
A09 - Infectious gastroenteritis and colitis, unspecified	2.52	1.82	3.49	0.2%	4	50	126	70,108	1.57E-08
A37 - Whooping cough	4.00	1.08	22.09	0.0%	0	3	12	70,273	3.52E-02
A40 - Streptococcal sepsis	1.59	1.06	2.40	0.1%	6	37	59	70,186	3.21E-02
A41 - Other sepsis	7.57	7.08	8.09	10.6%	532	962	7,281	61,513	0.00E+00
A49 - Bacterial infection of unspecified site	1.60	1.33	1.91	0.4%	39	191	305	69,753	3.90E-07
A78 - Q fever	5.00	1.07	46.93	0.0%	1	2	10	70,275	3.86E-02
A87 - Viral meningitis	8.00	1.07	354.98	0.0%	0	1	8	70,279	3.91E-02
B09 - Unspecified viral infection characterized by skin and ...	3.17	1.30	7.70	0.0%	0	6	19	70,263	1.64E-02
B20 - Human immunodeficiency virus [HIV] disease	1.53	1.21	1.92	0.3%	181	120	183	69,804	3.68E-04
B33 - Other viral diseases, NEC	43.75	16.84	113.63	0.2%	2	4	175	70,107	5.45E-37
B34 - Viral infection of unspecified site	16.46	14.89	18.20	9.6%	95	405	6,667	63,121	0.00E+00
B37 - Candidiasis	1.49	1.32	1.69	0.9%	75	415	619	69,179	2.74E-10
B49 - Unspecified mycosis	2.81	1.60	4.94	0.1%	1	16	45	70,226	3.37E-04
B87 - Myiasis	14.00	2.13	591.97	0.0%	0	1	14	70,273	9.77E-04
B95 - Strep., Staph., & Enterococcus	1.90	1.65	2.19	0.8%	76	295	561	69,356	1.33E-19
B96 - Other bacterial agents, CE	2.66	2.42	2.93	2.2%	98	579	1,543	68,068	4.81E-97
B99 - Other infectious diseases	5.51	4.29	7.06	0.6%	6	73	402	69,807	3.47E-51
C34 - Malignant neoplasm of bronchus and lung	1.36	1.06	1.75	0.2%	204	105	143	69,836	1.88E-02
C91 - Lymphoid leukemia	2.16	1.47	3.16	0.1%	103	38	82	70,065	8.66E-05
D53 - Other nutritional anemias	1.42	1.13	1.79	0.3%	62	124	176	69,926	3.23E-03
D61 - Other aplastic anemias / bone marrow	2.88	2.38	3.49	0.6%	92	140	403	69,653	2.49E-29
D62 - Acute posthemorrhagic anemia	1.45	1.27	1.67	0.7%	77	346	503	69,362	8.61E-08
D63 - Anemia in chronic diseases, CE	1.30	1.20	1.40	2.2%	998	1,150	1,495	66,645	2.25E-11
D64 - Other anemias	1.43	1.36	1.50	6.0%	1,805	2,741	3,915	61,827	7.14E-47
D65 - Disseminated intravascular coagulation	11.83	5.26	26.62	0.1%	0	6	71	70,211	3.02E-13
D68 - Other coagulation defects	2.05	1.79	2.36	0.9%	122	300	616	69,250	2.28E-25
D69 - Purpura/other hemorrhagic conditions	2.99	2.70	3.31	2.1%	234	488	1,459	68,107	4.18E-107

eTable 10 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
D70 - Neutropenia	2.11	1.70	2.62	0.4%	55	119	251	69,863	9.74E-12
D72 - Other disorders of white blood cells	3.30	3.06	3.57	4.0%	216	845	2,791	66,436	2.92E-228
D76 - Other specified diseases with ... lymphoreticular ...	10.00	1.42	433.98	0.0%	0	1	10	70,277	1.17E-02
D84 - Other immunodeficiencies	1.79	1.23	2.60	0.1%	16	42	75	70,155	3.09E-03
D86 - Sarcoidosis	2.12	1.51	2.98	0.1%	69	49	104	70,066	1.27E-05
D89 - Other disorders involving the immune mechanism, NEC	2.31	1.81	2.97	0.3%	47	89	206	69,946	1.44E-11
E03 - Other hypothyroidism	1.20	1.13	1.27	3.8%	1,905	2,085	2,498	63,800	1.16E-09
E09 - Drug or chemical induced diabetes mellitus	2.33	1.41	3.87	0.1%	5	21	49	70,213	1.25E-03
E11 - Type 2 diabetes mellitus	1.47	1.41	1.52	12.0%	8,815	4,652	6,817	50,004	8.55E-91
E16 - Other disorders of pancreatic internal secretion	1.89	1.59	2.24	0.5%	36	202	382	69,668	1.29E-13
E22 - Hyperfunction of pituitary gland	2.01	1.50	2.70	0.2%	15	67	135	70,071	2.43E-06
E43 - Unspecified severe malnutrition	3.83	3.30	4.46	1.2%	163	212	813	69,100	2.30E-78
E44 - Malnutrition (moderate & mild)	2.19	1.90	2.53	0.8%	135	270	592	69,291	7.99E-28
E46 - Unspecified malnutrition	2.53	2.21	2.90	1.0%	189	285	721	69,093	8.28E-43
E56 - Other vitamin deficiencies	1.38	1.11	1.70	0.3%	82	146	201	69,859	3.75E-03
E63 - Other nutritional deficiencies	1.65	1.13	2.41	0.1%	16	43	71	70,158	1.14E-02
E66 - Overweight and obesity	1.14	1.08	1.19	5.2%	1,602	3,012	3,421	62,253	3.64E-07
E78 - Disorders of lipoprotein metabolism and other lipidemias	1.10	1.06	1.13	12.7%	5,074	6,756	7,413	51,045	3.57E-08
E87 - Other fluid, electrolyte disorders	1.97	1.71	2.26	0.8%	71	298	586	69,333	4.78E-22
F02 - Dementia in other diseases, CE	1.26	1.15	1.37	1.7%	832	911	1,146	67,399	2.48E-07
F03 - Unspecified dementia	1.62	1.52	1.72	4.3%	2,386	1,744	2,821	63,337	4.22E-57
F05 - Delirium due to physiological condition	2.01	1.68	2.41	0.5%	31	179	360	69,718	8.96E-15
F32 - Major depressive disorder, single episode	1.07	1.02	1.14	3.8%	1,561	2,343	2,517	63,867	1.31E-02
F41 - Other anxiety disorders	1.16	1.10	1.22	5.1%	2,157	2,895	3,347	61,889	1.14E-08
F81 - Specific developmental disorders of scholastic skills	2.42	1.25	4.68	0.0%	6	12	29	70,241	1.25E-02
G03 - Meningitis due to other and unspecified causes	2.73	1.38	5.37	0.0%	1	11	30	70,246	4.94E-03
G04 - Encephalitis, myelitis and encephalomyelitis	2.53	1.41	4.57	0.1%	6	15	38	70,229	2.51E-03
G20 - Parkinson's disease	1.34	1.16	1.56	0.6%	678	311	418	68,881	8.64E-05
G30 - Alzheimer's disease	1.32	1.20	1.46	1.4%	975	715	946	67,652	1.67E-08
G40 - Epilepsy and recurrent seizures	1.42	1.29	1.57	1.4%	849	687	976	67,776	1.64E-12
G70 - Myasthenia gravis and other myoneural disorders	1.80	1.05	3.09	0.1%	48	20	36	70,184	4.50E-02
G72 - Other & unspecified myopathies	5.03	3.81	6.65	0.4%	26	59	297	69,906	3.46E-36
G92 - Toxic encephalopathy	3.57	3.01	4.24	0.9%	30	167	597	69,494	2.51E-54
G93 - Other disorders of brain	3.66	3.41	3.93	5.1%	600	960	3,515	65,213	6.29e-319
H91 - Other and unspecified hearing loss	1.23	1.05	1.45	0.5%	88	269	332	69,599	1.14E-02
I09 - Other rheumatic heart diseases	3.25	1.00	13.68	0.0%	2	4	13	70,269	4.90E-02
I10 - Essential (primary) hypertension	1.42	1.38	1.46	23.0%	10,798	8,275	11,775	39,440	8.19E-135
I11 - Hypertensive heart disease	1.32	1.23	1.42	2.6%	688	1,345	1,773	66,482	2.06E-14
I12 - Hypertensive chronic kidney disease	1.98	1.85	2.12	3.5%	894	1,217	2,412	65,765	1.99E-87
I13 - Hypertensive heart and chronic kidney disease	1.73	1.59	1.89	2.0%	601	784	1,360	67,543	2.08E-35
I15 - Secondary hypertension	1.36	1.10	1.68	0.3%	71	149	203	69,865	4.73E-03
I16 - Hypertensive crisis	1.33	1.13	1.57	0.5%	51	252	336	69,649	6.20E-04
I21 - Acute myocardial infarction	2.95	2.65	3.29	1.9%	186	437	1,291	68,374	1.43E-93
I24 - Other acute ischemic heart diseases	4.23	3.42	5.23	0.6%	31	105	444	69,708	3.58E-47
I25 - Chronic ischemic heart disease	1.52	1.45	1.60	6.1%	2,994	2,584	3,936	60,774	7.74E-63
I26 - Pulmonary embolism	3.04	2.63	3.51	1.1%	159	245	745	69,139	1.21E-56
I27 - Other pulmonary heart diseases	1.25	1.11	1.41	0.9%	251	485	608	68,944	2.24E-04
I30 - Acute pericarditis	2.80	1.38	5.68	0.0%	1	10	28	70,249	5.82E-03
I31 - Other diseases of pericardium	1.64	1.32	2.04	0.3%	35	130	213	69,910	9.53E-06
I33 - Acute and subacute endocarditis	1.80	1.16	2.80	0.1%	12	30	54	70,192	1.21E-02
I38 - Endocarditis, valve unspecified	1.44	1.03	2.01	0.1%	20	57	82	70,129	4.18E-02

eTable 10 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
I40 - Acute myocarditis	12.25	4.60	32.63	0.1%	0	4	49	70,235	1.50E-09
I42 - Cardiomyopathy	1.31	1.17	1.47	1.0%	307	508	667	68,806	4.04E-06
I44 - Atrioventricular/left bundle-branch block	1.97	1.74	2.23	1.1%	108	380	750	69,050	4.93E-28
I45 - Other conduction disorders	3.01	2.65	3.42	1.4%	97	314	945	68,932	1.57E-70
I46 - Cardiac arrest	21.24	15.30	29.50	1.1%	24	37	786	69,441	7.26E-150
I47 - Paroxysmal tachycardia	2.12	1.86	2.41	1.0%	128	339	717	69,104	4.06E-31
I48 - Atrial fibrillation & flutter	2.38	2.24	2.53	5.5%	2,479	1,542	3,672	62,595	4.58E-191
I49 - Other cardiac arrhythmias	2.00	1.83	2.19	2.1%	215	726	1,455	67,892	8.72E-55
I50 - Heart failure	1.83	1.74	1.93	6.2%	3,719	2,178	3,983	60,408	6.86E-117
I51 - Complications/ill-defined heart disease	2.12	1.96	2.29	2.8%	253	922	1,954	67,159	2.29E-82
I63 - Cerebral infarction	1.13	1.04	1.23	1.7%	788	1,055	1,190	67,255	4.68E-03
I69 - Sequelae of cerebrovascular disease	1.36	1.25	1.48	1.8%	1,381	914	1,245	66,748	1.23E-12
I82 - Other venous embolism and thrombosis	1.74	1.58	1.93	1.5%	377	586	1,022	68,303	2.04E-27
I95 - Hypotension	3.35	3.10	3.62	3.9%	341	805	2,697	66,445	4.66E-224
J02 - Acute pharyngitis	1.56	1.44	1.70	1.9%	87	858	1,342	68,001	7.22E-25
J06 - Acute upper respiratory infections	2.97	2.80	3.16	6.1%	222	1,408	4,187	64,471	6.56E-302
J12 - Viral pneumonia, NEC	312.66	243.82	400.93	27.6%	52	62	19,385	50,789	0.00E+00
J13 - Pneumonia due to Streptococcus pneumoniae	3.56	2.06	6.16	0.1%	1	16	57	70,214	2.85E-06
J15 - Bacterial pneumonia, NEC	6.49	5.63	7.49	2.0%	57	215	1,396	68,620	5.64E-190
J16 - Pneumonia due to other organisms	11.32	7.71	16.62	0.5%	6	28	317	69,937	3.19E-54
J17 - Pneumonia in diseases, CE	7.67	3.35	17.53	0.1%	5	6	46	70,231	6.36E-08
J18 - Pneumonia, unspecified organism	10.24	9.69	10.83	20.6%	936	1,369	14,025	53,958	0.00E+00
J20 - Acute bronchitis	2.09	1.90	2.29	2.0%	114	681	1,421	68,072	1.89E-58
J21 - Acute bronchiolitis	2.10	1.55	2.83	0.2%	23	63	132	70,070	1.12E-06
J22 - Unspecified acute lower resp. infection	53.66	41.41	69.52	4.4%	4	58	3,112	67,114	0.00E+00
J39 - Other diseases of upper respiratory tract	2.30	1.67	3.17	0.2%	11	53	122	70,102	2.74E-07
J40 - Bronchitis, not specified acute/chronic	2.72	2.41	3.06	1.4%	38	369	1,002	68,879	2.54E-65
J43 - Emphysema	1.96	1.75	2.21	1.2%	229	422	829	68,808	1.69E-30
J44 - Other chronic obstructive pulm. disease	2.15	2.03	2.28	5.4%	3,536	1,629	3,499	61,624	3.68E-150
J45 - Asthma	2.33	2.19	2.49	4.4%	1,324	1,282	2,991	64,691	1.71E-150
J47 - Bronchiectasis	1.62	1.24	2.12	0.2%	32	87	141	70,028	4.48E-04
J68 - Respiratory conditions due to inhalation of chemicals ...	3.00	1.04	10.55	0.0%	1	5	15	70,267	4.14E-02
J69 - Pneumonitis due to solids & liquids	2.33	2.00	2.71	0.8%	102	243	566	69,377	1.03E-29
J80 - Acute respiratory distress syndrome	74.24	54.62	100.92	4.3%	13	41	3,044	67,190	0.00E+00
J81 - Pulmonary edema	2.26	2.00	2.54	1.3%	94	391	883	68,920	4.68E-43
J82 - Pulmonary eosinophilia, NEC	5.50	1.98	15.26	0.0%	5	4	22	70,257	8.56E-04
J84 - Other interstitial pulmonary diseases	2.52	2.16	2.93	0.8%	135	227	571	69,355	6.32E-34
J85 - Abscess of lung and mediastinum	2.42	1.25	4.68	0.0%	3	12	29	70,244	1.25E-02
J90 - Pleural effusion, NEC	2.91	2.67	3.17	3.0%	311	703	2,046	67,228	1.71E-144
J91 - Pleural effusion in conditions, CE	2.26	1.73	2.96	0.2%	31	76	172	70,009	1.61E-09
J92 - Pleural plaque	2.00	1.33	3.01	0.1%	0	34	68	70,186	1.09E-03
J93 - Pneumothorax & air leak	5.10	3.88	6.70	0.4%	9	61	311	69,907	3.95E-38
J95 - Procedural complications of resp. system	3.49	2.66	4.56	0.3%	17	68	237	69,966	6.61E-22
J96 - Respiratory failure, NEC	19.70	18.34	21.15	22.9%	1,454	792	15,600	52,442	0.00E+00
J98 - Other respiratory disorders	6.94	6.50	7.39	10.8%	361	1,069	7,414	61,444	0.00E+00
J99 - Respiratory disorders in diseases, CE	4.71	2.13	10.43	0.0%	2	7	33	70,246	7.72E-05
K21 - Gastro-esophageal reflux disease	1.17	1.12	1.23	5.9%	2,106	3,255	3,807	61,120	5.50E-11
K35 - Acute appendicitis	2.64	1.33	5.21	0.0%	2	11	29	70,246	7.19E-03
K56 - Paralytic ileus and intestinal obstruction without hernia	1.33	1.14	1.55	0.5%	81	288	382	69,537	3.27E-04
K59 - Other functional intestinal disorders	1.08	1.01	1.15	2.8%	762	1,777	1,917	65,832	2.22E-02
K72 - Hepatic failure, NEC	2.54	2.01	3.20	0.4%	58	99	251	69,880	6.96E-16

eTable 10 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
K75 - Other inflammatory liver diseases	1.48	1.12	1.95	0.2%	44	82	121	70,041	7.65E-03
K82 - Other diseases of gallbladder	1.46	1.17	1.83	0.3%	14	128	187	69,959	1.08E-03
K85 - Acute pancreatitis	1.63	1.24	2.16	0.2%	20	79	129	70,060	6.80E-04
K92 - Other diseases of digestive system	1.68	1.52	1.86	1.4%	193	573	963	68,559	3.22E-23
L89 - Pressure ulcer	1.93	1.76	2.10	2.1%	743	754	1,453	67,338	6.19E-50
M06 - Other rheumatoid arthritis	1.27	1.10	1.46	0.6%	292	329	417	69,250	1.45E-03
M10 - Gout	1.21	1.08	1.35	1.0%	351	591	714	68,632	7.32E-04
M32 - Systemic lupus erythematosus (SLE)	1.53	1.18	1.98	0.2%	112	95	145	69,936	1.56E-03
M62 - Other disorders of muscle	1.10	1.05	1.15	6.6%	3,397	3,800	4,182	58,909	2.00E-05
N07 - Hereditary nephropathy, NEC	Inf			0.0%	0	0	10	70,278	1.95E-03
N17 - Acute kidney failure	6.56	6.18	6.95	12.2%	1,079	1,268	8,312	59,629	0.00E+00
N18 - Chronic kidney disease (CKD)	1.97	1.87	2.07	6.9%	5,104	2,191	4,317	58,676	6.48E-153
N19 - Unspecified kidney failure	2.09	1.75	2.50	0.5%	36	179	375	69,698	1.18E-16
N28 - Other disorders of kidney and ureter, NEC	1.13	1.03	1.24	1.3%	97	792	894	68,505	1.39E-02
N30 - Cystitis	1.33	1.18	1.49	0.9%	93	490	651	69,054	2.17E-06
N39 - Other disorders of urinary system	1.26	1.20	1.32	5.0%	1,377	2,646	3,331	62,934	8.96E-19
N40 - Benign prostatic hyperplasia	1.19	1.11	1.28	2.3%	933	1,330	1,587	66,438	2.14E-06
O07 - Failed attempted termination of pregnancy	8.00	1.88	71.72	0.0%	0	2	16	70,270	1.31E-03
O13 - Gestational [pregnancy-induced] hypertension without ...	4.80	1.89	12.16	0.0%	0	5	24	70,259	8.30E-04
O14 - Pre-eclampsia	4.43	1.99	9.84	0.0%	0	7	31	70,250	1.91E-04
O34 - Maternal care for abnormality of pelvic organs	1.71	1.12	2.60	0.1%	33	34	58	70,163	1.65E-02
O41 - Other disorders of amniotic fluid and membranes	5.83	2.52	13.53	0.0%	1	6	35	70,246	1.23E-05
O42 - Premature rupture of membranes	3.83	1.60	9.16	0.0%	0	6	23	70,259	2.97E-03
O43 - Placental disorders	5.80	2.32	14.51	0.0%	3	5	29	70,251	8.00E-05
O48 - Late pregnancy	6.33	2.74	14.62	0.1%	0	6	38	70,244	2.96E-06
O61 - Failed induction of labor	Inf			0.0%	0	0	6	70,282	3.13E-02
O62 - Abnormalities of forces of labor	5.00	2.27	11.03	0.0%	0	7	35	70,246	3.10E-05
O66 - Other obstructed labor	6.00	1.34	55.20	0.0%	0	2	12	70,274	1.29E-02
O69 - Labor and delivery complicated by umbilical ...	4.86	2.20	10.73	0.0%	1	7	34	70,246	4.90E-05
O70 - Perineal laceration during delivery	5.78	2.89	11.56	0.1%	0	9	52	70,227	7.55E-08
O72 - Postpartum hemorrhage	4.67	1.30	25.33	0.0%	0	3	14	70,271	1.27E-02
O75 - Other complications of labor and delivery, NEC	18.00	2.84	749.96	0.0%	0	1	18	70,269	7.63E-05
O76 - Abnormality in fetal heart rate and rhythm ...	8.00	3.72	17.22	0.1%	2	7	56	70,223	1.47E-09
O77 - Other fetal stress complicating labor and delivery	12.50	3.28	47.65	0.0%	0	2	25	70,261	2.30E-05
O80 - Encounter for full-term uncomplicated delivery	4.60	2.65	7.98	0.1%	0	15	69	70,204	7.35E-09
O82 - Encounter for cesarean delivery without indication	7.50	2.76	20.41	0.0%	0	4	30	70,254	1.81E-05
O86 - Other puerperal infections	11.50	3.01	44.00	0.0%	0	2	23	70,263	6.33E-05
O90 - Complications of the puerperium, NEC	13.50	3.55	51.30	0.0%	2	2	27	70,257	8.32E-06
O98 - Maternal infectious diseases	29.45	16.29	53.25	0.5%	9	11	324	69,944	3.72E-65
O99 - Other maternal diseases classifiable elsewhere but ...	1.77	1.41	2.23	0.3%	134	113	200	69,841	1.17E-06
Q90 - Down syndrome	4.64	2.44	8.80	0.1%	47	11	51	70,179	7.31E-07
R00 - Abnormalities of heart beat	2.65	2.49	2.82	5.6%	409	1,438	3,810	64,631	6.01E-235
R03 - Abnormal blood-pressure reading, without diagnosis	1.17	1.02	1.34	0.6%	37	388	453	69,410	2.73E-02
R04 - Hemorrhage from respiratory passages	1.82	1.56	2.12	0.7%	24	256	465	69,543	9.46E-15
R05 - Cough	6.09	5.84	6.36	22.4%	1,268	2,450	14,920	51,650	0.00E+00
R06 - Abnormalities of breathing	7.03	6.74	7.33	26.9%	2,200	2,506	17,609	47,973	0.00E+00
R07 - Pain in throat & chest	2.06	1.96	2.16	7.3%	650	2,387	4,909	62,342	1.89E-191
R09 - Other s/s circulatory/respiratory system	6.48	6.14	6.85	14.3%	635	1,501	9,732	58,420	0.00E+00
R11 - Nausea & vomiting	1.92	1.81	2.05	4.2%	283	1,479	2,846	65,680	7.92E-96
R13 - Aphagia and dysphagia	1.52	1.43	1.61	3.8%	1,554	1,693	2,569	64,472	5.81E-41
R14 - Flatulence and related conditions	1.28	1.11	1.48	0.6%	32	325	417	69,514	8.36E-04

eTable 10 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
R19 - Other s/s digestive system & abdomen	2.56	2.40	2.74	4.5%	232	1,212	3,106	65,738	1.72E-182
R34 - Anuria & oliguria	6.43	4.33	9.55	0.3%	2	28	180	70,078	1.19E-25
R40 - Somnolence, stupor & coma	2.92	2.63	3.24	2.0%	103	470	1,373	68,342	5.22E-98
R41 - Other s/s involving cognitive functions	2.45	2.33	2.57	7.9%	1,413	2,165	5,303	61,407	1.59E-288
R43 - Disturbances of smell & taste	32.62	18.91	56.25	0.6%	2	13	424	69,849	1.20E-85
R45 - Symptoms and signs involving emotional state	1.43	1.28	1.61	1.0%	194	500	716	68,878	7.02E-10
R47 - Speech disturbances, NEC	1.15	1.01	1.31	0.7%	243	423	488	69,134	3.40E-02
R50 - Fever of other & unknown origin	12.23	11.55	12.96	22.3%	608	1,250	15,290	53,140	0.00E+00
R51 - Headache	1.81	1.68	1.95	2.7%	133	1,021	1,846	67,288	1.94E-53
R52 - Pain, unspecified	1.55	1.41	1.70	1.6%	225	731	1,134	68,198	1.29E-20
R53 - Malaise & fatigue	2.48	2.38	2.58	13.3%	1,946	3,487	8,635	56,220	0.00E+00
R54 - Age-related physical debility	1.47	1.26	1.71	0.6%	133	275	404	69,476	9.01E-07
R55 - Syncope and collapse	1.54	1.40	1.69	1.6%	190	734	1,129	68,235	6.96E-20
R57 - Shock, NEC	9.31	7.60	11.40	1.4%	17	103	959	69,209	1.02E-151
R61 - Generalized hyperhidrosis	1.64	1.18	2.29	0.1%	3	56	92	70,137	4.01E-03
R62 - Lack of expected normal development	2.79	2.45	3.18	1.2%	254	305	850	68,879	1.14E-57
R63 - Symptoms and signs concerning food and fluid intake	1.78	1.64	1.92	2.6%	375	991	1,761	67,161	1.18E-48
R64 - Cachexia	2.44	1.84	3.23	0.2%	31	68	166	70,023	2.28E-10
R65 - S/s of systemic inflammation/infection	9.39	8.43	10.45	4.9%	131	367	3,445	66,345	0.00E+00
R68 - Other general s/s	3.80	3.56	4.07	6.1%	501	1,093	4,157	64,537	0.00E+00
R74 - Abnormal serum enzyme levels	3.63	3.28	4.03	2.4%	85	458	1,664	68,081	7.87E-151
R77 - Other abnormalities of plasma proteins	1.47	1.12	1.93	0.2%	11	87	128	70,062	6.37E-03
R78 - Findings of drugs & other substances	2.53	2.23	2.87	1.2%	96	342	866	68,984	3.58E-51
R79 - Other abnormal findings of blood	2.49	2.33	2.67	4.3%	245	1,187	2,959	65,897	1.55E-166
R91 - Abnormal findings on imaging of lung	7.29	6.87	7.74	13.1%	616	1,227	8,945	59,500	0.00E+00
R93 - Abnormal findings on diagnostic imaging of ...	1.22	1.09	1.37	0.9%	30	512	625	69,121	8.95E-04
R94 - Abnormal results of function studies	2.26	2.12	2.41	4.7%	250	1,420	3,209	65,409	3.25E-152
T17 - Foreign body in respiratory tract	1.59	1.16	2.19	0.1%	8	61	97	70,122	5.36E-03
T36 - Poisoning by ... systemic antibiotics ...	1.63	1.05	2.52	0.1%	1	32	52	70,203	3.82E-02
T37 - Poisoning by ... other anti-infectives ...	5.00	2.14	11.71	0.0%	0	6	30	70,252	1.26E-04
T38 - Adverse effects hormones, NEC	3.30	2.54	4.27	0.3%	9	74	244	69,961	2.62E-21
T40 - Poisoning by ... narcotics ...	1.90	1.39	2.59	0.2%	1	60	114	70,113	5.87E-05
T50 - Poisoning by ... diuretics ...	1.38	1.10	1.72	0.3%	13	133	183	69,959	5.84E-03
T68 - Hypothermia	2.35	1.45	3.81	0.1%	5	23	54	70,206	6.29E-04
T73 - Effects of other deprivation	3.20	1.12	11.17	0.0%	1	5	16	70,266	2.66E-02
T79 - Certain early complications of trauma, NEC	3.00	1.96	4.59	0.1%	10	28	84	70,166	2.03E-07
T85 - Complications of other internal prosthetic devices ...	1.32	1.01	1.73	0.2%	9	93	123	70,063	4.85E-02
T86 - Complications of transplanted organs and tissue	1.40	1.05	1.87	0.2%	57	78	109	70,044	2.82E-02
Y71 - Cardiovascular devices associated with adverse incidents	3.91	2.04	7.49	0.1%	1	11	43	70,233	2.46E-05
Y82 - Other and unspecified medical devices ...	9.00	1.25	394.48	0.0%	0	1	9	70,278	2.15E-02
Y84 - Other medical procedures as the cause of abnormal ...	3.00	1.93	4.66	0.1%	2	26	78	70,182	5.70E-07
Y95 - Nosocomial condition	2.44	1.54	3.87	0.1%	2	25	61	70,200	1.61E-04
Z09 - Encounter for follow-up examination after ...	2.16	1.91	2.45	1.1%	25	362	782	69,119	3.04E-35
Z11 - Encounter for screening for infectious and parasitic diseases	1.28	1.17	1.41	1.5%	53	805	1,033	68,397	1.19E-07
Z16 - Resistance to antimicrobial drugs	1.45	1.18	1.77	0.3%	61	157	227	69,843	4.30E-04
Z20 - Exposure to communicable diseases	34.98	31.44	38.92	17.3%	114	346	12,103	57,725	0.00E+00
Z21 - Asymptomatic human immunodeficiency ...	2.43	1.77	3.33	0.2%	41	54	131	70,062	2.30E-08
Z29 - Other prophylactic measures	2.90	2.28	3.69	0.4%	26	89	258	69,915	1.90E-19
Z37 - Outcome of delivery	9.20	6.11	13.86	0.3%	2	25	230	70,031	2.26E-37
Z39 - Encounter for maternal postpartum care and examination	2.08	1.42	3.04	0.1%	7	39	81	70,161	1.82E-04
Z3A - Weeks of gestation	1.87	1.51	2.32	0.3%	307	125	234	69,622	1.20E-08

eTable 10 / Code	OR (Est.)	OR (LI)	OR (UI)	Risk	A	B	C	D	P-value
Z43 - Encounter for attention to artificial openings	1.21	1.03	1.42	0.5%	153	270	327	69,538	2.19E-02
Z45 - Management of implanted device	3.53	3.22	3.88	2.9%	135	562	1,986	67,605	7.61E-175
Z46 - Fitting/adjustment of other devices	6.30	5.68	6.99	3.7%	101	415	2,616	67,156	0.00E+00
Z51 - Encounter for other medical care	2.67	2.48	2.87	3.8%	398	985	2,627	66,278	3.75E-164
Z60 - Problems of social environment	3.09	2.29	4.17	0.2%	11	56	173	70,048	1.78E-14
Z65 - Problems related to other psychosocial circumstances	1.95	1.31	2.89	0.1%	7	37	72	70,172	1.13E-03
Z66 - Do not resuscitate	11.55	9.89	13.50	2.8%	93	172	1,987	68,036	0.00E+00
Z71 - Persons encountering health services for ...	1.76	1.64	1.90	2.9%	225	1,141	2,011	66,911	4.85E-54
Z74 - Problems of provider dependency	2.47	2.34	2.60	7.3%	1,500	1,990	4,908	61,890	3.15E-270
Z78 - Other specified health status	2.22	1.99	2.48	1.5%	96	460	1,021	68,711	5.71E-48
Z79 - Long term (current) drug therapy	1.39	1.34	1.45	10.1%	2,928	4,540	6,331	56,489	4.61E-66
Z82 - Family history of certain disabilities and chronic ...	1.38	1.20	1.59	0.6%	32	327	451	69,478	1.03E-05
Z85 - Personal history of malignant neoplasm	1.44	1.32	1.58	1.7%	373	823	1,186	67,906	6.67E-16
Z86 - Personal history of certain other diseases	1.65	1.56	1.75	4.2%	839	1,736	2,866	64,847	3.43E-62
Z87 - Personal history of other conditions	1.62	1.53	1.71	4.9%	868	2,045	3,311	64,064	6.10E-67
Z88 - Allergy status to drugs, medicaments ...	1.85	1.68	2.04	1.7%	188	625	1,155	68,320	4.60E-36
Z90 - Acquired absence of organs, NEC	1.56	1.41	1.73	1.3%	177	585	914	68,612	2.42E-17
Z91 - Personal risk factors, NEC	1.12	1.05	1.19	3.1%	858	1,894	2,118	65,418	4.30E-04
Z92 - Personal history of medical treatment	1.55	1.30	1.86	0.4%	38	193	300	69,757	1.81E-06
Z93 - Artificial opening status	1.33	1.15	1.53	0.6%	344	333	443	69,168	9.12E-05
Z94 - Transplanted organ and tissue status	1.77	1.43	2.19	0.3%	301	135	239	69,613	1.00E-07
Z95 - Presence of cardiac and vascular implants and grafts	1.50	1.39	1.61	2.5%	910	1,135	1,700	66,543	3.23E-26
Z97 - Presence of other devices	2.60	2.04	3.33	0.3%	12	88	229	69,959	3.74E-15
Z99 - Dependence on devices, NEC	4.38	4.11	4.67	7.7%	1,798	1,187	5,201	62,102	0.00E+00