

# Dynamic CO-CIN report to SAGE and NERVTAG

Dynamic content updated: 2020-06-18 06:09:56.

## Executive summary

The COVID-19 Clinical Information Network (CO-CIN) collated clinical information from the usual health care records of people of all ages admitted to hospital in the UK.

Up to 10th March people with positive swabs were admitted to hospital as part of the containment strategy. Since 10th March, admission is mostly based upon need for treatment of COVID-19 disease. The great majority of cases in the community do not require hospital admission.

In total up until 18 June 2020, CO-CIN has recruited **62008 patients** with confirmed Coronavirus (Figure 1).

The CO-CIN dataset represents 20.7% (62008/299,251) of cases of confirmed Coronavirus cases in the UK, per the PHE daily reports (last updated 9am on 17 June).

Patient data is collected and uploaded from start of admission, however a complete patient data set is not available until the episode of care is complete. This causes a predictable lag in available data influenced by the duration of admission which is greatest for the sickest patients.

The geographical location of our patients can be seen in Figure 2, of these 999 had travelled abroad recently, and 7228 reported visiting or working in a hospital where COVID-19 cases are being managed.

The median age is 74 (range: 0-106), Male/Female 31814/24164.

The most common symptoms were cough (63%), fever (62%) and shortness of breath (62%) (Figure 3A). 2817/50807 (6%) of patients have reported no symptoms. Comorbidity can be seen in Figure 3B. The most common comorbidities were chronic cardiac disease (31%), chronic pulmonary disease (17%) and chronic kidney disease (16%). 10869/50956 (21%) of patients have reported no co morbidity. 343/4559 (8%) of women were recorded as being pregnant.

For patients not already in hospital, the median time from onset of symptoms to presentation at hospital was 4 days (range: 0 - 368894 days).

The median length of hospital stay was 9 days (interquartile range: 4-17, n = 44889). 6750/41924 (16%) patients required high-flow oxygen after day 1 of treatment.

Currently 15910 patient(s) have died and 7306 required ICU. 27835 have been discharged home.

Interpretation: The dataset is increasingly more representative of the burden of disease requiring hospitalisation and captures the early exponential rise of disease incidence that is now increasingly driven by domestic transmission events in the community.

Furthermore, we can now see 'hot spots' of disease incidence that largely reflect areas of high population density (most notably London) with a few exceptions to this. There are more men than women, consistent with reports from other countries. The proportion of pregnant women affected is broadly in line with the proportion of pregnant women in the general population.

The commonest comorbidity is chronic cardiac disease, reflecting patterns seen in other countries, although nearly a quarter of patients admitted do not have underlying comorbid disease.

Patients documented as being admitted to ICU are mainly 50-75 years old. When interpreting admission to ICU it is important to remember that we are currently unable to capture treatment limiting decisions regarding level of care.

Prof Calum Semple, Professor in Child Health and Outbreak Medicine, University of Liverpool.

Dr Annemarie Docherty, Academic Consultant Intensive Care University of Edinburgh.

Dr Chris Green, Academic Consultant Infectious Disease University of Birmingham.

Prof Ewen Harrison, Director Centre for Medical Informatics, Usher Institute, University of Edinburgh (analysis).

Professor Tom Solomon, Director HPRU Emerging and Zoonotic Infection.

ISARIC Investigators (Prof. Peter Horby, Prof. Peter Openshaw, Dr Gail Carson, and Dr Kenneth Baillie).

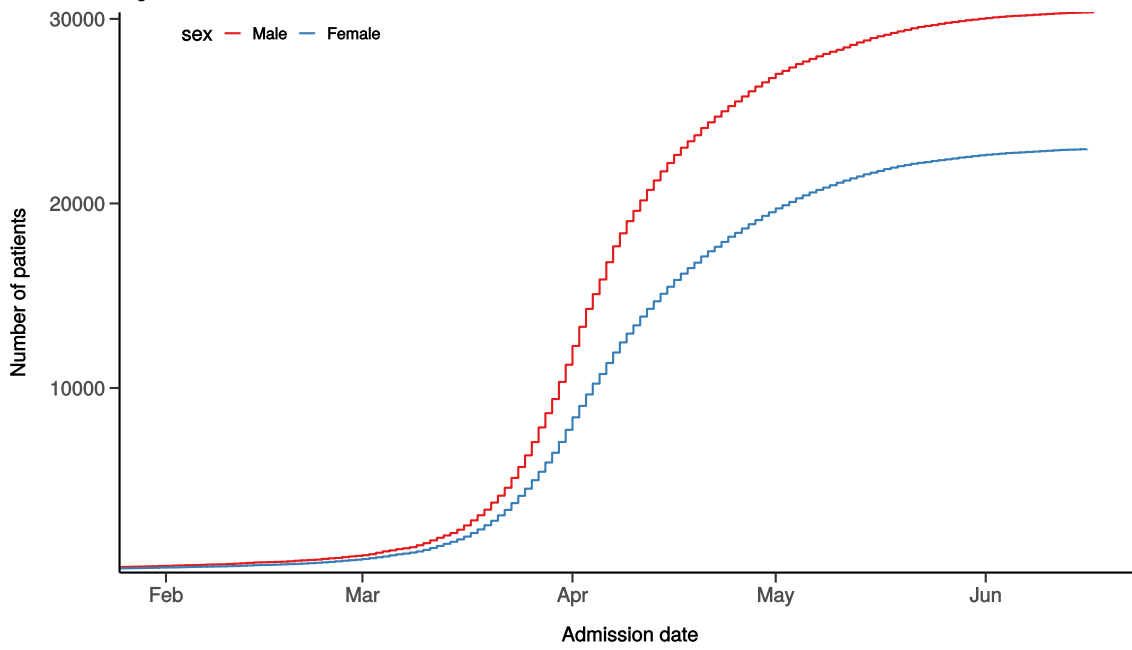
Analytics: Lisa Norman, Riinu Pius, Thomas Drake, Cameron Fairfield, Stephen Knight, Kenneth McLean, Katie Shaw.

## Admission

### Figure 1

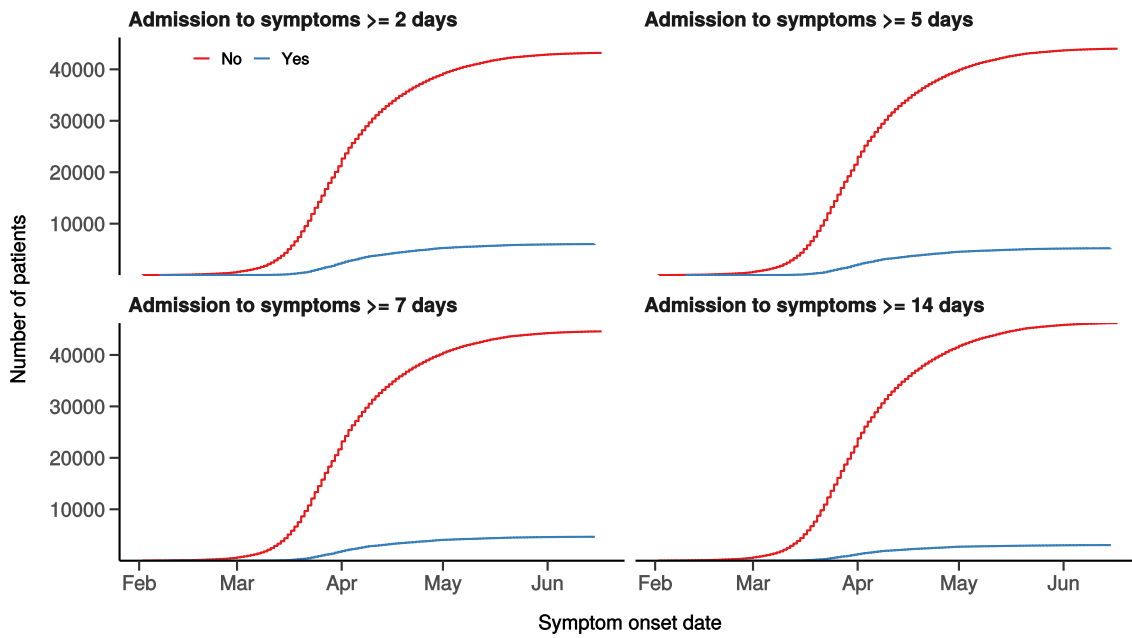
### Hospital admission with COVID-19 by sex

Figure 1A



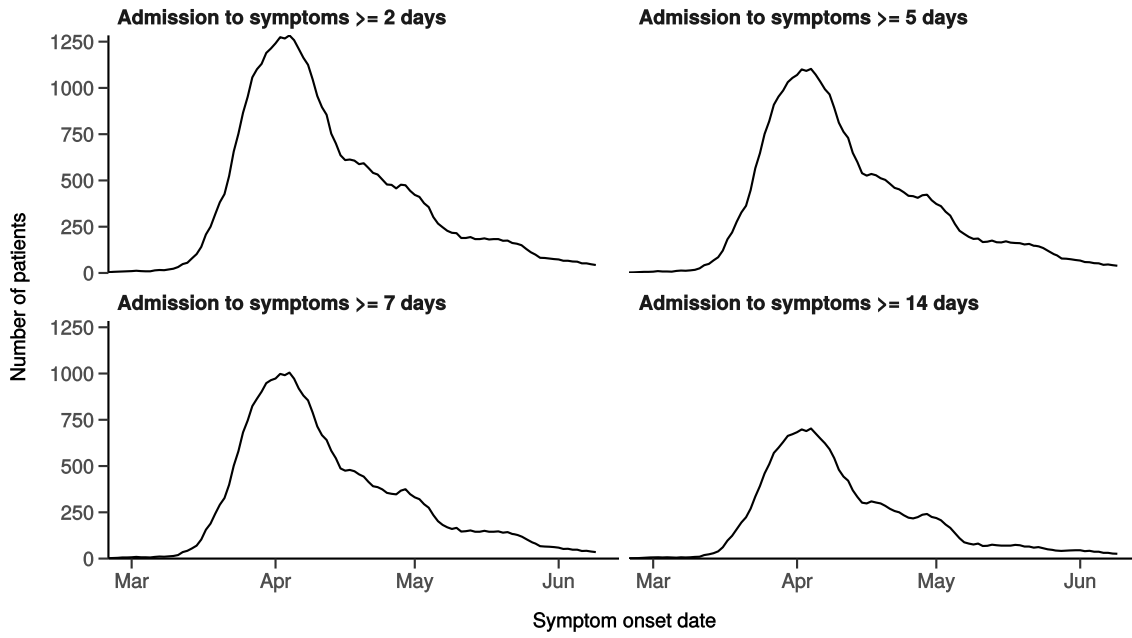
### Number with symptom onset occurring after admission to hospital

Figure 1B



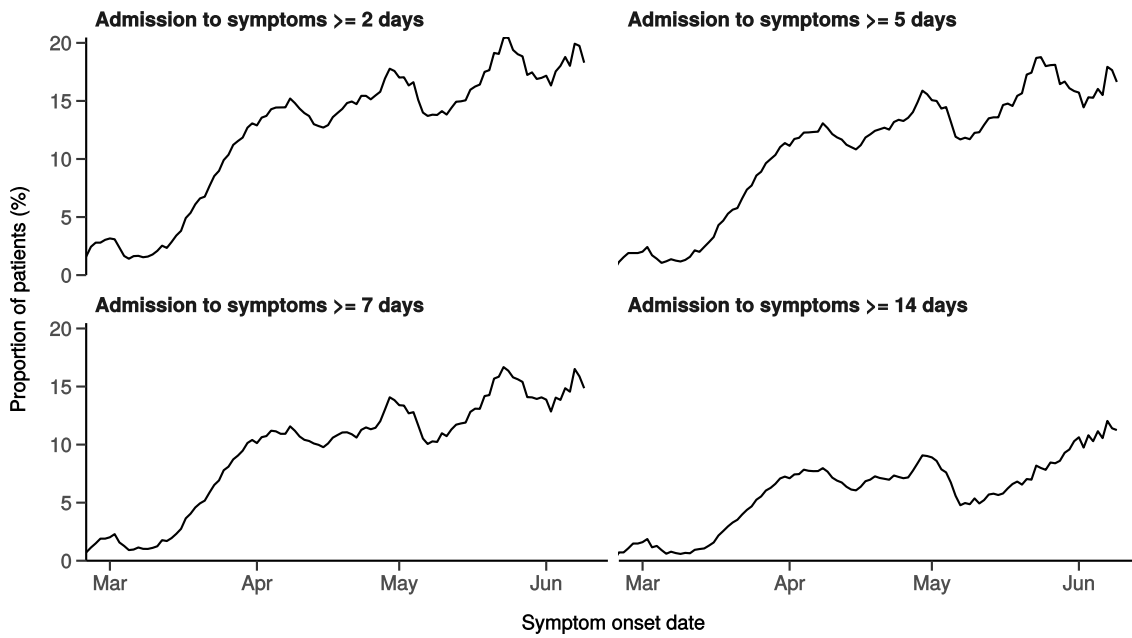
### Number with symptom onset occurring after hospital admission

Figure 1C - 7-day rolling count. n = 49250



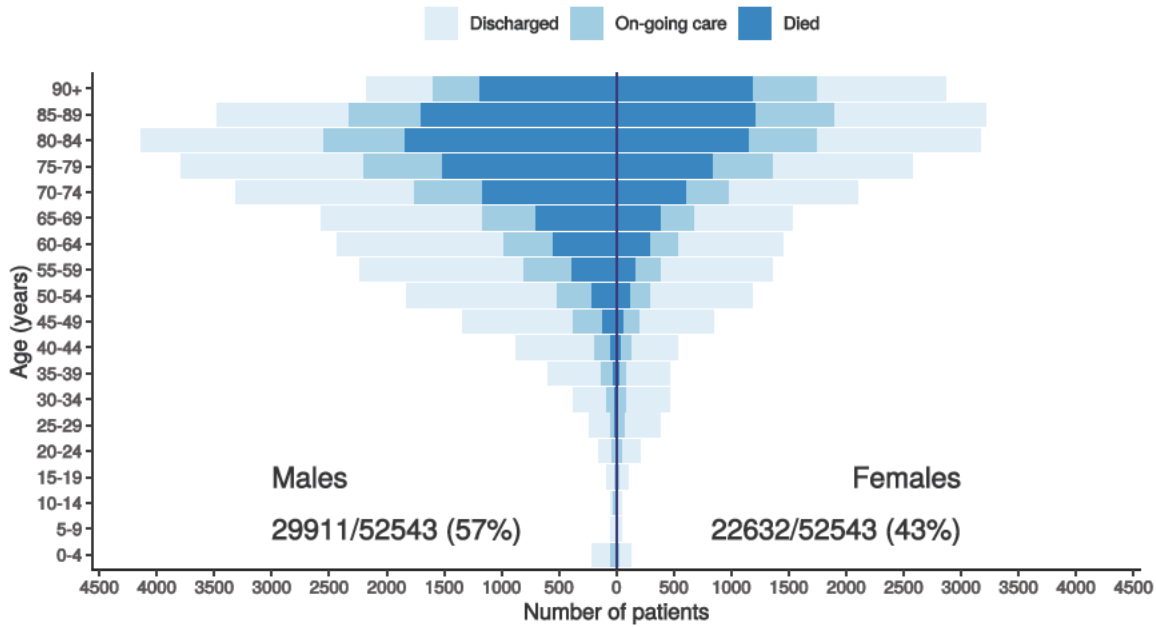
### Proportion with symptom onset occurring after hospital admission

Figure 1D - 7-day rolling percentage. n = 49250



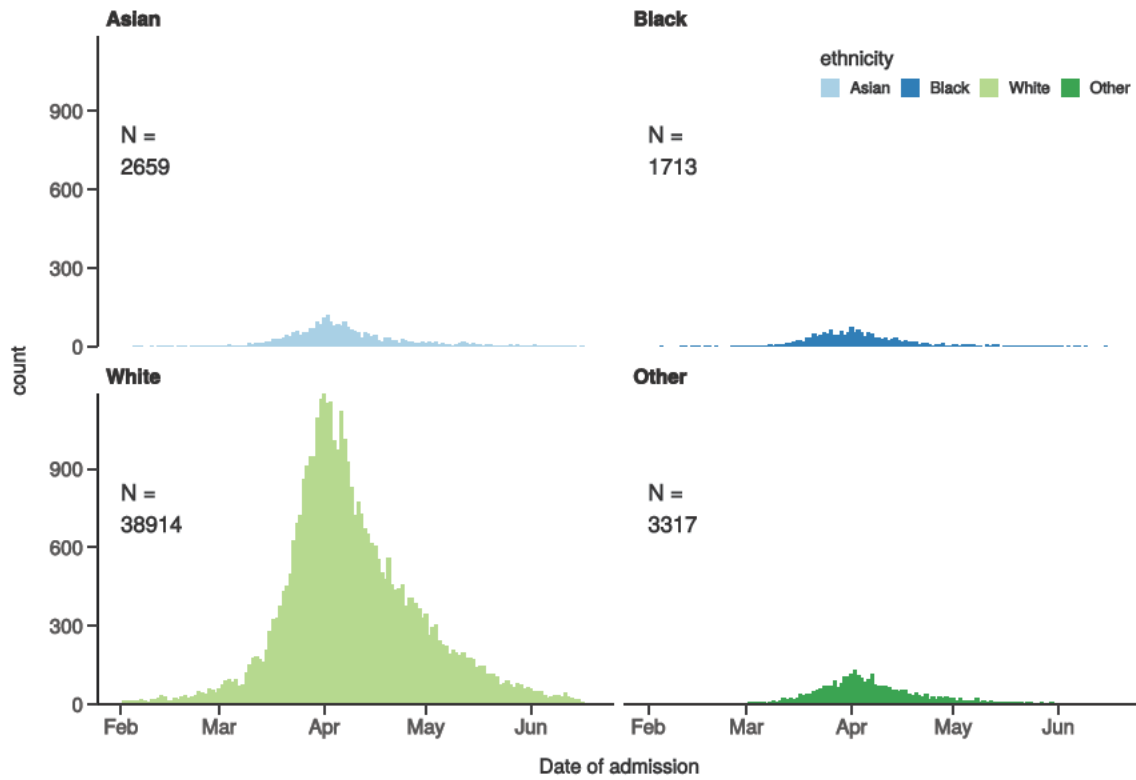
## Patients with outcome stratified by age, and sex

Figure 1E



## Hospital admission with COVID-19 by ethnicity

Figure 1F

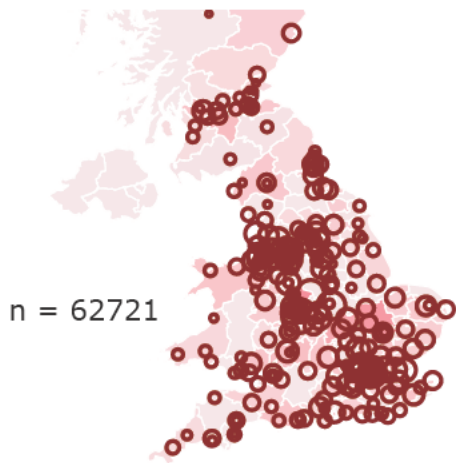


## Location by CCG / Healthboard

Figure 2

Click and drag on map to zoom into area. Reset via toolbar at top of map.





## Symptoms and comorbidity

Figure 3A

Symptoms on presentation to hospital (% patients, n = 50561) Comorbidity (% patients, n = 50686)

Figure 3A

Figure 3B

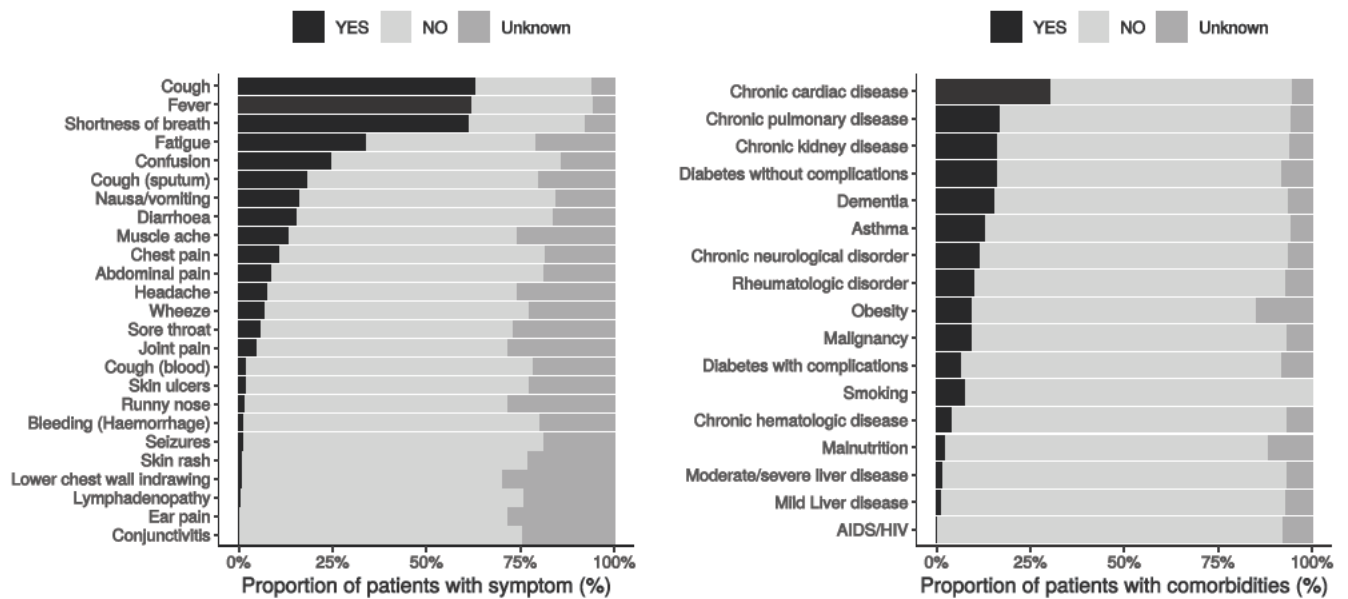
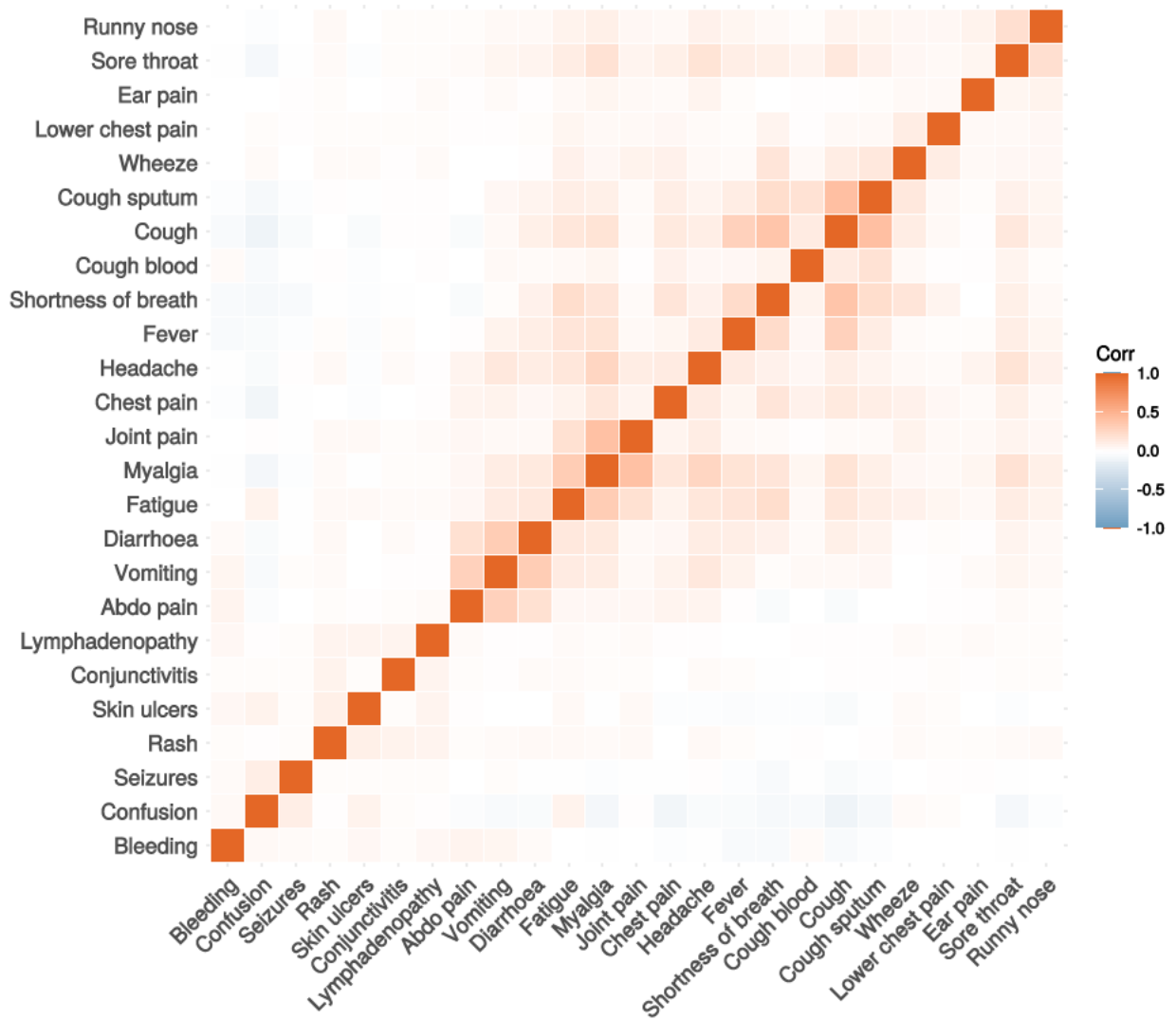


Figure 3C

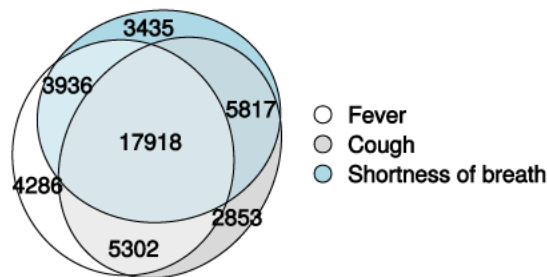
Correlation of symptoms in all pages. Note clusters, top right to bottom left, flu-like, coryzal, abdominal, respiratory, neurocutaneous.



### Symptoms (diagnostic criteria)

Figure 4A

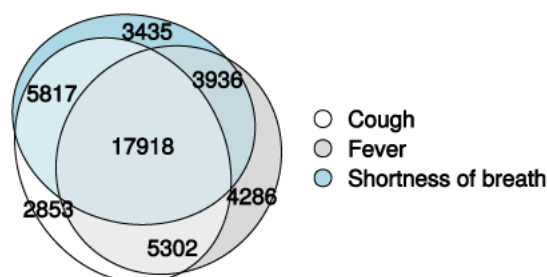
n = 50561



### Symptoms (most common)

Figure 4B

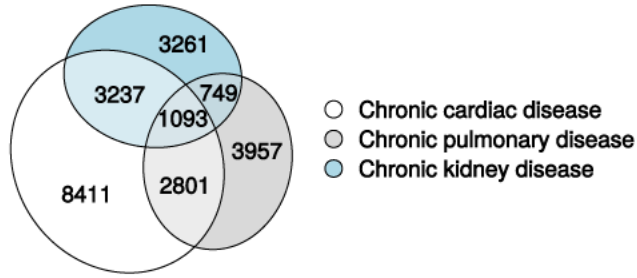
n = 50561



### Comorbidity (most common)

Figure 4C

n = 50686



## Medication prior to illness

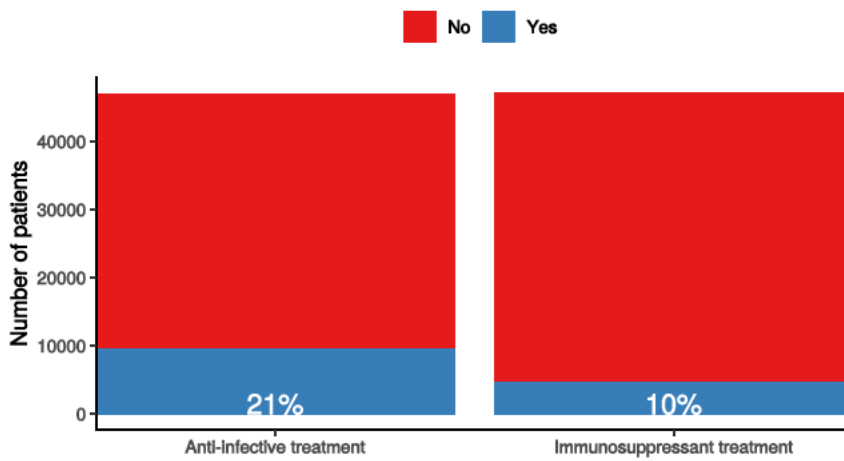
Figure 5

## Preadmission treatment

Figure 5

### Pre-admission treatment

Anti-infectives for illness episode (left) immunosuppressants including oral (not



## Patient flow

Figure 6A - All patients

N = 52814

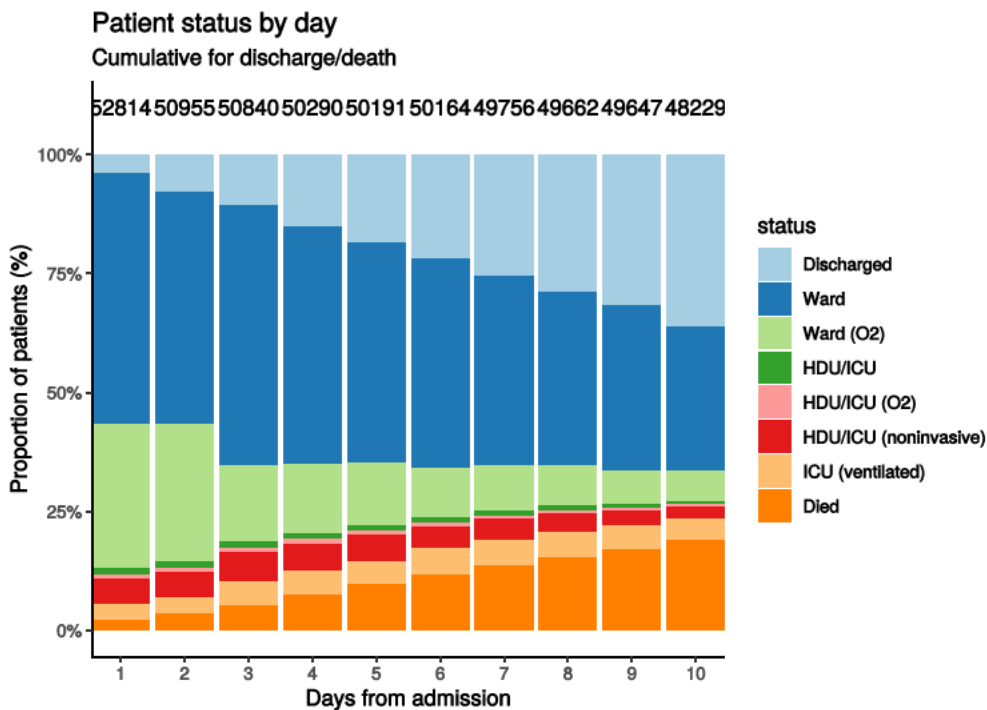
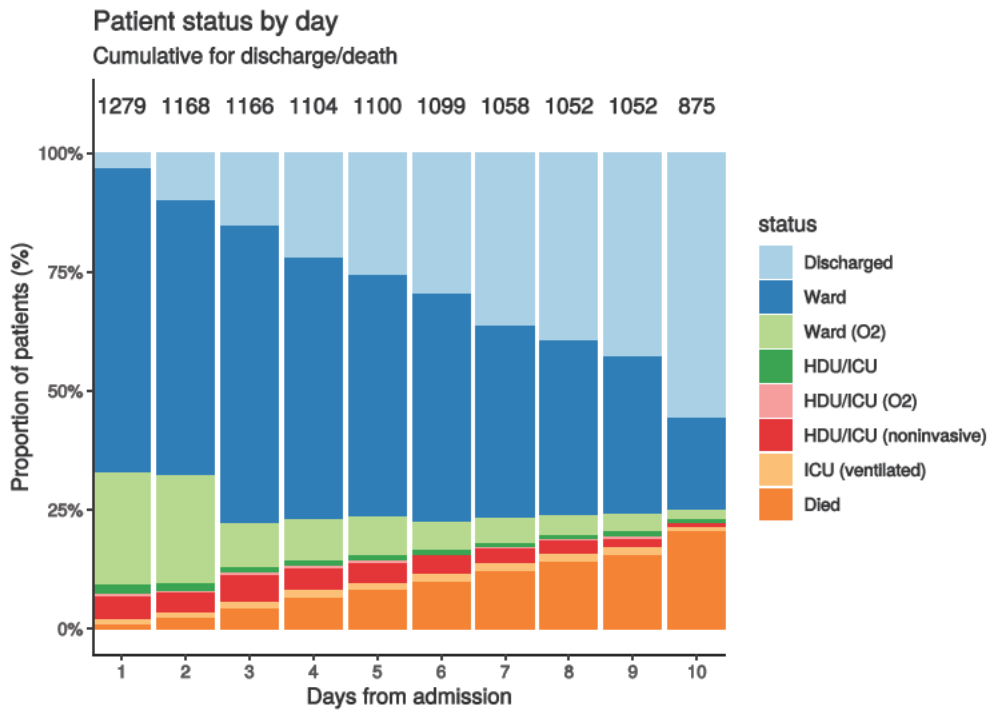


Figure 6B - Patients admitted  $\geq 14$  days and  $\leq 28$  days ago

N = 1279



## Oxygen requirement

Figure 7A - All patients

N = 49743

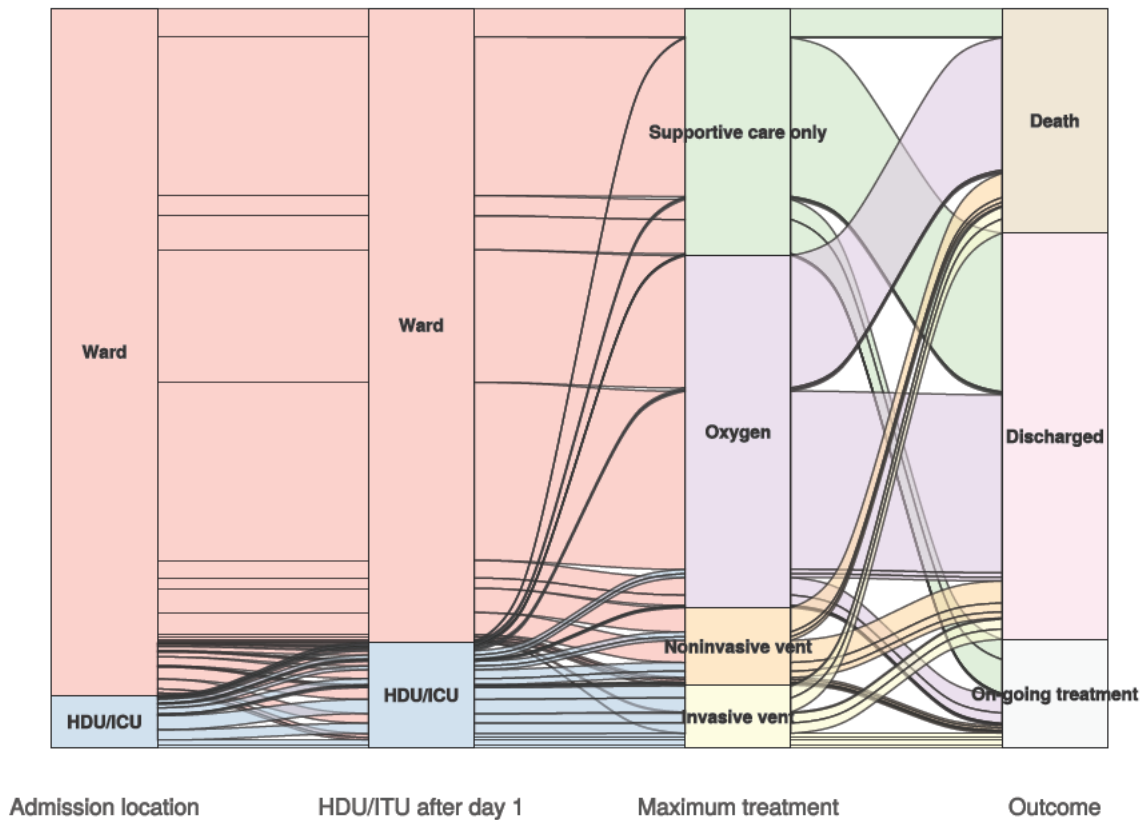
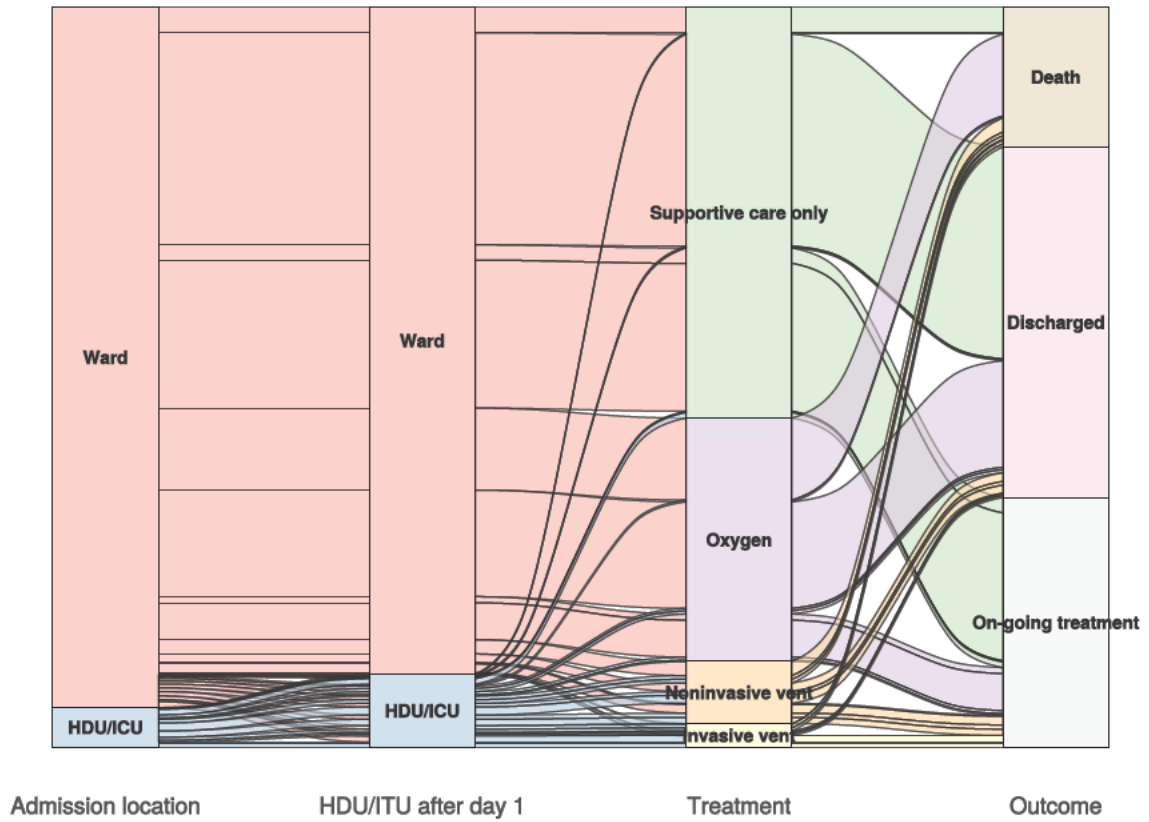


Figure 7B - Patients admitted  $\geq 14$  days and  $\leq 28$  days ago

N = 1244



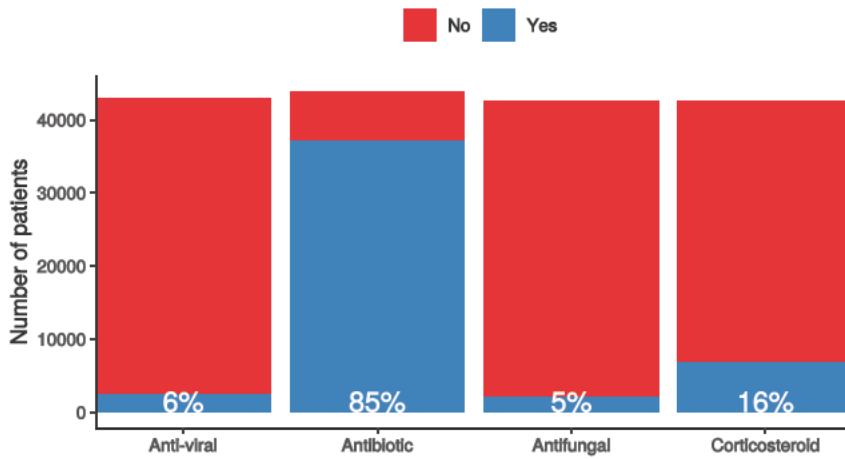


## In-hospital medical treatment

Figure 8

### In-hospital treatment

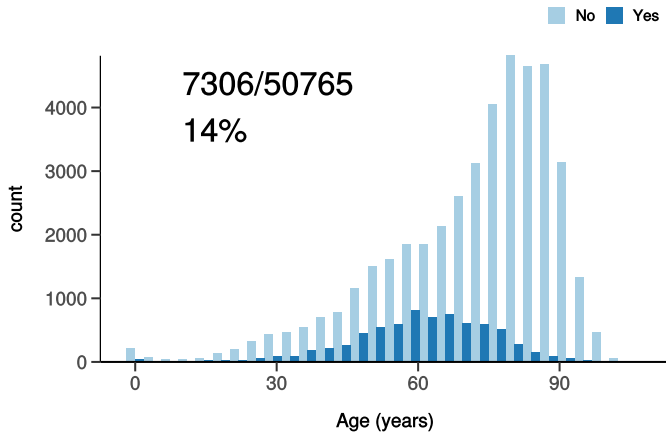
Anti-virals, antibiotics, corticosteroids, and anti-fungals for patients who have cc



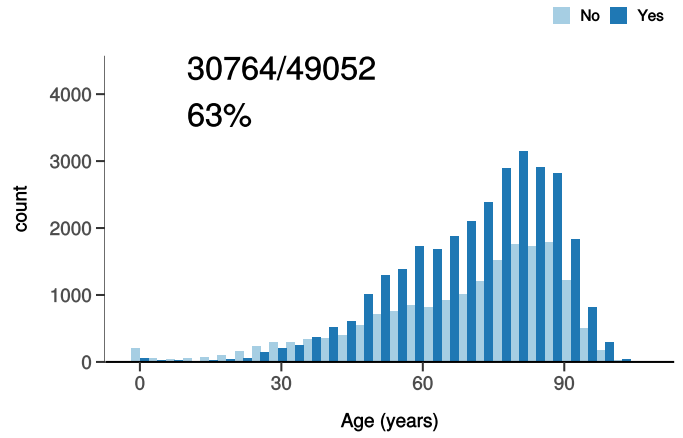
## Treatment

Figure 9

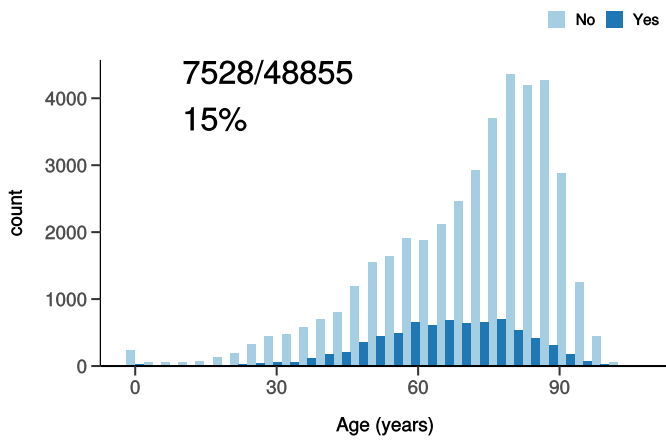
ICU/HDU admission  
Figure 10A



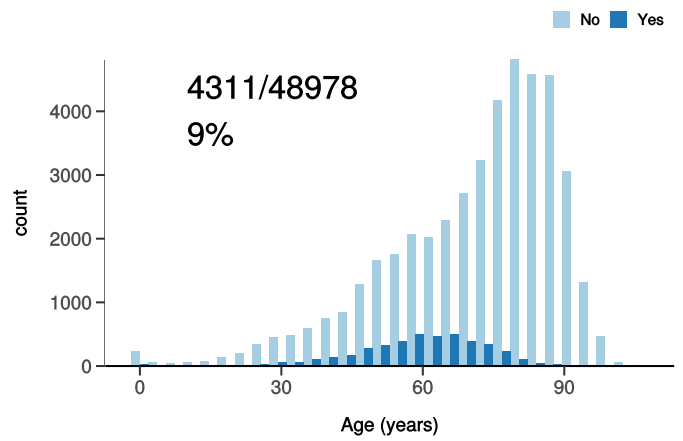
High flow oxygen  
Figure 10B



Noninvasive ventilation  
Figure 10C



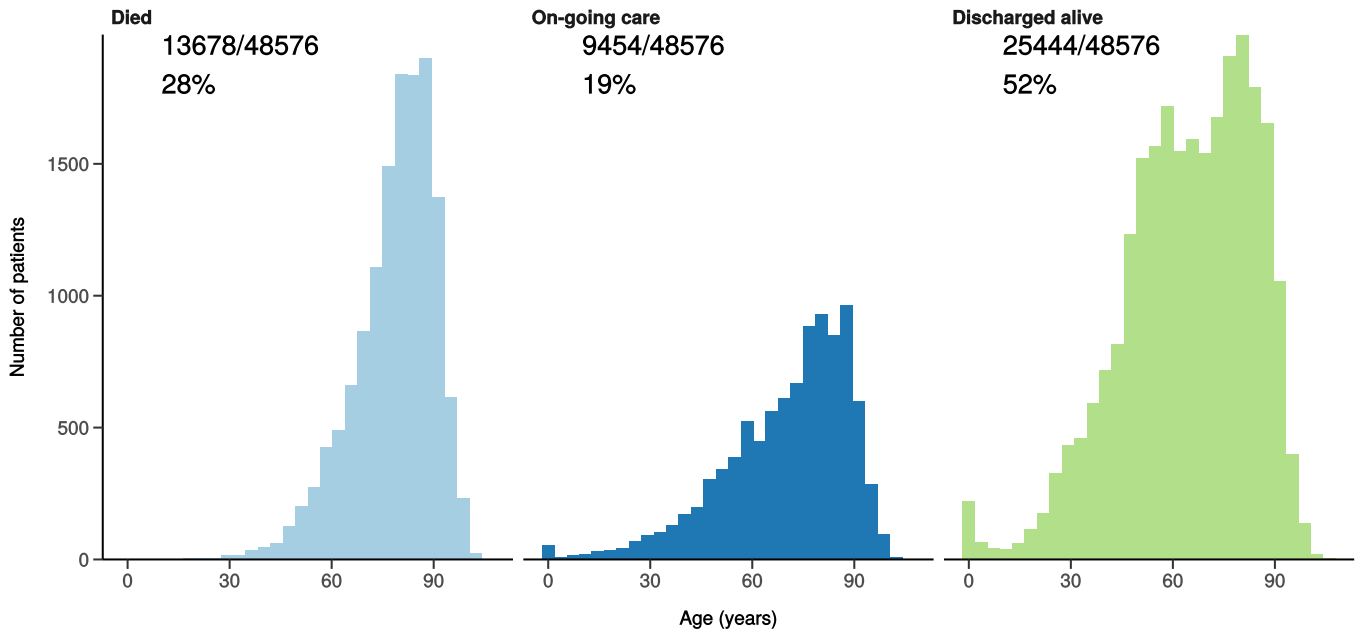
Invasive ventilation  
Figure 10D



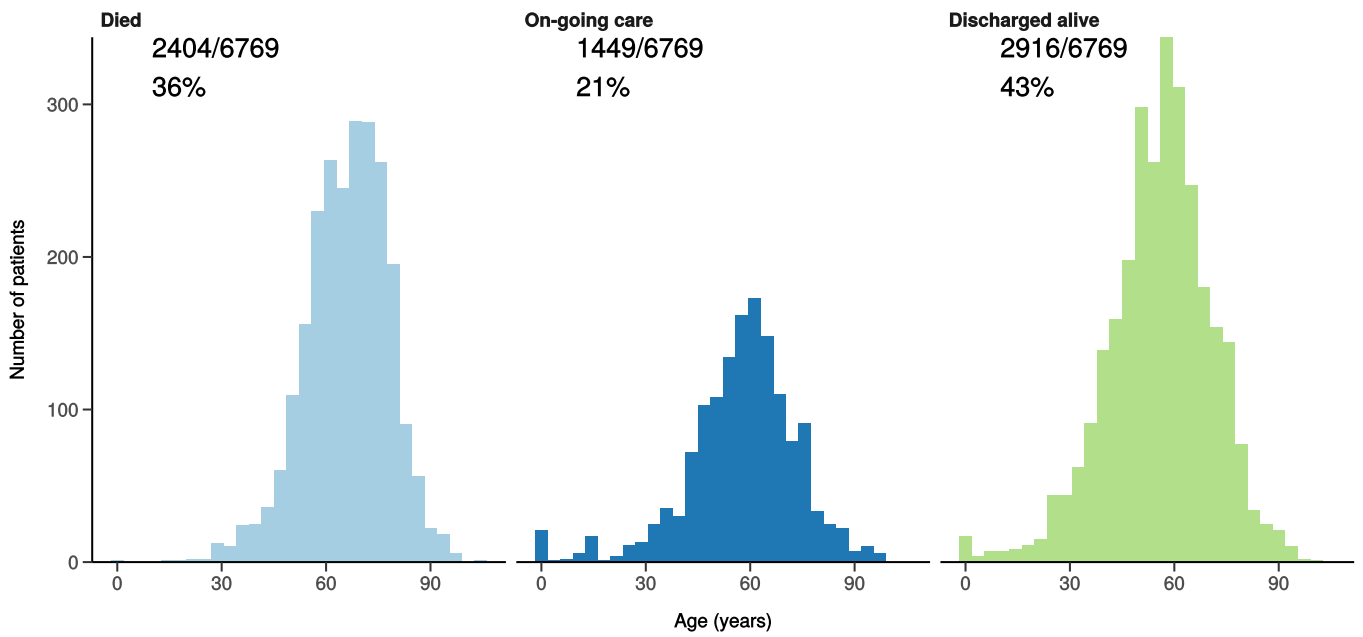
## Status of patients admitted $\geq 14$ days from today

Figure 10

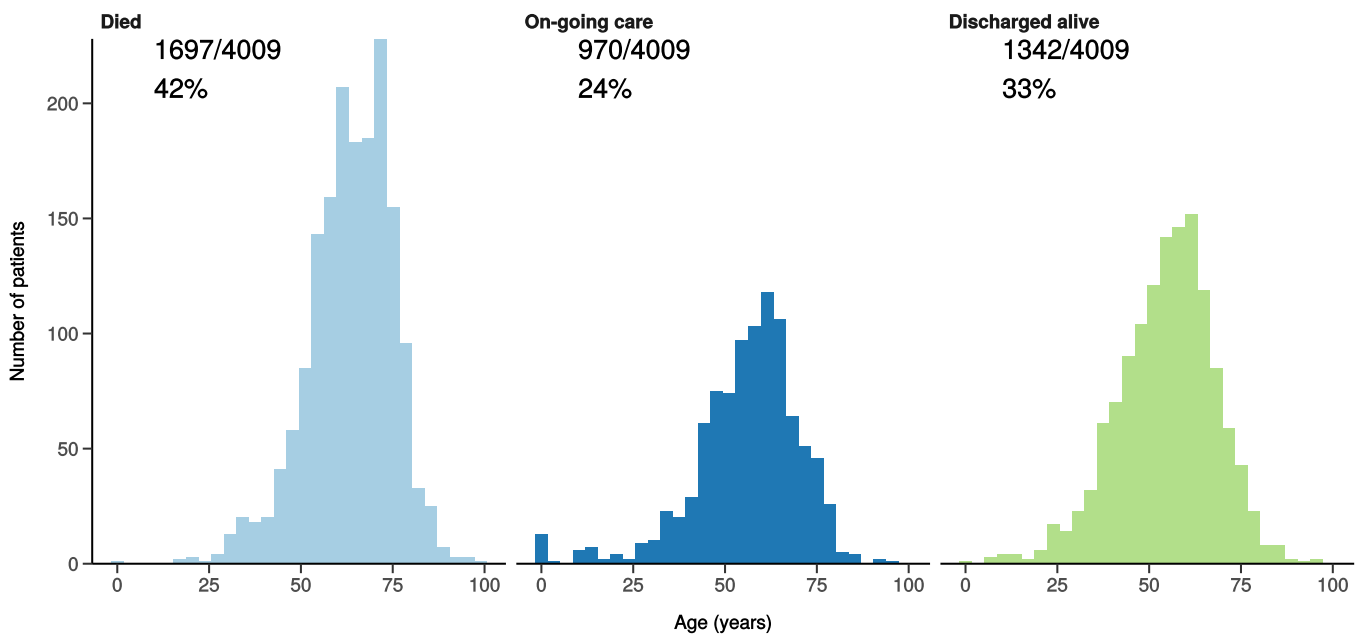
All patients



Patients admitted to ICU/HDU



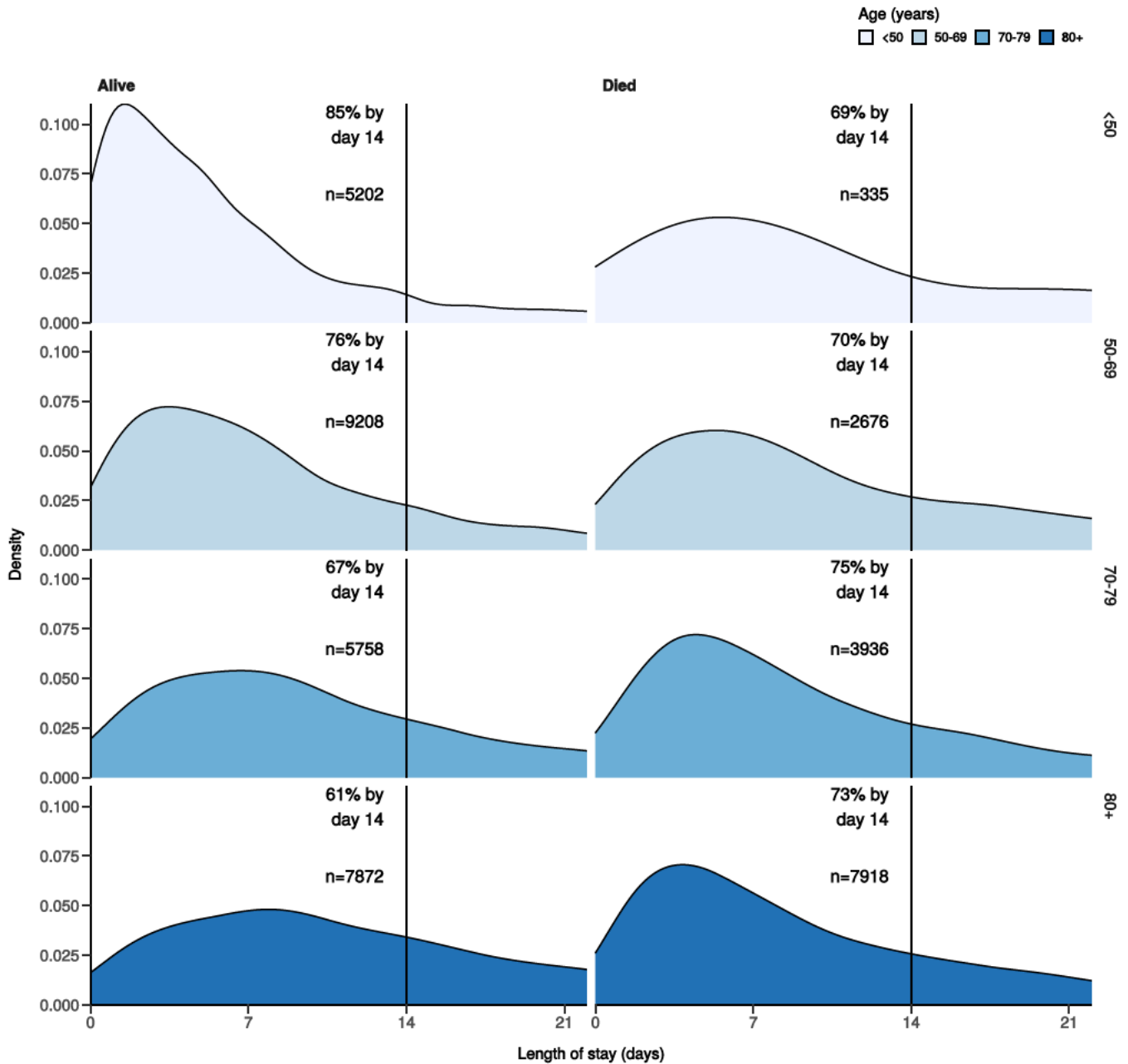
Patients receiving invasive ventilation



# Length of stay stratified by age

Figure 11

Length of stay stratified by age and mortality  
Proportion who reach outcome by day 14 shown



## Predictors of death: logistic regression multivariable model

Logistic regression model only includes patients admitted >14 days ago from today.

Dependent: death		No	Yes	OR (univariable)	OR (multivariable)
Age on admission (years)	<50	5949 (94.3)	360 (5.7)	•	•
	50-69	10030 (78.2)	2795 (21.8)	4.60 (4.11-5.17, p<0.001)	4.34 (3.82-4.96, p<0.001)
	70-79	6308 (60.4)	4134 (39.6)	10.83 (9.68-12.15, p<0.001)	9.01 (7.91-10.29, p<0.001)
	80+	8539 (50.7)	8307 (49.3)	16.08 (14.41-17.98, p<0.001)	13.30 (11.69-15.18, p<0.001)
Sex at Birth	Male	17087 (64.0)	9602 (36.0)	•	•
	Female	13983 (69.6)	6104 (30.4)	0.78 (0.75-0.81, p<0.001)	0.70 (0.66-0.73, p<0.001)

Dependent: death		No	Yes	OR (univariable)	OR (multivariable)
	Not specified	0 (NaN)	0 (NaN)	•	•
Chronic cardiac disease	NO	21200 (72.0)	8262 (28.0)	•	•
	YES	7788 (55.5)	6247 (44.5)	2.06 (1.97-2.15, p<0.001)	1.19 (1.13-1.26, p<0.001)
Chronic pulmonary disease	NO	24648 (69.1)	11013 (30.9)	•	•
	YES	4288 (55.8)	3393 (44.2)	1.77 (1.68-1.86, p<0.001)	1.32 (1.24-1.40, p<0.001)
Chronic neurological disorder	NO	25461 (67.8)	12088 (32.2)	•	•
	YES	3220 (59.6)	2181 (40.4)	1.43 (1.35-1.51, p<0.001)	1.15 (1.07-1.24, p<0.001)
Chronic hematologic disease	NO	27487 (67.2)	13402 (32.8)	•	•
	YES	1101 (58.2)	791 (41.8)	1.47 (1.34-1.62, p<0.001)	1.19 (1.06-1.33, p=0.003)
Chronic kidney disease	NO	24769 (69.5)	10861 (30.5)	•	•
	YES	4046 (53.7)	3494 (46.3)	1.97 (1.87-2.07, p<0.001)	1.28 (1.21-1.36, p<0.001)
Dementia	NO	25127 (70.1)	10711 (29.9)	•	•
	YES	3589 (49.9)	3605 (50.1)	2.36 (2.24-2.48, p<0.001)	1.42 (1.33-1.51, p<0.001)
Obesity	NO	23101 (66.8)	11457 (33.2)	•	•
	YES	3154 (70.5)	1319 (29.5)	0.84 (0.79-0.90, p<0.001)	1.35 (1.25-1.46, p<0.001)
Malignancy	NO	26217 (68.3)	12177 (31.7)	•	•
	YES	2414 (54.3)	2035 (45.7)	1.81 (1.70-1.93, p<0.001)	1.37 (1.27-1.48, p<0.001)

Number in dataframe = 52869, Number in model = 36849, Missing = 16020, AIC = 41087.3, C-statistic = 0.722, H&L = Chi-sq(8) 85.12 (p<0.001)

Figure 12 - Adjusted odds ratio plot

Death

Age on admission (years)	<50	-
	50-69	4.34 (3.82-4.96, p<0.001)
	70-79	9.01 (7.91-10.29, p<0.001)
	80+	13.30 (11.69-15.18, p<0.001)
Sex at Birth	Male	-
	Female	0.70 (0.66-0.73, p<0.001)
	Not specified	-
Chronic cardiac disease	YES	1.19 (1.13-1.26, p<0.001)
Chronic pulmonary disease	YES	1.32 (1.24-1.40, p<0.001)
Chronic neurological disorder	YES	1.15 (1.07-1.24, p<0.001)
Chronic hematologic disease	YES	1.19 (1.06-1.33, p=0.003)
Chronic kidney disease	YES	1.28 (1.21-1.36, p<0.001)
Dementia	YES	1.42 (1.33-1.51, p<0.001)
Obesity	YES	1.35 (1.25-1.46, p<0.001)
Malignancy	YES	1.37 (1.27-1.48, p<0.001)

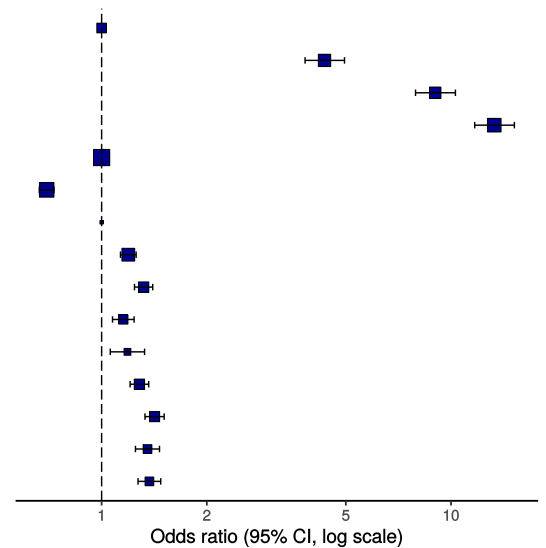
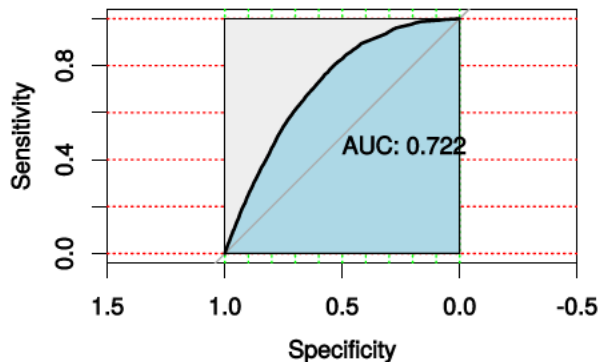


Figure 13 - ROC

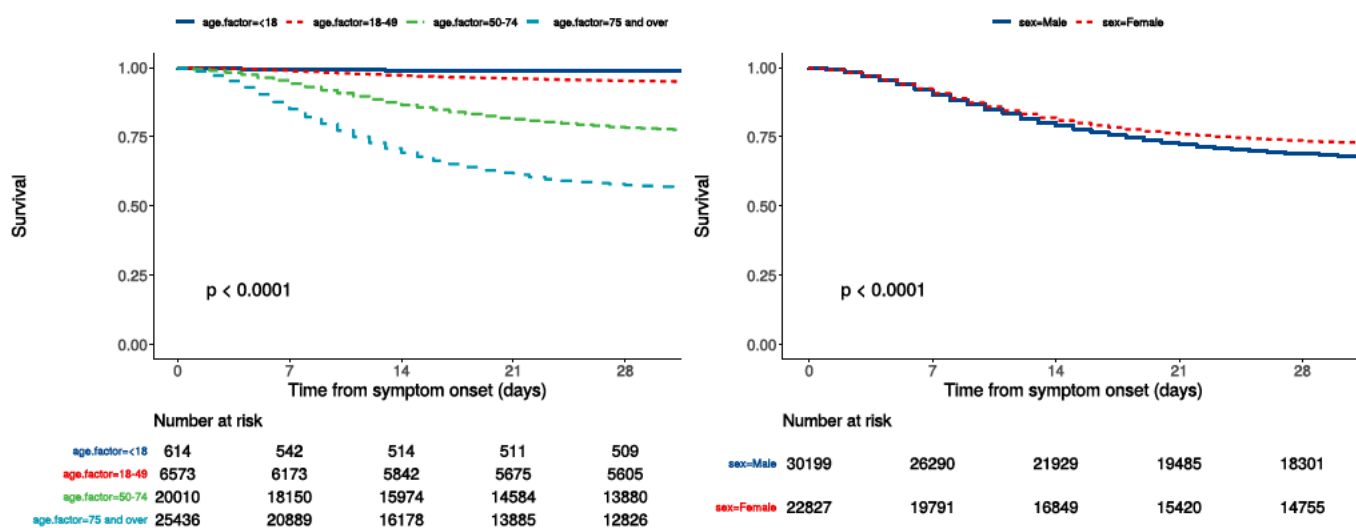


## Survival models

Kaplan-Meier plots for survival from symptom onset stratified by age (left) and sex (right)

Figure 14

P-value is log-rank test.



## Cox proportional hazards model

The methodology for this is now up and running, but models are still being explored. **What is presented here is not a final model, but to demonstrate methodology.** The results are correct, but important variables have not yet been included.

Time from symptom onset.

Dependent: Surv(time, status)		all	HR (univariable)	HR (multivariable)
Age on admission (years)	<50	7187 (13.7)	•	•
	50-69	14588 (27.7)	4.10 (3.67-4.58, p<0.001)	4.08 (3.55-4.68, p<0.001)
	70-79	11795 (22.4)	8.51 (7.64-9.48, p<0.001)	8.12 (7.08-9.31, p<0.001)
	80+	19065 (36.2)	11.74 (10.56-13.04, p<0.001)	10.92 (9.53-12.51, p<0.001)
Sex at Birth	Male	30199 (57.0)	•	•
	Female	22827 (43.0)	0.83 (0.80-0.85, p<0.001)	0.79 (0.76-0.82, p<0.001)
qSOFA score on admission	0	17724 (41.6)	•	•
	1	19388 (45.5)	1.58 (1.51-1.64, p<0.001)	1.70 (1.63-1.78, p<0.001)

Dependent: Surv(time, status)		all	HR (univariable)	HR (multivariable)
	2	4932 (11.6)	2.97 (2.83-3.13, p<0.001)	2.75 (2.60-2.91, p<0.001)
	3	554 (1.3)	4.93 (4.42-5.49, p<0.001)	4.32 (3.82-4.88, p<0.001)
Symptomatic at presentation	No symptoms	1785 (3.5)	•	•
	Symptoms	48697 (96.5)	1.35 (1.22-1.49, p<0.001)	•
Chronic cardiac disease	NO	32422 (67.7)	•	•
	YES	15434 (32.3)	1.80 (1.74-1.86, p<0.001)	1.15 (1.11-1.20, p<0.001)
Chronic kidney disease	NO	39189 (82.6)	•	•
	YES	8274 (17.4)	1.73 (1.66-1.79, p<0.001)	1.21 (1.16-1.27, p<0.001)
Moderate/severe liver disease	NO	46058 (98.0)	•	•
	YES	916 (2.0)	1.30 (1.17-1.45, p<0.001)	1.51 (1.32-1.72, p<0.001)
Chronic neurological disorder	NO	41256 (87.4)	•	•
	YES	5940 (12.6)	1.36 (1.30-1.43, p<0.001)	•
Malignancy	NO	42250 (89.7)	•	•
	YES	4829 (10.3)	1.59 (1.52-1.67, p<0.001)	1.28 (1.21-1.36, p<0.001)
Chronic hematologic disease	NO	44940 (95.6)	•	•
	YES	2060 (4.4)	1.36 (1.27-1.46, p<0.001)	•
Obesity	NO	38021 (88.6)	•	•
	YES	4875 (11.4)	0.86 (0.81-0.91, p<0.001)	1.18 (1.11-1.27, p<0.001)
Diabetes without complications	NO	38149 (82.3)	•	•
	YES	8195 (17.7)	1.23 (1.18-1.28, p<0.001)	•
Rheumatologic disorder	NO	41745 (89.0)	•	•
	YES	5140 (11.0)	1.20 (1.14-1.26, p<0.001)	•
Dementia	NO	39432 (83.4)	•	•
	YES	7871 (16.6)	2.06 (1.98-2.14, p<0.001)	1.19 (1.13-1.25, p<0.001)
Malnutrition	NO	43225 (97.3)	•	•
	YES	1190 (2.7)	1.45 (1.32-1.59, p<0.001)	•
smoking_mhyn_2levels	NO	29680 (92.2)	•	•
	YES	2519 (7.8)	0.92 (0.85-0.99, p=0.030)	•

Number in dataframe = 53302, Number in model = 34642, Missing = 18660, Number of events = 10350, Concordance = 0.720 (SE = 0.002), R-squared = 0.164( Max possible = 0.998), Likelihood ratio test = 6191.575 (df = 13, p = 0.000)

**Figure 15a - Multivariable Cox proportional hazards model**

Survival: HR (95% CI, p-value)

Age on admission (years)	<50	-
	50-69	4.08 (3.55-4.68, p<0.001)
	70-79	8.12 (7.08-9.31, p<0.001)
	80+	10.92 (9.53-12.51, p<0.001)
Sex at Birth	Female	0.79 (0.76-0.82, p<0.001)
qSOFA score on admission	0	-
	1	1.70 (1.63-1.78, p<0.001)
	2	2.75 (2.60-2.91, p<0.001)
	3	4.32 (3.82-4.88, p<0.001)
Chronic cardiac disease	YES	1.15 (1.11-1.20, p<0.001)
Chronic kidney disease	YES	1.21 (1.16-1.27, p<0.001)
Moderate/severe liver disease	YES	1.51 (1.32-1.72, p<0.001)
Malignancy	YES	1.28 (1.21-1.36, p<0.001)
Obesity	YES	1.18 (1.11-1.27, p<0.001)
Dementia	YES	1.19 (1.13-1.25, p<0.001)

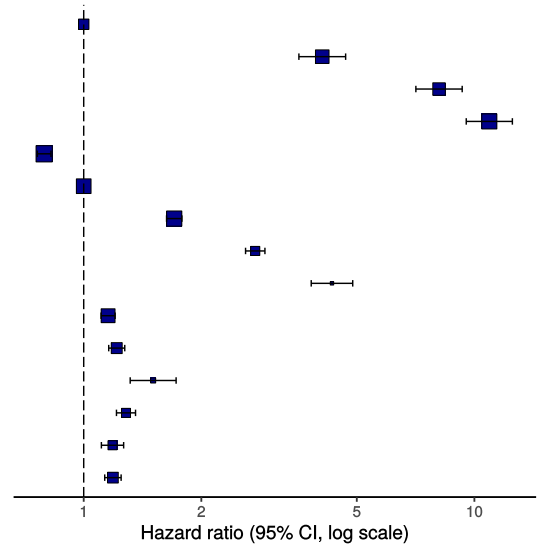
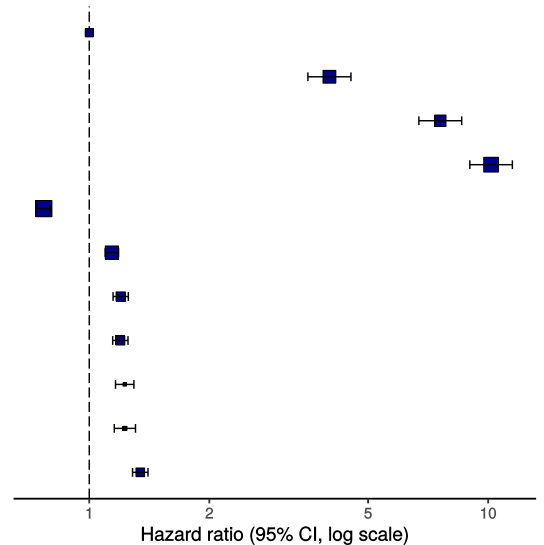


Figure 15b - Multivariable Cox proportional hazards model (age, sex, comorbidities only)

Survival: HR (95% CI, p-value)

Age on admission (years)	<50	-
	50-69	4.00 (3.53-4.53, p<0.001)
	70-79	7.59 (6.70-8.58, p<0.001)
	80+	10.17 (8.99-11.50, p<0.001)
Sex at Birth	Female	0.77 (0.74-0.80, p<0.001)
Chronic cardiac disease	YES	1.14 (1.10-1.18, p<0.001)
Chronic pulmonary disease	YES	1.20 (1.15-1.25, p<0.001)
Chronic kidney disease	YES	1.20 (1.14-1.25, p<0.001)
Malignancy	YES	1.23 (1.16-1.29, p<0.001)
Obesity	YES	1.23 (1.16-1.31, p<0.001)
Dementia	YES	1.34 (1.28-1.40, p<0.001)



ROC = 0.7198791

Figure 16 - Predictions calibration plot

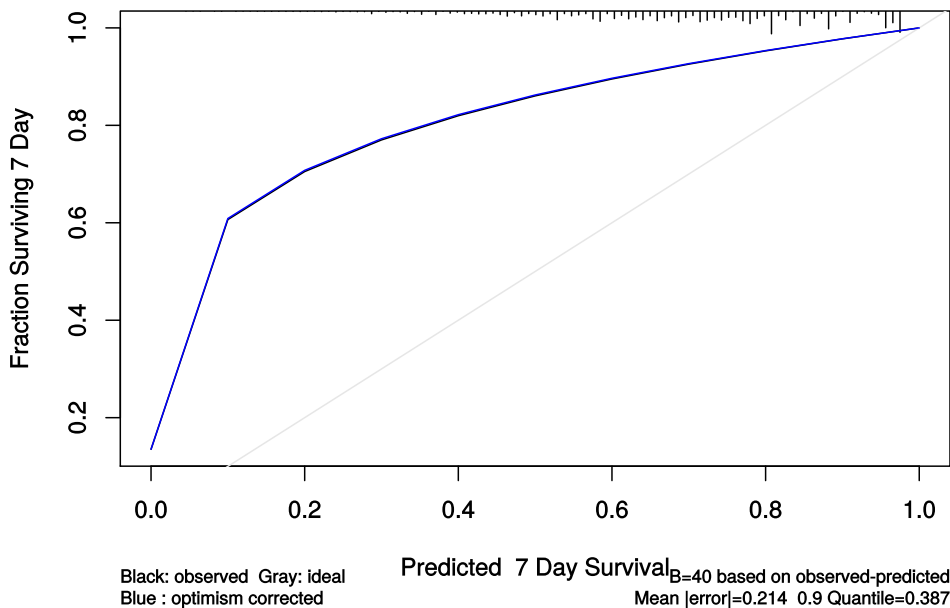


Figure 17 - Prognostic model predictions



Again, for demonstration of methods.

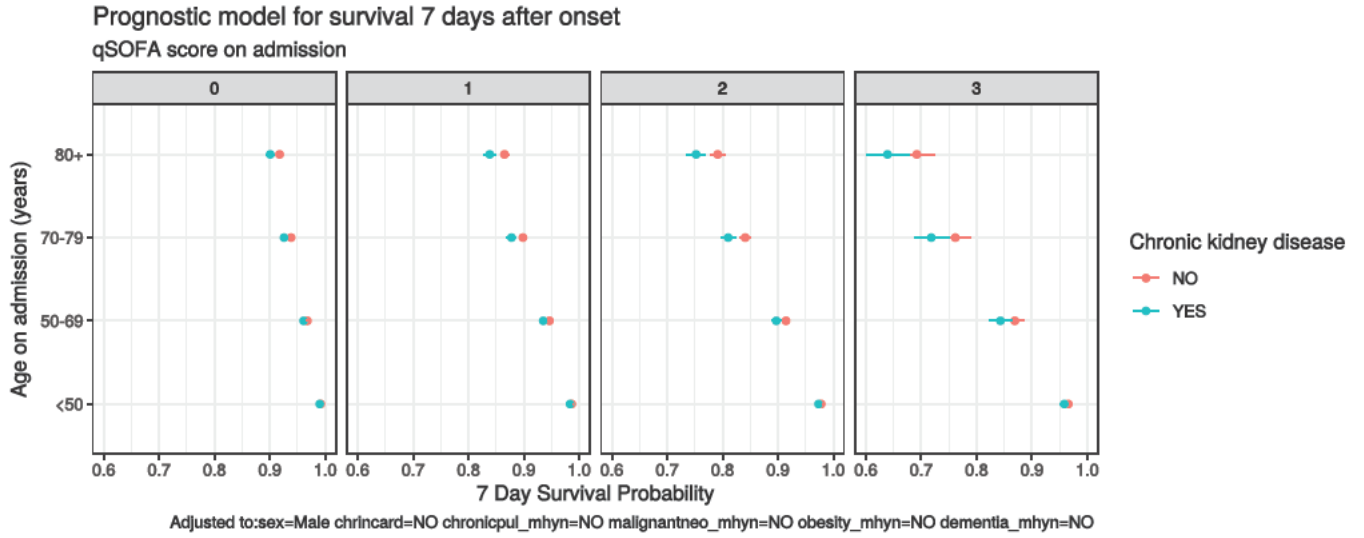


Figure 18 - Death by severity (NEWS) on admission

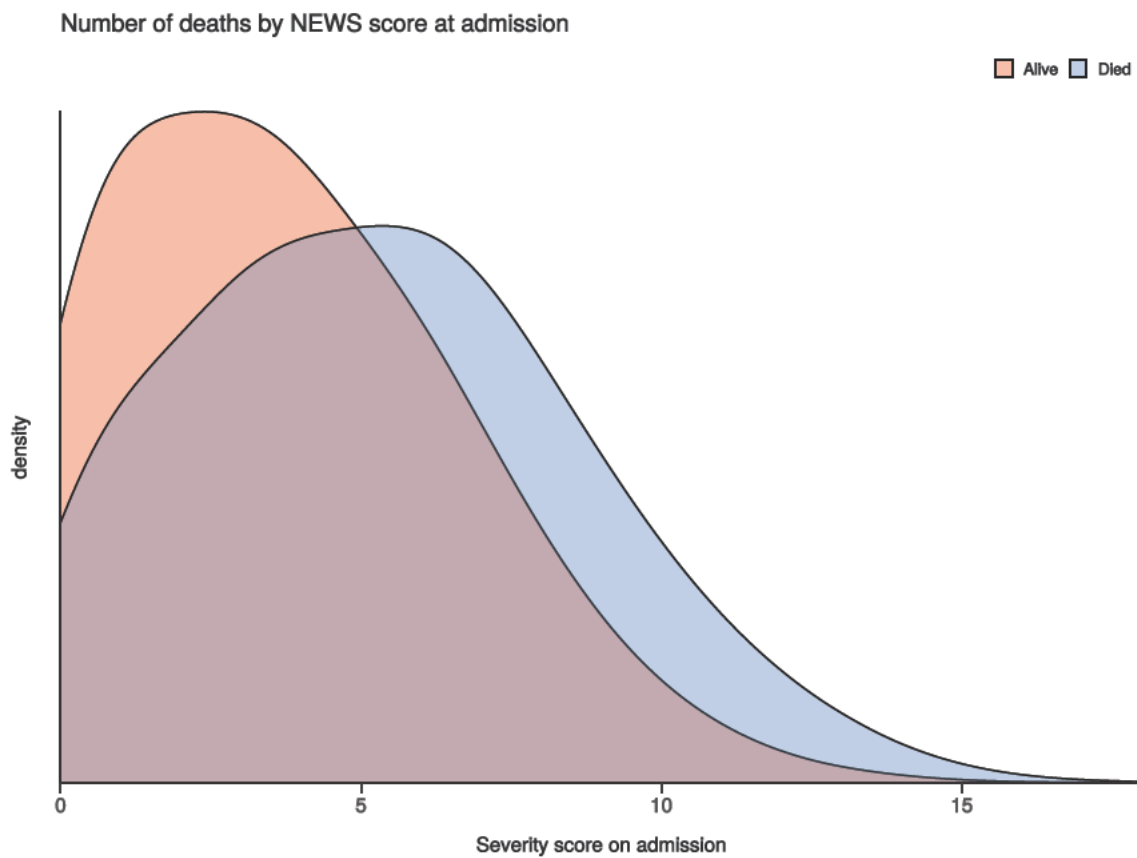


Figure 19 - Death by severity (NEWS) on admission stratified by age

Number of deaths by NEWS score at admission  
Stratified by age

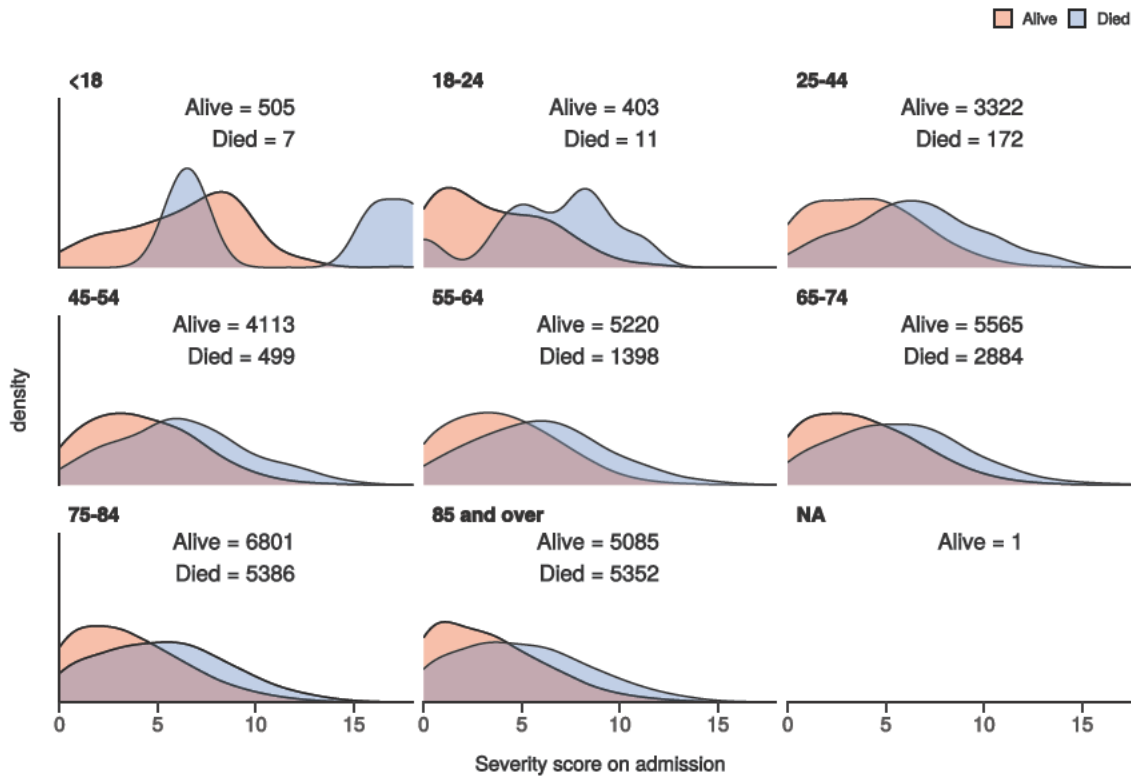
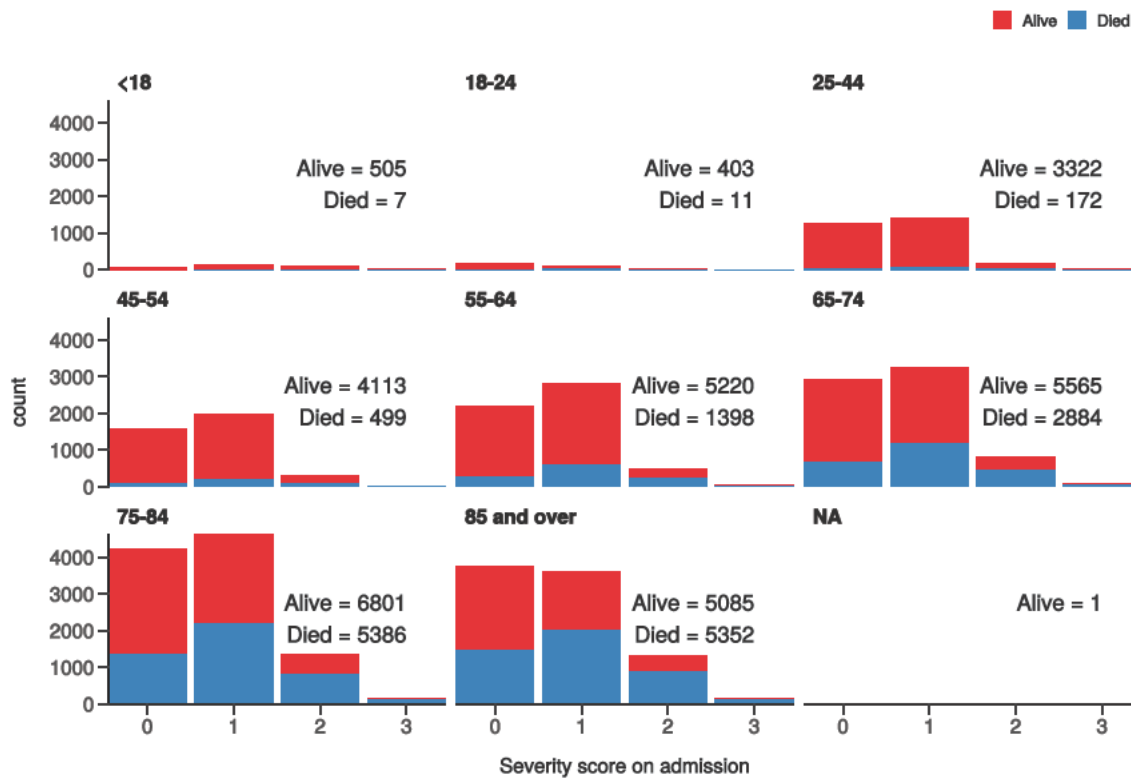


Figure 20 - Death by severity (qSOFA) on admission stratified by age

Number of deaths by qSOFA score at admission  
Stratified by age



## Healthcare workers

Healthcare worker		NO	YES	p
Total N (%)		46898 (94.8)	2548 (5.2)	
NEWS score on admission	Median (IQR)	4.0 (4.0)	4.0 (4.0)	0.342

Healthcare worker		NO	YES	p
Death	No	25753 (64.2)	2085 (92.7)	<0.001
	Yes	14352 (35.8)	165 (7.3)	

## Admission (detail)

Table 1

label	levels	all
Total N (%)		62008 (100.0)
Age on admission (years)	Mean (SD)	70.1 (18.8)
Sex at Birth	Male	31814 (51.3)
	Female	24164 (39.0)
	Not specified	98 (0.2)
	(Missing)	5932 (9.6)
Healthcare worker	YES	2548 (4.1)
	NO	46898 (75.6)
	N/A	5549 (8.9)
	(Missing)	7013 (11.3)
Microbiology lab worker	YES	83 (0.1)
	NO	24149 (38.9)
	N/A	2827 (4.6)
	(Missing)	34949 (56.4)
Onset to admission (days)	Mean (SD)	7.9 (1695.6)
Transfer from other facility	Yes-facility is a study site	1140 (1.8)
	Yes-facility is not a study site	2743 (4.4)
	No	45792 (73.8)
	N/A	2154 (3.5)
	(Missing)	10179 (16.4)
Travel in 14 d prior to symptoms	Yes	794 (1.3)
	No	20936 (33.8)
	N/A	4113 (6.6)
	(Missing)	36165 (58.3)
Country	Afghanistan	0 (0.0)
	Albania	0 (0.0)
	Algeria	0 (0.0)
	Andorra	1 (0.0)
	Angola	0 (0.0)
	Antigua and Barbuda	4 (0.0)

<b>label</b>	<b>levels</b>	<b>all</b>
	Argentina	1 (0.0)
	Armenia	0 (0.0)
	Aruba	0 (0.0)
	Australia	3 (0.0)
	Austria	22 (0.0)
	Azerbaijan	2 (0.0)
	The	0 (0.0)
	Bahrain	0 (0.0)
	Bangladesh	1 (0.0)
	Barbados	17 (0.0)
	Belarus	0 (0.0)
	Belgium	4 (0.0)
	Belize	0 (0.0)
	Benin	0 (0.0)
	Bhutan	0 (0.0)
	Bolivia	0 (0.0)
	Bosnia and Herzegovina	0 (0.0)
	Botswana	0 (0.0)
	Brazil	3 (0.0)
	Brunei	0 (0.0)
	Bulgaria	3 (0.0)
	Burkina Faso	0 (0.0)
	Burma	0 (0.0)
	Burundi	0 (0.0)
	Cambodia	1 (0.0)
	Cameroon	0 (0.0)
	Canada	2 (0.0)
	Cabo Verde	1 (0.0)
	Central African Republic	1 (0.0)
	Chad	0 (0.0)
	Chile	1 (0.0)
	China	3 (0.0)
	Colombia	0 (0.0)
	Comoros	0 (0.0)
	Republic of the	0 (0.0)
	Costa Rica	0 (0.0)

<b>label</b>	<b>levels</b>	<b>all</b>
	Cote d'Ivoire	0 (0.0)
	Croatia	0 (0.0)
	Cuba	1 (0.0)
	Curacao	0 (0.0)
	Cyprus	26 (0.0)
	Czechia	2 (0.0)
	Denmark	1 (0.0)
	Djibouti	0 (0.0)
	Dominica	0 (0.0)
	Dominican Republic	3 (0.0)
	Ecuador	0 (0.0)
	Egypt	8 (0.0)
	El Salvador	0 (0.0)
	Equatorial Guinea	0 (0.0)
	Eritrea	0 (0.0)
	Estonia	0 (0.0)
	Ethiopia	0 (0.0)
	Fiji	0 (0.0)
	Finland	0 (0.0)
	France	31 (0.0)
	Gabon	0 (0.0)
	Georgia	0 (0.0)
	Germany	8 (0.0)
	Ghana	2 (0.0)
	Greece	2 (0.0)
	Grenada	0 (0.0)
	Guatemala	0 (0.0)
	Guinea	0 (0.0)
	Guinea-Bissau	0 (0.0)
	Guyana	0 (0.0)
	Haiti	0 (0.0)
	Holy See	0 (0.0)
	Honduras	0 (0.0)
	Hong Kong	1 (0.0)
	Hungary	3 (0.0)
	Iceland	1 (0.0)

<b>label</b>	<b>levels</b>	<b>all</b>
	India	10 (0.0)
	Indonesia	0 (0.0)
	Iran	6 (0.0)
	Iraq	0 (0.0)
	Ireland	7 (0.0)
	Israel	0 (0.0)
	Italy	89 (0.1)
	Jamaica	3 (0.0)
	Japan	6 (0.0)
	Jordan	0 (0.0)
	Kazakhstan	0 (0.0)
	Kenya	1 (0.0)
	Kiribati	0 (0.0)
	South	0 (0.0)
	Kosovo	0 (0.0)
	Kuwait	1 (0.0)
	Kyrgyzstan	0 (0.0)
	Laos	0 (0.0)
	Latvia	0 (0.0)
	Lebanon	0 (0.0)
	Lesotho	0 (0.0)
	Liberia	0 (0.0)
	Libya	0 (0.0)
	Liechtenstein	0 (0.0)
	Lithuania	0 (0.0)
	Luxembourg	0 (0.0)
	Macau	0 (0.0)
	Macedonia	0 (0.0)
	Madagascar	1 (0.0)
	Malawi	0 (0.0)
	Malaysia	4 (0.0)
	Maldives	1 (0.0)
	Mali	0 (0.0)
	Malta	1 (0.0)
	Marshall Islands	0 (0.0)
	Mauritania	0 (0.0)

<b>label</b>	<b>levels</b>	<b>all</b>
	Mauritius	1 (0.0)
	Mexico	4 (0.0)
	Micronesia	0 (0.0)
	Moldova	0 (0.0)
	Monaco	0 (0.0)
	Mongolia	0 (0.0)
	Montenegro	0 (0.0)
	Morocco	4 (0.0)
	Mozambique	0 (0.0)
	Namibia	0 (0.0)
	Nauru	0 (0.0)
	Nepal	3 (0.0)
	Netherlands	9 (0.0)
	New Zealand	3 (0.0)
	Nicaragua	0 (0.0)
	Niger	0 (0.0)
	Nigeria	2 (0.0)
	North Korea	0 (0.0)
	Norway	2 (0.0)
	Oman	0 (0.0)
	Pakistan	9 (0.0)
	Palau	0 (0.0)
	Palestinian Territories	0 (0.0)
	Panama	1 (0.0)
	Papua New Guinea	0 (0.0)
	Paraguay	0 (0.0)
	Peru	0 (0.0)
	Philippines	5 (0.0)
	Poland	3 (0.0)
	Portugal	22 (0.0)
	Qatar	1 (0.0)
	Romania	6 (0.0)
	Russia	0 (0.0)
	Rwanda	0 (0.0)
	Saint Kitts and Nevis	0 (0.0)
	Saint Lucia	0 (0.0)

<b>label</b>	<b>levels</b>	<b>all</b>
	Saint Vincent and the Grenadines	0 (0.0)
	Samoa	0 (0.0)
	San Marino	0 (0.0)
	Sao Tome and Principe	0 (0.0)
	Saudi Arabia	2 (0.0)
	Senegal	0 (0.0)
	Serbia	0 (0.0)
	Seychelles	0 (0.0)
	Sierra Leone	0 (0.0)
	Singapore	4 (0.0)
	Sint Maarten	0 (0.0)
	Slovakia	1 (0.0)
	Slovenia	1 (0.0)
	Solomon Islands	0 (0.0)
	Somalia	2 (0.0)
	South Africa	10 (0.0)
	South Korea	1 (0.0)
	South Sudan	0 (0.0)
	Spain	193 (0.3)
	Sri Lanka	0 (0.0)
	Sudan	0 (0.0)
	Suriname	0 (0.0)
	Swaziland	1 (0.0)
	Sweden	0 (0.0)
	Switzerland	8 (0.0)
	Syria	0 (0.0)
	Taiwan	0 (0.0)
	Tajikistan	0 (0.0)
	Tanzania	0 (0.0)
	Thailand	8 (0.0)
	Timor-Leste	0 (0.0)
	Togo	0 (0.0)
	Tonga	0 (0.0)
	Trinidad and Tobago	0 (0.0)
	Tunisia	0 (0.0)
	Turkey	8 (0.0)



<b>label</b>	<b>levels</b>	<b>all</b>
	Turkmenistan	0 (0.0)
	Tuvalu	0 (0.0)
	Uganda	0 (0.0)
	Ukraine	0 (0.0)
	United Arab Emirates	10 (0.0)
	United Kingdom	114 (0.2)
	Uruguay	0 (0.0)
	Uzbekistan	0 (0.0)
	Vanuatu	0 (0.0)
	Venezuela	0 (0.0)
	Vietnam	0 (0.0)
	Yemen	1 (0.0)
	Zambia	0 (0.0)
	Zimbabwe	1 (0.0)
	(Missing)	61279 (98.8)
Country 2	Afghanistan	0 (0.0)
	Albania	0 (0.0)
	Algeria	1 (0.0)
	Andorra	0 (0.0)
	Angola	0 (0.0)
	Antigua and Barbuda	1 (0.0)
	Argentina	0 (0.0)
	Armenia	0 (0.0)
	Aruba	1 (0.0)
	Australia	2 (0.0)
	Austria	4 (0.0)
	Azerbaijan	0 (0.0)
	The	0 (0.0)
	Bahrain	0 (0.0)
	Bangladesh	0 (0.0)
	Barbados	2 (0.0)
	Belarus	0 (0.0)
	Belgium	0 (0.0)
	Belize	0 (0.0)
	Benin	0 (0.0)
	Bhutan	0 (0.0)

<b>label</b>	<b>levels</b>	<b>all</b>
	Bolivia	0 (0.0)
	Bosnia and Herzegovina	0 (0.0)
	Botswana	0 (0.0)
	Brazil	0 (0.0)
	Brunei	0 (0.0)
	Bulgaria	2 (0.0)
	Burkina Faso	0 (0.0)
	Burma	0 (0.0)
	Burundi	0 (0.0)
	Cambodia	0 (0.0)
	Cameroon	0 (0.0)
	Canada	1 (0.0)
	Cabo Verde	0 (0.0)
	Central African Republic	0 (0.0)
	Chad	0 (0.0)
	Chile	0 (0.0)
	China	0 (0.0)
	Colombia	0 (0.0)
	Comoros	0 (0.0)
	Republic of the	0 (0.0)
	Costa Rica	0 (0.0)
	Cote d'Ivoire	0 (0.0)
	Croatia	0 (0.0)
	Cuba	0 (0.0)
	Curacao	0 (0.0)
	Cyprus	3 (0.0)
	Czechia	1 (0.0)
	Denmark	0 (0.0)
	Djibouti	0 (0.0)
	Dominica	0 (0.0)
	Dominican Republic	0 (0.0)
	Ecuador	0 (0.0)
	Egypt	2 (0.0)
	El Salvador	0 (0.0)
	Equatorial Guinea	0 (0.0)
	Eritrea	0 (0.0)

<b>label</b>	<b>levels</b>	<b>all</b>
	Estonia	0 (0.0)
	Ethiopia	0 (0.0)
	Fiji	0 (0.0)
	Finland	0 (0.0)
	France	9 (0.0)
	Gabon	0 (0.0)
	Georgia	0 (0.0)
	Germany	3 (0.0)
	Ghana	0 (0.0)
	Greece	0 (0.0)
	Grenada	0 (0.0)
	Guatemala	0 (0.0)
	Guinea	0 (0.0)
	Guinea-Bissau	0 (0.0)
	Guyana	0 (0.0)
	Haiti	0 (0.0)
	Holy See	0 (0.0)
	Honduras	0 (0.0)
	Hong Kong	0 (0.0)
	Hungary	0 (0.0)
	Iceland	0 (0.0)
	India	3 (0.0)
	Indonesia	1 (0.0)
	Iran	0 (0.0)
	Iraq	0 (0.0)
	Ireland	1 (0.0)
	Israel	1 (0.0)
	Italy	16 (0.0)
	Jamaica	1 (0.0)
	Japan	0 (0.0)
	Jordan	0 (0.0)
	Kazakhstan	0 (0.0)
	Kenya	0 (0.0)
	Kiribati	0 (0.0)
	South	0 (0.0)
	Kosovo	0 (0.0)

<b>label</b>	<b>levels</b>	<b>all</b>
	Kuwait	0 (0.0)
	Kyrgyzstan	0 (0.0)
	Laos	0 (0.0)
	Latvia	0 (0.0)
	Lebanon	0 (0.0)
	Lesotho	0 (0.0)
	Liberia	0 (0.0)
	Libya	0 (0.0)
	Liechtenstein	0 (0.0)
	Lithuania	0 (0.0)
	Luxembourg	0 (0.0)
	Macau	0 (0.0)
	Macedonia	0 (0.0)
	Madagascar	0 (0.0)
	Malawi	0 (0.0)
	Malaysia	0 (0.0)
	Maldives	0 (0.0)
	Mali	0 (0.0)
	Malta	0 (0.0)
	Marshall Islands	0 (0.0)
	Mauritania	0 (0.0)
	Mauritius	0 (0.0)
	Mexico	0 (0.0)
	Micronesia	0 (0.0)
	Moldova	0 (0.0)
	Monaco	0 (0.0)
	Mongolia	0 (0.0)
	Montenegro	0 (0.0)
	Morocco	1 (0.0)
	Mozambique	0 (0.0)
	Namibia	0 (0.0)
	Nauru	0 (0.0)
	Nepal	0 (0.0)
	Netherlands	2 (0.0)
	New Zealand	0 (0.0)
	Nicaragua	0 (0.0)

<b>label</b>	<b>levels</b>	<b>all</b>
	Niger	0 (0.0)
	Nigeria	0 (0.0)
	North Korea	0 (0.0)
	Norway	0 (0.0)
	Oman	0 (0.0)
	Pakistan	1 (0.0)
	Palau	0 (0.0)
	Palestinian Territories	0 (0.0)
	Panama	0 (0.0)
	Papua New Guinea	0 (0.0)
	Paraguay	0 (0.0)
	Peru	0 (0.0)
	Philippines	0 (0.0)
	Poland	0 (0.0)
	Portugal	2 (0.0)
	Qatar	1 (0.0)
	Romania	0 (0.0)
	Russia	0 (0.0)
	Rwanda	0 (0.0)
	Saint Kitts and Nevis	0 (0.0)
	Saint Lucia	0 (0.0)
	Saint Vincent and the Grenadines	0 (0.0)
	Samoa	0 (0.0)
	San Marino	0 (0.0)
	Sao Tome and Principe	0 (0.0)
	Saudi Arabia	0 (0.0)
	Senegal	0 (0.0)
	Serbia	0 (0.0)
	Seychelles	0 (0.0)
	Sierra Leone	0 (0.0)
	Singapore	0 (0.0)
	Sint Maarten	0 (0.0)
	Slovakia	0 (0.0)
	Slovenia	0 (0.0)
	Solomon Islands	0 (0.0)
	Somalia	0 (0.0)

<b>label</b>	<b>levels</b>	<b>all</b>
	South Africa	1 (0.0)
	South Korea	0 (0.0)
	South Sudan	0 (0.0)
	Spain	20 (0.0)
	Sri Lanka	0 (0.0)
	Sudan	0 (0.0)
	Suriname	0 (0.0)
	Swaziland	0 (0.0)
	Sweden	0 (0.0)
	Switzerland	0 (0.0)
	Syria	0 (0.0)
	Taiwan	0 (0.0)
	Tajikistan	0 (0.0)
	Tanzania	0 (0.0)
	Thailand	1 (0.0)
	Timor-Leste	0 (0.0)
	Togo	0 (0.0)
	Tonga	0 (0.0)
	Trinidad and Tobago	0 (0.0)
	Tunisia	0 (0.0)
	Turkey	4 (0.0)
	Turkmenistan	0 (0.0)
	Tuvalu	0 (0.0)
	Uganda	0 (0.0)
	Ukraine	0 (0.0)
	United Arab Emirates	0 (0.0)
	United Kingdom	1 (0.0)
	Uruguay	0 (0.0)
	Uzbekistan	0 (0.0)
	Vanuatu	0 (0.0)
	Venezuela	0 (0.0)
	Vietnam	1 (0.0)
	Yemen	0 (0.0)
	Zambia	0 (0.0)
	Zimbabwe	0 (0.0)
	(Missing)	61918 (99.9)

label	levels	all
Animal, raw meat, insect bites 14 d prior	Yes	104 (0.2)
	No	9998 (16.1)
	Unknown	14165 (22.8)
	N/A	1707 (2.8)
	(Missing)	36034 (58.1)
Animal / insect	2 Budgerigars and 26 Cats at home	1 (1.0)
	2 cats	1 (1.0)
	2 dogs	1 (1.0)
	Bee Sting	1 (1.0)
	Bird (pet)	1 (1.0)
	Birds at home	1 (1.0)
	Budgie	1 (1.0)
	budgies	1 (1.0)
	cat	2 (2.0)
	Cat	1 (1.0)
	CAT	1 (1.0)
	Cat (pet)	1 (1.0)
	Cat / Dog	1 (1.0)
	Cat, Dog (pets)	1 (1.0)
	cats	3 (2.9)
	chicken & beef	1 (1.0)
	Chickens	2 (2.0)
	COWS	1 (1.0)
	cows, rabbits, pigs goats	1 (1.0)
	DAILY CONTACT WITH DOMESTIC PET CAT	1 (1.0)
	dog	5 (4.9)
	Dog	12 (11.8)
	DOG	2 (2.0)
	DOG FAMILY PET	1 (1.0)
	Dog, domestic animla living in their home.	1 (1.0)
	Dogs	1 (1.0)
	dogs and cats	1 (1.0)
	Dogs at home	1 (1.0)
	domestic	1 (1.0)
	Domestic pet dog	1 (1.0)
	DOMESTIC ANIMAL	2 (2.0)

label	levels	all
	Domestic animal and faeces/nest	1 (1.0)
	domestic animal living in his home	1 (1.0)
	domestic animals	1 (1.0)
	Domestic animals living in his/her home	1 (1.0)
	Domestic Animals living in his/her home	1 (1.0)
	Domestic animals living in home	1 (1.0)
	Domestic cats	1 (1.0)
	domestic dog	1 (1.0)
	domestic Dog	1 (1.0)
	Domestic Per (dog)	1 (1.0)
	Domestic pest (cats)	1 (1.0)
	Domestic Pet	5 (4.9)
	Domestic Pet (Dog)	6 (5.9)
	Domestic pet cat	1 (1.0)
	Domestic pet Dog	1 (1.0)
	Domestic pet, dog	1 (1.0)
	Domestic pets	1 (1.0)
	Domestic Pets	2 (2.0)
	Domestic pets (dog)	1 (1.0)
	Domestic Pets Cat and Dog	1 (1.0)
	FARM ANIMALS - LAMBS	1 (1.0)
	Farm animals, cattle	1 (1.0)
	Guinea Pig	1 (1.0)
	HORSES	1 (1.0)
	pet dog	2 (2.0)
	Pet dog	2 (2.0)
	Pet dog -ongoing daily contact	1 (1.0)
	pet dog at home	1 (1.0)
	Pet dog ongoing daily contact	1 (1.0)
	Prepared raw chicken	1 (1.0)
	Rabbits	1 (1.0)
	raw chicken	1 (1.0)
	Raw Chicken	1 (1.0)
	Rodent	1 (1.0)
	she has a cat	1 (1.0)
	Sheep & Cattle	1 (1.0)



label	levels	all
	Two cats	1 (1.0)
	unknown	1 (1.0)

## Symptoms (detail)

Table 2

Stratified: all		all
Total N (%)		62008 (100.0)
Fever	YES	31442 (50.7)
	NO	16354 (26.4)
	Unknown	2765 (4.5)
	(Missing)	11447 (18.5)
Cough	YES	31890 (51.4)
	NO	15650 (25.2)
	Unknown	3029 (4.9)
	(Missing)	11439 (18.4)
Cough (sputum)	YES	9376 (15.1)
	NO	30975 (50.0)
	Unknown	10068 (16.2)
	(Missing)	11589 (18.7)
Cough (blood)	YES	1129 (1.8)
	NO	38429 (62.0)
	Unknown	10829 (17.5)
	(Missing)	11621 (18.7)
Sore throat	YES	3007 (4.8)
	NO	33892 (54.7)
	Unknown	13494 (21.8)
	(Missing)	11615 (18.7)
Runny nose	YES	945 (1.5)
	NO	35259 (56.9)
	Unknown	14182 (22.9)
	(Missing)	11622 (18.7)
Ear pain	YES	182 (0.3)
	NO	35909 (57.9)
	Unknown	14292 (23.0)
	(Missing)	11625 (18.7)
Wheeze	YES	3504 (5.7)

**Stratified: all****all**

	NO	35529 (57.3)
	Unknown	11362 (18.3)
	(Missing)	11613 (18.7)
Chest pain	YES	5601 (9.0)
	NO	35514 (57.3)
	Unknown	9292 (15.0)
	(Missing)	11601 (18.7)
Muscle ache	YES	6767 (10.9)
	NO	30668 (49.5)
	Unknown	12939 (20.9)
	(Missing)	11634 (18.8)
Joint pain	YES	2461 (4.0)
	NO	33691 (54.3)
	Unknown	14203 (22.9)
	(Missing)	11653 (18.8)
Fatigue	YES	17182 (27.7)
	NO	22795 (36.8)
	Unknown	10431 (16.8)
	(Missing)	11600 (18.7)
Shortness of breath	YES	31106 (50.2)
	NO	15540 (25.1)
	Unknown	3923 (6.3)
	(Missing)	11439 (18.4)
Lower chest wall indrawing	YES	478 (0.8)
	NO	34932 (56.3)
	Unknown	14947 (24.1)
	(Missing)	11651 (18.8)
Headache	YES	3929 (6.3)
	NO	33465 (54.0)
	Unknown	12987 (20.9)
	(Missing)	11627 (18.8)
Confusion	YES	12598 (20.3)
	NO	30692 (49.5)
	Unknown	7161 (11.5)
	(Missing)	11557 (18.6)
Seizures	YES	674 (1.1)

Stratified: all		all
	NO	40310 (65.0)
	Unknown	9391 (15.1)
	(Missing)	11633 (18.8)
Abdominal pain	YES	4391 (7.1)
	NO	36554 (59.0)
	Unknown	9472 (15.3)
	(Missing)	11591 (18.7)
Nausea/vomiting	YES	8253 (13.3)
	NO	34297 (55.3)
	Unknown	7884 (12.7)
	(Missing)	11574 (18.7)
Diarrhoea	YES	7788 (12.6)
	NO	34529 (55.7)
	Unknown	8112 (13.1)
	(Missing)	11579 (18.7)
Conjunctivitis	YES	169 (0.3)
	NO	37928 (61.2)
	Unknown	12286 (19.8)
	(Missing)	11625 (18.7)
Skin rash	YES	604 (1.0)
	NO	38293 (61.8)
	Unknown	11495 (18.5)
	(Missing)	11616 (18.7)
Skin ulcers	YES	1020 (1.6)
	NO	37942 (61.2)
	Unknown	11418 (18.4)
	(Missing)	11628 (18.8)
Lymphadenopathy	YES	262 (0.4)
	NO	38077 (61.4)
	Unknown	12040 (19.4)
	(Missing)	11629 (18.8)
Bleeding (Haemorrhage)	YES	706 (1.1)
	NO	39719 (64.1)
	Unknown	9949 (16.0)
	(Missing)	11634 (18.8)
If Bleeding (others)	YES	474 (0.8)

Stratified: all		all
	NO	19474 (31.4)
	Unknown	5343 (8.6)
	(Missing)	36717 (59.2)

## Comorbidity (detail)

Table 3

Stratified: all		all
Total N (%)		62008 (100.0)
Chronic cardiac disease	YES	15542 (25.1)
	NO	32596 (52.6)
	Unknown	2548 (4.1)
	(Missing)	11322 (18.3)
Chronic pulmonary disease	YES	8600 (13.9)
	NO	39359 (63.5)
	Unknown	2708 (4.4)
	(Missing)	11341 (18.3)
Asthma	YES	6623 (10.7)
	NO	41147 (66.4)
	Unknown	2854 (4.6)
	(Missing)	11384 (18.4)
Chronic kidney disease	YES	8340 (13.4)
	NO	39405 (63.5)
	Unknown	2908 (4.7)
	(Missing)	11355 (18.3)
Moderate/severe liver disease	YES	919 (1.5)
	NO	46325 (74.7)
	Unknown	3378 (5.4)
	(Missing)	11386 (18.4)
Mild Liver disease	YES	716 (1.2)
	NO	46407 (74.8)
	Unknown	3496 (5.6)
	(Missing)	11389 (18.4)
Chronic neurological disorder	YES	5984 (9.7)
	NO	41480 (66.9)
	Unknown	3162 (5.1)
	(Missing)	11382 (18.4)

<b>Stratified: all</b>		<b>all</b>
Malignancy	YES	4875 (7.9)
	NO	42478 (68.5)
	Unknown	3281 (5.3)
	(Missing)	11374 (18.3)
Chronic hematologic disease	YES	2069 (3.3)
	NO	45201 (72.9)
	Unknown	3333 (5.4)
	(Missing)	11405 (18.4)
AIDS/HIV	YES	201 (0.3)
	NO	46596 (75.1)
	Unknown	3823 (6.2)
	(Missing)	11388 (18.4)
Obesity	YES	4900 (7.9)
	NO	38245 (61.7)
	Unknown	7385 (11.9)
	(Missing)	11478 (18.5)
Diabetes with complications	YES	3483 (5.6)
	NO	43008 (69.4)
	Unknown	4120 (6.6)
	(Missing)	11397 (18.4)
Diabetes without complications	YES	8262 (13.3)
	NO	38357 (61.9)
	Unknown	4001 (6.5)
	(Missing)	11388 (18.4)
Rheumatologic disorder	YES	5171 (8.3)
	NO	41990 (67.7)
	Unknown	3442 (5.6)
	(Missing)	11405 (18.4)
Dementia	YES	7925 (12.8)
	NO	39654 (63.9)
	Unknown	3062 (4.9)
	(Missing)	11367 (18.3)
Malnutrition	YES	1201 (1.9)
	NO	43466 (70.1)
	Unknown	5879 (9.5)
	(Missing)	11462 (18.5)

Stratified: all

all

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Smoking	YES	2530 (4.1)
	NO	29843 (48.1)
	(Missing)	29635 (47.8)

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