

# Dynamic CO-CIN report to SAGE and NERVTAG

Dynamic content updated: 2020-07-23 06:13:49.

## 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 23 July 2020, CO-CIN has recruited **74421 patients** with confirmed Coronavirus (Figure 1).

The CO-CIN dataset represents NA% (74421/NA) of cases of confirmed Coronavirus cases in the UK, per the PHE daily reports (last updated NA).

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 1023 had travelled abroad recently, and 7601 reported visiting or working in a hospital where COVID-19 cases are being managed.

The median age is 74 (range: 0-107), Male/Female 39708/30954.

The most common symptoms were cough (61%), fever (60%) and shortness of breath (60%) (Figure 3A). 4336/66256 (7%) 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 (17%). 13862/66539 (21%) of patients have reported no co morbidity. 457/5803 (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: 5-18, n = 61451).

8791/55734 (16%) patients required high-flow oxygen after day 1 of treatment.

Currently 20794 patient(s) have died and 9226 required ICU. 38156 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).

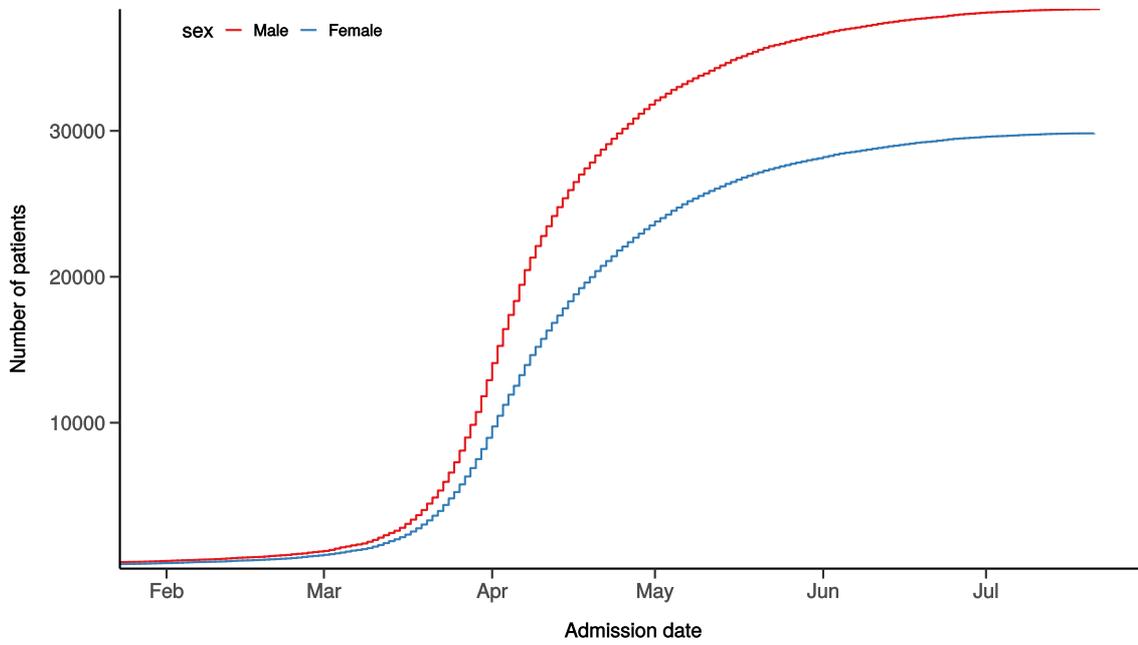
Analytics: Lisa Norman, Riinu Pius, Thomas Drake, Cameron Fairfield, Stephen Knight, Kenneth McLean, Katie Shaw.

## Admission

### Figure 1

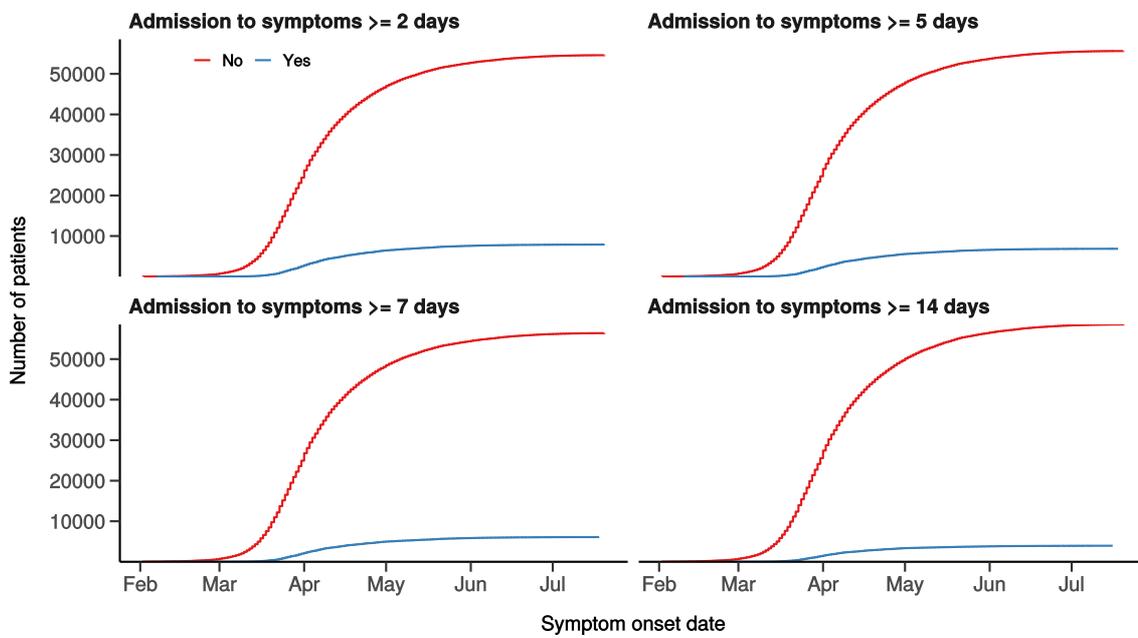
### Hospital admission with COVID-19 by sex

Figure 1A



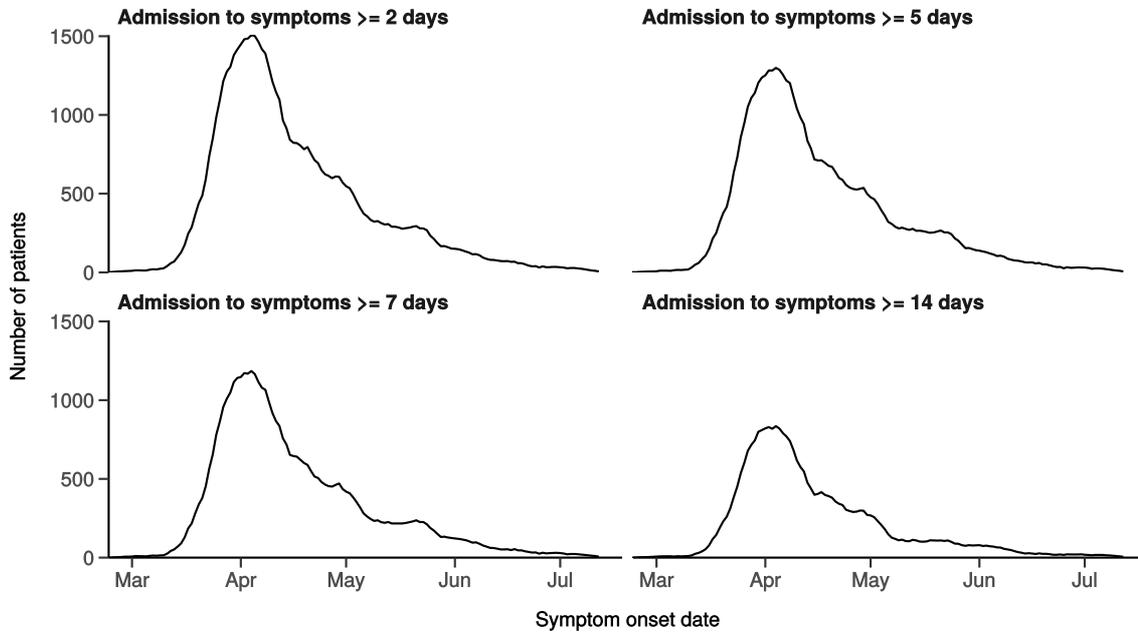
### Number with symptom onset occurring after admission to hospital

Figure 1B



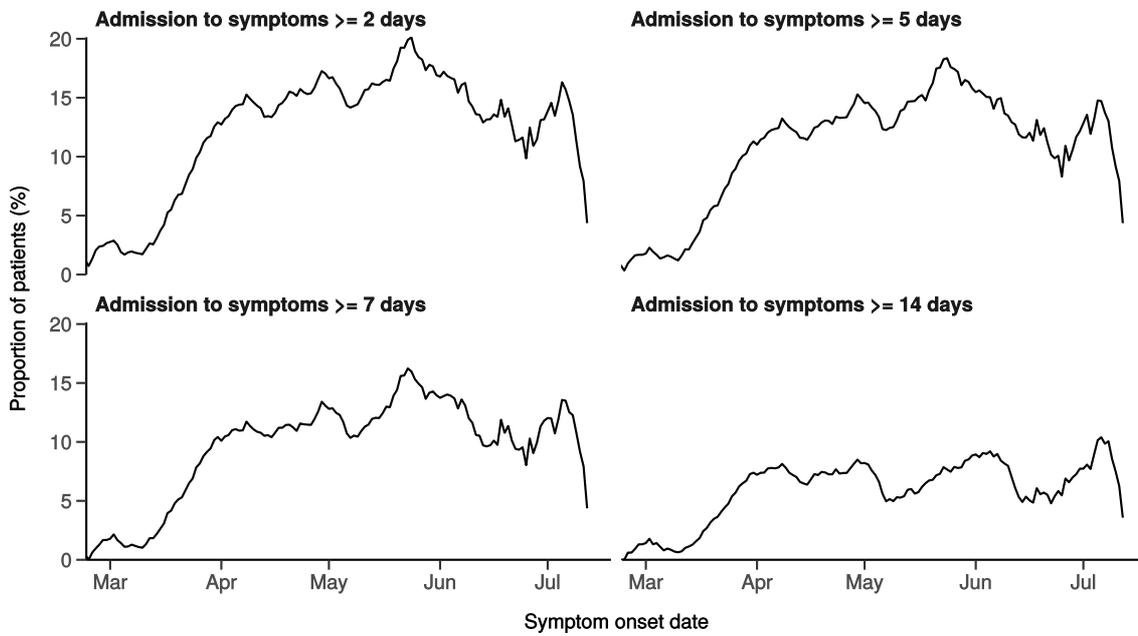
### Number with symptom onset occurring after hospital admission

Figure 1C - 7-day rolling count. n = 62501



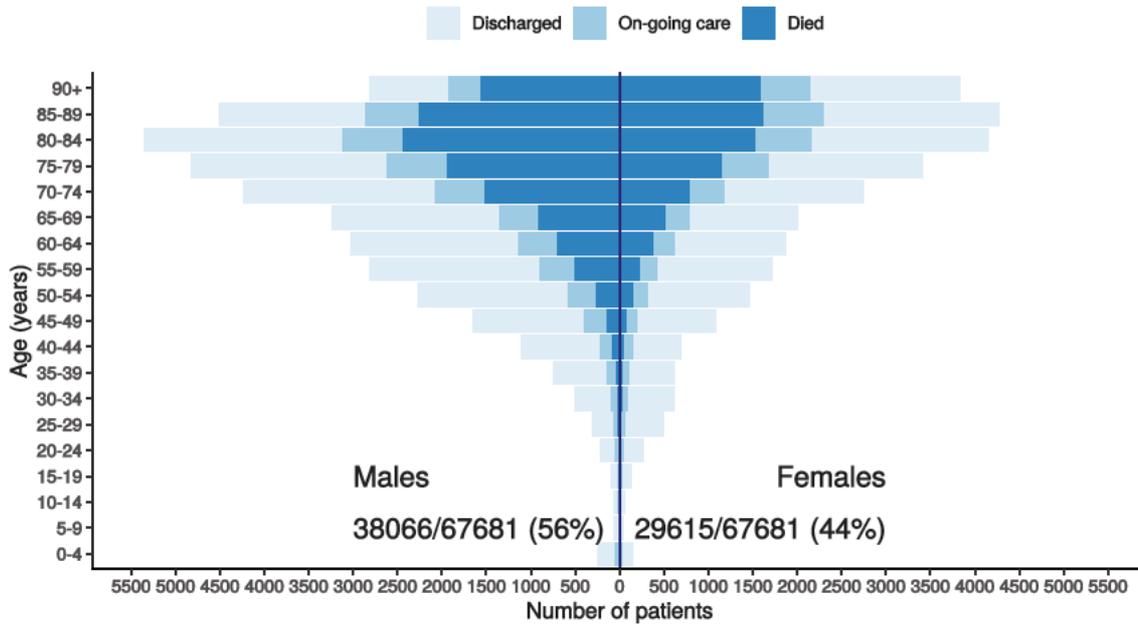
### Proportion with symptom onset occurring after hospital admission

Figure 1D - 7-day rolling percentage. n = 62501



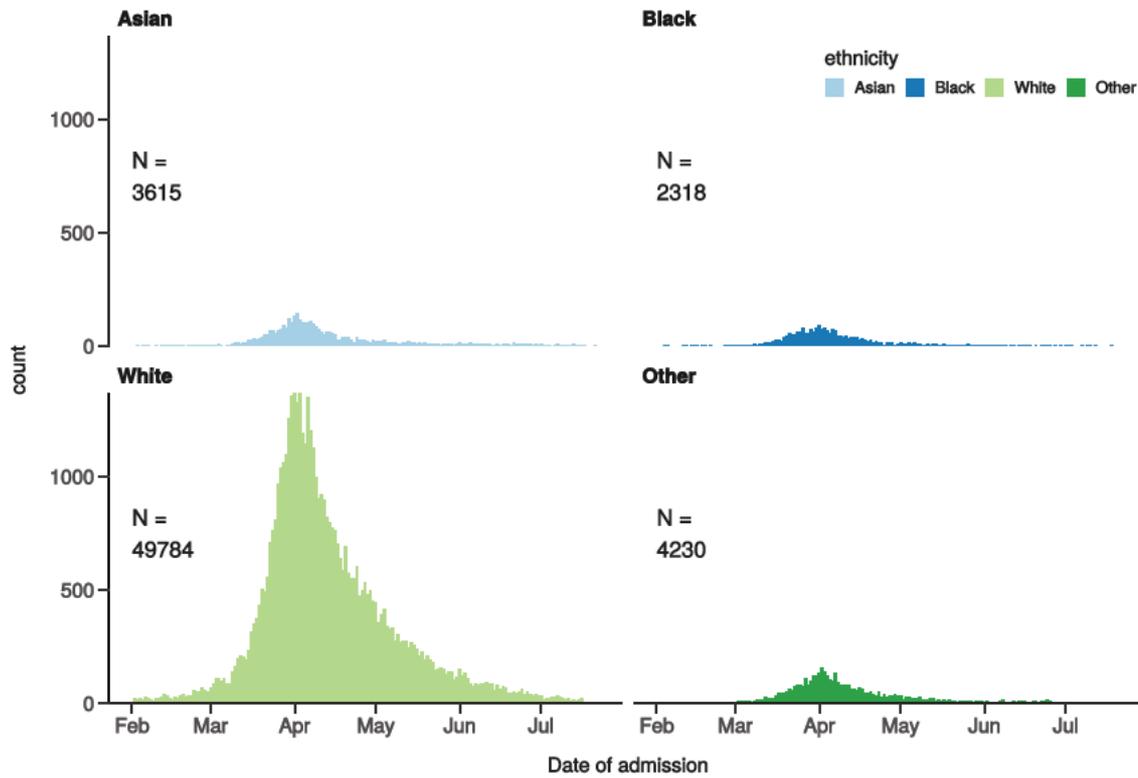
## Patients with outcome stratified by age, and sex

Figure 1E



## Hospital admission with COVID-19 by ethnicity

Figure 1F

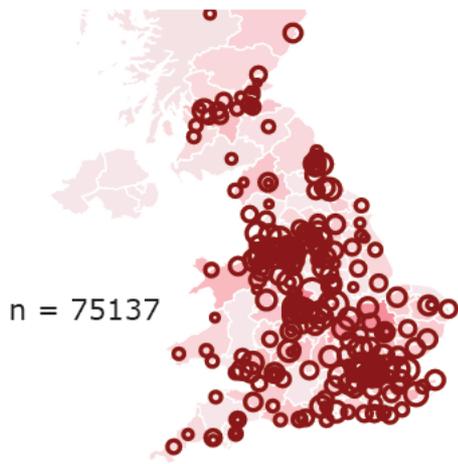


## Location by CCG / Healthboard

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 = 66087) Comorbidity (% patients, n = 66244)  
 Figure 3A Figure 3B

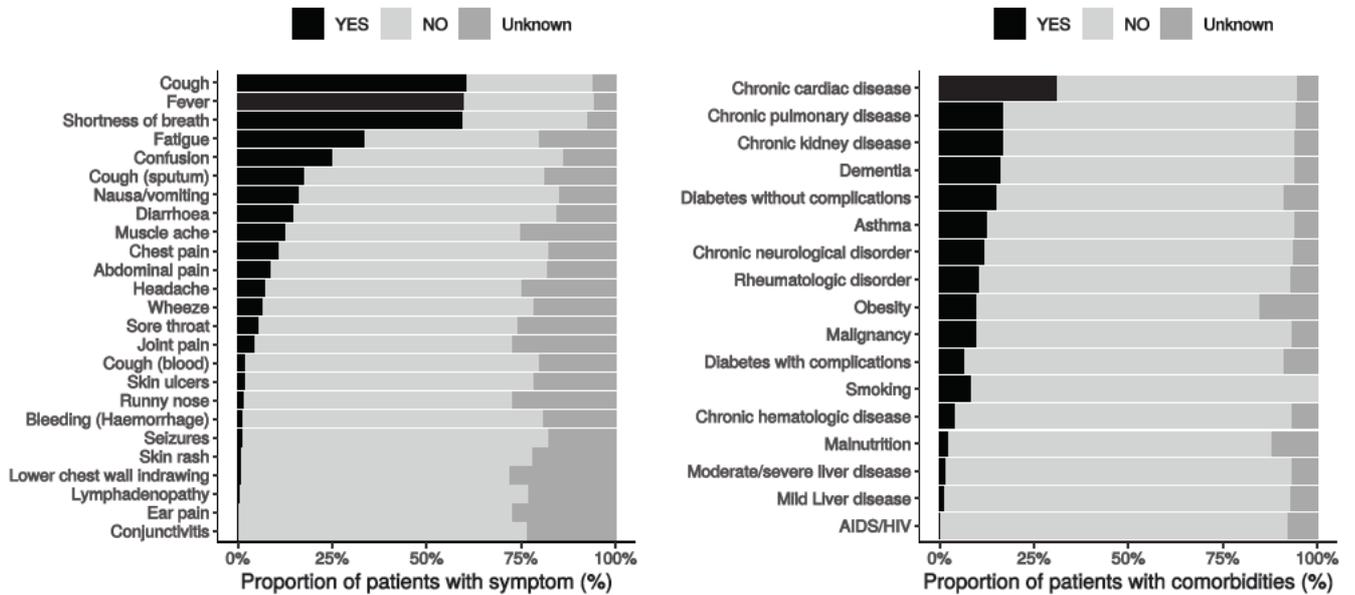
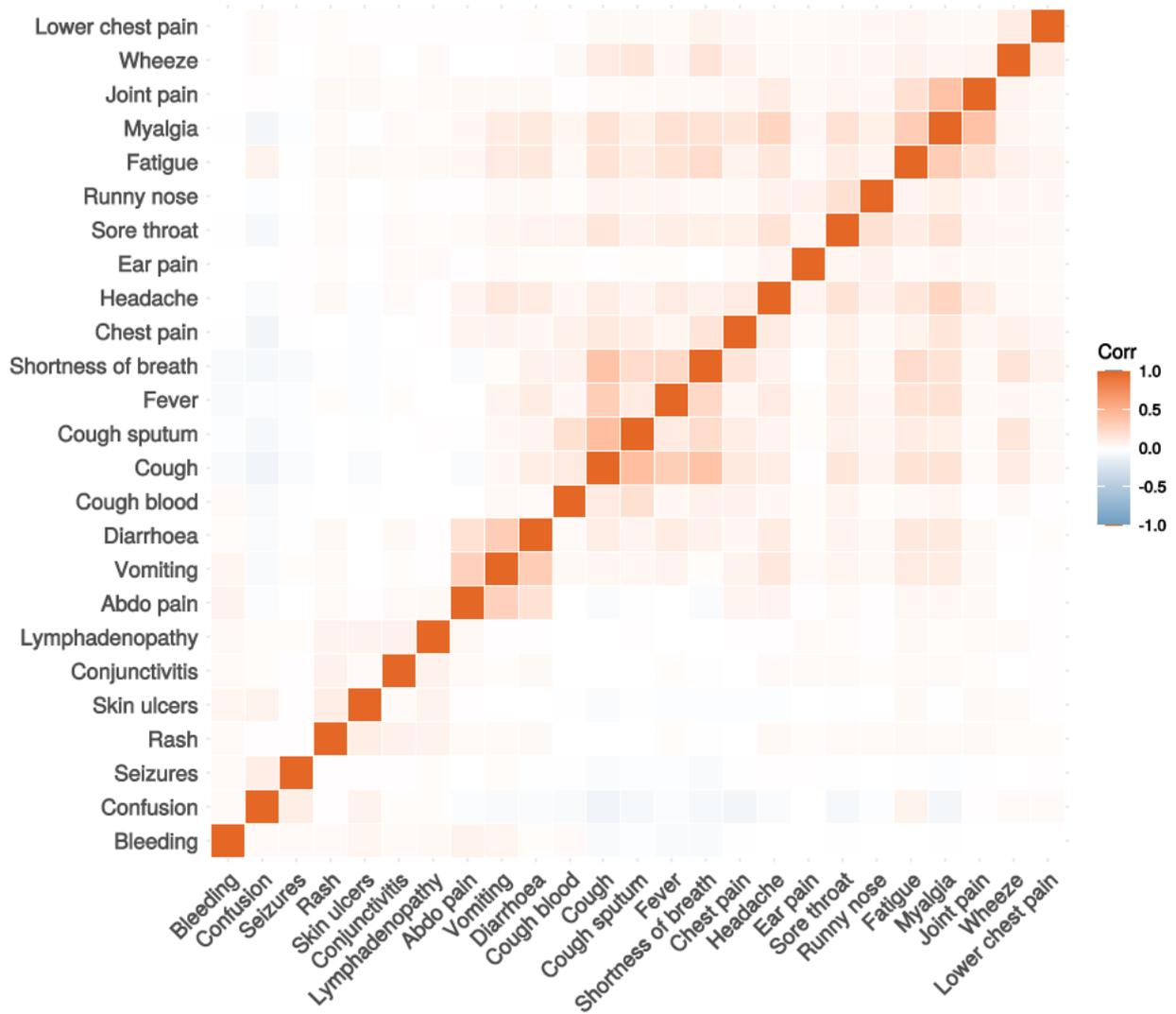


Figure 3C

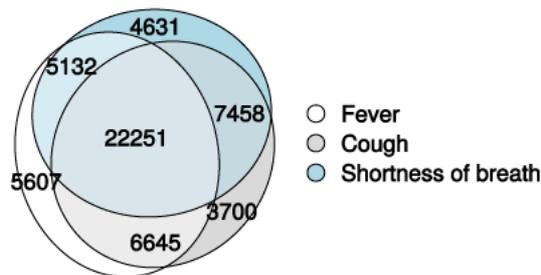
Correlation of symptoms in all pages. Note clusters, top right to bottom left, flu-like, coryzal, abdominal, respiratory, neurocutaneous.



### Symptoms (diagnostic criteria)

Figure 4A

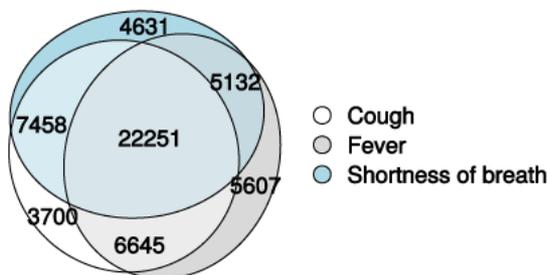
n = 66087



### Symptoms (most common)

Figure 4B

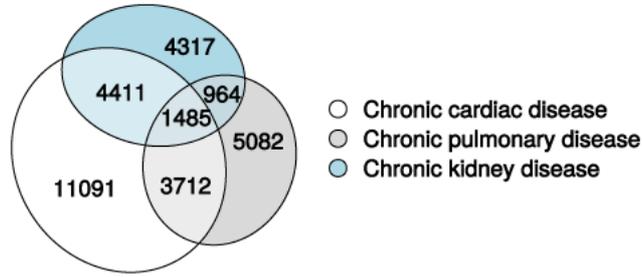
n = 66087



### Comorbidity (most common)

Figure 4C

n = 66244



## Medication prior to illness

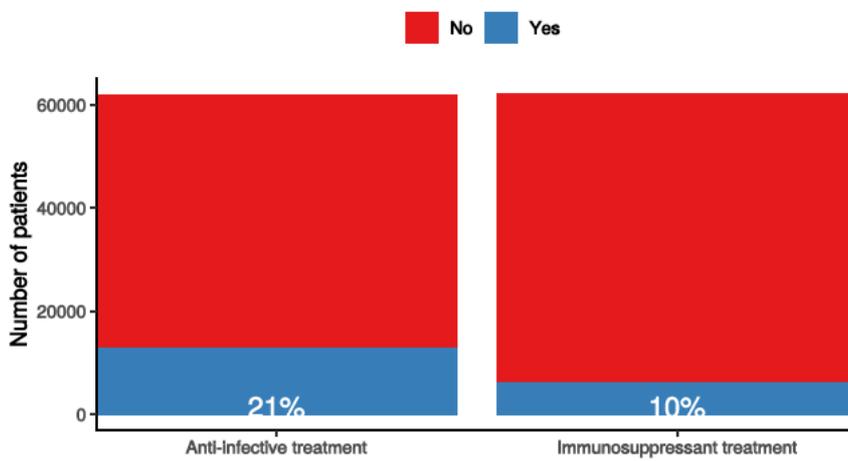
Figure 5

## Preadmission treatment

Figure 5

### Pre-admission treatment

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



## Patient flow

Figure 6A - All patients

N = 68814

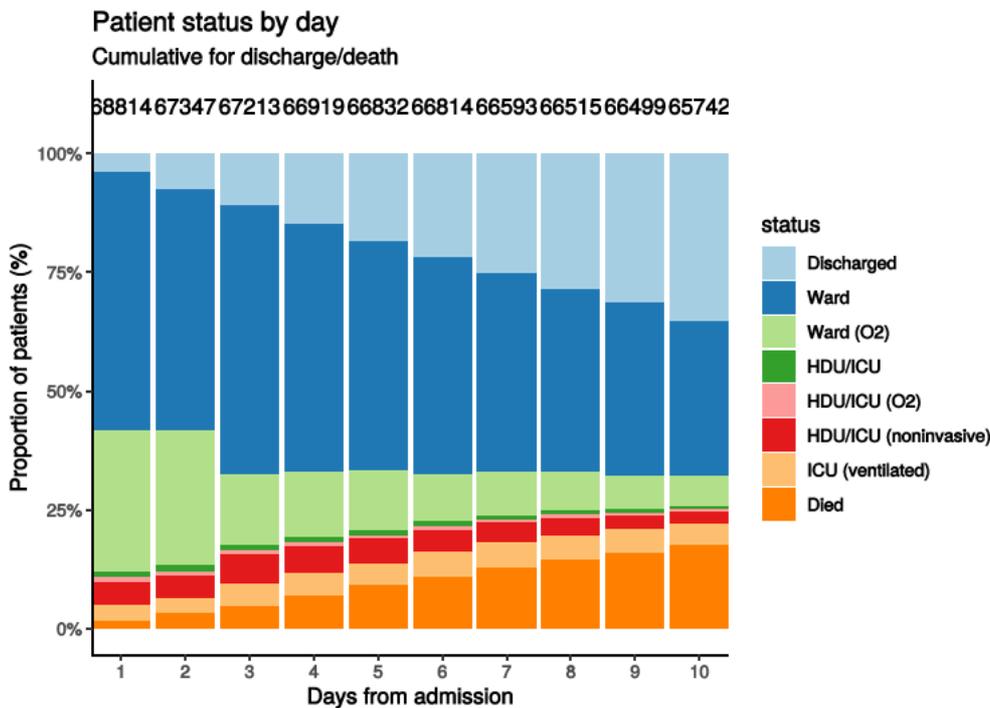
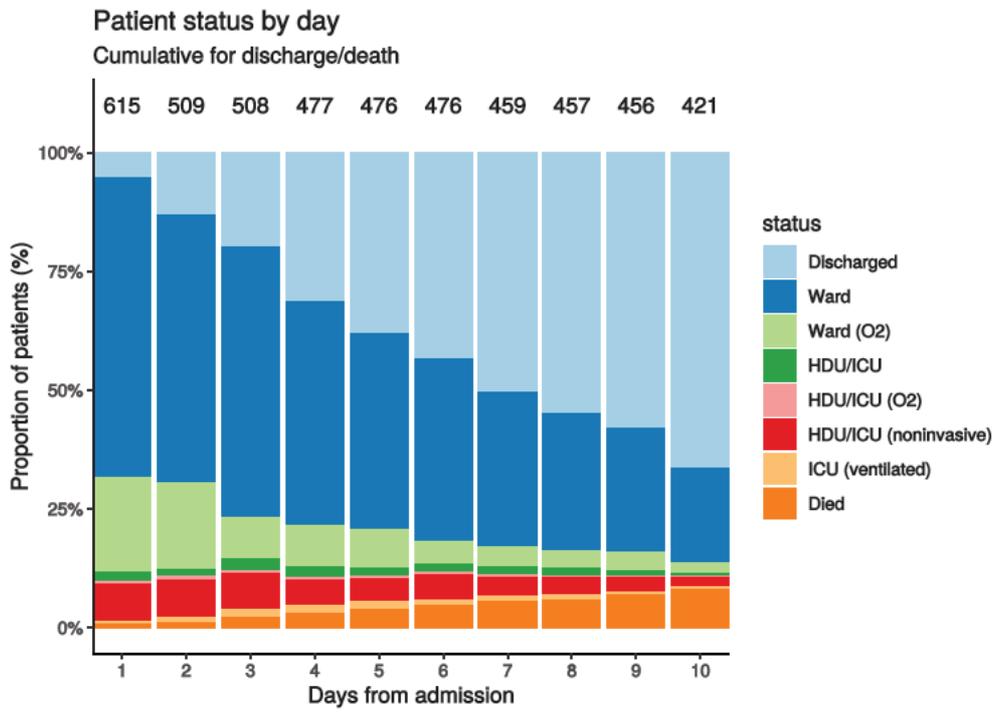


Figure 6B - Patients admitted  $\geq 14$  days and  $\leq 28$  days ago

N = 615



## Oxygen requirement

Figure 7A - All patients

N = 65372

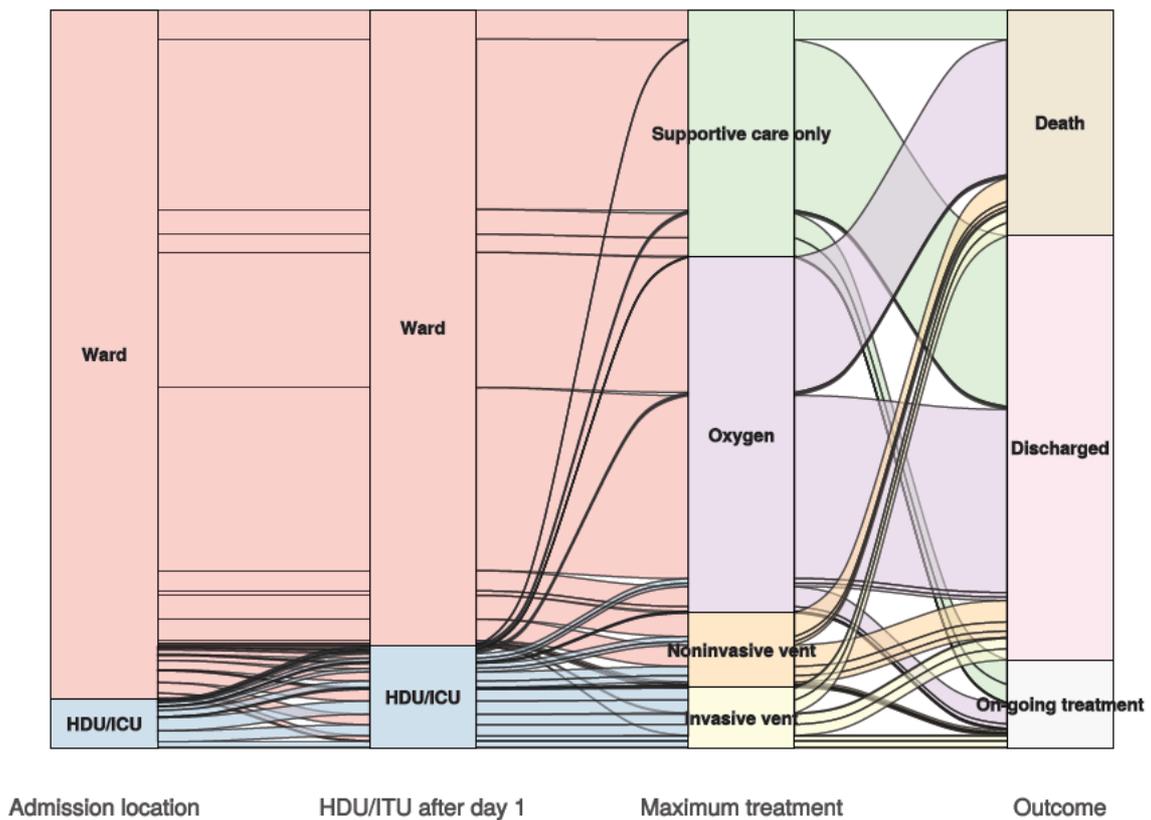
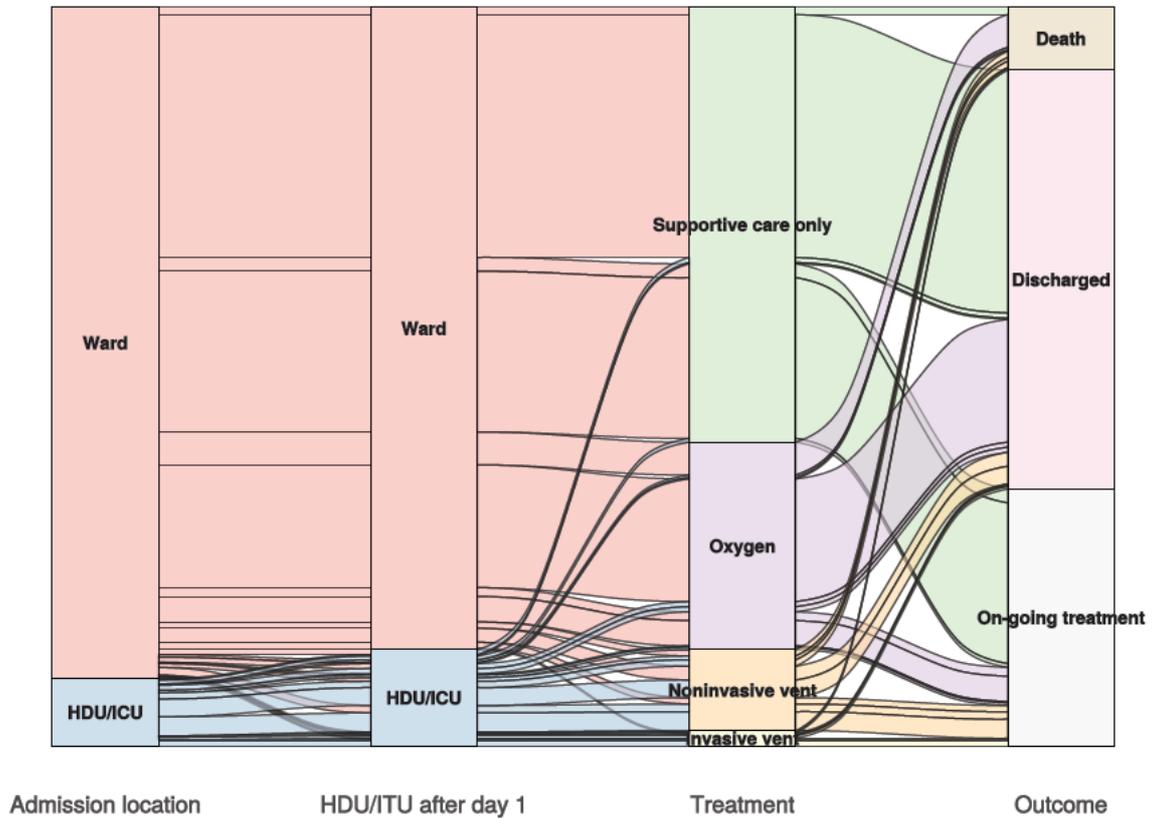


Figure 7B - Patients admitted  $\geq 14$  days and  $\leq 28$  days ago

N = 596

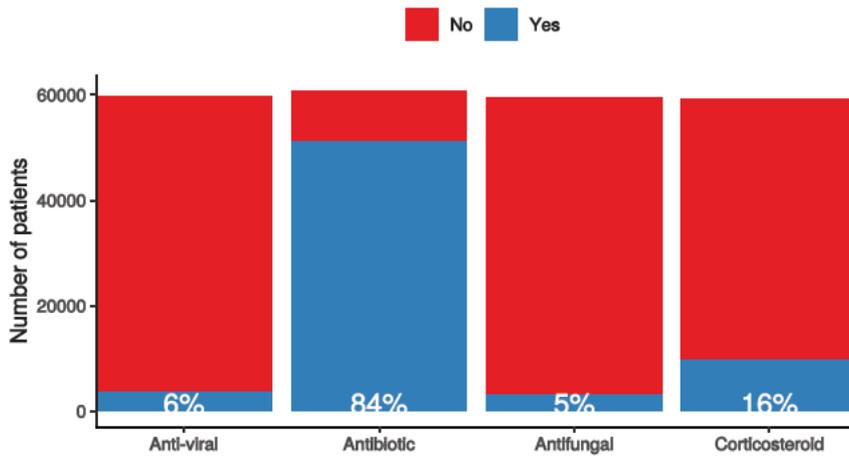


## In-hospital medical treatment

Figure 8

### In-hospital treatment

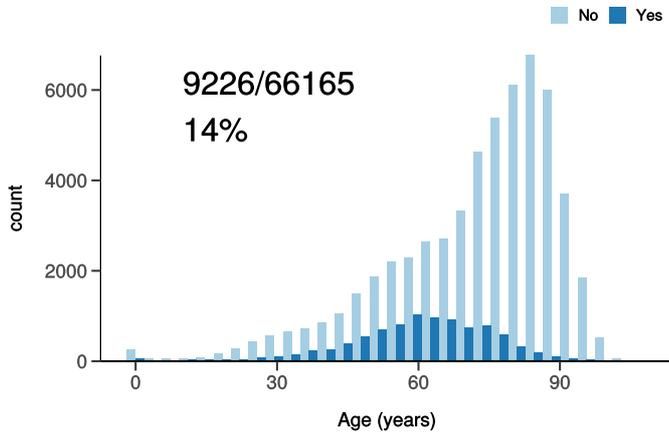
Anti-virals, antibiotics, corticosteroids, and anti-fungals for patients who have cc



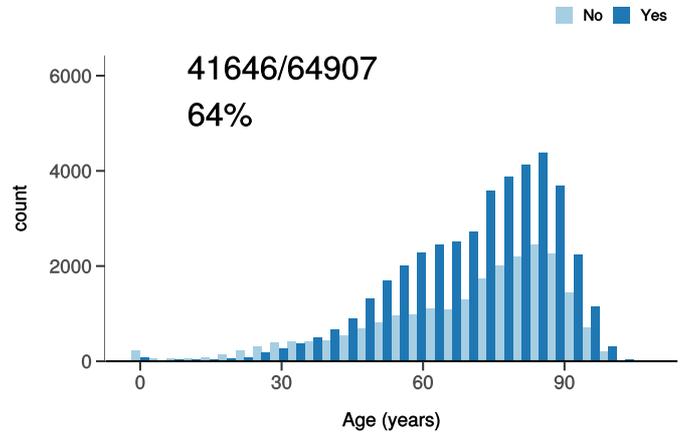
## Treatment

Figure 9

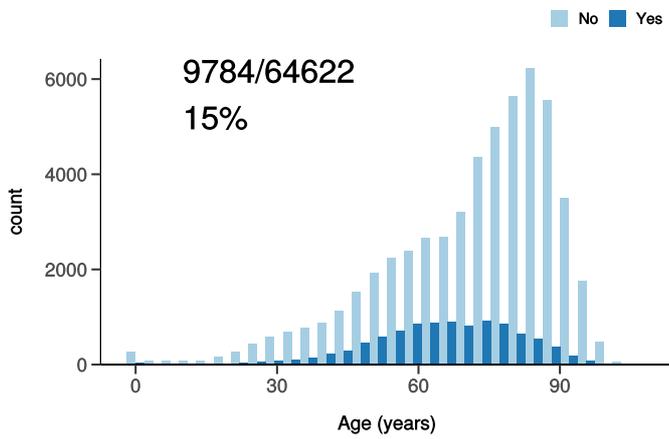
ICU/HDU admission  
Figure 10A



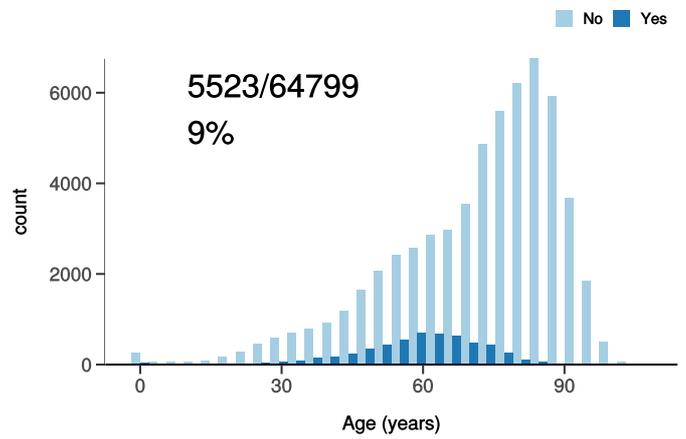
High flow oxygen  
Figure 10B



Noninvasive ventilation  
Figure 10C



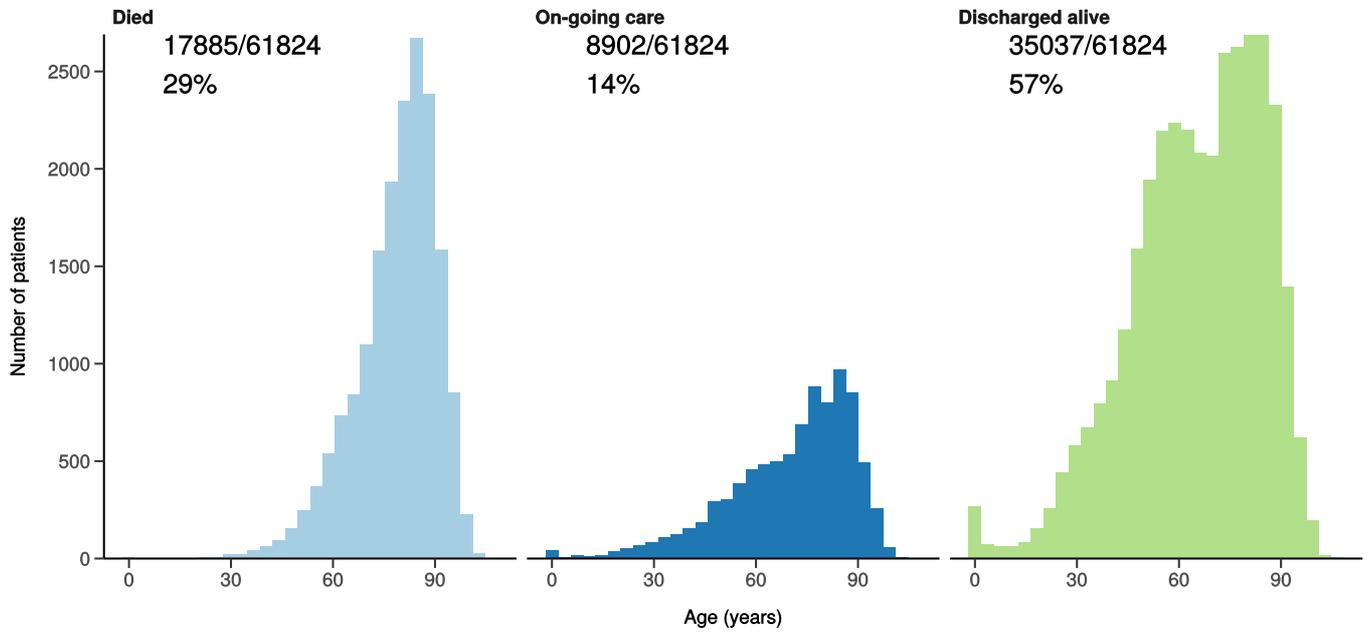
Invasive ventilation  
Figure 10D



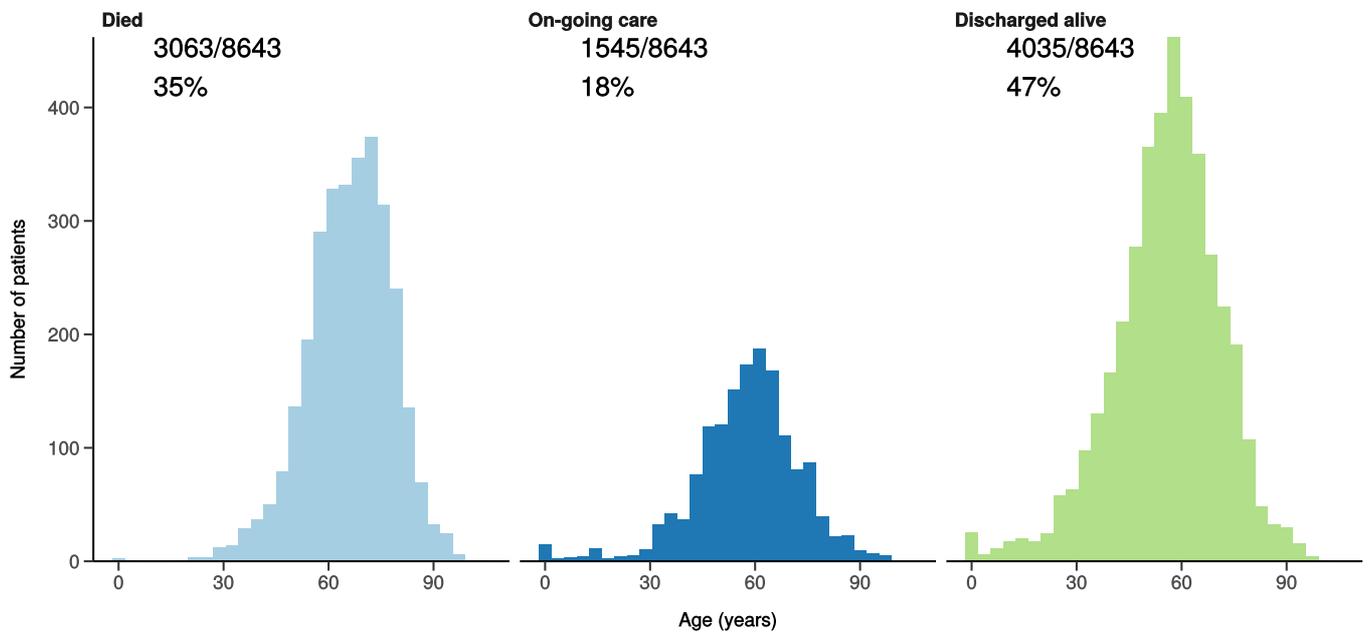
## Status of patients admitted $\geq 14$ days from today

Figure 10

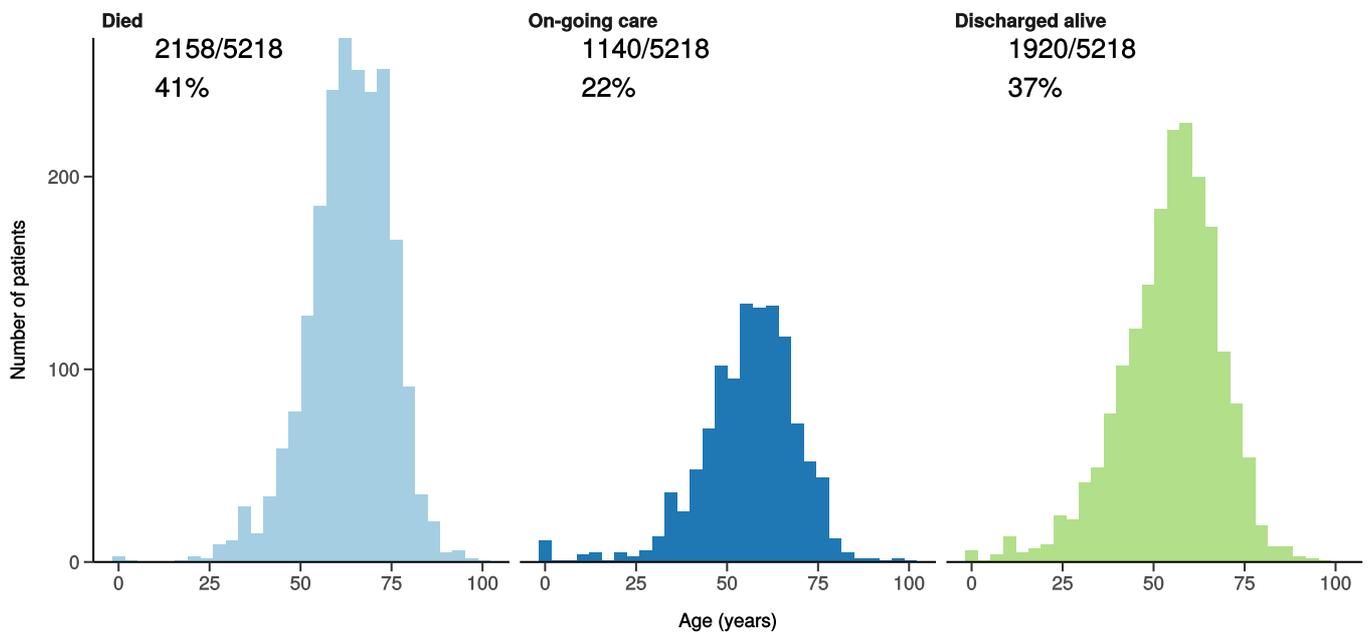
### All patients



### Patients admitted to ICU/HDU



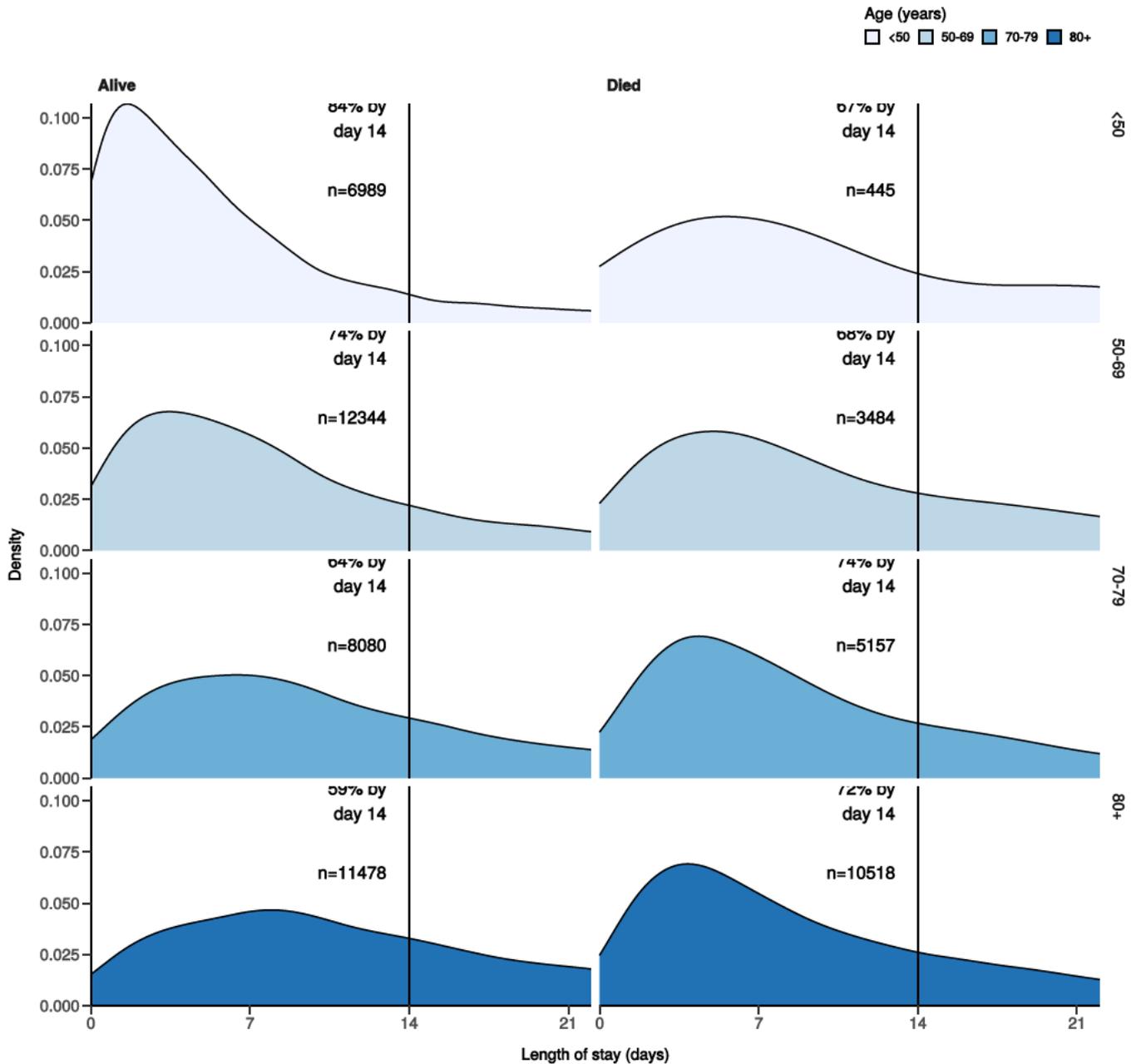
### Patients receiving invasive ventilation



# 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	8063 (94.4)	476 (5.6)	•	•
	50-69	13664 (78.9)	3655 (21.1)	4.53 (4.11-5.01, p<0.001)	4.30 (3.85-4.82, p<0.001)
	70-79	8916 (62.2)	5411 (37.8)	10.28 (9.33-11.36, p<0.001)	8.73 (7.80-9.79, p<0.001)
	80+	12517 (53.2)	11030 (46.8)	14.93 (13.58-16.45, p<0.001)	12.53 (11.21-14.05, p<0.001)
Sex at Birth	Male	23511 (65.3)	12503 (34.7)	•	•
	Female	19767 (70.9)	8124 (29.1)	0.77 (0.75-0.80, p<0.001)	0.70 (0.67-0.73, p<0.001)

Dependent: death		No	Yes	OR (univariable)	OR (multivariable)
	Not specified	0 (NaN)	0 (NaN)	•	•
Chronic cardiac disease	NO	29231 (72.8)	10929 (27.2)	•	•
	YES	11367 (57.7)	8328 (42.3)	1.96 (1.89-2.03, p<0.001)	1.15 (1.10-1.20, p<0.001)
Chronic pulmonary disease	NO	34297 (70.1)	14614 (29.9)	•	•
	YES	6175 (57.9)	4488 (42.1)	1.71 (1.63-1.78, p<0.001)	1.27 (1.21-1.34, p<0.001)
Chronic neurological disorder	NO	35445 (69.0)	15913 (31.0)	•	•
	YES	4729 (61.1)	3005 (38.9)	1.42 (1.35-1.49, p<0.001)	1.13 (1.07-1.20, p<0.001)
Chronic hematologic disease	NO	38463 (68.4)	17775 (31.6)	•	•
	YES	1589 (60.2)	1052 (39.8)	1.43 (1.32-1.55, p<0.001)	1.15 (1.05-1.27, p=0.004)
Chronic kidney disease	NO	34443 (70.6)	14336 (29.4)	•	•
	YES	5910 (55.7)	4709 (44.3)	1.91 (1.83-2.00, p<0.001)	1.29 (1.22-1.36, p<0.001)
Dementia	NO	34851 (71.2)	14079 (28.8)	•	•
	YES	5391 (52.3)	4922 (47.7)	2.26 (2.16-2.36, p<0.001)	1.39 (1.32-1.47, p<0.001)
Obesity	NO	32092 (68.1)	15046 (31.9)	•	•
	YES	4509 (71.4)	1803 (28.6)	0.85 (0.80-0.90, p<0.001)	1.35 (1.26-1.44, p<0.001)
Malignancy	NO	36673 (69.5)	16077 (30.5)	•	•
	YES	3421 (55.2)	2778 (44.8)	1.85 (1.76-1.95, p<0.001)	1.45 (1.36-1.54, p<0.001)

Number in dataframe = 67991, Number in model = 50666, Missing = 17325, AIC = 56204.7, C-statistic = 0.714, H&L = Chi-sq(8) 114.88 (p<0.001)

Figure 12 - Adjusted odds ratio plot

Death

Age on admission (years)	<50	-
	50-69	4.30 (3.85-4.82, p<0.001)
	70-79	8.73 (7.80-9.79, p<0.001)
	80+	12.53 (11.21-14.05, p<0.001)
Sex at Birth	Male	-
	Female	0.70 (0.67-0.73, p<0.001)
	Not specified	-
Chronic cardiac disease	YES	1.15 (1.10-1.20, p<0.001)
Chronic pulmonary disease	YES	1.27 (1.21-1.34, p<0.001)
Chronic neurological disorder	YES	1.13 (1.07-1.20, p<0.001)
Chronic hematologic disease	YES	1.15 (1.05-1.27, p=0.004)
Chronic kidney disease	YES	1.29 (1.22-1.36, p<0.001)
Dementia	YES	1.39 (1.32-1.47, p<0.001)
Obesity	YES	1.35 (1.26-1.44, p<0.001)
Malignancy	YES	1.45 (1.36-1.54, p<0.001)

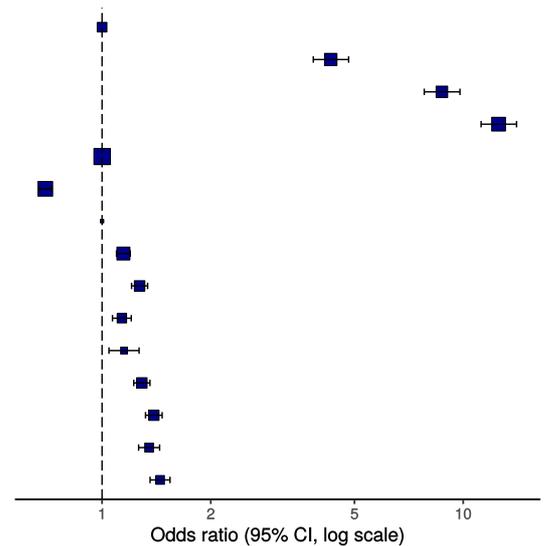
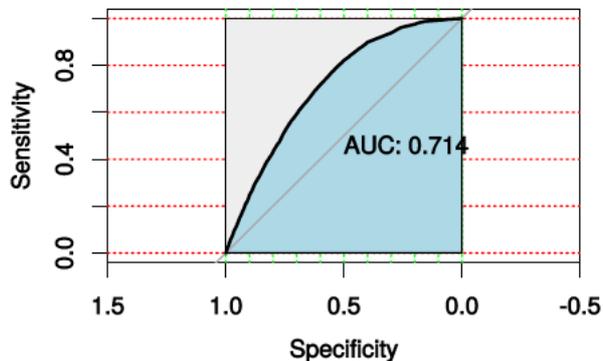


Figure 13 - ROC

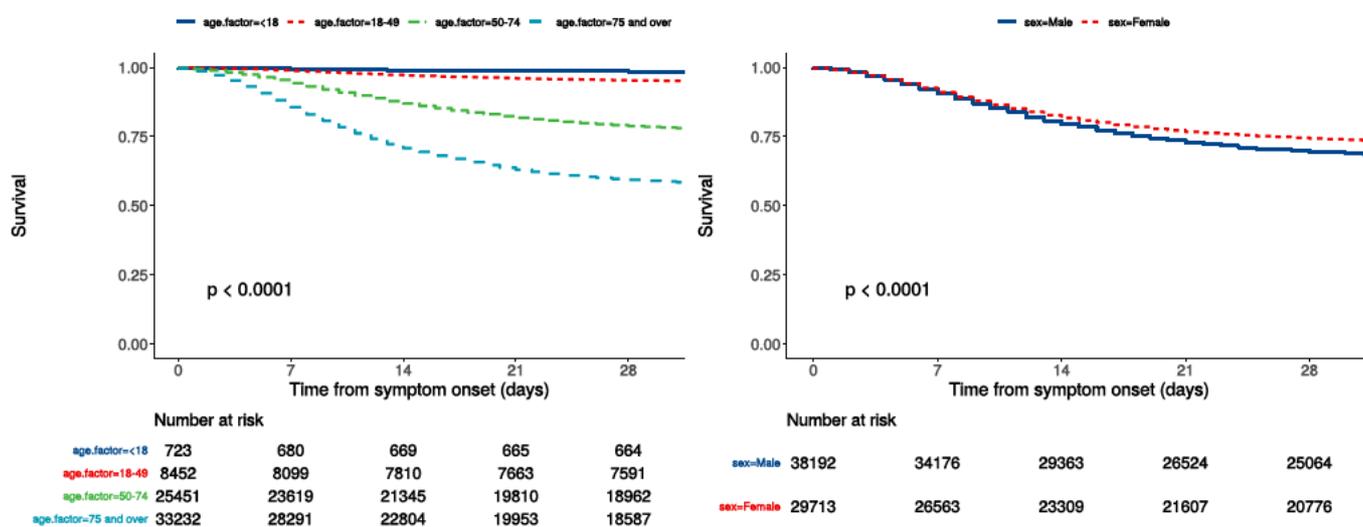


## Survival models

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	9175 (13.5)	•	•	•
	50-69	18455 (27.2)		4.10 (3.72-4.51, p<0.001)	4.07 (3.62-4.58, p<0.001)
	70-79	15242 (22.5)		8.31 (7.57-9.13, p<0.001)	7.94 (7.06-8.93, p<0.001)
	80+	24990 (36.8)		11.28 (10.29-12.36, p<0.001)	10.48 (9.32-11.78, p<0.001)
Sex at Birth	Male	38192 (56.2)	•	•	•
	Female	29713 (43.8)		0.82 (0.80-0.84, p<0.001)	0.78 (0.76-0.81, p<0.001)
qSOFA score on admission	0	24234 (42.4)	•	•	•
	1	25695 (45.0)		1.60 (1.54-1.65, p<0.001)	1.70 (1.64-1.77, p<0.001)

Dependent: Surv(time, status)		all	HR (univariable)	HR (multivariable)
	2	6463 (11.3)	3.01 (2.88-3.14, p<0.001)	2.80 (2.67-2.94, p<0.001)
	3	718 (1.3)	4.86 (4.42-5.34, p<0.001)	4.48 (4.02-4.98, p<0.001)
Symptomatic at presentation	No symptoms	2987 (4.5)	•	•
	Symptoms	62945 (95.5)	1.50 (1.39-1.63, p<0.001)	•
Chronic cardiac disease	NO	42025 (67.1)	•	•
	YES	20588 (32.9)	1.74 (1.69-1.79, p<0.001)	1.12 (1.08-1.16, p<0.001)
Chronic kidney disease	NO	50999 (82.1)	•	•
	YES	11117 (17.9)	1.70 (1.65-1.76, p<0.001)	1.21 (1.17-1.27, p<0.001)
Moderate/severe liver disease	NO	60269 (98.0)	•	•
	YES	1201 (2.0)	1.27 (1.16-1.39, p<0.001)	1.44 (1.28-1.61, p<0.001)
Chronic neurological disorder	NO	53737 (87.0)	•	•
	YES	8035 (13.0)	1.35 (1.30-1.41, p<0.001)	•
Malignancy	NO	55193 (89.6)	•	•
	YES	6427 (10.4)	1.62 (1.55-1.68, p<0.001)	1.32 (1.26-1.39, p<0.001)
Chronic hematologic disease	NO	58813 (95.6)	•	•
	YES	2735 (4.4)	1.33 (1.25-1.42, p<0.001)	•
Obesity	NO	49324 (88.3)	•	•
	YES	6544 (11.7)	0.87 (0.83-0.91, p<0.001)	1.21 (1.15-1.28, p<0.001)
Diabetes without complications	NO	50035 (83.2)	•	•
	YES	10112 (16.8)	1.23 (1.18-1.27, p<0.001)	•
Rheumatologic disorder	NO	54438 (88.7)	•	•
	YES	6933 (11.3)	1.18 (1.13-1.23, p<0.001)	•
Dementia	NO	51201 (82.7)	•	•
	YES	10731 (17.3)	1.99 (1.92-2.05, p<0.001)	1.19 (1.14-1.24, p<0.001)
Malnutrition	NO	56360 (97.2)	•	•
	YES	1614 (2.8)	1.42 (1.31-1.54, p<0.001)	•
smoking_mhyn_2levels	NO	37043 (91.6)	•	•
	YES	3415 (8.4)	0.90 (0.84-0.96, p=0.002)	•

Number in dataframe = 68207, Number in model = 46505, Missing = 21702, Number of events = 14016, Concordance = 0.715 (SE = 0.002), R-squared = 0.159 (Max possible = 0.998), Likelihood ratio test = 8073.706 (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	4.07 (3.62-4.58, p<0.001)
	70-79	7.94 (7.06-8.93, p<0.001)
	80+	10.48 (9.32-11.78, p<0.001)
Sex at Birth	Female	0.78 (0.76-0.81, p<0.001)
	Male	-
qSOFA score on admission	0	-
	1	1.70 (1.64-1.77, p<0.001)
	2	2.80 (2.67-2.94, p<0.001)
	3	4.48 (4.02-4.98, p<0.001)
Chronic cardiac disease	YES	1.12 (1.08-1.16, p<0.001)
Chronic kidney disease	YES	1.21 (1.17-1.27, p<0.001)
Moderate/severe liver disease	YES	1.44 (1.28-1.61, p<0.001)
Malignancy	YES	1.32 (1.26-1.39, p<0.001)
Obesity	YES	1.21 (1.15-1.28, p<0.001)
Dementia	YES	1.19 (1.14-1.24, p<0.001)

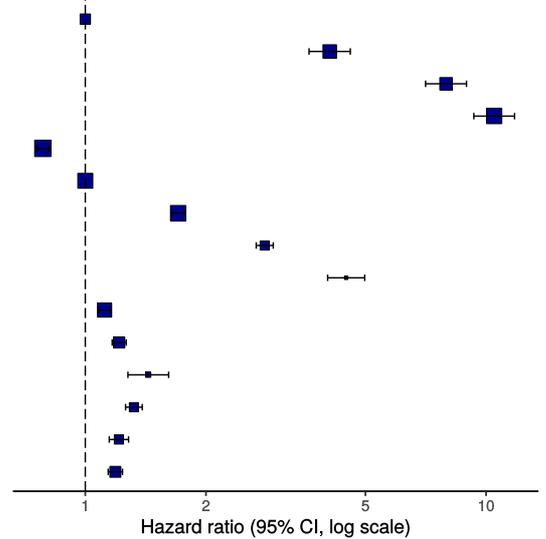
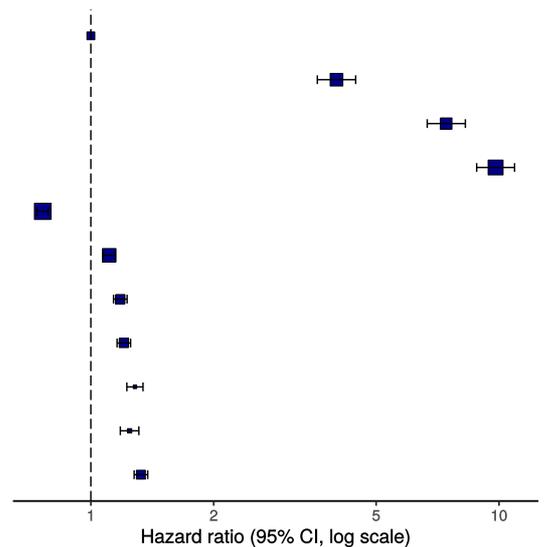


Figure 15b - Multivariable Cox proportional hazards model (age, sex, comorbidities only)

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

Age on admission (years)	<50	-
	50-69	4.00 (3.59-4.46, p<0.001)
	70-79	7.43 (6.67-8.27, p<0.001)
	80+	9.81 (8.82-10.92, p<0.001)
Sex at Birth	Female	0.76 (0.74-0.79, p<0.001)
	Male	-
Chronic cardiac disease	YES	1.11 (1.07-1.15, p<0.001)
Chronic pulmonary disease	YES	1.18 (1.14-1.23, p<0.001)
Chronic kidney disease	YES	1.20 (1.16-1.25, p<0.001)
Malignancy	YES	1.28 (1.23-1.34, p<0.001)
Obesity	YES	1.24 (1.18-1.31, p<0.001)
Dementia	YES	1.33 (1.28-1.38, p<0.001)



ROC = 0.7145346

Figure 16 - Predictions calibration plot

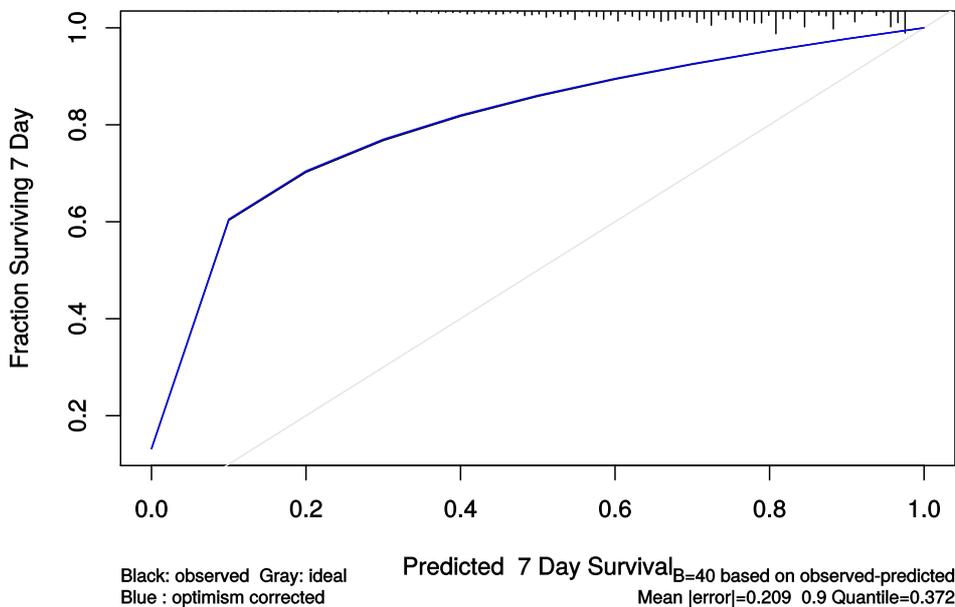


Figure 17 - Prognostic model predictions

Again, for demonstration of methods.

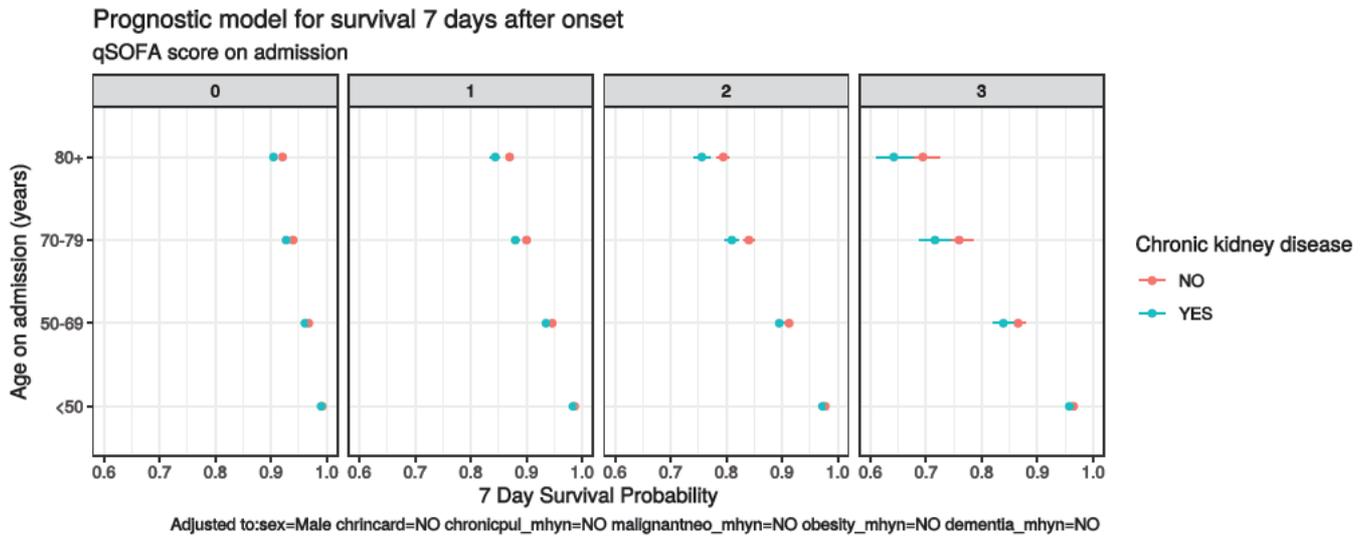


Figure 18 - Death by severity (NEWS) on admission

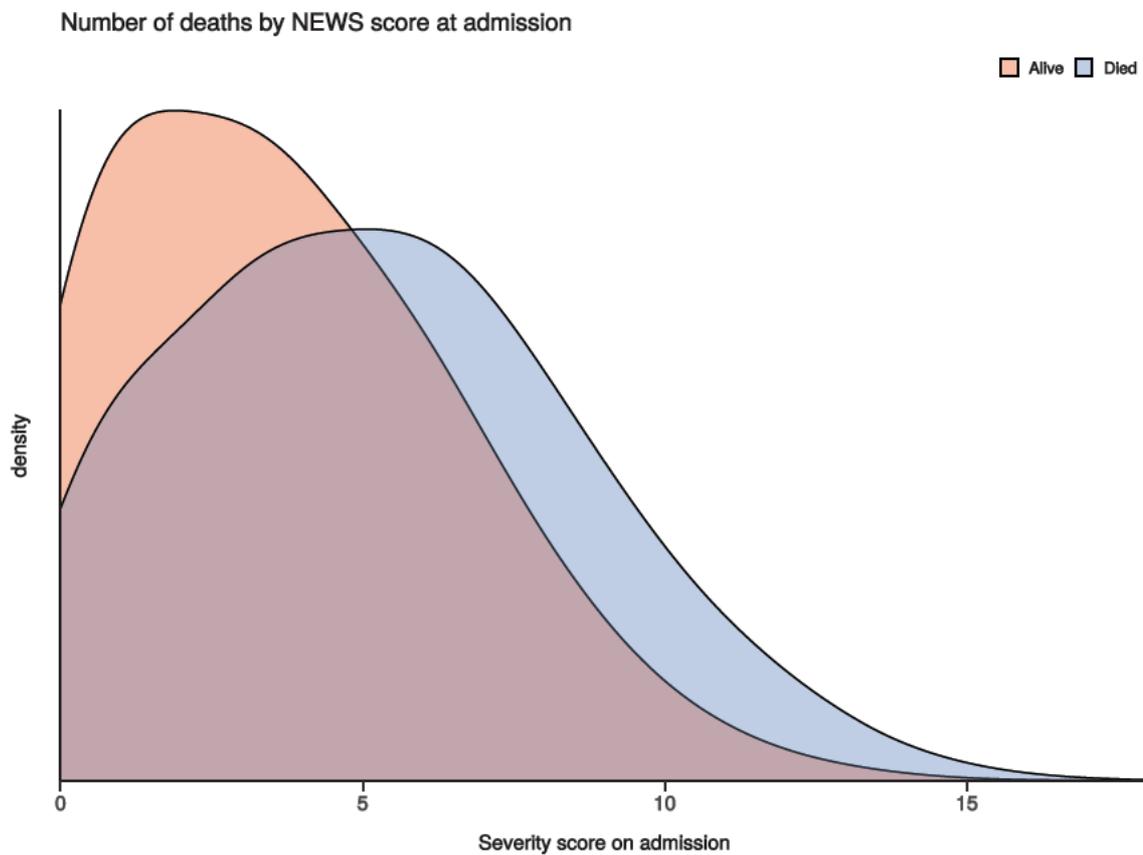


Figure 19 - Death by severity (NEWS) on admission stratified by age

Number of deaths by NEWS score at admission  
Stratified by age

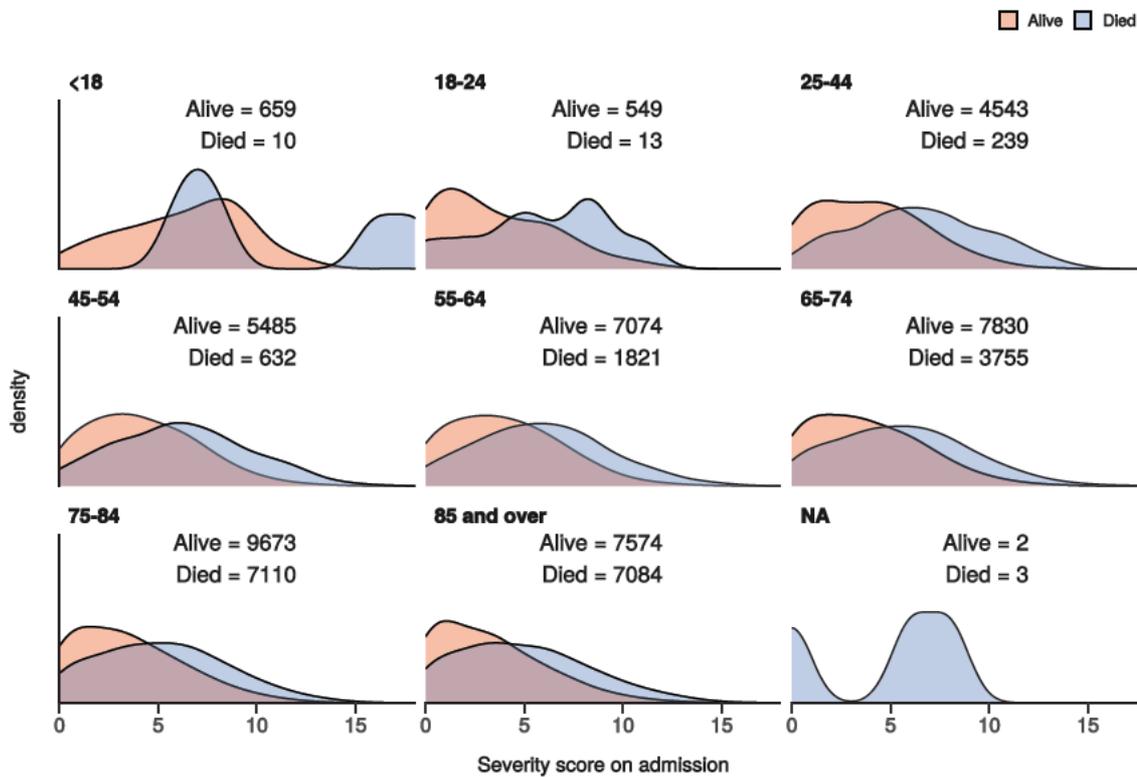
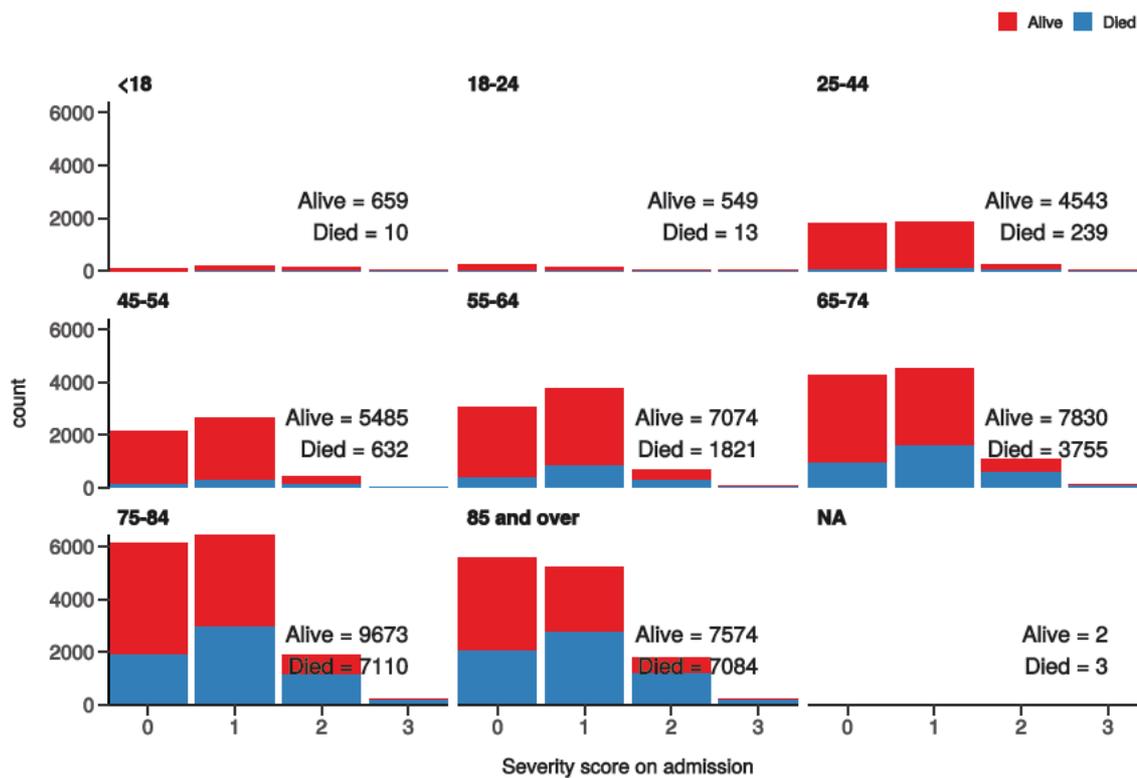


Figure 20 - Death by severity (qSOFA) on admission stratified by age

Number of deaths by qSOFA score at admission  
Stratified by age



## Healthcare workers

Healthcare worker		NO	YES	p
Total N (%)		59904 (95.0)	3179 (5.0)	
NEWS score on admission	Median (IQR)	4.0 (4.0)	4.0 (4.0)	0.020

Healthcare worker		NO	YES	p
Death	No	36145 (65.7)	2756 (92.6)	<0.001
	Yes	18889 (34.3)	220 (7.4)	

## Admission (detail)

Table 1

label	levels	all
Total N (%)		74421 (100.0)
Age on admission (years)	Mean (SD)	70.5 (19.6)
Sex at Birth	Male	39708 (53.4)
	Female	30954 (41.6)
	Not specified	135 (0.2)
	(Missing)	3624 (4.9)
Healthcare worker	YES	3179 (4.3)
	NO	59904 (80.5)
	N/A	6830 (9.2)
	(Missing)	4508 (6.1)
Microbiology lab worker	YES	89 (0.1)
	NO	25367 (34.1)
	N/A	2999 (4.0)
	(Missing)	45966 (61.8)
Onset to admission (days)	Mean (SD)	5.9 (1505.3)
Transfer from other facility	Yes-facility is a study site	1683 (2.3)
	Yes-facility is not a study site	3548 (4.8)
	No	58585 (78.7)
	N/A	2976 (4.0)
	(Missing)	7629 (10.3)
Travel in 14 d prior to symptoms	Yes	805 (1.1)
	No	21994 (29.6)
	N/A	4369 (5.9)
	(Missing)	47253 (63.5)
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	21 (0.0)
	Azerbaijan	2 (0.0)
	The	0 (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)
	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)
	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	32 (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	4 (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	8 (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	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)

<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	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)
	South Africa	10 (0.0)
	South Korea	1 (0.0)
	South Sudan	0 (0.0)
	Spain	198 (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)	73681 (99.0)
Country 2	Afghanistan	0 (0.0)
	Albania	0 (0.0)
	Algeria	0 (0.0)
	Andorra	0 (0.0)
	Angola	0 (0.0)
	Antigua and Barbuda	0 (0.0)
	Argentina	0 (0.0)
	Armenia	0 (0.0)
	Aruba	0 (0.0)
	Australia	0 (0.0)
	Austria	0 (0.0)
	Azerbaijan	0 (0.0)
	The	0 (0.0)
	Bahrain	0 (0.0)
	Bangladesh	0 (0.0)
	Barbados	0 (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	0 (0.0)
	Burkina Faso	0 (0.0)
	Burma	0 (0.0)
	Burundi	0 (0.0)
	Cambodia	0 (0.0)
	Cameroon	0 (0.0)
	Canada	0 (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	0 (0.0)
	Czechia	0 (0.0)
	Denmark	0 (0.0)
	Djibouti	0 (0.0)
	Dominica	0 (0.0)
	Dominican Republic	0 (0.0)
	Ecuador	0 (0.0)
	Egypt	0 (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	0 (0.0)
	Gabon	0 (0.0)
	Georgia	0 (0.0)
	Germany	0 (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	0 (0.0)
	Indonesia	0 (0.0)
	Iran	0 (0.0)
	Iraq	0 (0.0)
	Ireland	0 (0.0)
	Israel	0 (0.0)
	Italy	0 (0.0)
	Jamaica	0 (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	0 (0.0)
	Mozambique	0 (0.0)
	Namibia	0 (0.0)
	Nauru	0 (0.0)
	Nepal	0 (0.0)
	Netherlands	0 (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	0 (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	0 (0.0)
	Qatar	0 (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	0 (0.0)
	South Korea	0 (0.0)
	South Sudan	0 (0.0)
	Spain	0 (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	0 (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	0 (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	0 (0.0)
	Uruguay	0 (0.0)
	Uzbekistan	0 (0.0)
	Vanuatu	0 (0.0)
	Venezuela	0 (0.0)
	Vietnam	0 (0.0)
	Yemen	0 (0.0)
	Zambia	0 (0.0)
	Zimbabwe	0 (0.0)
	(Missing)	74421 (100.0)

<b>label</b>	<b>levels</b>	<b>all</b>
Animal, raw meat, insect bites 14 d prior	Yes	108 (0.1)
	No	10601 (14.2)
	Unknown	14804 (19.9)
	N/A	1779 (2.4)
	(Missing)	47129 (63.3)
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)
	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 (5.7)
	Dog	12 (11.3)
	DOG	2 (1.9)
	DOG FAMILY PET	1 (0.9)
	Dog, domestic animla 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)

label	levels	all
	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)
	Domestic Pet	5 (4.7)
	Domestic Pet (Dog)	6 (5.7)
	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)
	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)

label	levels	all
	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 (%)		74421 (100.0)
Fever	YES	39635 (53.3)
	NO	22892 (30.8)
	Unknown	3560 (4.8)
	(Missing)	8334 (11.2)
Cough	YES	40054 (53.8)
	NO	22139 (29.7)
	Unknown	3893 (5.2)
	(Missing)	8335 (11.2)
Cough (sputum)	YES	11831 (15.9)
	NO	41769 (56.1)
	Unknown	12397 (16.7)
	(Missing)	8424 (11.3)
Cough (blood)	YES	1425 (1.9)
	NO	51270 (68.9)
	Unknown	13282 (17.8)
	(Missing)	8444 (11.3)
Sore throat	YES	3744 (5.0)
	NO	45194 (60.7)
	Unknown	17065 (22.9)
	(Missing)	8418 (11.3)
Runny nose	YES	1123 (1.5)
	NO	47012 (63.2)
	Unknown	17860 (24.0)
	(Missing)	8426 (11.3)
Ear pain	YES	220 (0.3)
	NO	47721 (64.1)
	Unknown	18048 (24.3)

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

	(Missing)	8432 (11.3)
Wheeze	YES	4415 (5.9)
	NO	47478 (63.8)
	Unknown	14101 (18.9)
	(Missing)	8427 (11.3)
Chest pain	YES	7195 (9.7)
	NO	47319 (63.6)
	Unknown	11507 (15.5)
	(Missing)	8400 (11.3)
Muscle ache	YES	8536 (11.5)
	NO	41008 (55.1)
	Unknown	16449 (22.1)
	(Missing)	8428 (11.3)
Joint pain	YES	3148 (4.2)
	NO	44869 (60.3)
	Unknown	17954 (24.1)
	(Missing)	8450 (11.4)
Fatigue	YES	22197 (29.8)
	NO	30664 (41.2)
	Unknown	13142 (17.7)
	(Missing)	8418 (11.3)
Shortness of breath	YES	39472 (53.0)
	NO	21739 (29.2)
	Unknown	4894 (6.6)
	(Missing)	8316 (11.2)
Lower chest wall indrawing	YES	578 (0.8)
	NO	46904 (63.0)
	Unknown	18490 (24.8)
	(Missing)	8449 (11.4)
Headache	YES	4956 (6.7)
	NO	44685 (60.0)
	Unknown	16342 (22.0)
	(Missing)	8438 (11.3)
Confusion	YES	16688 (22.4)
	NO	40402 (54.3)
	Unknown	8933 (12.0)

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

	(Missing)	8398 (11.3)
Seizures	YES	901 (1.2)
	NO	53360 (71.7)
	Unknown	11719 (15.7)
	(Missing)	8441 (11.3)
Abdominal pain	YES	5820 (7.8)
	NO	48350 (65.0)
	Unknown	11837 (15.9)
	(Missing)	8414 (11.3)
Nausea/vomiting	YES	10712 (14.4)
	NO	45478 (61.1)
	Unknown	9834 (13.2)
	(Missing)	8397 (11.3)
Diarrhoea	YES	9836 (13.2)
	NO	46058 (61.9)
	Unknown	10128 (13.6)
	(Missing)	8399 (11.3)
Conjunctivitis	YES	212 (0.3)
	NO	50370 (67.7)
	Unknown	15403 (20.7)
	(Missing)	8436 (11.3)
Skin rash	YES	797 (1.1)
	NO	50770 (68.2)
	Unknown	14423 (19.4)
	(Missing)	8431 (11.3)
Skin ulcers	YES	1397 (1.9)
	NO	50325 (67.6)
	Unknown	14259 (19.2)
	(Missing)	8440 (11.3)
Lymphadenopathy	YES	344 (0.5)
	NO	50559 (67.9)
	Unknown	15068 (20.2)
	(Missing)	8450 (11.4)
Bleeding (Haemorrhage)	YES	1012 (1.4)
	NO	52480 (70.5)
	Unknown	12480 (16.8)

Stratified: all		all
	(Missing)	8449 (11.4)
If Bleeding (others)	YES	503 (0.7)
	NO	20682 (27.8)
	Unknown	5592 (7.5)
	(Missing)	47644 (64.0)

## Comorbidity (detail)

Table 3

Stratified: all		all
Total N (%)		74421 (100.0)
Chronic cardiac disease	YES	20699 (27.8)
	NO	42219 (56.7)
	Unknown	3326 (4.5)
	(Missing)	8177 (11.0)
Chronic pulmonary disease	YES	11243 (15.1)
	NO	51365 (69.0)
	Unknown	3621 (4.9)
	(Missing)	8192 (11.0)
Asthma	YES	8540 (11.5)
	NO	53867 (72.4)
	Unknown	3783 (5.1)
	(Missing)	8231 (11.1)
Chronic kidney disease	YES	11177 (15.0)
	NO	51238 (68.8)
	Unknown	3812 (5.1)
	(Missing)	8194 (11.0)
Moderate/severe liver disease	YES	1203 (1.6)
	NO	60556 (81.4)
	Unknown	4434 (6.0)
	(Missing)	8228 (11.1)
Mild Liver disease	YES	941 (1.3)
	NO	60656 (81.5)
	Unknown	4592 (6.2)
	(Missing)	8232 (11.1)
Chronic neurological disorder	YES	8080 (10.9)
	NO	53980 (72.5)

Stratified: all		all
	Unknown	4132 (5.6)
	(Missing)	8229 (11.1)
Malignancy	YES	6472 (8.7)
	NO	55441 (74.5)
	Unknown	4289 (5.8)
	(Missing)	8219 (11.0)
Chronic hematologic disease	YES	2746 (3.7)
	NO	59090 (79.4)
	Unknown	4342 (5.8)
	(Missing)	8243 (11.1)
AIDS/HIV	YES	258 (0.3)
	NO	60868 (81.8)
	Unknown	5065 (6.8)
	(Missing)	8230 (11.1)
Obesity	YES	6608 (8.9)
	NO	49609 (66.7)
	Unknown	10019 (13.5)
	(Missing)	8185 (11.0)
Diabetes with complications	YES	4569 (6.1)
	NO	55759 (74.9)
	Unknown	5860 (7.9)
	(Missing)	8233 (11.1)
Diabetes without complications	YES	10176 (13.7)
	NO	50266 (67.5)
	Unknown	5748 (7.7)
	(Missing)	8231 (11.1)
Rheumatologic disorder	YES	6960 (9.4)
	NO	54704 (73.5)
	Unknown	4513 (6.1)
	(Missing)	8244 (11.1)
Dementia	YES	10777 (14.5)
	NO	51445 (69.1)
	Unknown	3990 (5.4)
	(Missing)	8209 (11.0)
Malnutrition	YES	1625 (2.2)
	NO	56609 (76.1)

<b>Stratified: all</b>		<b>all</b>
	Unknown	7919 (10.6)
	(Missing)	8268 (11.1)
Smoking	YES	3430 (4.6)
	NO	37202 (50.0)
	(Missing)	33789 (45.4)