

# Dynamic CO-CIN report to SAGE and NERVTAG

Dynamic content updated: 2020-08-26 15:24:53.

## 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 26 August 2020, CO-CIN has recruited **79335 patients** with confirmed Coronavirus (Figure 1).

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 1054 had travelled abroad recently, and 7856 reported visiting or working in a hospital where COVID-19 cases are being managed.

The median age is 74 (range: 0-107), Male/Female 43697/34107.

The most common symptoms were cough (60%), history of fever (59%) and shortness of breath (dyspnea) (59%) (Figure 3A). 5052/74097 (7%) of patients have reported no symptoms. Comorbidity can be seen in Figure 3B. The most common comorbidities were hypertension (physician diagnosed) (46%), chronic cardiac disease, including congenit...t hypertension) (31%) and chronic pulmonary disease (not asthma) (17%). 15544/74280 (21%) of patients have reported no co morbidity. 527/6488 (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: 5-19, n = 70836).

9184/60118 (15%) patients required high-flow oxygen after day 1 of treatment.

Currently 23079 patient(s) have died and 10316 required ICU. 44477 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).

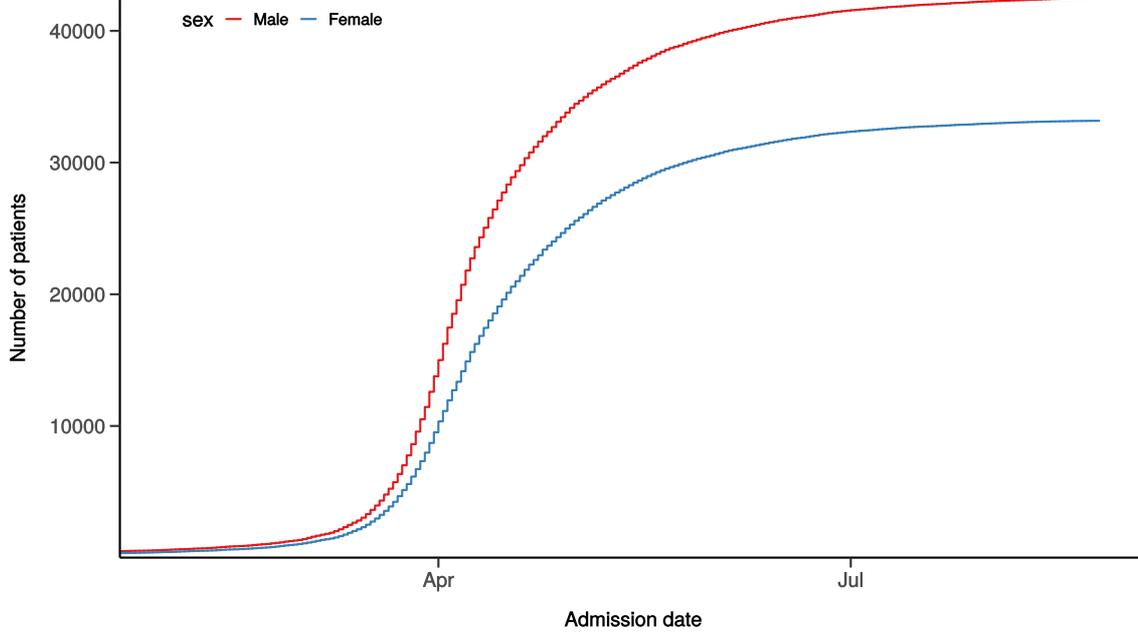
Analytics: Lisa Norman, Riinu Pius, Thomas Drake, Cameron Fairfield, Stephen Knight, Kenneth McLean, Katie Shaw.

## Admission

Figure 1

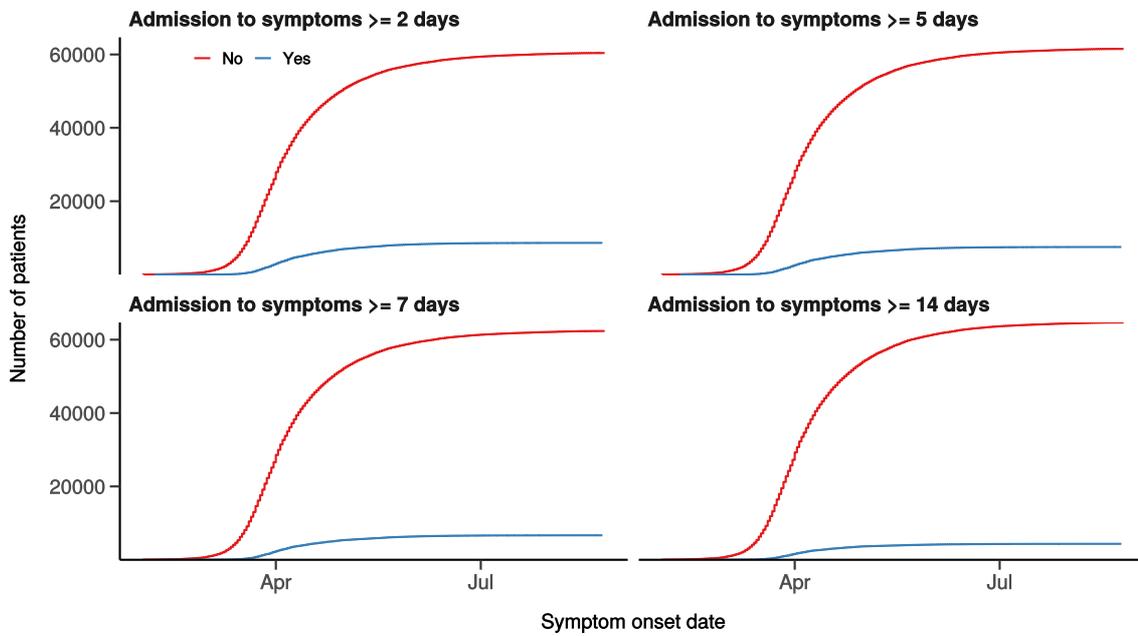
### Hospital admission with COVID-19 by sex

Figure 1A



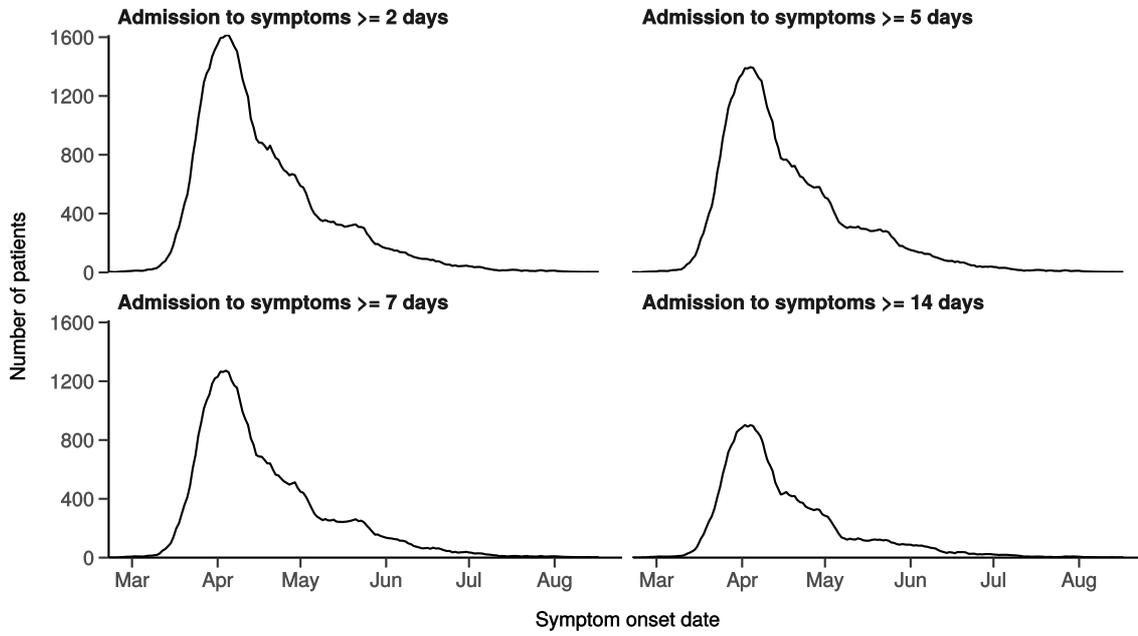
### Number with symptom onset occurring after admission to hospital

Figure 1B



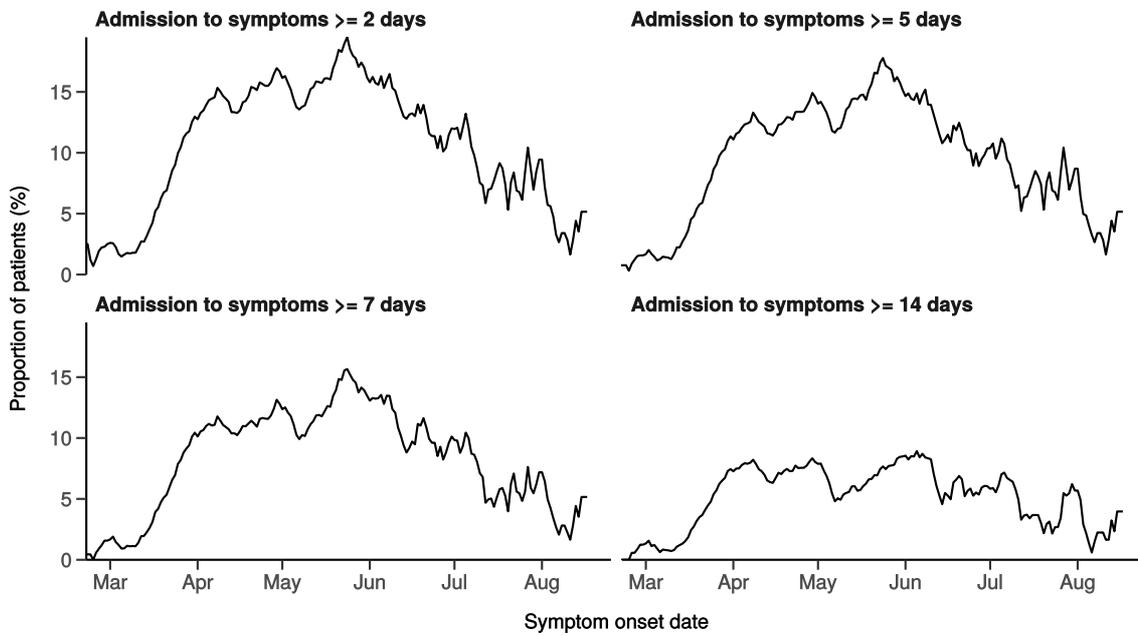
### Number with symptom onset occurring after hospital admission

Figure 1C - 7-day rolling count. n = 69042



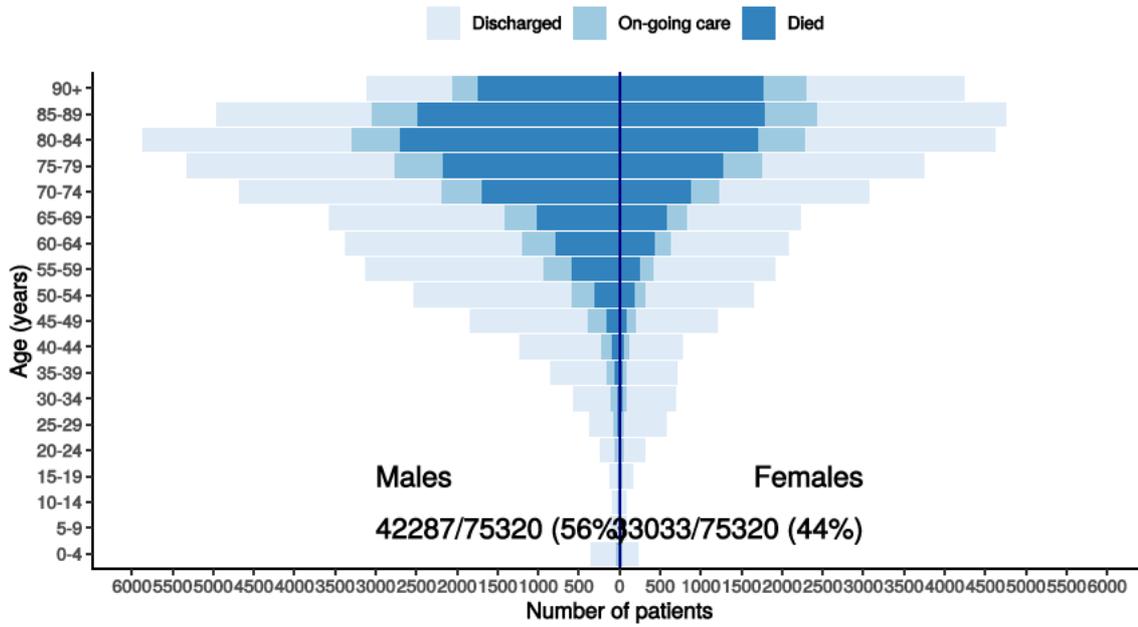
### Proportion with symptom onset occurring after hospital admission

Figure 1D - 7-day rolling percentage. n = 69042



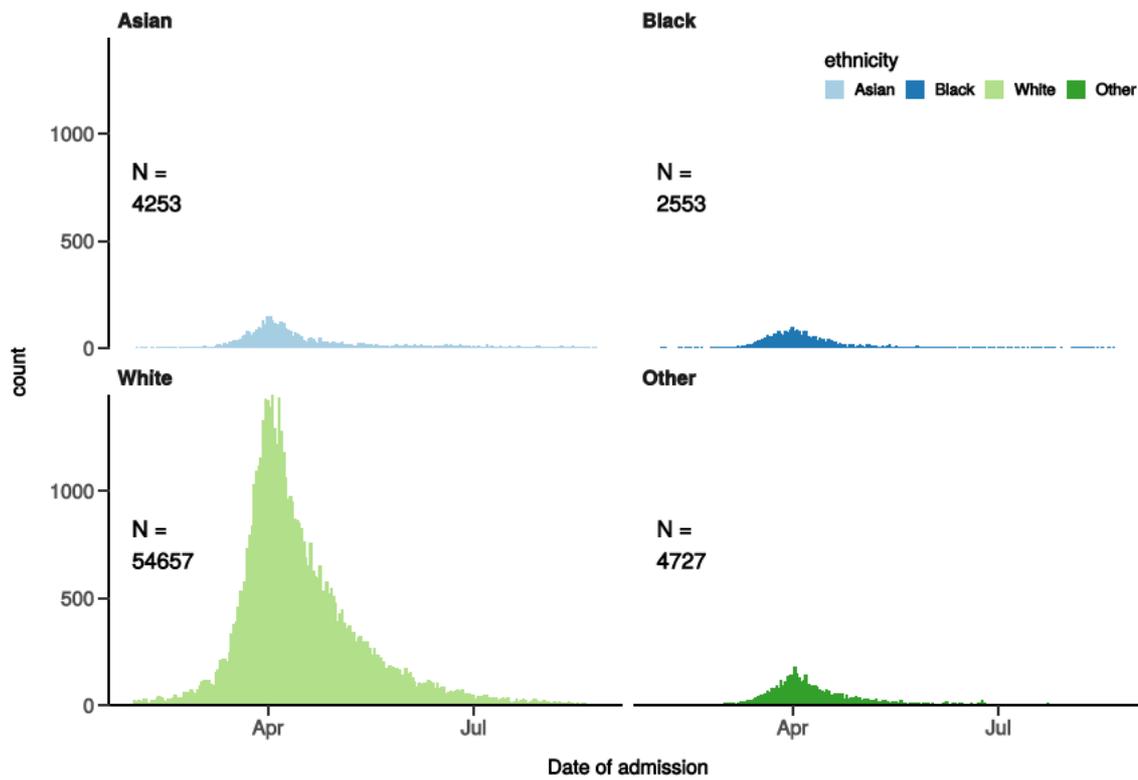
## Patients with outcome stratified by age, and sex

Figure 1E



## Hospital admission with COVID-19 by ethnicity

Figure 1F

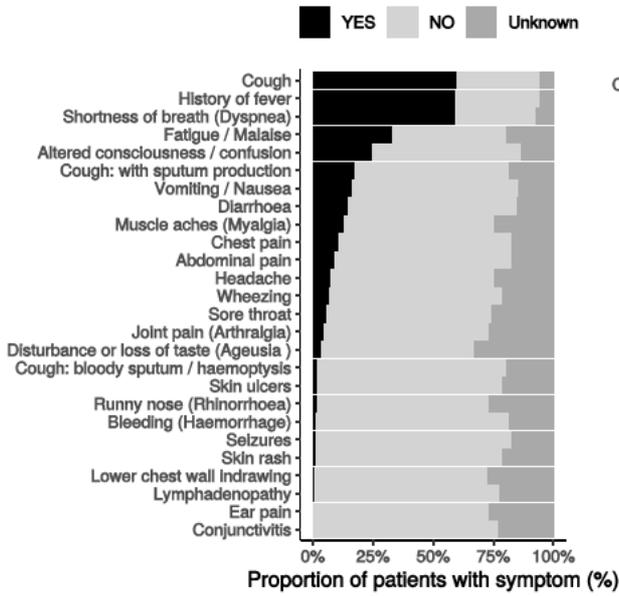


## Symptoms and comorbidity

Figure 3A

Symptoms on presentation to hospital (% patients, n = 73957)

Figure 3A



Comorbidity (% patients, Figure 3B)

Figure 3B

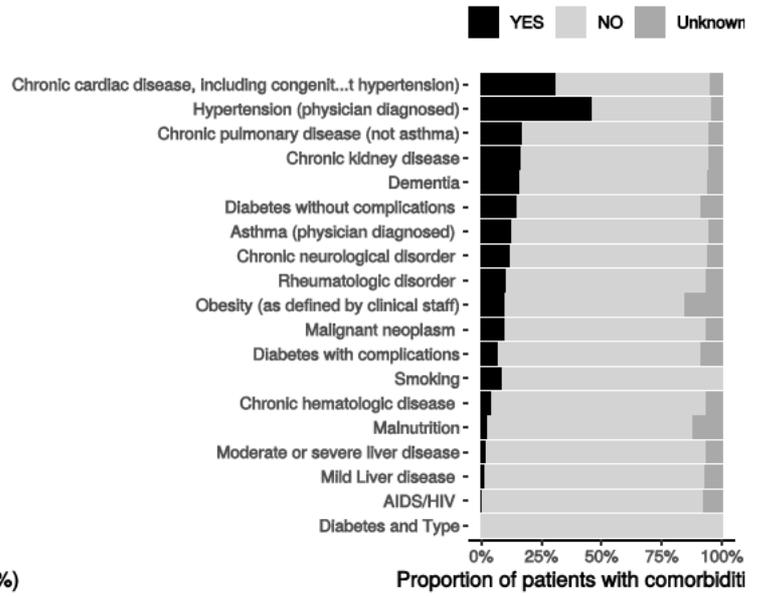
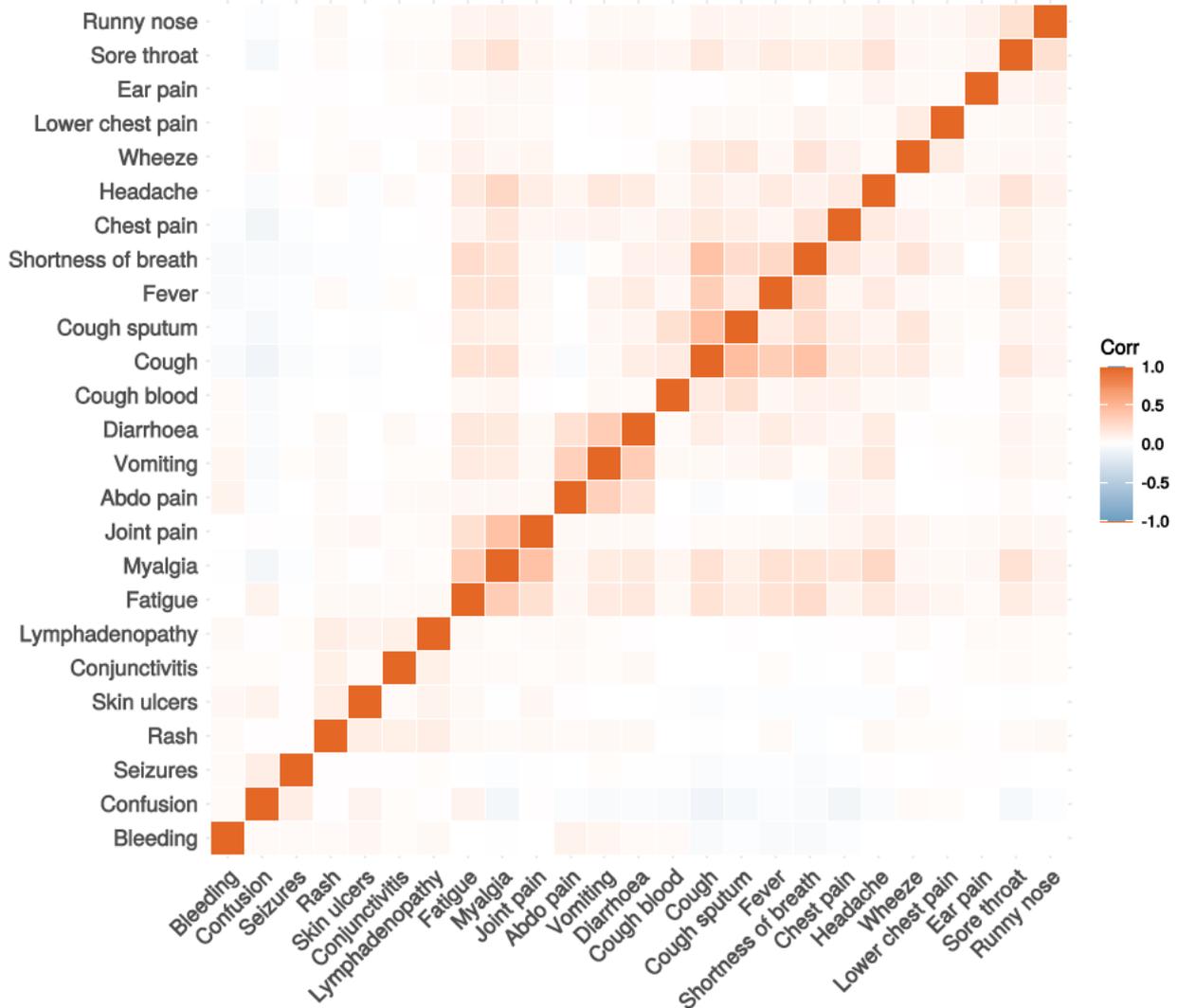


Figure 3C

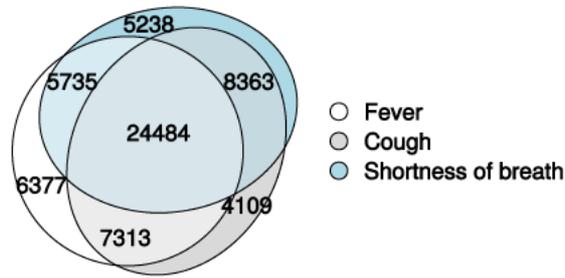
Correlation of symptoms in all pages. Note clusters, top right to bottom left, flu-like, coryzal, abdominal, respiratory, neurocutaneous.



Symptoms (diagnostic criteria)

Figure 4A

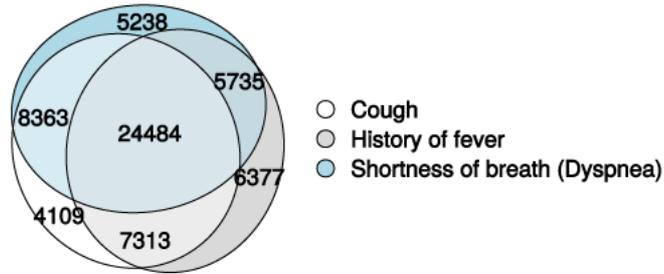
n = 73957



## Symptoms (most common)

Figure 4B

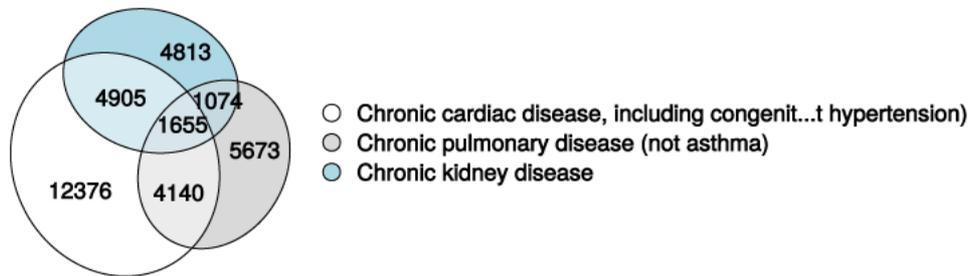
n = 73957



## Comorbidity (most common)

Figure 4C

n = 74110



## Medication prior to illness

Figure 5

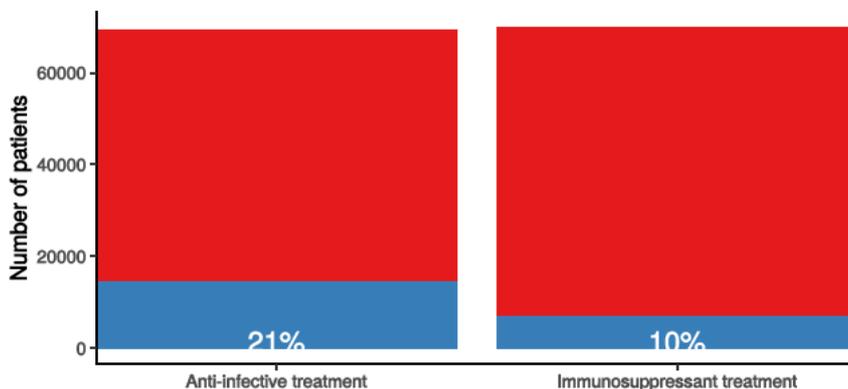
## Preadmission treatment

Figure 5

### Pre-admission treatment

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

■ No ■ Yes



## Patient flow

Figure 6A - All patients

N = 75607

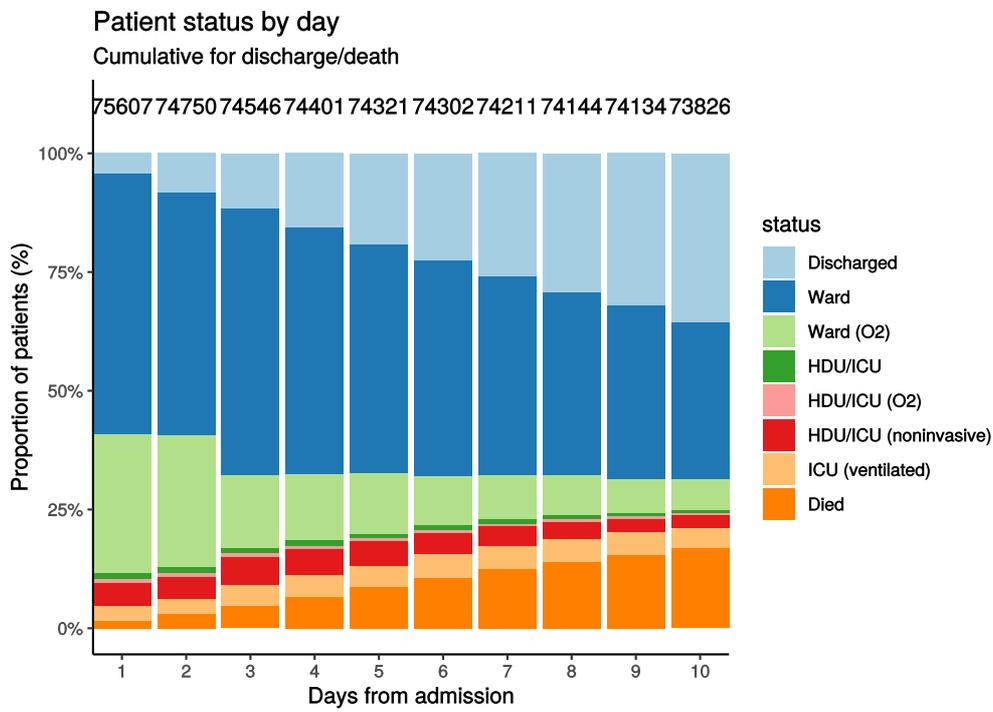
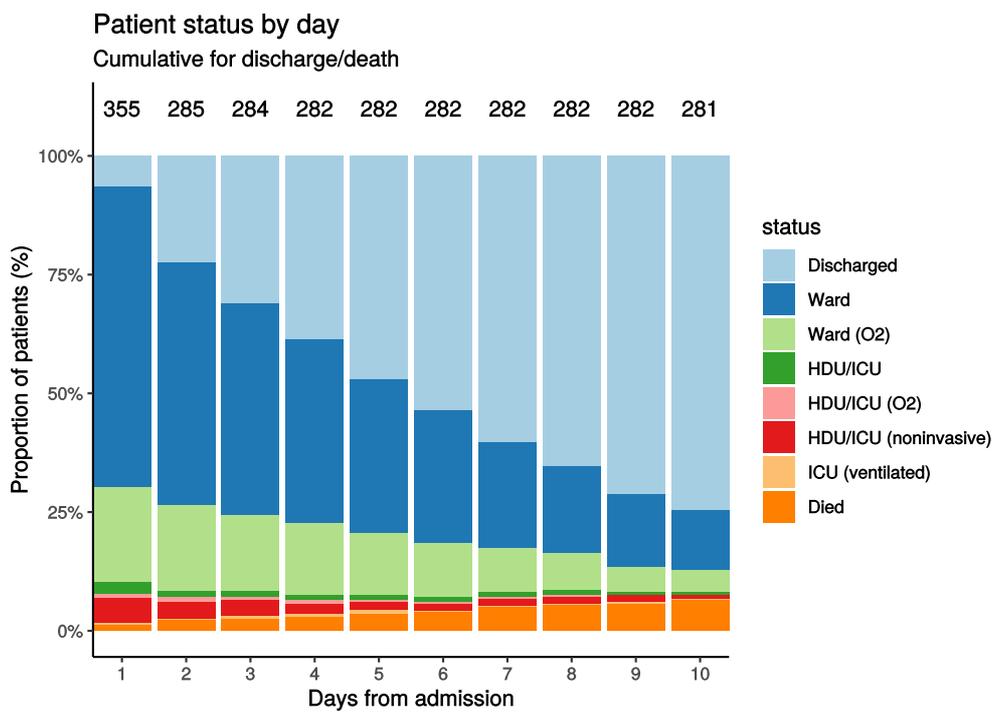


Figure 6B - Patients admitted  $\geq 14$  days and  $\leq 28$  days ago

N = 355



## Oxygen requirement

Figure 7A - All patients

N = 71612

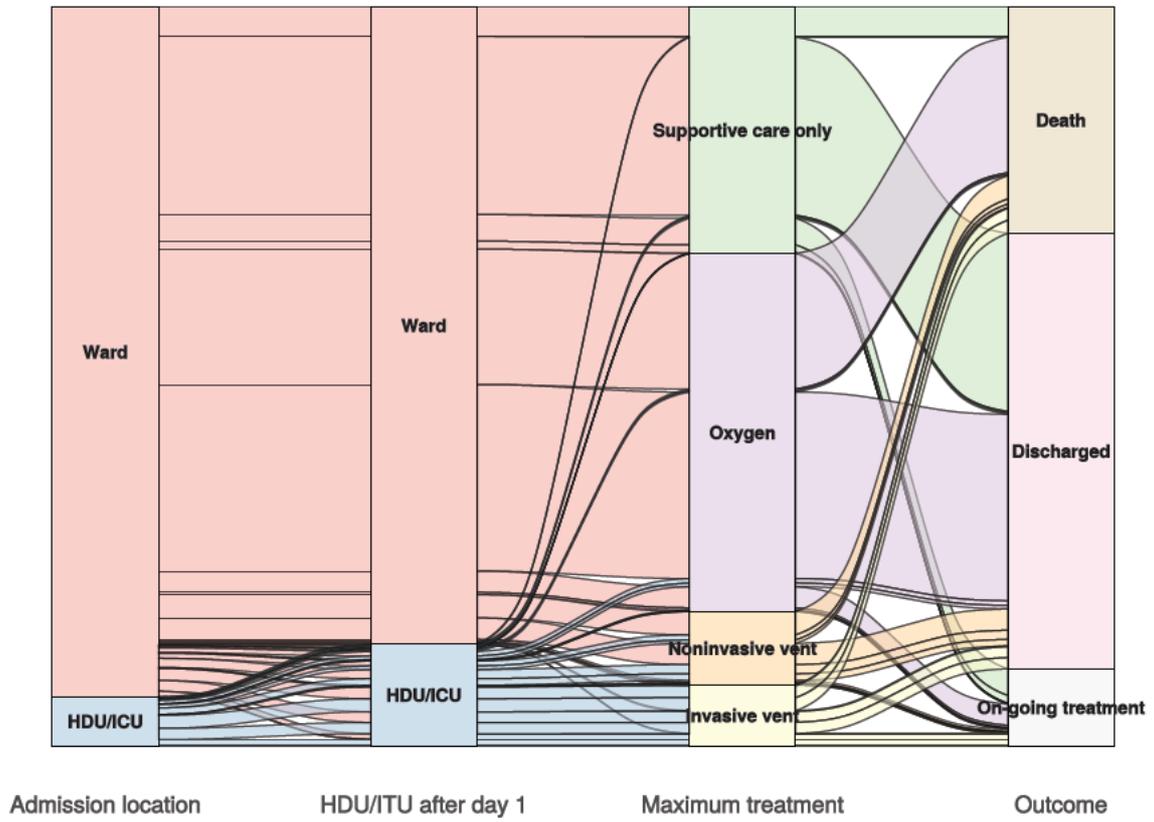
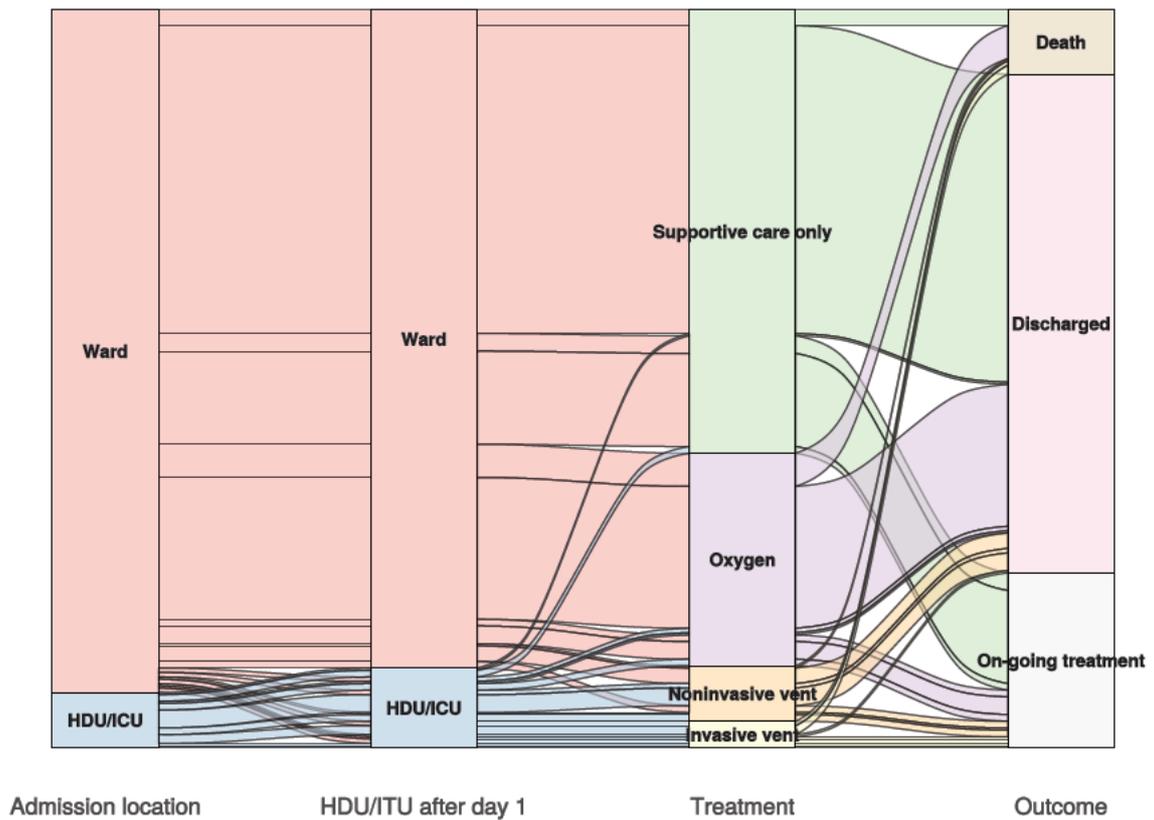


Figure 7B - Patients admitted  $\geq 14$  days and  $\leq 28$  days ago

N = 344

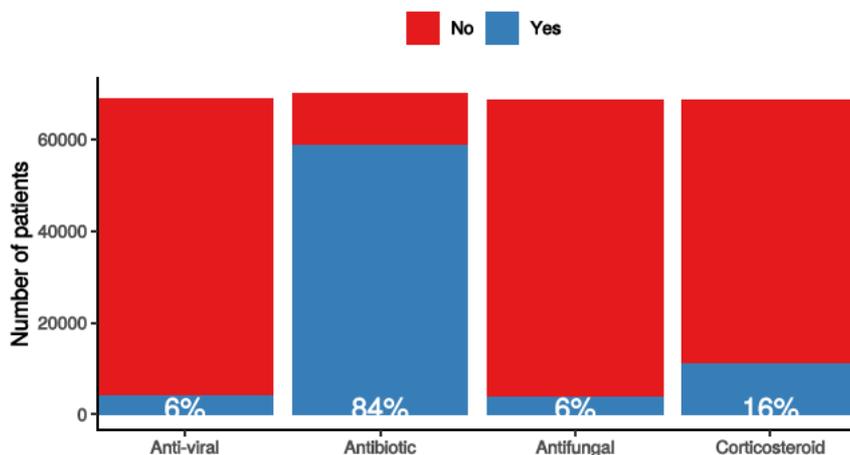


## In-hospital medical treatment

Figure 8

## In-hospital treatment

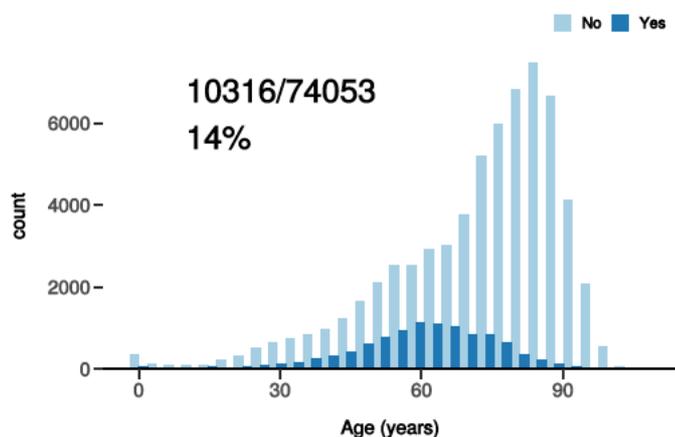
Anti-virals, antibiotics, corticosteroids, and anti-fungals for patients who have  $\alpha$



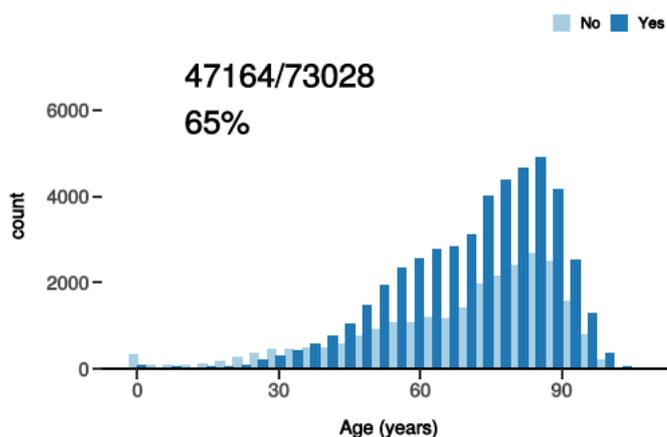
## Treatment

Figure 9

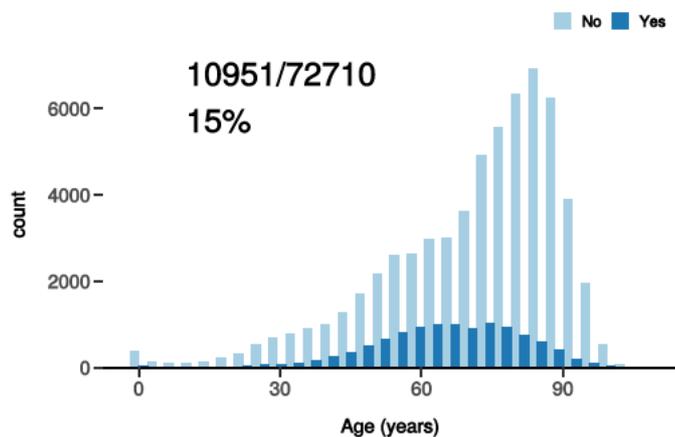
ICU/HDU admission  
Figure 10A



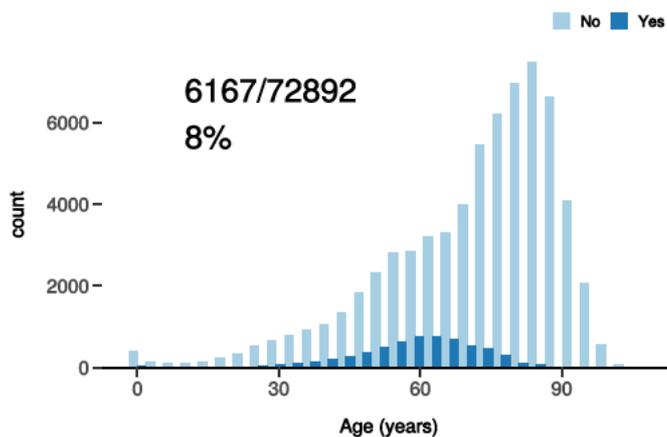
High flow oxygen  
Figure 10B



Noninvasive ventilation  
Figure 10C



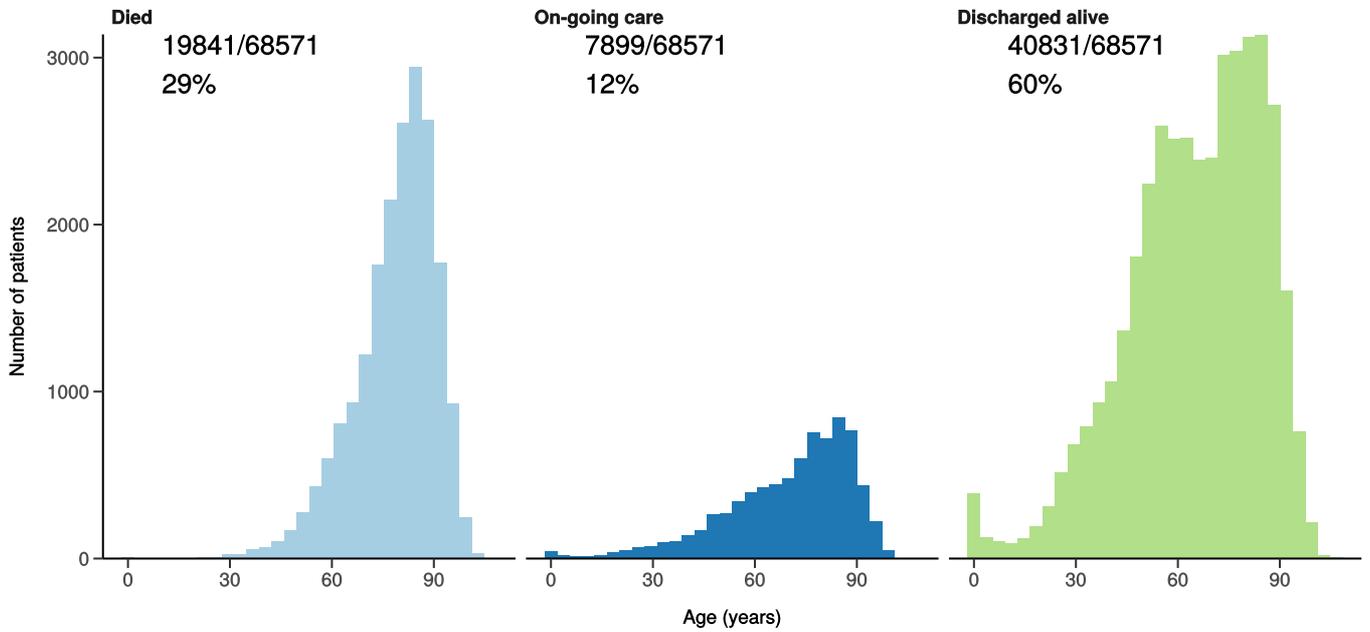
Invasive ventilation  
Figure 10D



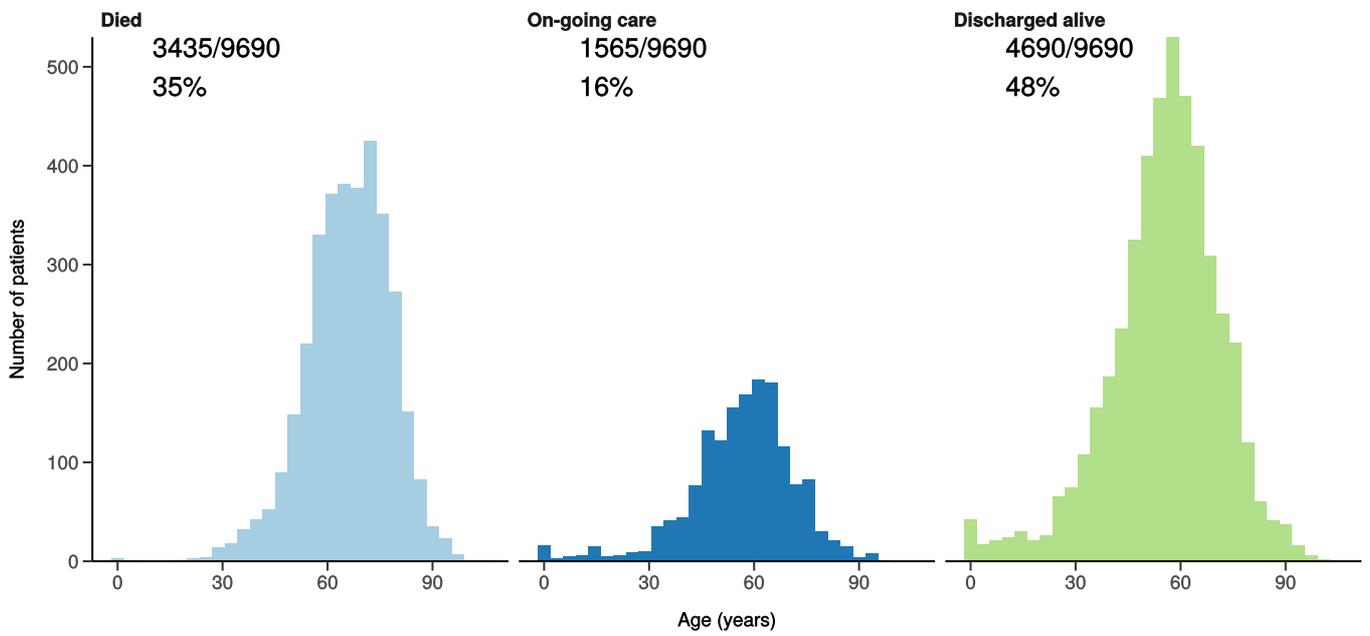
## Status of patients admitted $\geq 14$ days from today

Figure 10

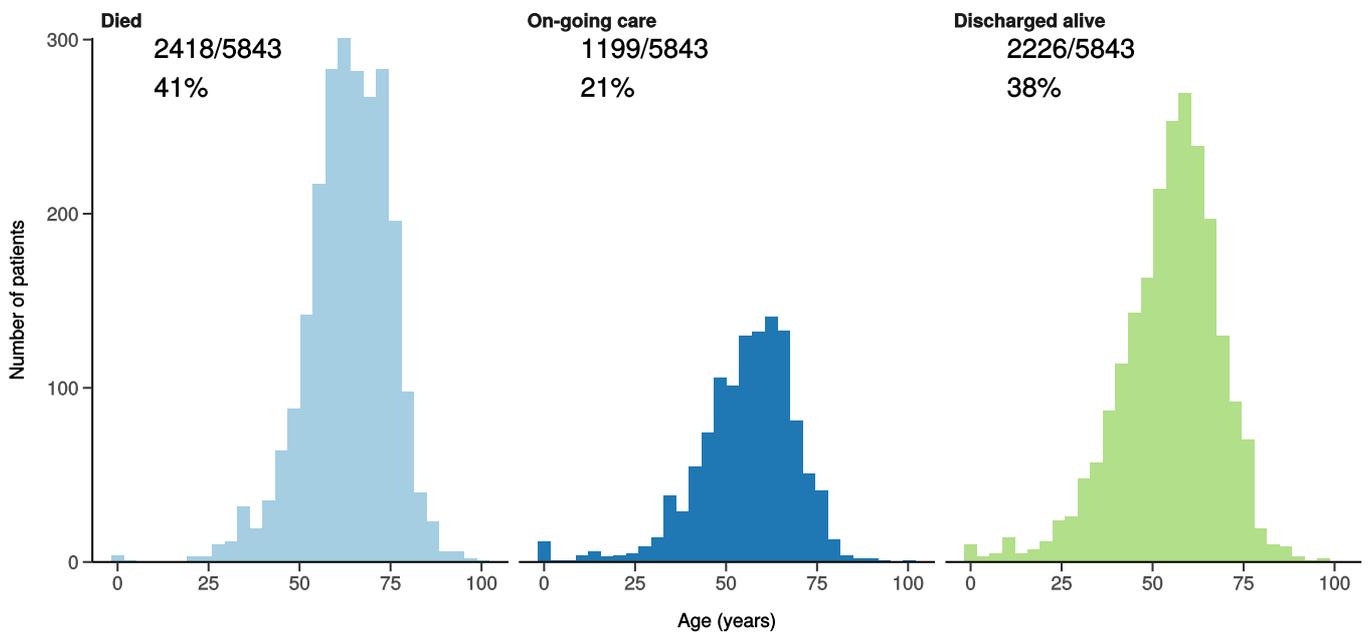
All patients



Patients admitted to ICU/HDU



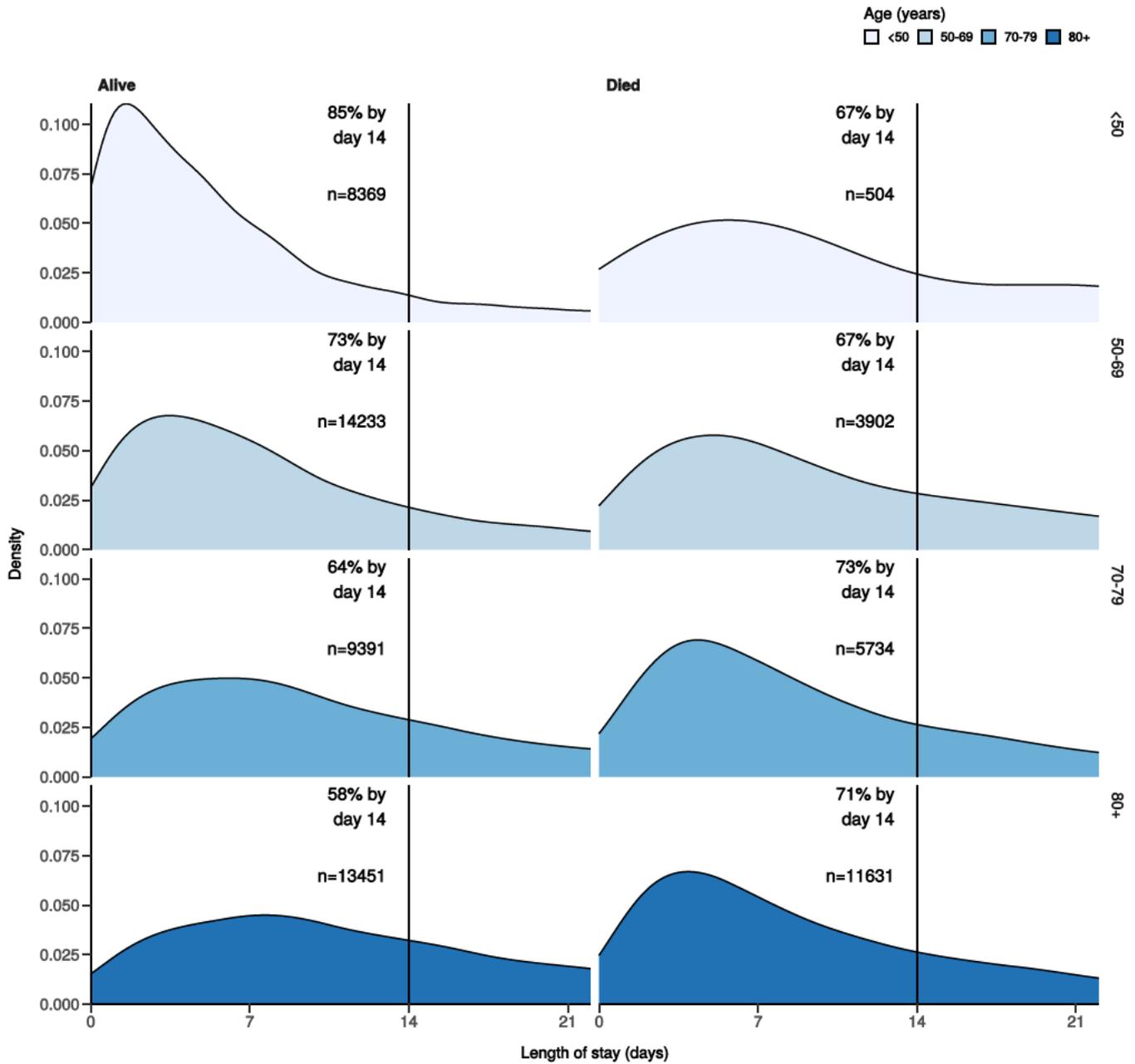
Patients receiving invasive ventilation



# 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.factor	<50	9627 (94.7)	538 (5.3)	•	•
	50-69	15833 (79.4)	4097 (20.6)	4.63 (4.22-5.09, p<0.001)	4.34 (3.91-4.83, p<0.001)
	70-79	10396 (63.3)	6018 (36.7)	10.36 (9.45-11.37, p<0.001)	8.77 (7.90-9.77, p<0.001)
	80+	14722 (54.7)	12203 (45.3)	14.83 (13.57-16.25, p<0.001)	12.53 (11.29-13.95, p<0.001)

Dependent: death		No	Yes	OR (univariable)	OR (multivariable)
Sex at Birth	Male	27449 (66.4)	13859 (33.6)	•	•
	Female	23224 (72.0)	9050 (28.0)	0.77 (0.75-0.80, p<0.001)	0.70 (0.67-0.73, p<0.001)
	Not specified	0 (NaN)	0 (NaN)	•	•
Chronic cardiac disease, including congenit...t hypertension)	NO	34110 (73.7)	12157 (26.3)	•	•
	YES	13264 (58.8)	9286 (41.2)	1.96 (1.90-2.03, p<0.001)	1.15 (1.10-1.20, p<0.001)
Chronic pulmonary disease (not asthma)	NO	39978 (71.0)	16307 (29.0)	•	•
	YES	7275 (59.4)	4967 (40.6)	1.67 (1.61-1.74, p<0.001)	1.24 (1.19-1.31, p<0.001)
Chronic neurological disorder	NO	41386 (70.0)	17719 (30.0)	•	•
	YES	5534 (62.2)	3359 (37.8)	1.42 (1.35-1.48, p<0.001)	1.14 (1.08-1.21, p<0.001)
Chronic hematologic disease	NO	44924 (69.4)	19799 (30.6)	•	•
	YES	1847 (61.1)	1176 (38.9)	1.44 (1.34-1.56, p<0.001)	1.15 (1.05-1.26, p=0.002)
Chronic kidney disease	NO	40194 (71.6)	15964 (28.4)	•	•
	YES	6911 (56.8)	5247 (43.2)	1.91 (1.84-1.99, p<0.001)	1.28 (1.22-1.34, p<0.001)
Dementia	NO	40713 (72.1)	15754 (27.9)	•	•
	YES	6263 (53.7)	5410 (46.3)	2.23 (2.14-2.33, p<0.001)	1.37 (1.30-1.44, p<0.001)
Obesity (as defined by clinical staff)	NO	37356 (69.1)	16711 (30.9)	•	•
	YES	5309 (72.6)	2008 (27.4)	0.85 (0.80-0.89, p<0.001)	1.30 (1.22-1.39, p<0.001)
Malignant neoplasm	NO	42826 (70.5)	17903 (29.5)	•	•
	YES	3979 (56.2)	3105 (43.8)	1.87 (1.78-1.96, p<0.001)	1.44 (1.36-1.53, p<0.001)

Number in dataframe = 75502, Number in model = 58240, Missing = 17262, AIC = 63813.2, C-statistic = 0.713, H&L = Chi-sq(8) 130.65 (p<0.001)

**Figure 12 - Adjusted odds ratio plot**

## Death

age.factor	<50	-
	50-69	4.34 (3.91-4.83, p<0.001)
	70-79	8.77 (7.90-9.77, p<0.001)
	80+	12.53 (11.29-13.95, p<0.001)
Sex at Birth	Male	-
	Female	0.70 (0.67-0.73, p<0.001)
	Not specified	-
Chronic cardiac disease, including congestive heart failure and hypertension	YES	1.15 (1.10-1.20, p<0.001)
Chronic pulmonary disease (not asthma)	YES	1.24 (1.19-1.31, p<0.001)
Chronic neurological disorder	YES	1.14 (1.08-1.21, p<0.001)
Chronic hematologic disease	YES	1.15 (1.05-1.26, p=0.002)
Chronic kidney disease	YES	1.28 (1.22-1.34, p<0.001)
Dementia	YES	1.37 (1.30-1.44, p<0.001)
Obesity (as defined by clinical staff)	YES	1.30 (1.22-1.39, p<0.001)
Malignant neoplasm	YES	1.44 (1.36-1.53, p<0.001)

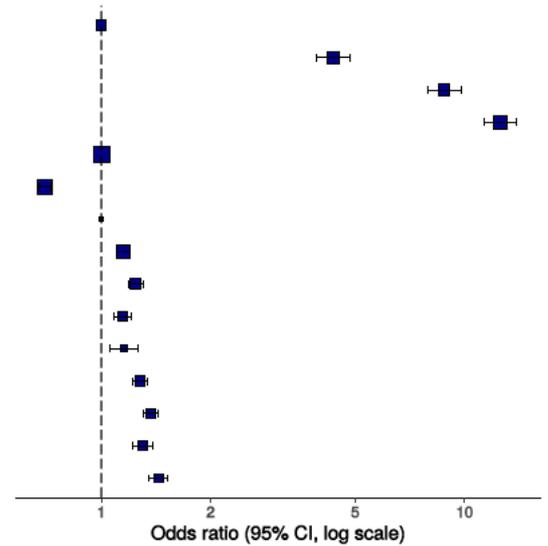
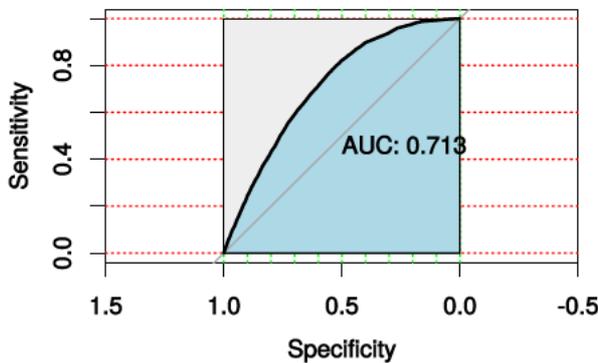


Figure 13 - ROC

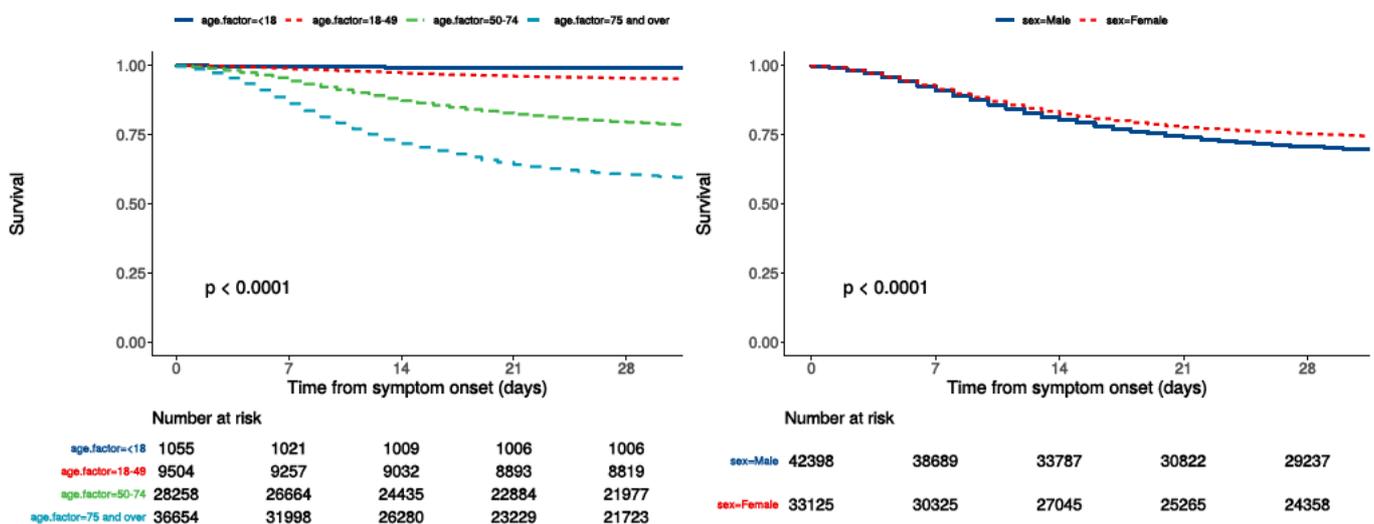


## Survival models

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.factor	<50	10559 (14.0)	•	•
	50-69	20493 (27.2)	4.22 (3.85-4.62, p<0.001)	4.08 (3.65-4.55, p<0.001)
	70-79	16843 (22.3)	8.48 (7.76-9.26, p<0.001)	7.99 (7.16-8.91, p<0.001)
	80+	27581 (36.5)	11.40 (10.45-12.43, p<0.001)	10.51 (9.42-11.71, p<0.001)
Sex at Birth	Male	42398 (56.1)	•	•
	Female	33125 (43.9)	0.81 (0.79-0.84, p<0.001)	0.79 (0.76-0.81, p<0.001)
qSOFA score on admission	0	27441 (42.6)	•	•
	1	28933 (44.9)	1.59 (1.54-1.64, p<0.001)	1.70 (1.64-1.76, p<0.001)
	2	7252 (11.3)	3.01 (2.89-3.14, p<0.001)	2.84 (2.71-2.98, p<0.001)
	3	815 (1.3)	4.83 (4.42-5.28, p<0.001)	4.46 (4.03-4.93, p<0.001)
Symptomatic at presentation	No symptoms	3594 (4.9)	•	•
	Symptoms	70234 (95.1)	1.54 (1.43-1.65, p<0.001)	•
Chronic cardiac disease, including congenit...t hypertension)	NO	47224 (67.3)	•	•
	YES	22978 (32.7)	1.75 (1.71-1.80, p<0.001)	1.13 (1.09-1.17, p<0.001)
Chronic kidney disease	NO	57287 (82.2)	•	•
	YES	12393 (17.8)	1.71 (1.65-1.76, p<0.001)	1.21 (1.17-1.26, p<0.001)
Moderate or severe liver disease	NO	67606 (98.0)	•	•
	YES	1374 (2.0)	1.26 (1.15-1.37, p<0.001)	1.41 (1.27-1.57, p<0.001)
Chronic neurological disorder	NO	60288 (86.9)	•	•
	YES	9051 (13.1)	1.35 (1.30-1.40, p<0.001)	•
Malignant neoplasm	NO	61959 (89.6)	•	•
	YES	7186 (10.4)	1.63 (1.57-1.69, p<0.001)	1.31 (1.25-1.37, p<0.001)
Chronic hematologic disease	NO	66016 (95.6)	•	•
	YES	3056 (4.4)	1.34 (1.26-1.42, p<0.001)	•

Dependent: Surv(time, status)		all	HR (univariable)	HR (multivariable)
Obesity (as defined by clinical staff)	NO	55191 (88.1)	•	•
	YES	7428 (11.9)	0.86 (0.82-0.90, p<0.001)	1.18 (1.12-1.24, p<0.001)
Diabetes without complications	NO	56247 (83.4)	•	•
	YES	11158 (16.6)	1.24 (1.20-1.29, p<0.001)	•
Rheumatologic disorder	NO	60996 (88.5)	•	•
	YES	7907 (11.5)	1.20 (1.16-1.25, p<0.001)	•
Dementia	NO	57619 (82.9)	•	•
	YES	11872 (17.1)	1.97 (1.91-2.03, p<0.001)	1.17 (1.12-1.21, p<0.001)
Malnutrition	NO	63208 (97.2)	•	•
	YES	1821 (2.8)	1.45 (1.34-1.56, p<0.001)	•
smoking_mhyn_2levels	NO	41249 (58.0)	•	•
	YES	3990 (5.6)	0.87 (0.82-0.93, p<0.001)	•
	N/K	25906 (36.4)	1.24 (1.20-1.27, p<0.001)	•

Number in dataframe = 75982, Number in model = 52598, Missing = 23384, Number of events = 15652, Concordance = 0.716 (SE = 0.002), R-squared = 0.159( Max possible = 0.998), Likelihood ratio test = 9136.205 (df = 13, p = 0.000)

Figure 15a - Multivariable Cox proportional hazards model

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

age.factor	<50	-
	50-69	4.08 (3.65-4.55, p<0.001)
	70-79	7.99 (7.16-8.91, p<0.001)
	80+	10.51 (9.42-11.71, p<0.001)
Sex at Birth	Female	0.79 (0.76-0.81, p<0.001)
qSOFA score on admission	0	-
	1	1.70 (1.64-1.76, p<0.001)
	2	2.84 (2.71-2.98, p<0.001)
	3	4.46 (4.03-4.93, p<0.001)
Chronic cardiac disease, including congenit...t hypertension	YES	1.13 (1.09-1.17, p<0.001)
Chronic kidney disease	YES	1.21 (1.17-1.26, p<0.001)
Moderate or severe liver disease	YES	1.41 (1.27-1.57, p<0.001)
Malignant neoplasm	YES	1.31 (1.25-1.37, p<0.001)
Obesity (as defined by clinical staff)	YES	1.18 (1.12-1.24, p<0.001)
Dementia	YES	1.17 (1.12-1.21, p<0.001)

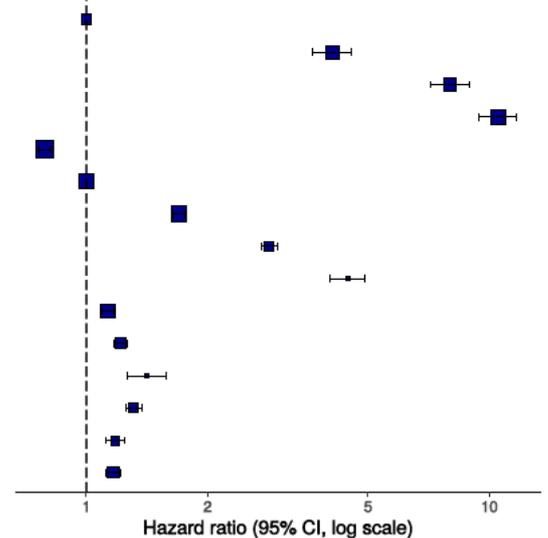
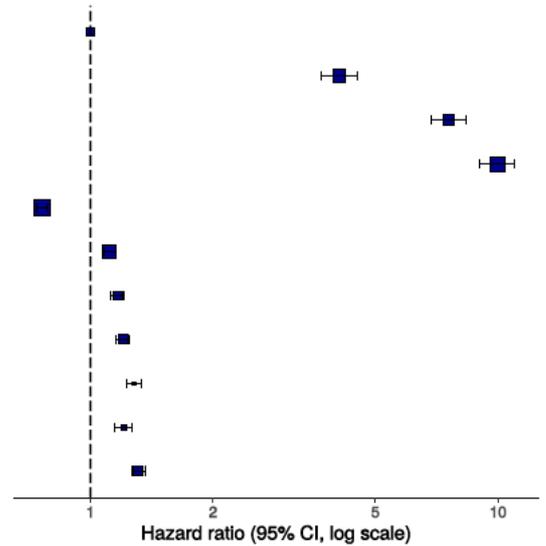


Figure 15b - Multivariable Cox proportional hazards model (age, sex, comorbidities only)

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

age.factor	<50	-
	50-69	4.08 (3.68-4.51, p<0.001)
	70-79	7.56 (6.83-8.36, p<0.001)
	80+	9.96 (9.01-11.01, p<0.001)
Sex at Birth	Female	0.76 (0.74-0.79, p<0.001)
Chronic cardiac disease, including congenit...t hypertension)	YES	1.11 (1.08-1.15, p<0.001)
Chronic pulmonary disease (not asthma)	YES	1.17 (1.12-1.21, p<0.001)
Chronic kidney disease	YES	1.20 (1.16-1.25, p<0.001)
Malignant neoplasm	YES	1.28 (1.23-1.34, p<0.001)
Obesity (as defined by clinical staff)	YES	1.21 (1.15-1.27, p<0.001)
Dementia	YES	1.31 (1.26-1.36, p<0.001)



ROC = 0.7155535

Figure 16 - Predictions calibration plot

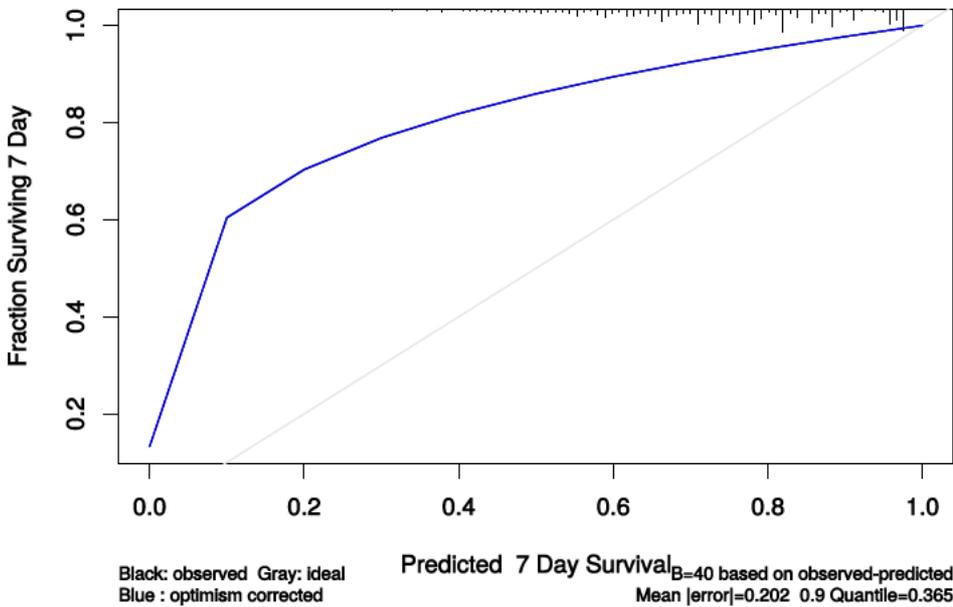


Figure 17 - Prognostic model predictions

Again, for demonstration of methods.

Prognostic model for survival 7 days after onset  
qSOFA score on admission

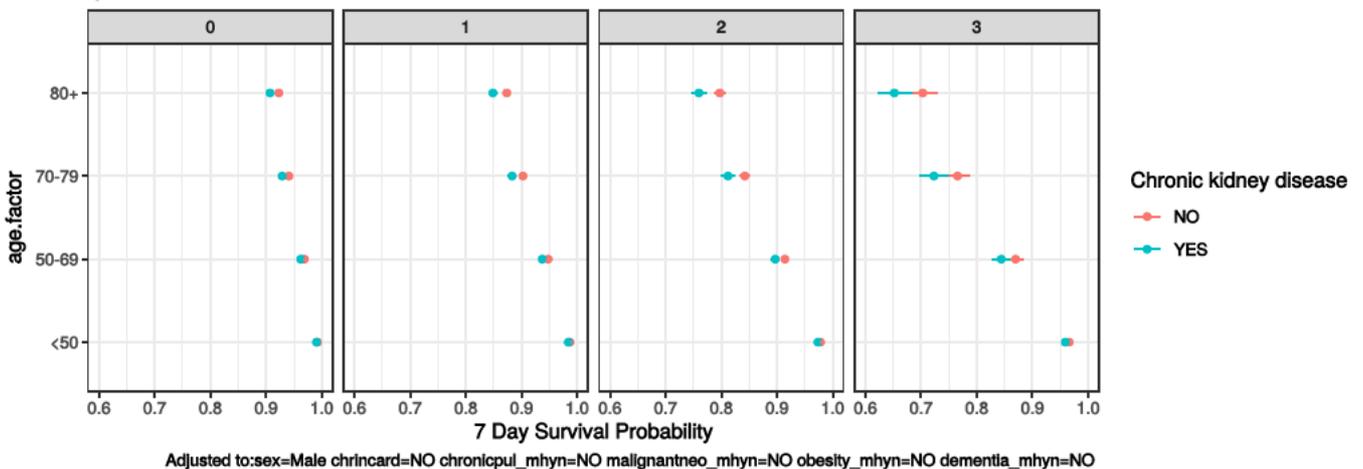


Figure 18 - Death by severity (NEWS) on admission

Number of deaths by NEWS score at admission

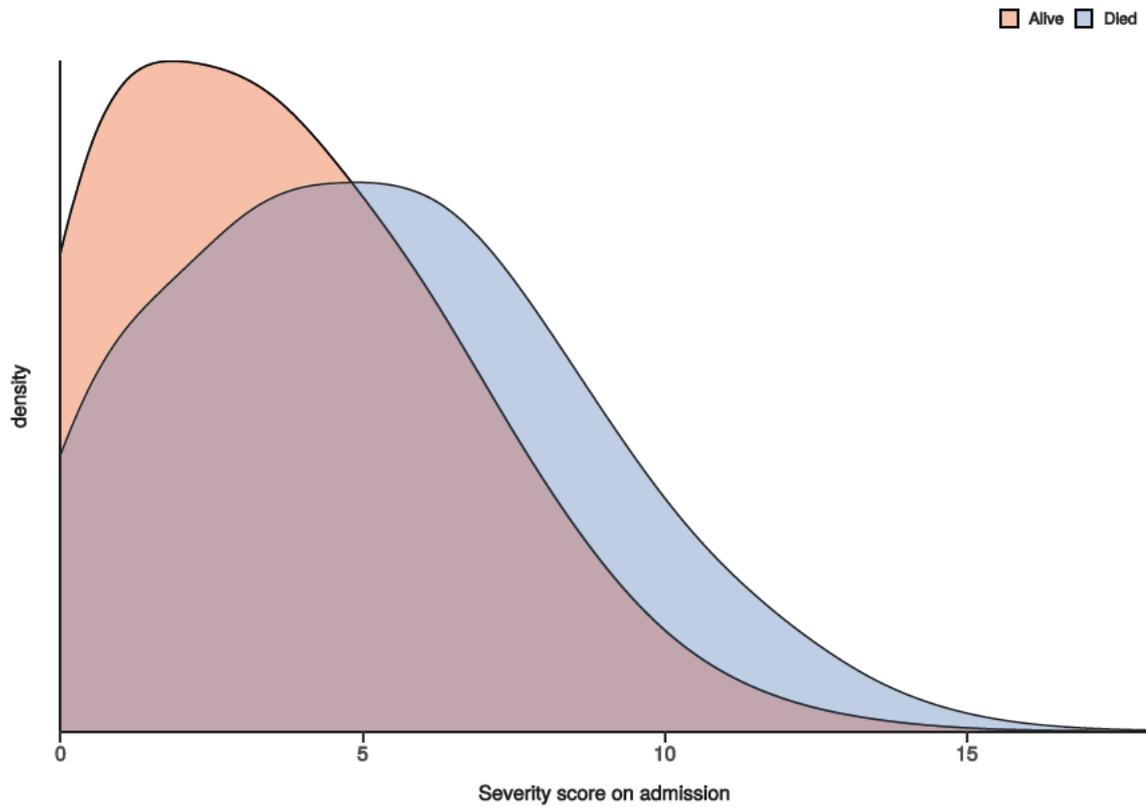


Figure 19 - Death by severity (NEWS) on admission stratified by age

Number of deaths by NEWS score at admission  
Stratified by age

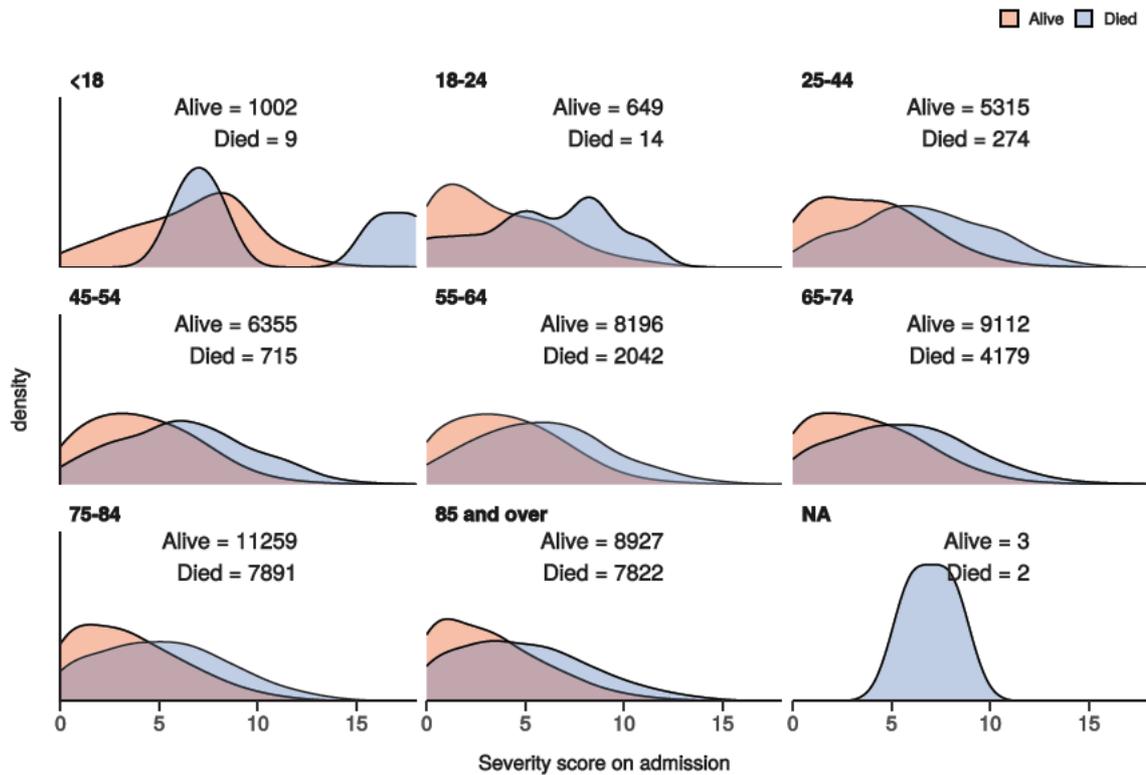
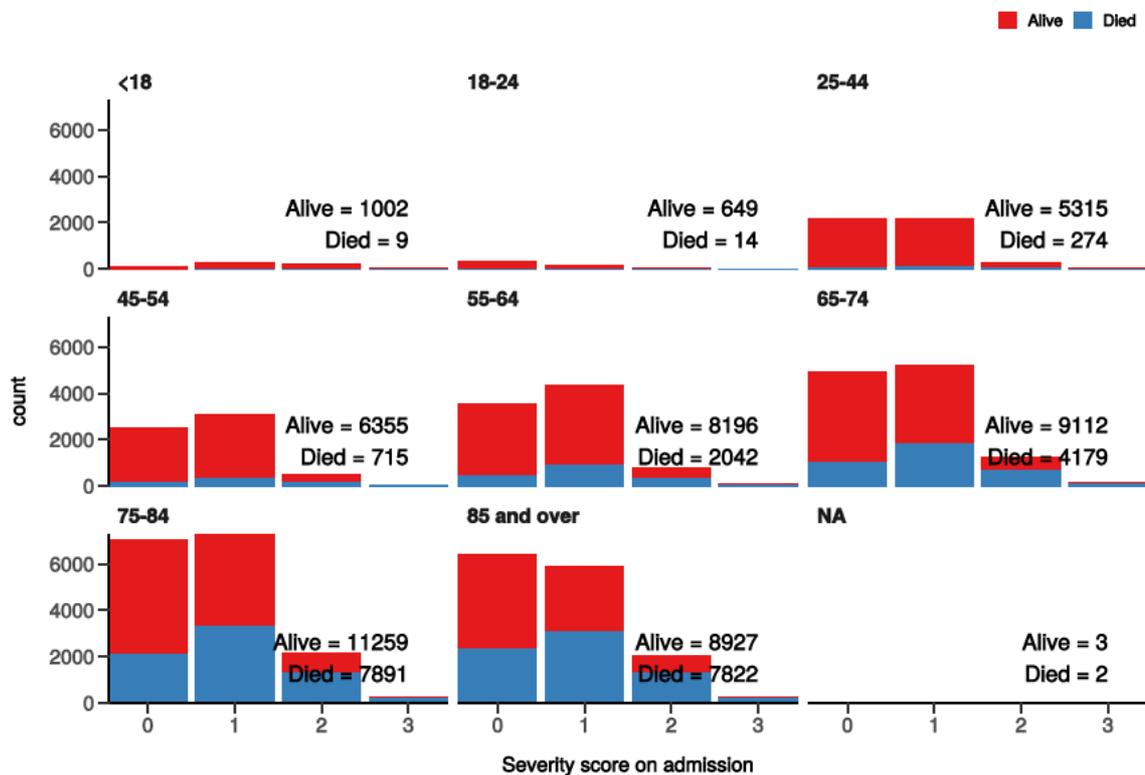


Figure 20 - Death by severity (qSOFA) on admission stratified by age

Number of deaths by qSOFA score at admission  
Stratified by age



## Healthcare workers

Employed as a healthcare worker?		NO	YES	p
Total N (%)		65741 (95.1)	3406 (4.9)	
NEWS score on admission	Median (IQR)	4.0 (4.0)	4.0 (4.0)	0.006
Death	No	42476 (66.9)	3075 (92.7)	<0.001
	Yes	20973 (33.1)	243 (7.3)	

## Admission (detail)

Table 1

label	levels	all
Total N (%)		79335 (100.0)
age	Mean (SD)	70.2 (20.2)
Sex at Birth	Male	43697 (55.1)
	Female	34107 (43.0)
	Not specified	144 (0.2)
	(Missing)	1387 (1.7)
	Employed as a healthcare worker?	YES
	NO	65741 (82.9)
	N/A	7501 (9.5)
	(Missing)	2687 (3.4)

<b>label</b>	<b>levels</b>	<b>all</b>
Employed in a microbiology laboratory?	YES	89 (0.1)
	NO	26008 (32.8)
	N/A	3087 (3.9)
	(Missing)	50151 (63.2)
Onset to admission (days)	Mean (SD)	5.4 (1438.7)
Transfer from other facility?	Yes-other facility is a study site	2057 (2.6)
	Yes-other facility is not a study site	3832 (4.8)
	No	65123 (82.1)
	N/A	3216 (4.1)
	(Missing)	5107 (6.4)
	Travel in the 14 days prior to first symptom onset?	Yes
	No	22751 (28.7)
	N/A	4512 (5.7)
	(Missing)	51244 (64.6)
If YES, state location: 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)
	Argentina	1 (0.0)
	Armenia	0 (0.0)
	Aruba	0 (0.0)
	Australia	3 (0.0)
	Austria	21 (0.0)
	Azerbaijan	2 (0.0)
	Bahamas (The)	6 (0.0)
	Bahrain	0 (0.0)
	Bangladesh	1 (0.0)
	Barbados	18 (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)	

<b>label</b>	<b>levels</b>	<b>all</b>
	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	1 (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)
	Congo (Republic of the)	0 (0.0)
	Costa Rica	0 (0.0)
	Cote dlvoire	0 (0.0)
	Croatia	0 (0.0)
	Cuba	1 (0.0)
	Curacao	0 (0.0)
	Cyprus	27 (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	9 (0.0)
	El Salvador	0 (0.0)
	Equatorial Guinea	0 (0.0)
	Eritrea	0 (0.0)
	Estonia	0 (0.0)

<b>label</b>	<b>levels</b>	<b>all</b>
	Ethiopia	0 (0.0)
	Fji	0 (0.0)
	Finland	0 (0.0)
	France	35 (0.0)
	Gabon	0 (0.0)
	Gambia (The)	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	4 (0.0)
	Iceland	1 (0.0)
	India	12 (0.0)
	Indonesia	1 (0.0)
	Iran	6 (0.0)
	Iraq	0 (0.0)
	Ireland	8 (0.0)
	Israel	0 (0.0)
	Italy	90 (0.1)
	Jamaica	3 (0.0)
	Japan	6 (0.0)
	Jordan	1 (0.0)
	Kazakhstan	0 (0.0)
	Kenya	1 (0.0)
	Kiribati	0 (0.0)
	Korea (South)	0 (0.0)
	Kosovo	0 (0.0)

<b>label</b>	<b>levels</b>	<b>all</b>
	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	2 (0.0)
	Marshall Islands	0 (0.0)
	Mauritania	0 (0.0)
	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)

<b>label</b>	<b>levels</b>	<b>all</b>
	Niger	0 (0.0)
	Nigeria	2 (0.0)
	North Korea	0 (0.0)
	Norway	2 (0.0)
	Oman	0 (0.0)
	Pakistan	10 (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)
	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	1 (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)

<b>label</b>	<b>levels</b>	<b>all</b>
	South Africa	10 (0.0)
	South Korea	1 (0.0)
	South Sudan	0 (0.0)
	Spain	204 (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	1 (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)
	Turkmenistan	0 (0.0)
	Tuvalu	0 (0.0)
	Uganda	0 (0.0)
	Ukraine	0 (0.0)
	United Arab Emirates	11 (0.0)
	United Kingdom	115 (0.1)
	United States	32 (0.0)
	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)

<b>label</b>	<b>levels</b>	<b>all</b>
	(Missing)	78537 (99.0)
	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	3 (0.0)
	Austria	4 (0.0)
	Azerbaijan	0 (0.0)
	Bahamas (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)
	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	2 (0.0)
	Cabo Verde	0 (0.0)
	Central African Republic	0 (0.0)

<b>label</b>	<b>levels</b>	<b>all</b>
	Chad	0 (0.0)
	Chile	0 (0.0)
	China	0 (0.0)
	Colombia	0 (0.0)
	Comoros	0 (0.0)
	Congo (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)
	Estonia	0 (0.0)
	Ethiopia	0 (0.0)
	Fiji	0 (0.0)
	Finland	0 (0.0)
	France	9 (0.0)
	Gabon	0 (0.0)
	Gambia (The)	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)

<b>label</b>	<b>levels</b>	<b>all</b>
	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	4 (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)
	Korea (South)	0 (0.0)
	Kosovo	0 (0.0)
	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)

<b>label</b>	<b>levels</b>	<b>all</b>
	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)
	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)

<b>label</b>	<b>levels</b>	<b>all</b>
	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)
	South Africa	1 (0.0)
	South Korea	0 (0.0)
	South Sudan	0 (0.0)
	Spain	21 (0.0)
	Sri Lanka	0 (0.0)
	Sudan	0 (0.0)
	Suriname	0 (0.0)
	Swaziland	0 (0.0)
	Sweden	0 (0.0)
	Switzerland	1 (0.0)
	Syria	0 (0.0)
	Taiwan	0 (0.0)
	Tajikistan	0 (0.0)

label	levels	all
	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)
	United States	4 (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)	79236 (99.9)
Contact with animals, raw meat or insect bi...symptom onset?	Yes	109 (0.1)
	No	11013 (13.9)
	Unknown	15237 (19.2)
	N/A	1829 (2.3)
	(Missing)	51147 (64.5)
If YES, specify the animal/insect	2 Budgerigars and 26 Cats at home	1 (0.9)
	2 cats	1 (0.9)
	2 dogs	1 (0.9)
	Bee Sting	1 (0.9)
	Bird (pet)	1 (0.9)
	Birds at home	1 (0.9)
	Budgie	1 (0.9)

label	levels	all
	budgies	1 (0.9)
	cat	3 (2.8)
	Cat	1 (0.9)
	CAT	1 (0.9)
	Cat (pet)	1 (0.9)
	Cat / Dog	1 (0.9)
	Cat, Dog (pets)	1 (0.9)
	cats	3 (2.8)
	Cats	1 (0.9)
	chicken & beef	1 (0.9)
	Chickens	2 (1.9)
	COWS	1 (0.9)
	Cows, Rabbits, Pigs, Goats	1 (0.9)
	DAILY CONTACT WITH DOMESTIC PET CAT	1 (0.9)
	dog	6 (5.6)
	Dog	12 (11.2)
	DOG	2 (1.9)
	DOG FAMILY PET	1 (0.9)
	Dog, domestic animal living in their home.	1 (0.9)
	Dogs	1 (0.9)
	dogs and cats	1 (0.9)
	Dogs at home	1 (0.9)
	domestic	1 (0.9)
	Domestic pet dog	1 (0.9)
	DOMESTIC ANIMAL	2 (1.9)
	Domestic animal and faeces/nest	1 (0.9)
	domestic animal living in his home	1 (0.9)
	domestic animals	1 (0.9)
	Domestic animals living in his/her home	1 (0.9)
	Domestic Animals living in his/her home	1 (0.9)
	Domestic animals living in home	1 (0.9)
	Domestic cats	1 (0.9)
	domestic dog	1 (0.9)
	domestic Dog	1 (0.9)
	Domestic Per (dog)	1 (0.9)
	Domestic pest (cats)	1 (0.9)

label	levels	all
	Domestic Pet	5 (4.7)
	Domestic Pet (Dog)	6 (5.6)
	Domestic pet cat	1 (0.9)
	Domestic pet Dog	1 (0.9)
	Domestic pet, dog	1 (0.9)
	Domestic pets	1 (0.9)
	Domestic Pets	2 (1.9)
	Domestic pets (dog)	1 (0.9)
	Domestic Pets Cat and Dog	1 (0.9)
	FARM ANIMALS - LAMBS	1 (0.9)
	Farm animals, cattle	1 (0.9)
	Guinea Pig	1 (0.9)
	HORSES	1 (0.9)
	Livestock including pigs	1 (0.9)
	pet dog	2 (1.9)
	Pet dog	2 (1.9)
	Pet dog -ongoing daily contact	1 (0.9)
	pet dog at home	1 (0.9)
	Pet dog ongoing daily contact	1 (0.9)
	Prepared raw chicken	1 (0.9)
	Rabbits	1 (0.9)
	raw chicken	1 (0.9)
	Raw Chicken	1 (0.9)
	Rodent	1 (0.9)
	she has a cat	1 (0.9)
	SHEEP	1 (0.9)
	Sheep & Cattle	1 (0.9)
	Two cats	1 (0.9)
	unknown	1 (0.9)

## Symptoms (detail)

Table 2

Stratified: all		all
Total N (%)		79335 (100.0)
History of fever	YES	43909 (55.3)
	NO	26134 (32.9)

## Stratified: all

all

	Unknown	3914 (4.9)
	(Missing)	5378 (6.8)
Cough	YES	44269 (55.8)
	NO	25421 (32.0)
	Unknown	4265 (5.4)
	(Missing)	5380 (6.8)
Cough: with sputum production	YES	13124 (16.5)
	NO	47261 (59.6)
	Unknown	13481 (17.0)
	(Missing)	5469 (6.9)
Cough: bloody sputum / haemoptysis	YES	1581 (2.0)
	NO	57881 (73.0)
	Unknown	14389 (18.1)
	(Missing)	5484 (6.9)
Sore throat	YES	4127 (5.2)
	NO	50880 (64.1)
	Unknown	18869 (23.8)
	(Missing)	5459 (6.9)
Runny nose (Rhinorrhoea)	YES	1268 (1.6)
	NO	52939 (66.7)
	Unknown	19656 (24.8)
	(Missing)	5472 (6.9)
Ear pain	YES	249 (0.3)
	NO	53685 (67.7)
	Unknown	19924 (25.1)
	(Missing)	5477 (6.9)
Wheezing	YES	4939 (6.2)
	NO	53483 (67.4)
	Unknown	15441 (19.5)
	(Missing)	5472 (6.9)
Chest pain	YES	8130 (10.2)
	NO	53158 (67.0)
	Unknown	12604 (15.9)
	(Missing)	5443 (6.9)
Muscle aches (Myalgia)	YES	9498 (12.0)
	NO	46226 (58.3)

Stratified: all		all
	Unknown	18146 (22.9)
	(Missing)	5465 (6.9)
Joint pain (Arthralgia)	YES	3529 (4.4)
	NO	50478 (63.6)
	Unknown	19839 (25.0)
	(Missing)	5489 (6.9)
Fatigue / Malaise	YES	24627 (31.0)
	NO	34680 (43.7)
	Unknown	14562 (18.4)
	(Missing)	5466 (6.9)
Shortness of breath (Dyspnea)	YES	43820 (55.2)
	NO	24834 (31.3)
	Unknown	5306 (6.7)
	(Missing)	5375 (6.8)
Lower chest wall indrawing	YES	665 (0.8)
	NO	53015 (66.8)
	Unknown	20162 (25.4)
	(Missing)	5493 (6.9)
Headache	YES	5534 (7.0)
	NO	50373 (63.5)
	Unknown	17951 (22.6)
	(Missing)	5477 (6.9)
Altered consciousness / confusion	YES	18462 (23.3)
	NO	45662 (57.6)
	Unknown	9757 (12.3)
	(Missing)	5454 (6.9)
Seizures	YES	1038 (1.3)
	NO	60070 (75.7)
	Unknown	12740 (16.1)
	(Missing)	5487 (6.9)
Abdominal pain	YES	6631 (8.4)
	NO	54314 (68.5)
	Unknown	12918 (16.3)
	(Missing)	5472 (6.9)
Vomiting / Nausea	YES	12095 (15.2)
	NO	51140 (64.5)

Stratified: all		all
	Unknown	10658 (13.4)
	(Missing)	5442 (6.9)
Diarhoea	YES	10947 (13.8)
	NO	51926 (65.5)
	Unknown	11012 (13.9)
	(Missing)	5450 (6.9)
Conjunctivitis	YES	243 (0.3)
	NO	56754 (71.5)
	Unknown	16855 (21.2)
	(Missing)	5483 (6.9)
Skin rash	YES	940 (1.2)
	NO	57160 (72.0)
	Unknown	15756 (19.9)
	(Missing)	5479 (6.9)
Skin ulcers	YES	1574 (2.0)
	NO	56702 (71.5)
	Unknown	15573 (19.6)
	(Missing)	5486 (6.9)
Lymphadenopathy	YES	425 (0.5)
	NO	56996 (71.8)
	Unknown	16420 (20.7)
	(Missing)	5494 (6.9)
Bleeding (Haemorrhage)	YES	1177 (1.5)
	NO	59093 (74.5)
	Unknown	13569 (17.1)
	(Missing)	5496 (6.9)
If Bleeding (others)	YES	526 (0.7)
	NO	21622 (27.3)
	Unknown	5758 (7.3)
	(Missing)	51429 (64.8)

## Comorbidity (detail)

Table 3

Stratified: all		all
Total N (%)		79335 (100.0)
Chronic cardiac disease, including congenit...t hypertension)	YES	23076 (29.1)

Stratified: all		all
	NO	47382 (59.7)
	Unknown	3652 (4.6)
	(Missing)	5225 (6.6)
Chronic pulmonary disease (not asthma)	YES	12542 (15.8)
	NO	57610 (72.6)
	Unknown	3955 (5.0)
	(Missing)	5228 (6.6)
Asthma (physician diagnosed)	YES	9537 (12.0)
	NO	60399 (76.1)
	Unknown	4136 (5.2)
	(Missing)	5263 (6.6)
Chronic kidney disease	YES	12447 (15.7)
	NO	57484 (72.5)
	Unknown	4172 (5.3)
	(Missing)	5232 (6.6)
Moderate or severe liver disease	YES	1375 (1.7)
	NO	67850 (85.5)
	Unknown	4852 (6.1)
	(Missing)	5258 (6.6)
Mild Liver disease	YES	1079 (1.4)
	NO	67969 (85.7)
	Unknown	5023 (6.3)
	(Missing)	5264 (6.6)
Chronic neurological disorder	YES	9090 (11.5)
	NO	60492 (76.2)
	Unknown	4498 (5.7)
	(Missing)	5255 (6.6)
Malignant neoplasm	YES	7227 (9.1)
	NO	62166 (78.4)
	Unknown	4688 (5.9)
	(Missing)	5254 (6.6)
Chronic hematologic disease	YES	3070 (3.9)
	NO	66245 (83.5)
	Unknown	4743 (6.0)
	(Missing)	5277 (6.7)
AIDS/HIV	YES	289 (0.4)

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

	NO	68156 (85.9)
	Unknown	5624 (7.1)
	(Missing)	5266 (6.6)
Obesity (as defined by clinical staff)	YES	7450 (9.4)
	NO	55384 (69.8)
	Unknown	11189 (14.1)
	(Missing)	5312 (6.7)
Diabetes with complications	YES	5159 (6.5)
	NO	62354 (78.6)
	Unknown	6552 (8.3)
	(Missing)	5270 (6.6)
Diabetes without complications	YES	11204 (14.1)
	NO	56442 (71.1)
	Unknown	6426 (8.1)
	(Missing)	5263 (6.6)
Rheumatologic disorder	YES	7933 (10.0)
	NO	61215 (77.2)
	Unknown	4913 (6.2)
	(Missing)	5274 (6.6)
Dementia	YES	11916 (15.0)
	NO	57819 (72.9)
	Unknown	4360 (5.5)
	(Missing)	5240 (6.6)
Malnutrition	YES	1833 (2.3)
	NO	63408 (79.9)
	Unknown	8797 (11.1)
	(Missing)	5297 (6.7)
Smoking	YES	4001 (5.0)
	NO	41382 (52.2)
	N/K	26024 (32.8)
	(Missing)	7928 (10.0)