Dynamic CO-CIN report to SAGE and NERVTAG

Dynamic content updated: 2020-07-08 06:14:18.

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 08 July 2020, CO-CIN has recruited **70253 patients** with confirmed Coronavirus (Figure 1).

The CO-CIN dataset represents NA% (70253/NA) of cases of confirmed Coronovirus cases in the UK, per the PHE daily reports (last updated 5pm on 6 July).

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 7449 reported visiting or working in a hospital where COVID-19 cases are being managed.

The median age is 74 (range: 0-107), Male/Female 36831/28375.

The most common symptoms were cough (62%), fever (61%) and shortness of breath (60%) (Figure 3A). 3696/60376 (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 (17%). 12774/60480 (21%) of patients have reported no co morbidity. 414/5353 (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: 4-18, n = 55000).
8224/51099 (16%) patients required high-flow oxygen after day 1 of treatment.

Currently 18976 patient(s) have died and 8494 required ICU. 34119 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.

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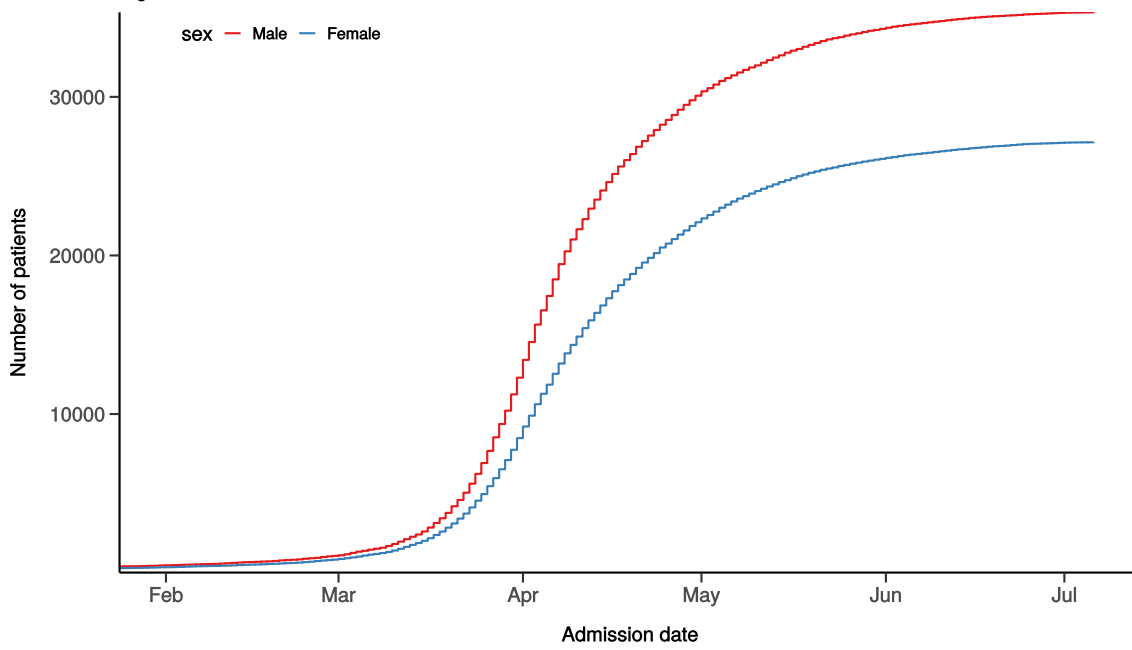Analytics: Lisa Norman, Riinu Pius, Thomas Drake, Cameron Fairfield, Stephen Knight, Kenneth McLean, Katie Shaw.
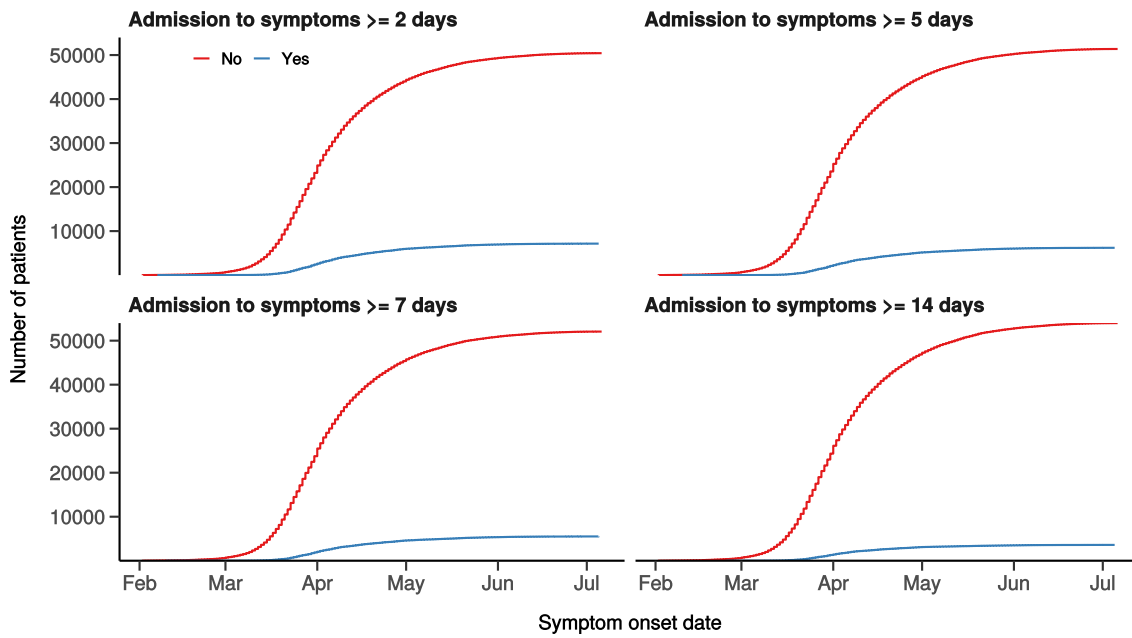
Admission

Figure 1

Hospital admission with COVID-19 by sex
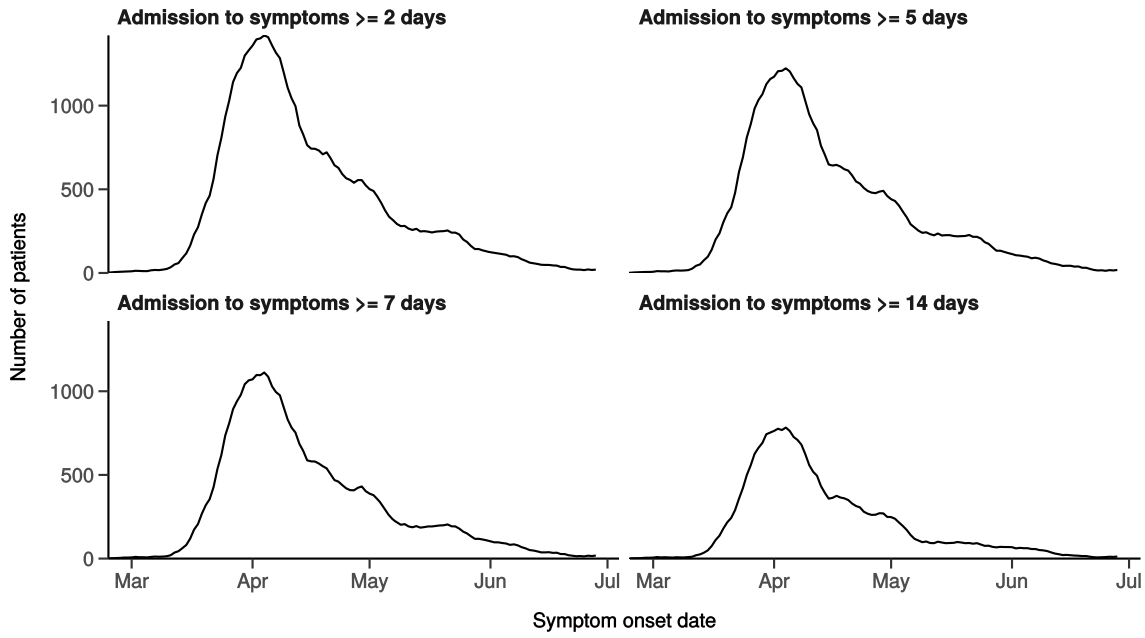## Figure 1A

Number with symptom onset occuring after admission to hospital
Figure 1B

Number with symptom onset occuring after hospital admission

Figure 1C - 7-day rolling count. n = 57594

Proportion with symptom onset occuring after hospital admission

Figure 1D - 7-day rolling percentage. n = 57594
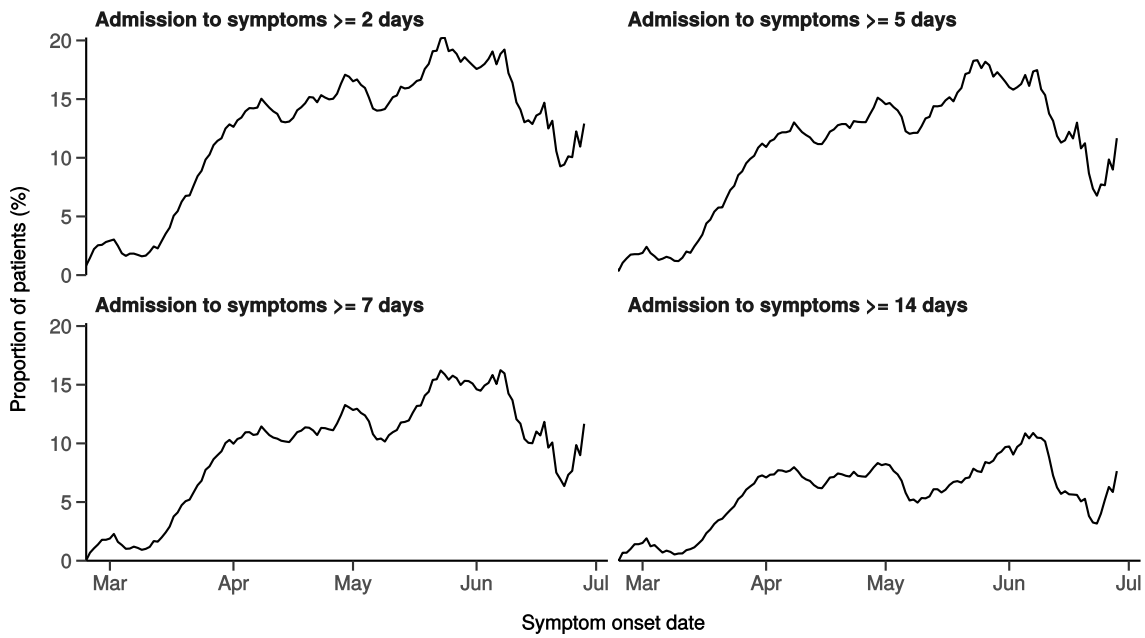
Patients with outcome stratified by age, and sex
Figure 1E

Discharged | On-going care | Died

Age (years)

Males
34981/61861 (57%)

Females
26880/61861 (43%)

Number of patients
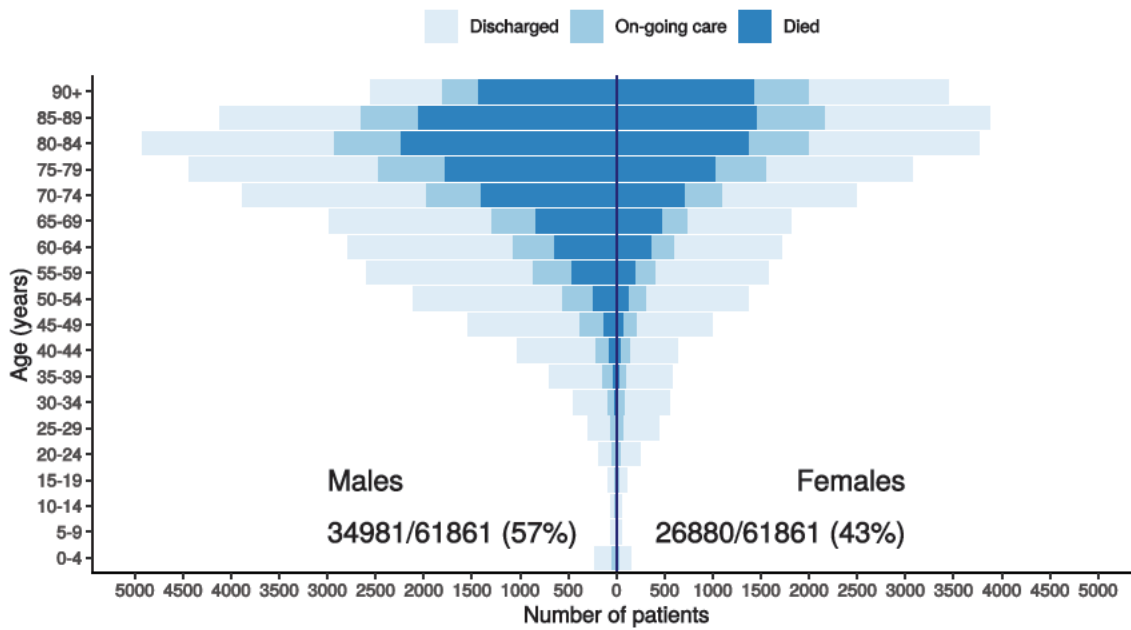
Hospital admission with COVID-19 by ethnicity
Figure 1F

Asian

N = 3169

Black

N = 2059

ethnicity
Asian | Black | White | Other

White

N = 45704

Other

N = 3824

count

Date of admission
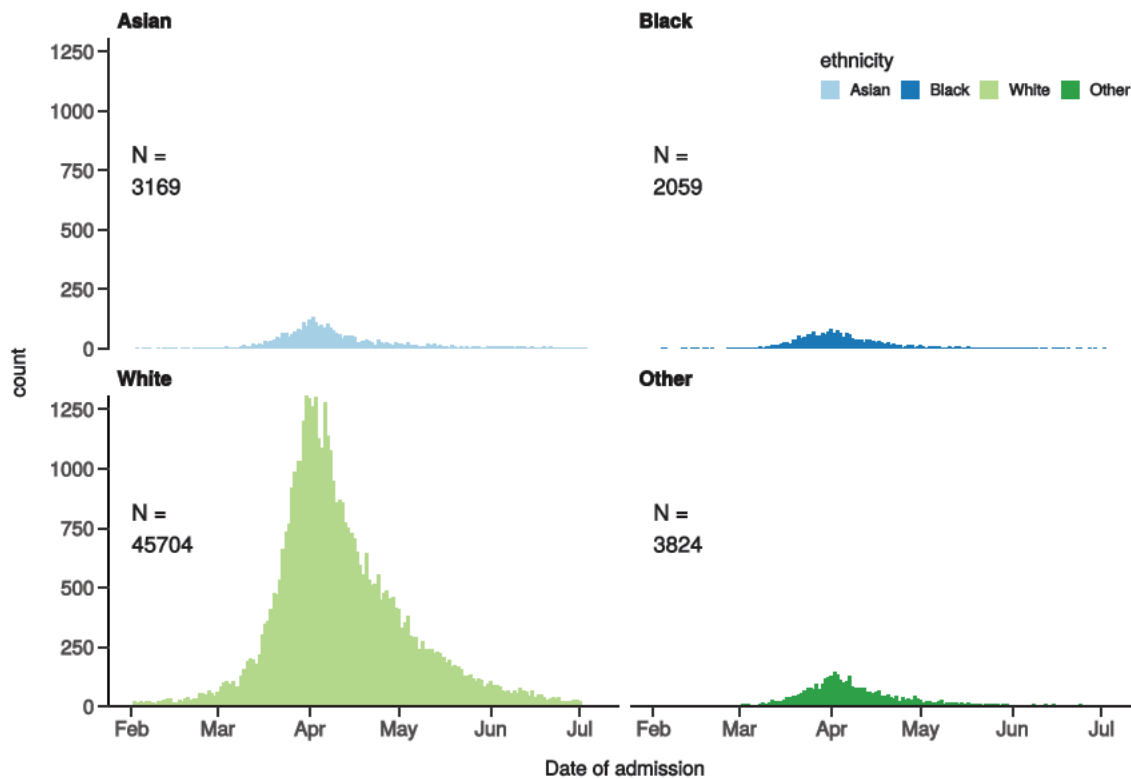
Location by CCG / Healthboard

Figure 2

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

n = 71023
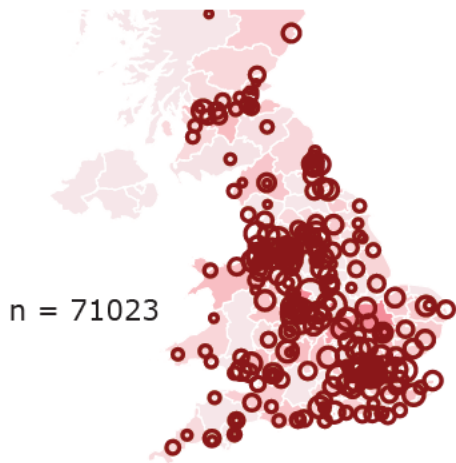
Symptoms and comorbidity

Figure 3A

Symptoms on presentation to hospital (% patients, n = 60175)
Figure 3A

Comorbidity (% patients, n = 60258)
Figure 3B
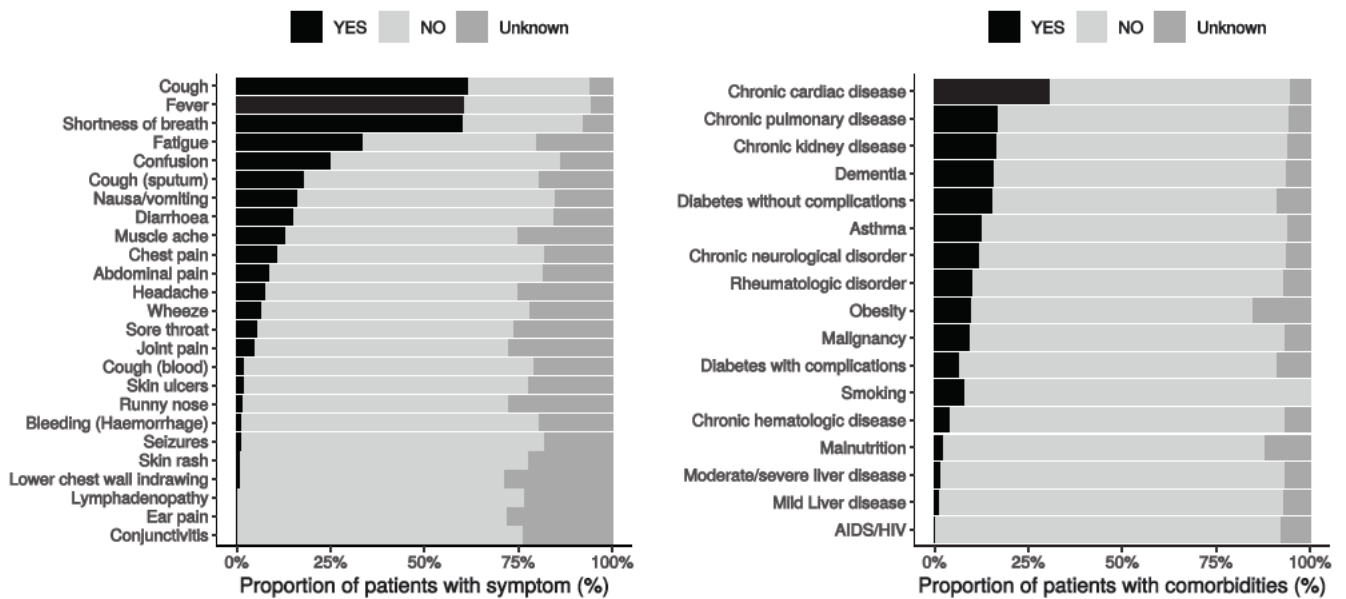
Figure 3C

Correlation of symtpoms in all pages. Note clusters, top right to bottom left, flu-like, coryzal, abdominal, respiratory, neurocutaneous.
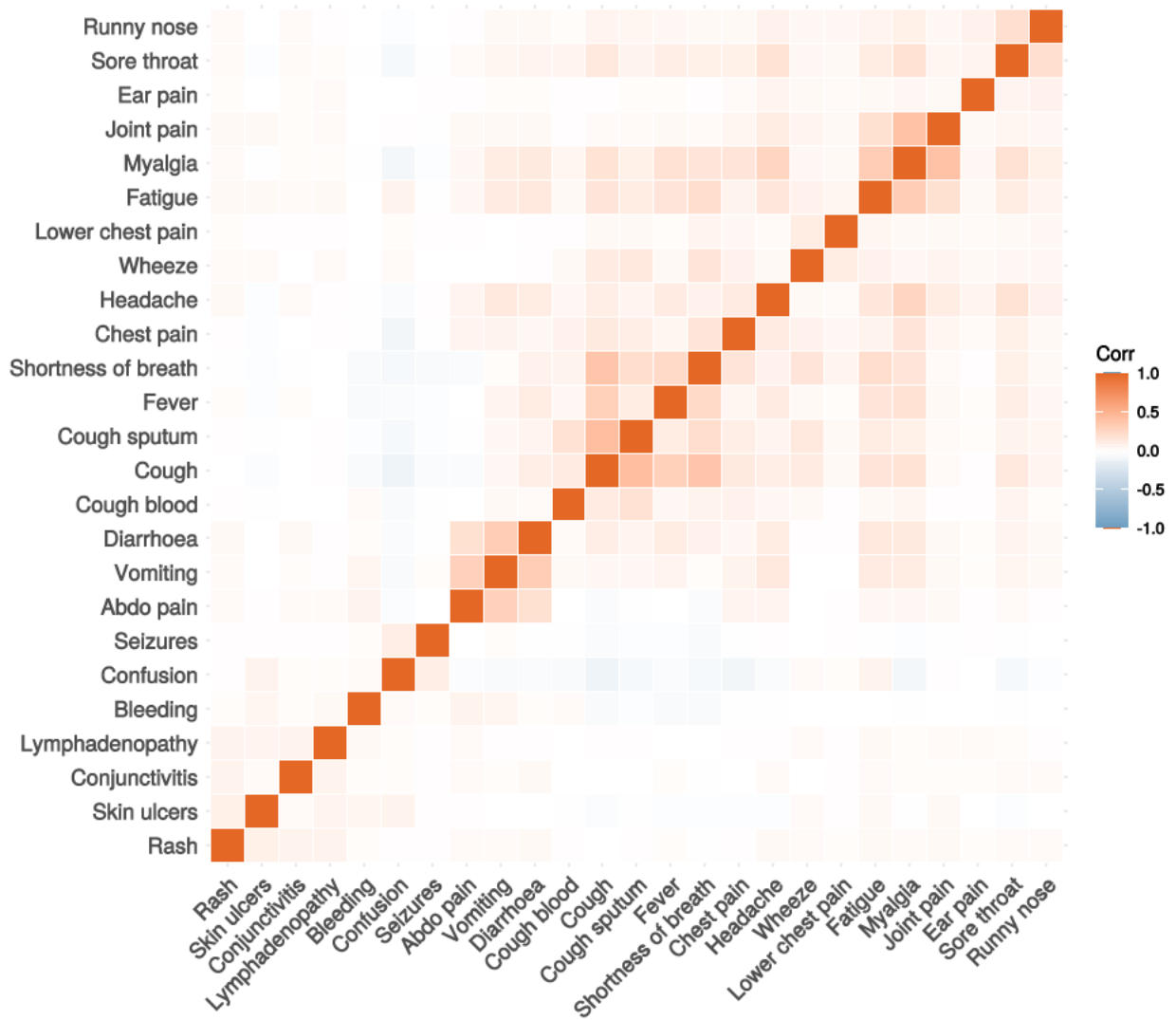
Symptoms (diagnostic criteria)

Figure 4A

n = 60175

Fever
Cough
Shortness of breath
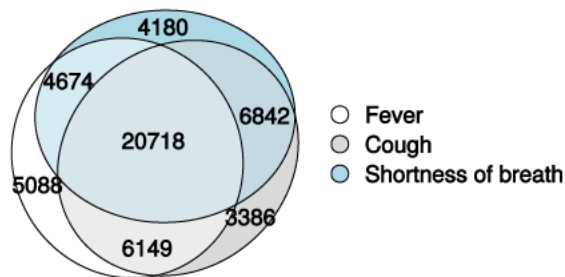
Symptoms (most common)

Figure 4B

n = 60175

Cough
Fever
Shortness of breath
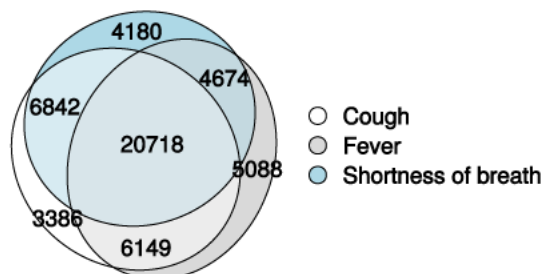
Comorbidity (most common)

Figure 4C

Chronic cardiac disease
Chronic pulmonary disease
Chronic kidney disease
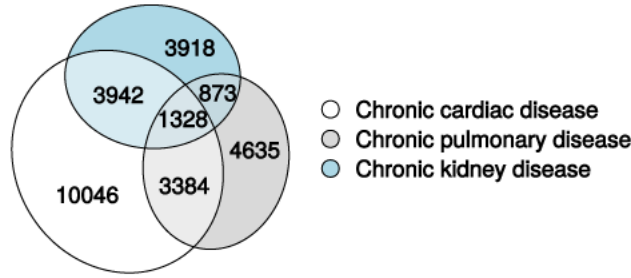
Medication prior to illness

Figure 5

Preadmission treatment

Figure 5

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

No   Yes
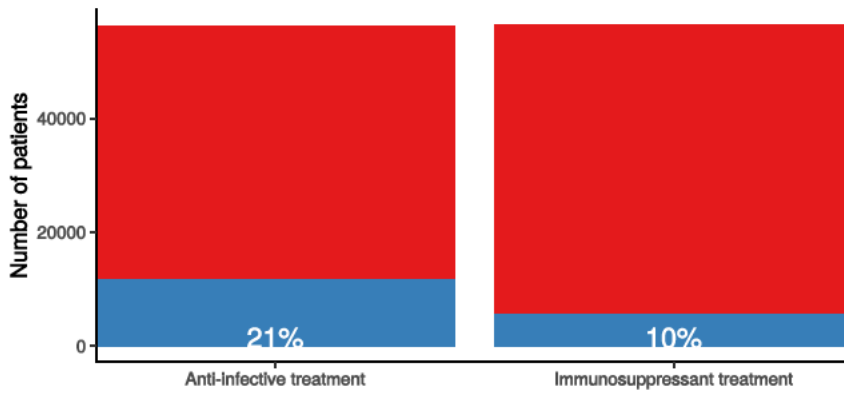
Patient flow

Figure 6A - All patients

N = 62644

Patient status by day
Cumulative for discharge/death
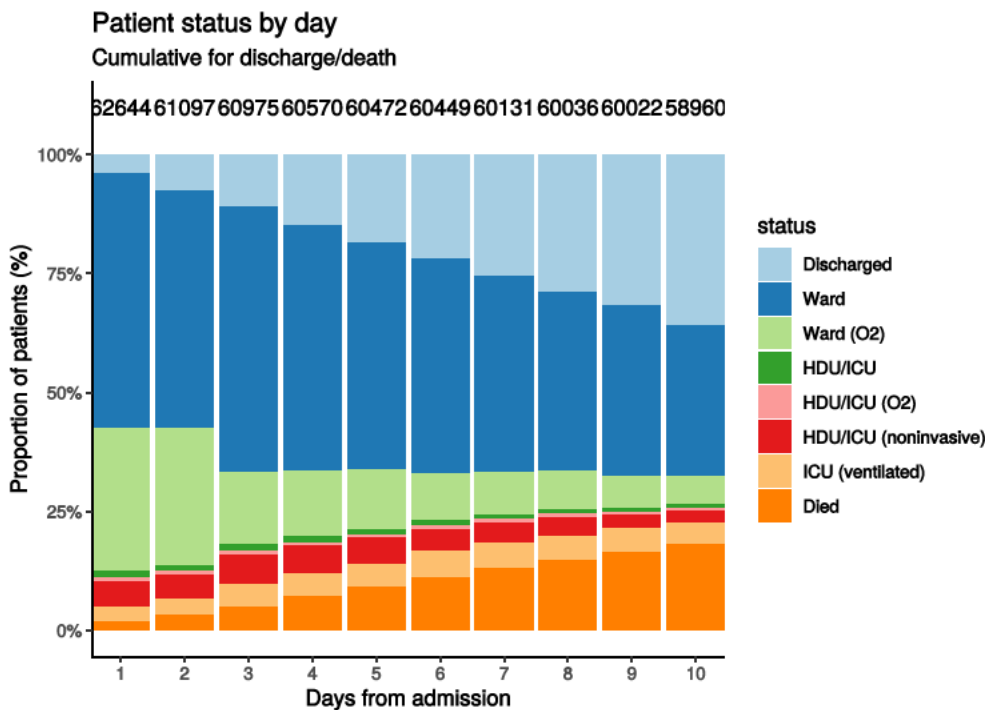
Figure 6B - Patients admitted >=14 days and <=28 days ago

N = 887

Patient status by day
Cumulative for discharge/death
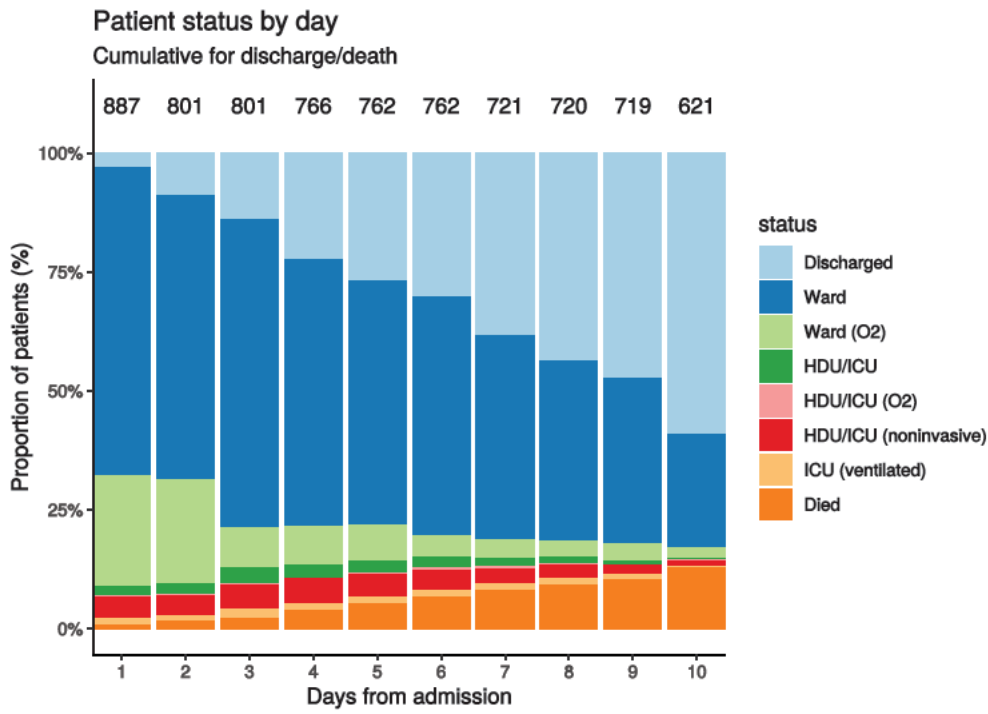
Oxygen requirement

Figure 7A - All patients

N = 59349
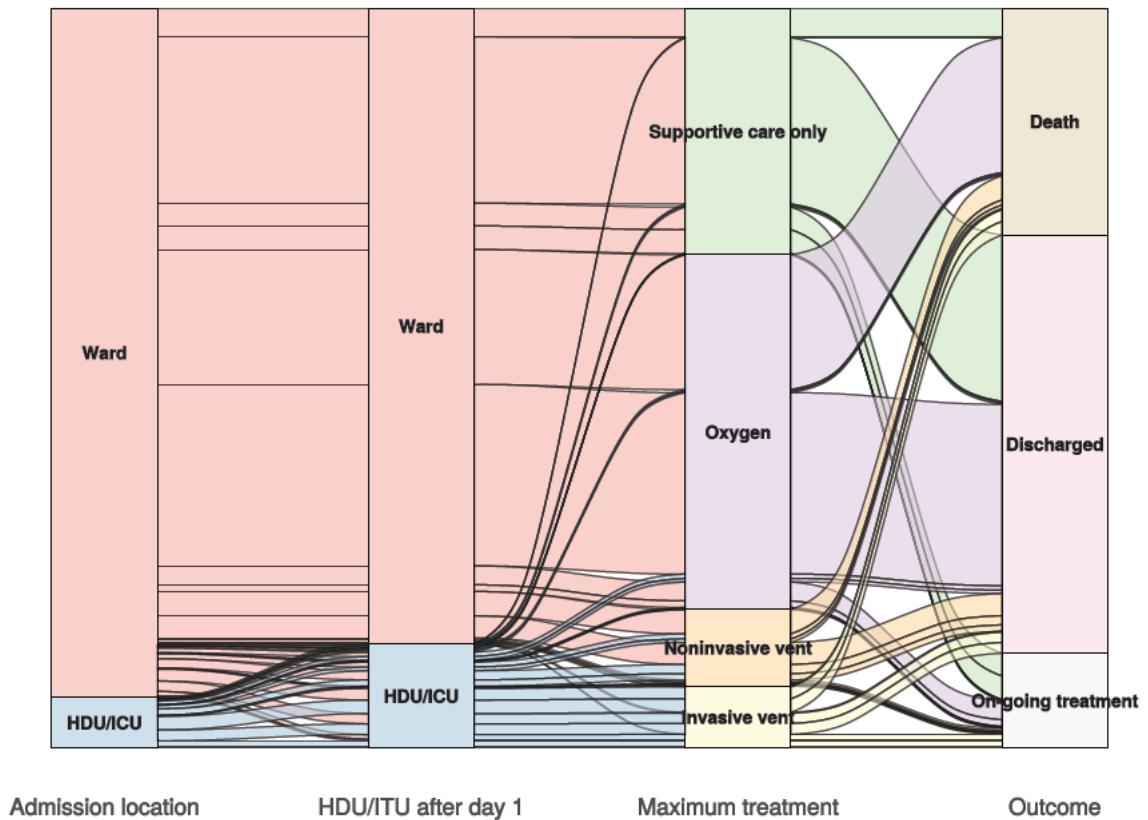
Figure 7B - Patients admitted >=14 days and <=28 days ago

N = 861

Admission location   HDU/ITU after day 1   Treatment   Outcome
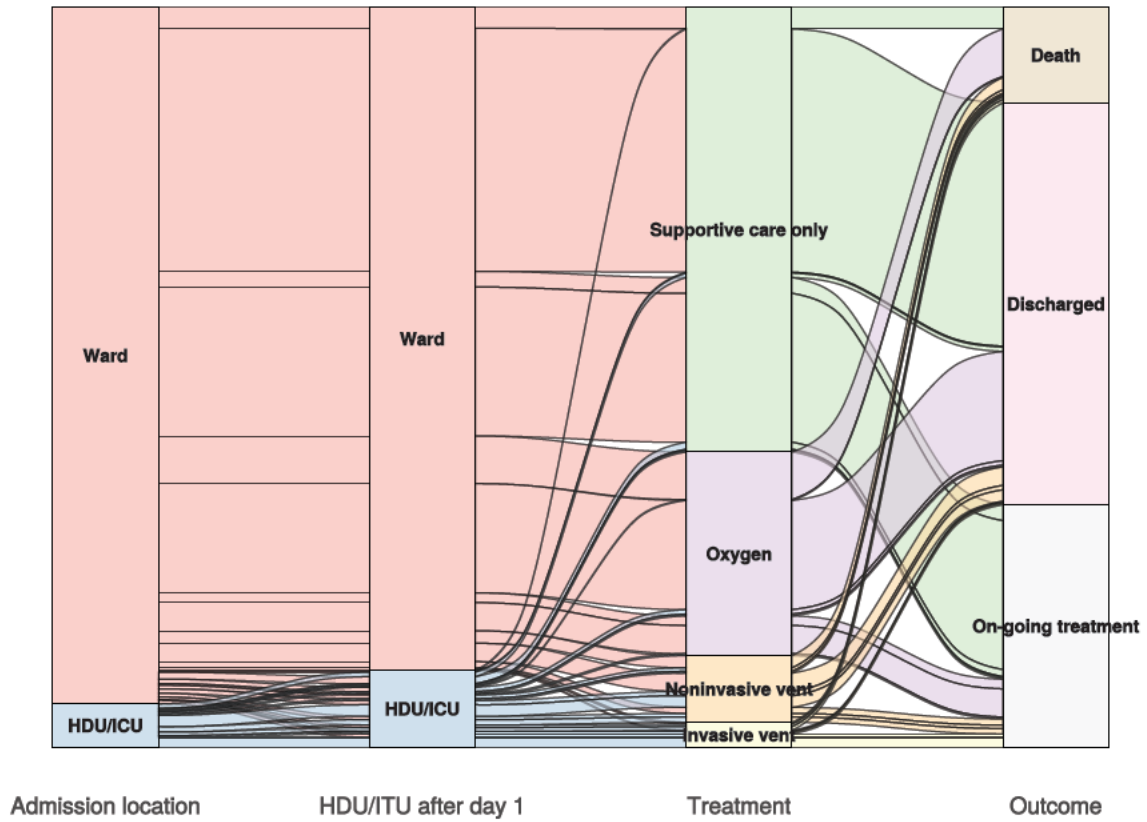
In-hospital medical treatment

Figure 8

In-hospital treatment
Anti-virals, antibiotics, corticosteroids, and anti-fungals for patients who have co
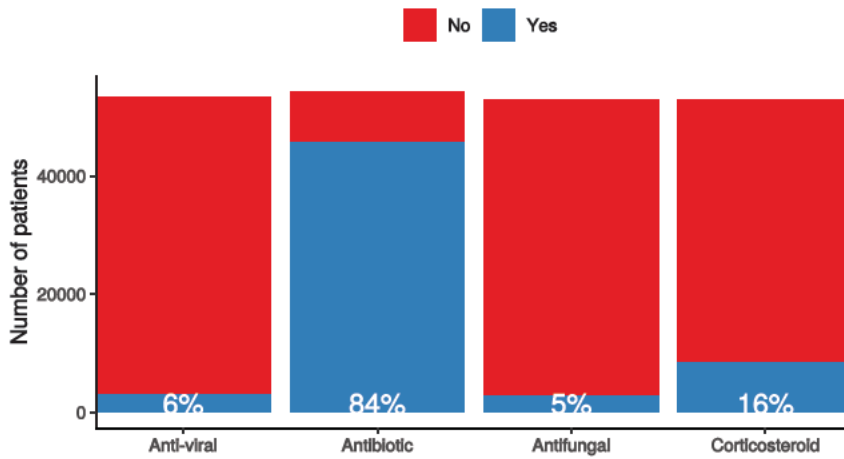
Treatment

Figure 9

ICU/HDU admission
Figure 10A

8494/60234
14%
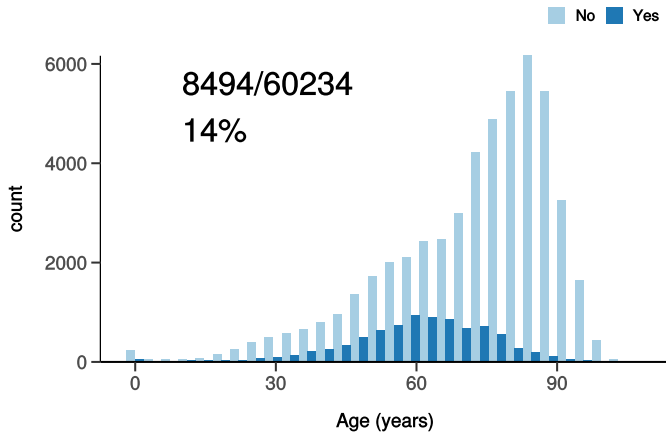
High flow oxygen
Figure 10B

37515/58783
64%

Noninvasive ventilation
Figure 10C

8996/58529
15%
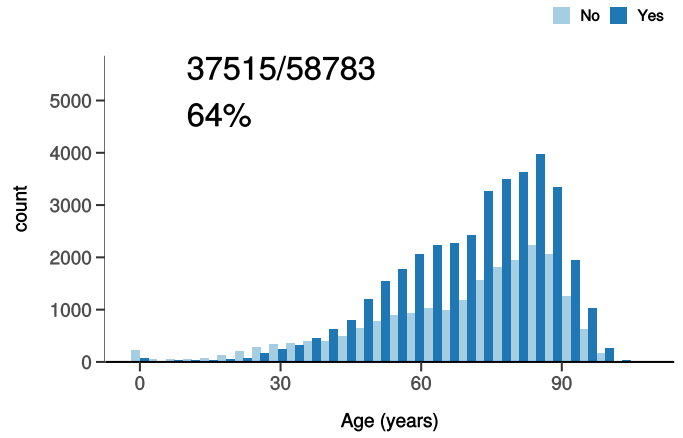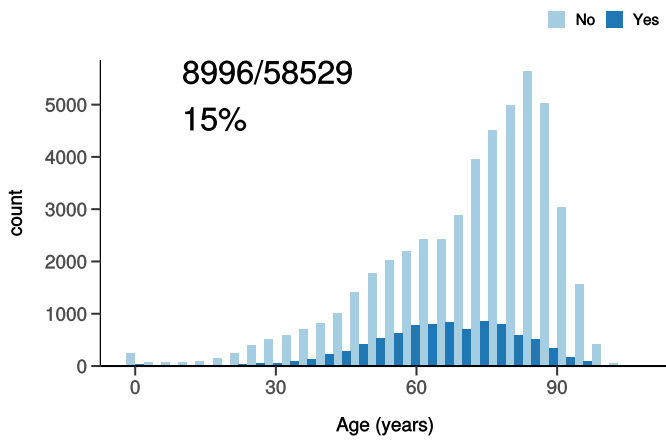
Invasive ventilation
Figure 10D

5070/58680
9%
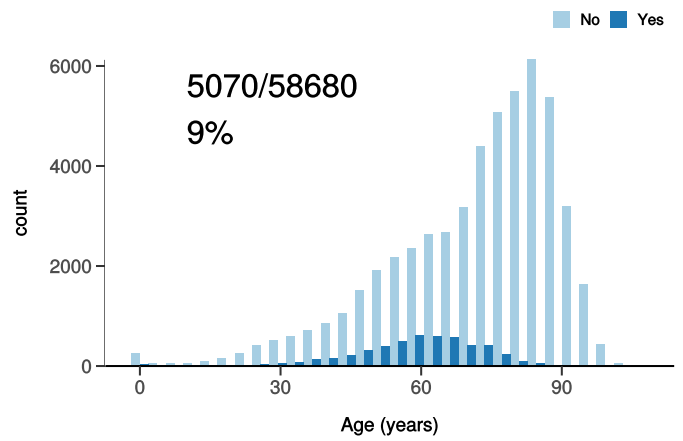
Status of patients admitted >=14 days from today

Figure 10

All patients

Died
16300/56608
29%

On-going care
9043/56608
16%

Discharged alive
31265/56608
55%

Number of patients

Age (years)
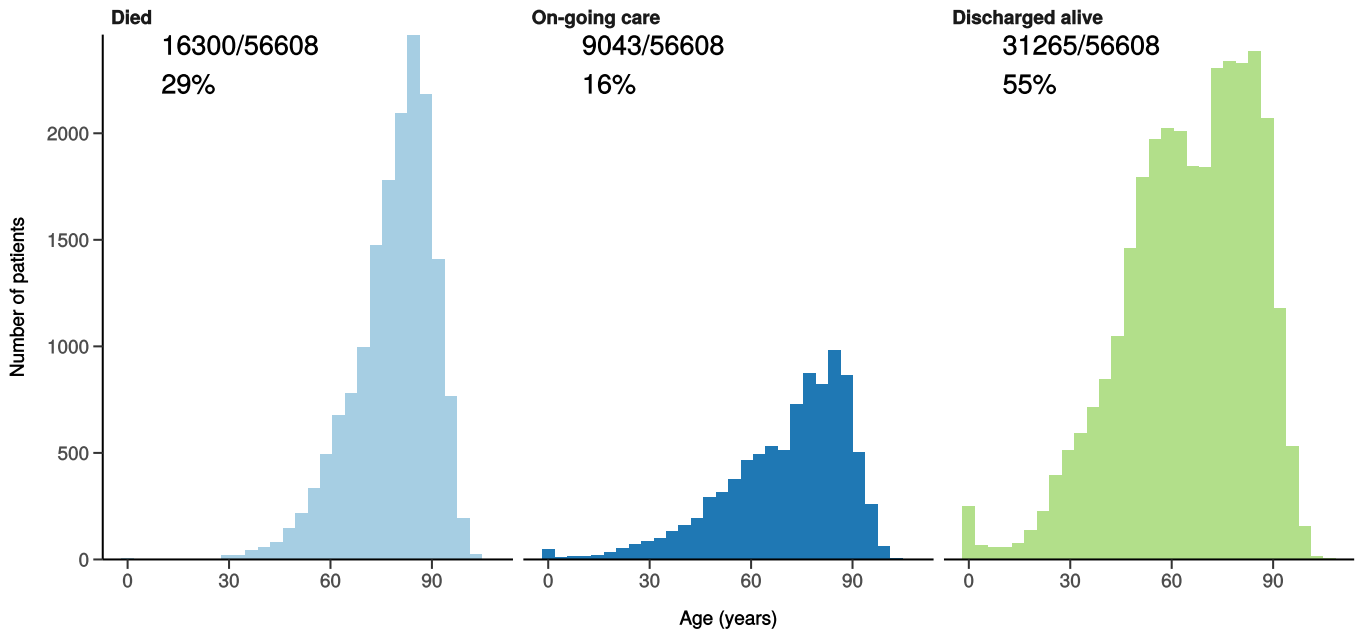
Patients admitted to ICU/HDU

Died
2821/7921
36%

On-going care
1503/7921
19%

Discharged alive
3597/7921
45%

Number of patients

Age (years)
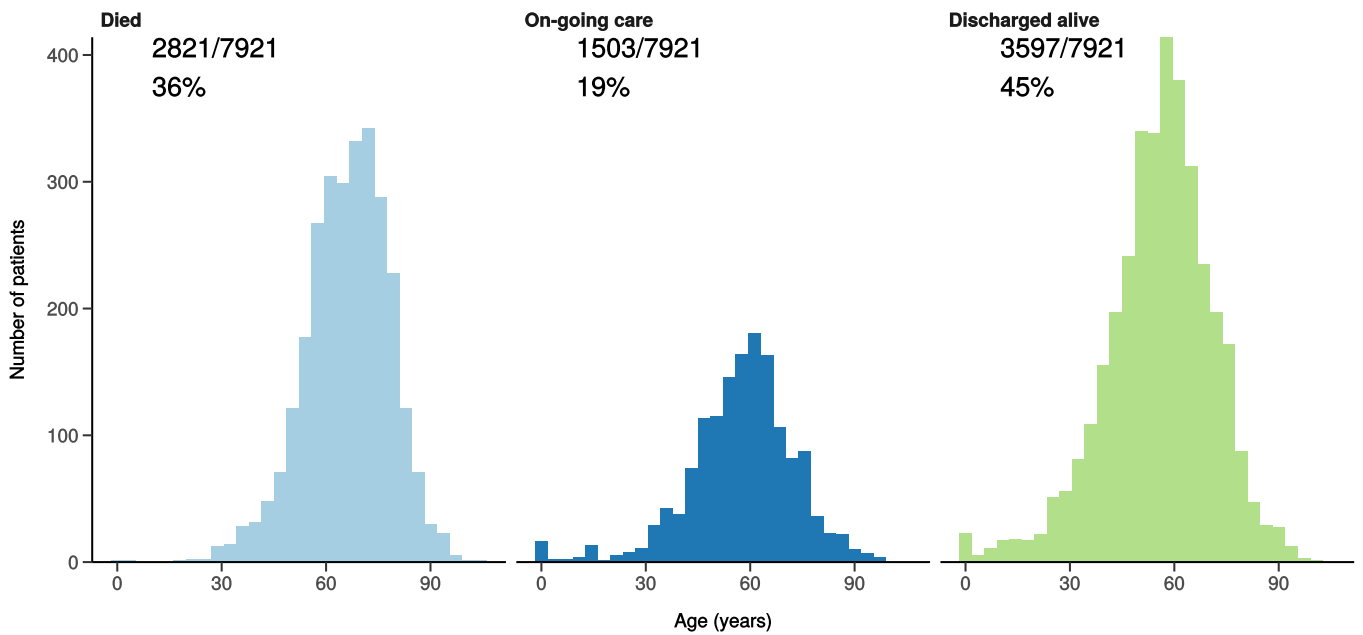
Patients receiving invasive ventilation

Died
1987/4755
42%

On-going care
1074/4755
23%

Discharged alive
1694/4755
36%

Number of patients

Age (years)
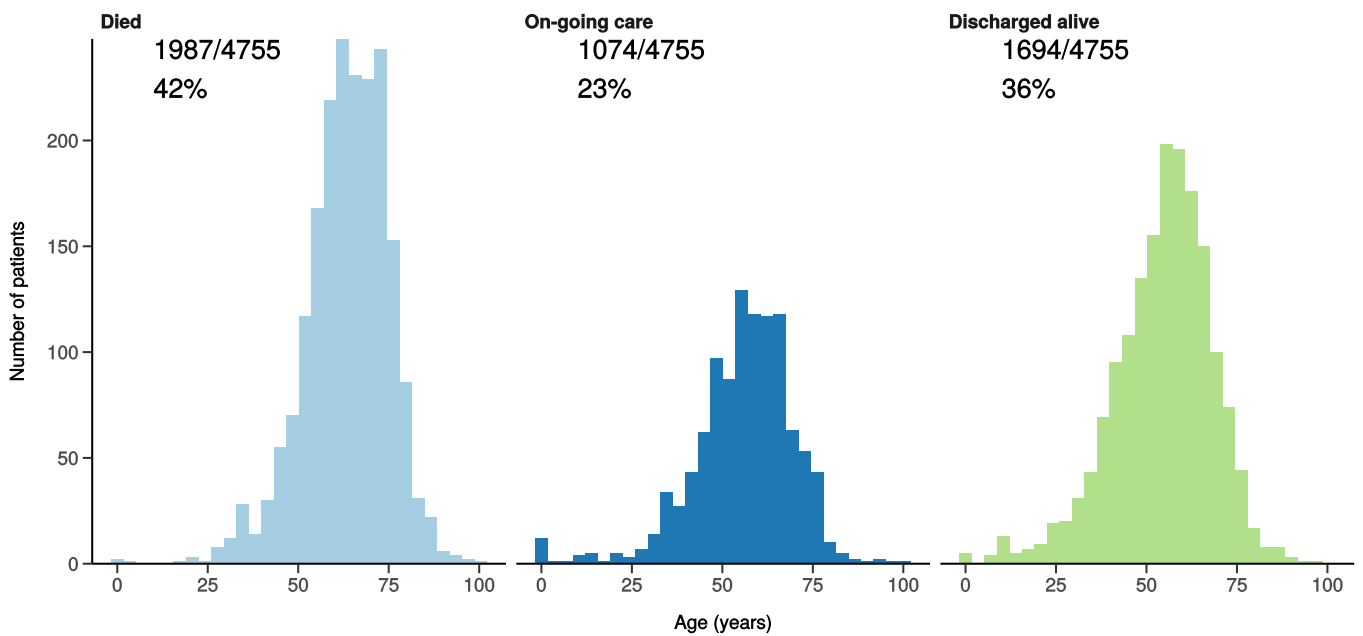
Length of stay stratified by age

Figure 11

Length of stay stratified by age and mortality
Proportion who reach outcome by day 14 shown
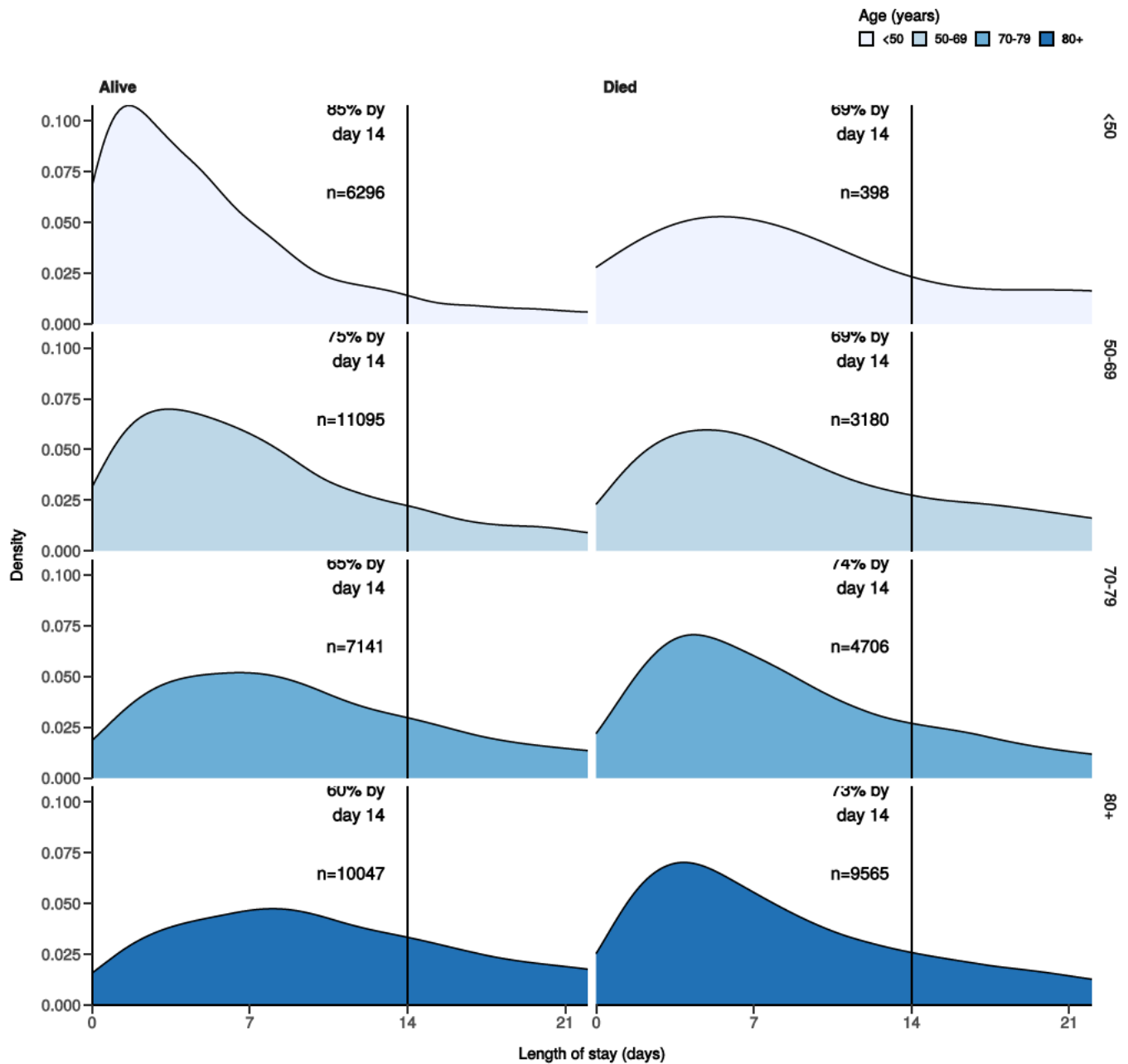
Predictors of death: logistic regression multivariable model

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	7249 (94.4)	429 (5.6)	•	•
	50-69	12229 (78.6)	3326 (21.4)	4.60 (4.14-5.11, p<0.001)	4.29 (3.82-4.84, p<0.001)
	70-79	7850 (61.4)	4943 (38.6)	10.64 (9.60-11.82, p<0.001)	8.85 (7.86-9.99, p<0.001)
	80+	10930 (52.2)	10020 (47.8)	15.49 (14.02-17.16, p<0.001)	12.78 (11.37-14.42, p<0.001)
Sex at Birth	Male	20953 (64.6)	11471 (35.4)	•	•
	Female	17477 (70.5)	7327 (29.5)	0.77 (0.74-0.79, p<0.001)	0.69 (0.66-0.72, p<0.001)

Dependent: death		No	Yes	OR (univariable)	OR (multivariable)
	Not specified	0 (NaN)	0 (NaN)	•	•
Chronic cardiac disease	NO	26039 (72.4)	9939 (27.6)	•	•
	YES	9919 (56.8)	7558 (43.2)	2.00 (1.92-2.07, p<0.001)	1.16 (1.11-1.21, p<0.001)
Chronic pulmonary disease	NO	30471 (69.7)	13258 (30.3)	•	•
	YES	5392 (56.8)	4105 (43.2)	1.75 (1.67-1.83, p<0.001)	1.30 (1.23-1.38, p<0.001)
Chronic neurological disorder	NO	31480 (68.5)	14481 (31.5)	•	•
	YES	4095 (60.2)	2711 (39.8)	1.44 (1.37-1.52, p<0.001)	1.15 (1.08-1.23, p<0.001)
Chronic hematologic disease	NO	34077 (67.9)	16146 (32.1)	•	•
	YES	1386 (59.0)	965 (41.0)	1.47 (1.35-1.60, p<0.001)	1.18 (1.07-1.31, p=0.001)
Chronic kidney disease	NO	30569 (70.1)	13063 (29.9)	•	•
	YES	5184 (55.0)	4248 (45.0)	1.92 (1.83-2.01, p<0.001)	1.28 (1.21-1.35, p<0.001)
Dementia	NO	30975 (70.7)	12837 (29.3)	•	•
	YES	4668 (51.4)	4422 (48.6)	2.29 (2.18-2.39, p<0.001)	1.40 (1.32-1.48, p<0.001)
Obesity	NO	28515 (67.5)	13739 (32.5)	•	•
	YES	3937 (71.0)	1610 (29.0)	0.85 (0.80-0.90, p<0.001)	1.34 (1.25-1.44, p<0.001)
Malignancy	NO	32495 (69.0)	14623 (31.0)	•	•
	YES	3009 (54.5)	2515 (45.5)	1.86 (1.76-1.97, p<0.001)	1.43 (1.34-1.53, p<0.001)

Number in dataframe = 62218, Number in model = 45239, Missing = 16979, AIC = 50321.6, C-statistic = 0.717, H&L = Chi-sq(8) 100.38 (p<0.001)

Figure 12 - Adjusted odds ratio plot

Death

Age on admission (years)	<50	-	
	50-69	4.29 (3.82-4.84, p<0.001)	
	70-79	8.85 (7.86-9.99, p<0.001)	
	80+	12.78 (11.37-14.42, p<0.001)	
Sex at Birth	Male	-	
	Female	0.69 (0.66-0.72, p<0.001)	
	Not specified	-	
Chronic cardiac disease	YES	1.16 (1.11-1.21, p<0.001)	
Chronic pulmonary disease	YES	1.30 (1.23-1.38, p<0.001)	
Chronic neurological disorder	YES	1.15 (1.08-1.23, p<0.001)	
Chronic hematologic disease	YES	1.18 (1.07-1.31, p=0.001)	
Chronic kidney disease	YES	1.28 (1.21-1.35, p<0.001)	
Dementia	YES	1.40 (1.32-1.48, p<0.001)	
Obesity	YES	1.34 (1.25-1.44, p<0.001)	
Malignancy	YES	1.43 (1.34-1.53, p<0.001)	

Odds ratio (95% CI, log scale)
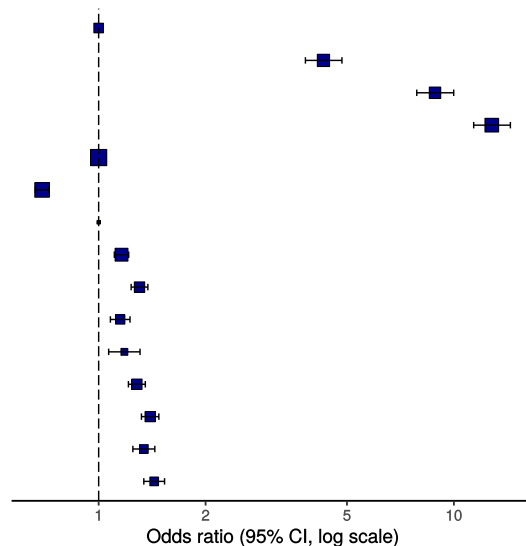
Figure 13 - ROC
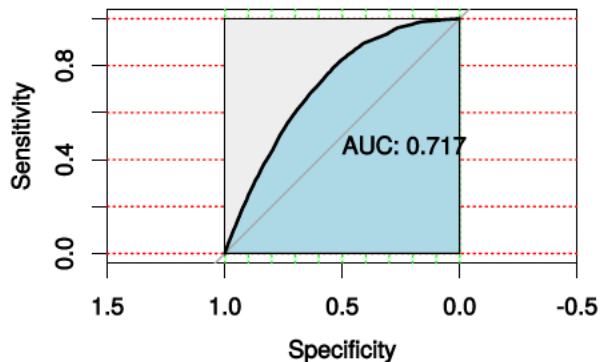
Survival models

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

Figure 14

P-value is log-rank test.
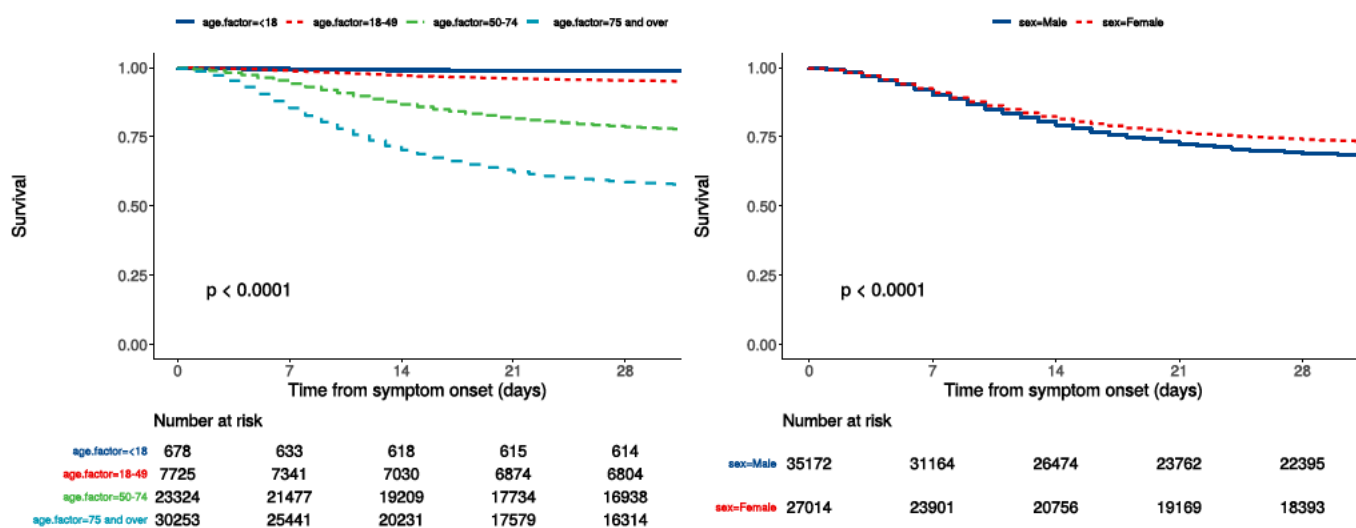
Cox proportional hazards model

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	8403 (13.6)	•	•
	50-69	16943 (27.3)	4.12 (3.73-4.56, p<0.001)	4.00 (3.53-4.53, p<0.001)
	70-79	13902 (22.4)	8.46 (7.66-9.33, p<0.001)	7.86 (6.95-8.89, p<0.001)
	80+	22736 (36.7)	11.51 (10.44-12.67, p<0.001)	10.43 (9.23-11.78, p<0.001)
Sex at Birth	Male	35172 (56.6)	•	•
	Female	27014 (43.4)	0.81 (0.79-0.84, p<0.001)	0.78 (0.75-0.81, p<0.001)
qSOFA score on admission	0	21632 (42.0)	•	•
	1	23374 (45.3)	1.58 (1.53-1.64, p<0.001)	1.70 (1.63-1.77, p<0.001)

Dependent: Surv(time, status)		all	HR (univariable)	HR (multivariable)
	2	5899 (11.4)	2.96 (2.83-3.10, p<0.001)	2.77 (2.63-2.92, p<0.001)
	3	649 (1.3)	4.84 (4.38-5.34, p<0.001)	4.38 (3.91-4.90, p<0.001)
Symptomatic at presentation	No symptoms	2468 (4.1)	•	•
	Symptoms	57583 (95.9)	1.46 (1.34-1.59, p<0.001)	•
Chronic cardiac disease	NO	38322 (67.3)	•	•
	YES	18595 (32.7)	1.77 (1.71-1.82, p<0.001)	1.13 (1.09-1.17, p<0.001)
Chronic kidney disease	NO	46464 (82.3)	•	•
	YES	9999 (17.7)	1.70 (1.64-1.76, p<0.001)	1.21 (1.16-1.26, p<0.001)
Moderate/severe liver disease	NO	54773 (98.0)	•	•
	YES	1100 (2.0)	1.30 (1.18-1.43, p<0.001)	1.48 (1.31-1.67, p<0.001)
Chronic neurological disorder	NO	48929 (87.2)	•	•
	YES	7205 (12.8)	1.37 (1.31-1.43, p<0.001)	•
Malignancy	NO	50177 (89.6)	•	•
	YES	5821 (10.4)	1.62 (1.55-1.69, p<0.001)	1.32 (1.26-1.39, p<0.001)
Chronic hematologic disease	NO	53442 (95.6)	•	•
	YES	2475 (4.4)	1.35 (1.27-1.44, p<0.001)	•
Obesity	NO	45020 (88.5)	•	•
	YES	5851 (11.5)	0.87 (0.82-0.91, p<0.001)	1.20 (1.13-1.27, p<0.001)
Diabetes without complications	NO	45402 (82.9)	•	•
	YES	9386 (17.1)	1.23 (1.19-1.28, p<0.001)	•
Rheumatologic disorder	NO	49502 (88.8)	•	•
	YES	6240 (11.2)	1.18 (1.13-1.24, p<0.001)	•
Dementia	NO	46662 (82.9)	•	•
	YES	9622 (17.1)	2.00 (1.94-2.07, p<0.001)	1.19 (1.14-1.24, p<0.001)
Malnutrition	NO	51279 (97.3)	•	•
	YES	1441 (2.7)	1.43 (1.32-1.56, p<0.001)	•
smoking_mhyn_2levels	NO	34266 (91.8)	•	•
	YES	3044 (8.2)	0.90 (0.83-0.96, p=0.003)	•

Number in dataframe = 62511, Number in model = 41901, Missing = 20610, Number of events = 12677, Concordance = 0.716 (SE = 0.002), R-squared = 0.161(Max possible = 0.998), Likelihood ratio test = 7354.887 (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	4.00 (3.53-4.53, p<0.001)	
	70-79	7.86 (6.95-8.89, p<0.001)	
	80+	10.43 (9.23-11.78, p<0.001)	
Sex at Birth	Female	0.78 (0.75-0.81, p<0.001)	
qSOFA score on admission	0	-	
	1	1.70 (1.63-1.77, p<0.001)	
	2	2.77 (2.63-2.92, p<0.001)	
	3	4.38 (3.91-4.90, p<0.001)	
Chronic cardiac disease	YES	1.13 (1.09-1.17, p<0.001)	
Chronic kidney disease	YES	1.21 (1.16-1.26, p<0.001)	
Moderate/severe liver disease	YES	1.48 (1.31-1.67, p<0.001)	
Malignancy	YES	1.32 (1.26-1.39, p<0.001)	
Obesity	YES	1.20 (1.13-1.27, p<0.001)	
Dementia	YES	1.19 (1.14-1.24, p<0.001)	

Hazard ratio (95% CI, log scale)
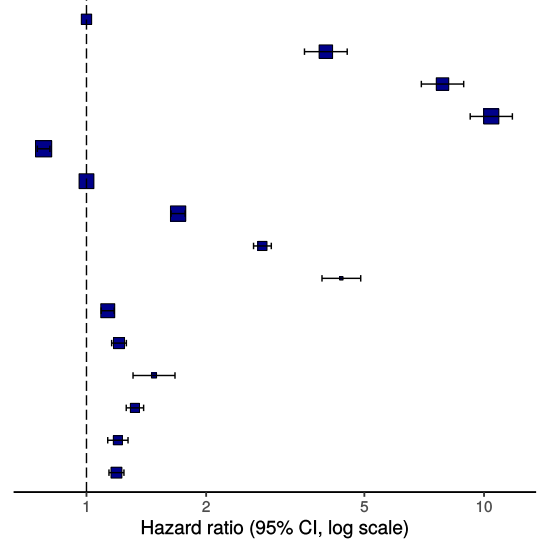
Figure 15b - Multivariable Cox proportional hazards model (age, sex, comorbidities only)

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

Age on admission (years)	<50	-	
	50-69	3.96 (3.54-4.44, p<0.001)	
	70-79	7.42 (6.63-8.30, p<0.001)	
	80+	9.86 (8.82-11.03, p<0.001)	
Sex at Birth	Female	0.76 (0.73-0.79, p<0.001)	
Chronic cardiac disease	YES	1.12 (1.08-1.16, p<0.001)	
Chronic pulmonary disease	YES	1.20 (1.15-1.25, p<0.001)	
Chronic kidney disease	YES	1.20 (1.15-1.24, p<0.001)	
Malignancy	YES	1.27 (1.22-1.34, p<0.001)	
Obesity	YES	1.23 (1.17-1.30, p<0.001)	
Dementia	YES	1.33 (1.28-1.39, p<0.001)	

Hazard ratio (95% CI, log scale)
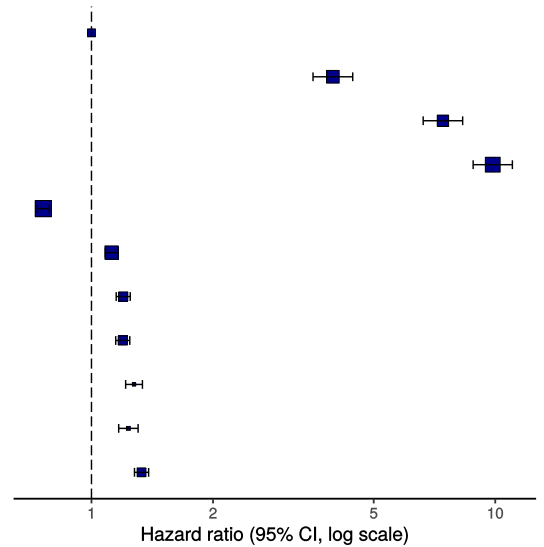
ROC = 0.7157917

Figure 16 - Predictions calibration plot

Black: observed Gray: ideal
Blue : optimism corrected

Predicted 7 Day Survival $_{B=40}$ based on observed-predicted
Mean |error|=0.212 0.9 Quantile=0.379
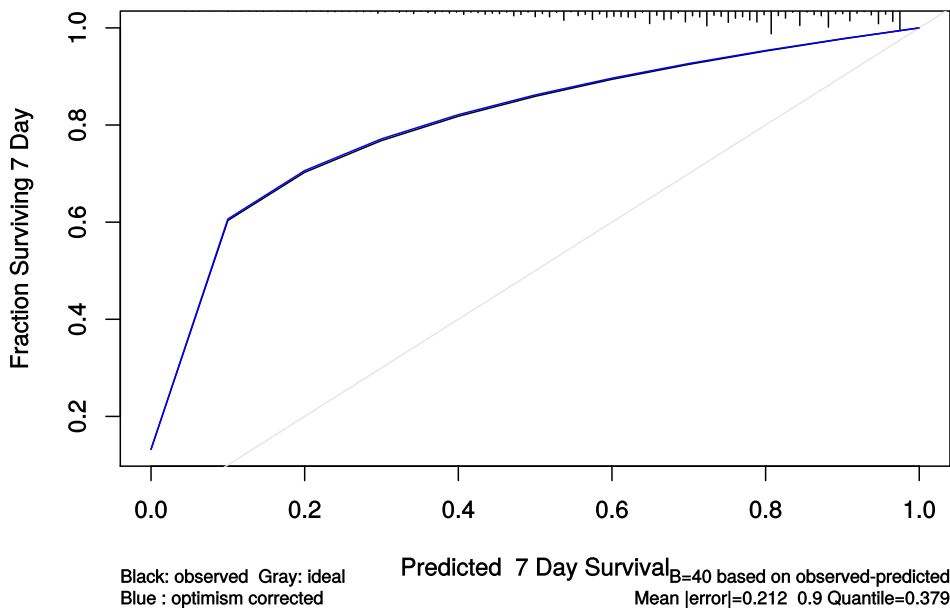
Figure 17 - Prognostic model predictions

Again, for demonstration of methods.

Prognostic model for survival 7 days after onset

qSOFA score on admission

Adjusted to:sex=Male chrincard=NO chronicpul_mhyn=NO malignantneo_mhyn=NO obesity_mhyn=NO dementia_mhyn=NO
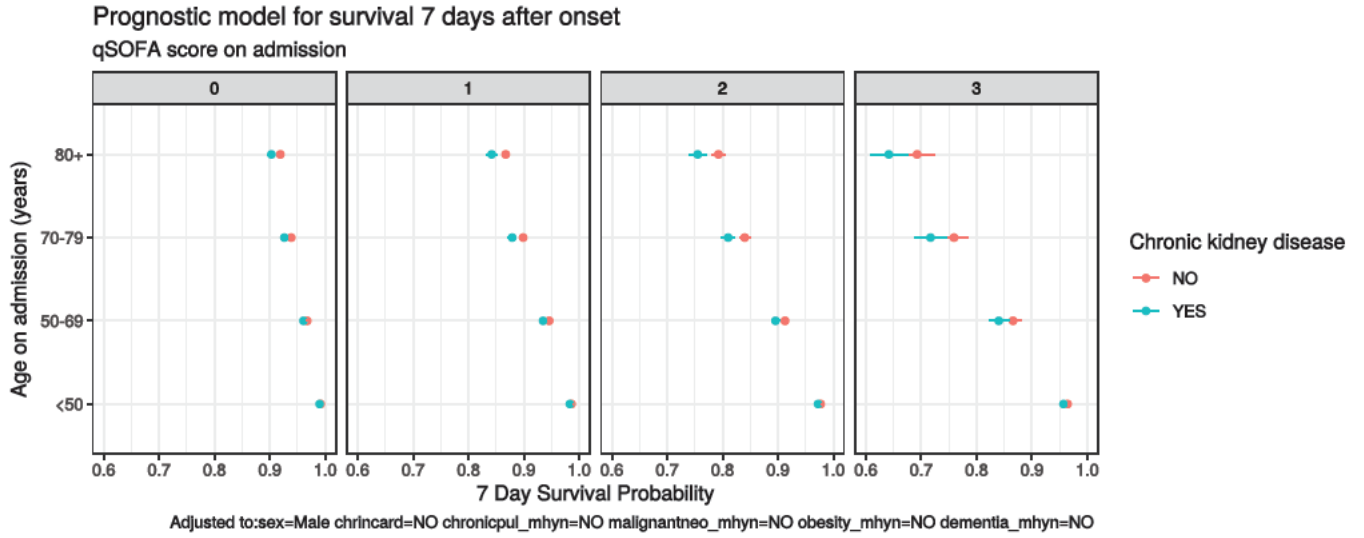
Figure 18 - Death by severity (NEWS) on admission

Number of deaths by NEWS score at admission
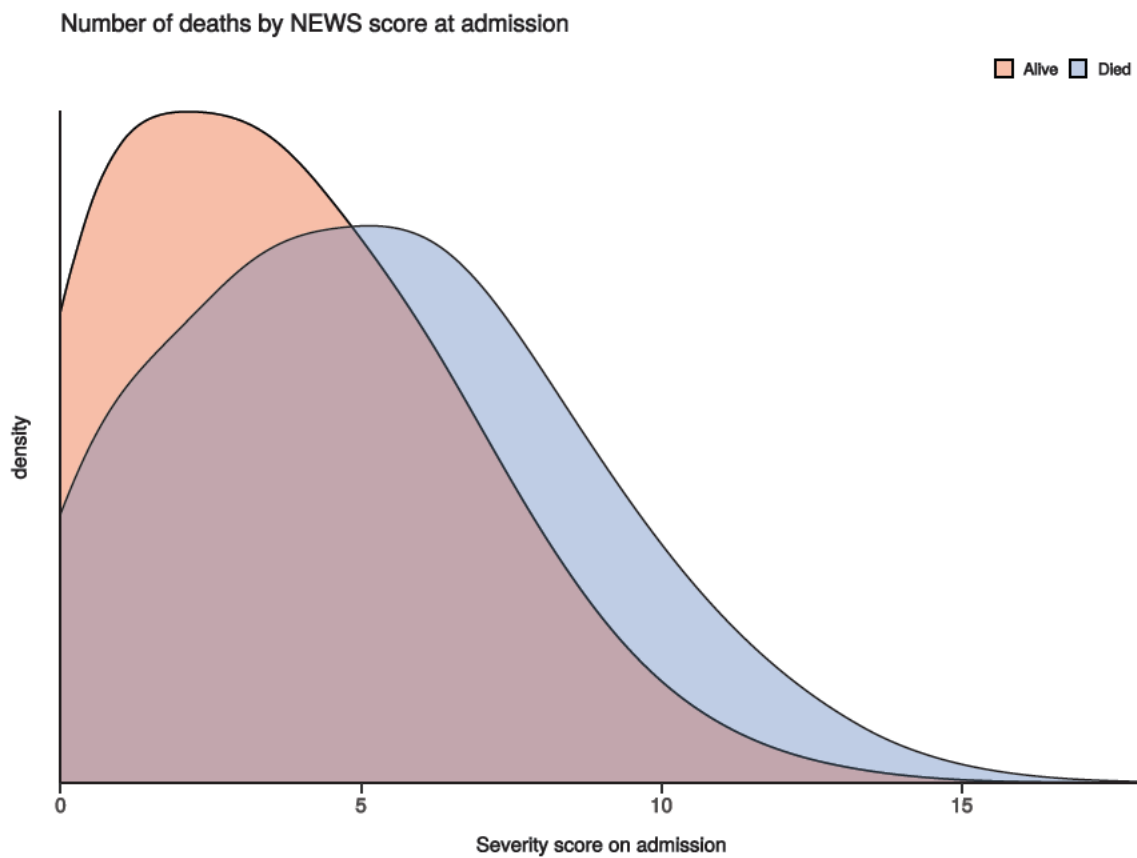
Figure 19 - Death by severity (NEWS) on admission stratified by age

Number of deaths by NEWS score at admission
Stratified by age
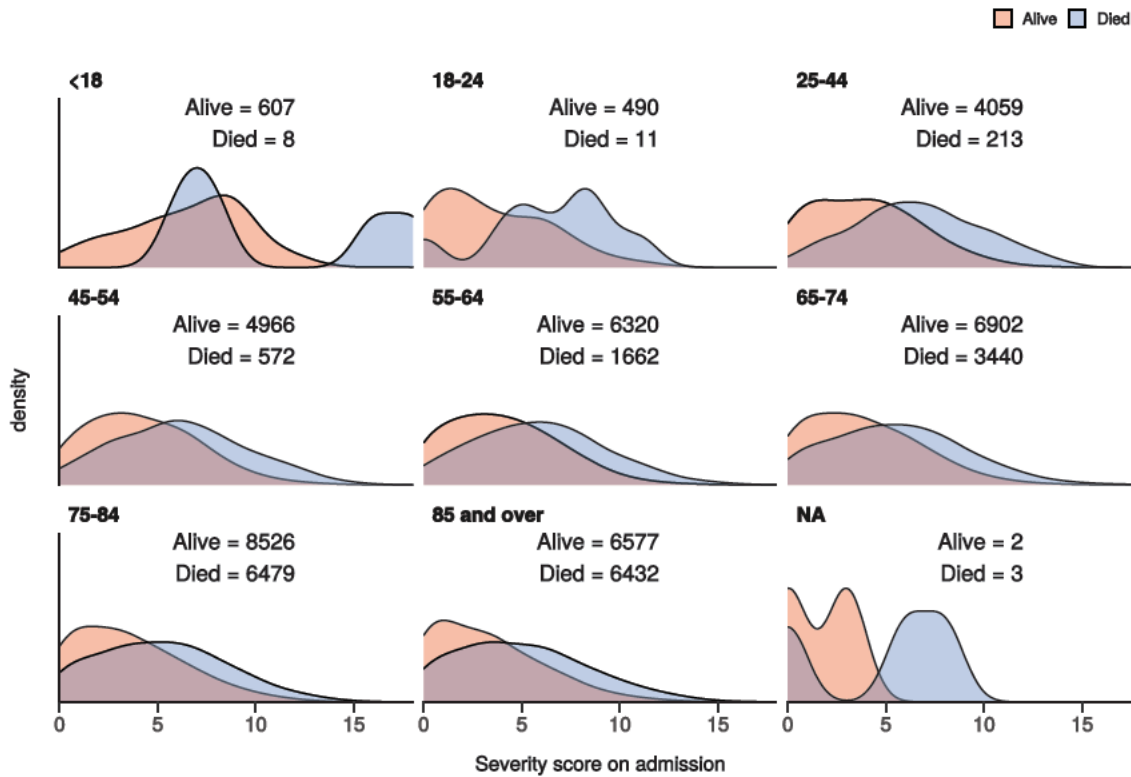
Figure 20 - Death by severity (qSOFA) on admission stratified by age

Number of deaths by qSOFA score at admission
Stratified by age
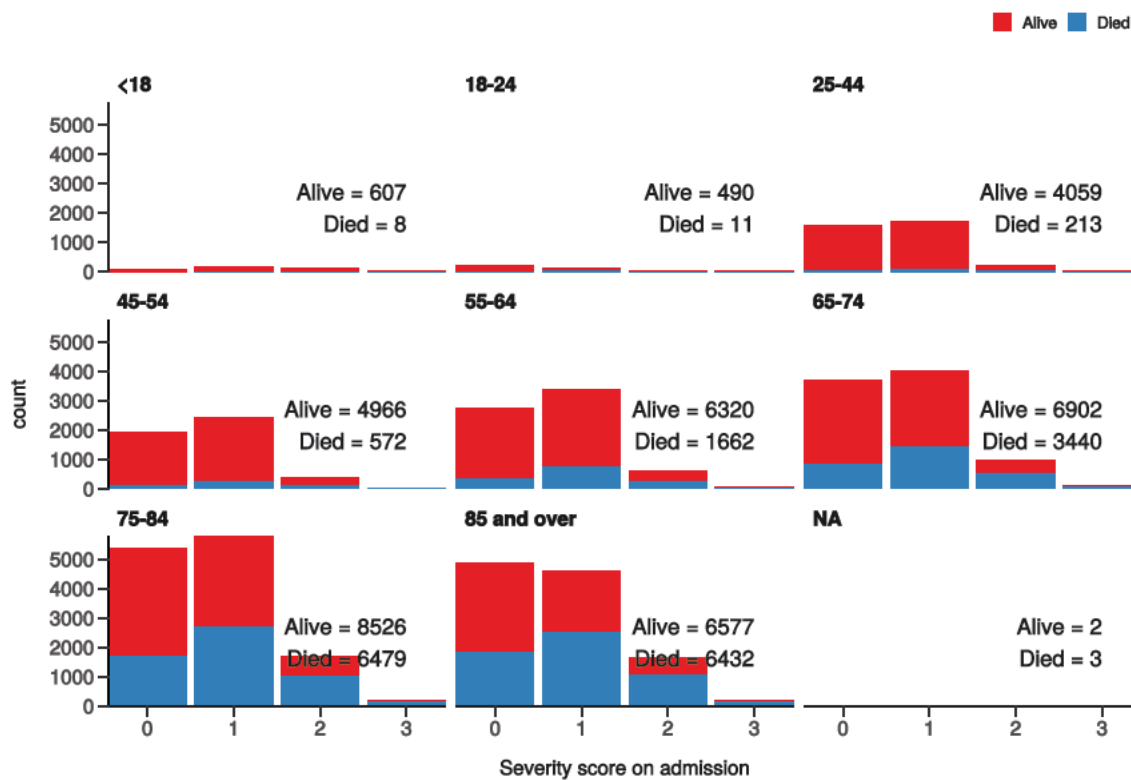
Healthcare workers

Healthcare worker		NO	YES	p
Total N (%)		55151 (94.9)	2977 (5.1)	
NEWS score on admission	Median (IQR)	4.0 (4.0)	4.0 (4.0)	0.070

Healthcare worker		NO	YES	p
Death	No	31974 (65.0)	2521 (92.5)	<0.001
	Yes	17198 (35.0)	203 (7.5)	

Admission (detail)

Table 1

label	levels	all
Total N (%)		70253 (100.0)
Age on admission (years)	Mean (SD)	70.4 (19.5)
Sex at Birth	Male	36831 (52.4)
	Female	28375 (40.4)
	Not specified	112 (0.2)
	(Missing)	4935 (7.0)
Healthcare worker	YES	2977 (4.2)
	NO	55151 (78.5)
	N/A	6301 (9.0)
	(Missing)	5824 (8.3)
Microbiology lab worker	YES	89 (0.1)
	NO	25000 (35.6)
	N/A	2946 (4.2)
	(Missing)	42218 (60.1)
Onset to admission (days)	Mean (SD)	6.6 (1569.6)
Transfer from other facility	Yes-facility is a study site	1449 (2.1)
	Yes-facility is not a study site	3208 (4.6)
	No	53752 (76.5)
	N/A	2647 (3.8)
	(Missing)	9197 (13.1)
Travel in 14 d prior to symptoms	Yes	804 (1.1)
	No	21585 (30.7)
	N/A	4268 (6.1)
	(Missing)	43596 (62.1)
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)

label	levels	all
	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	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	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)

label	levels	all
	Cote dIvoire	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)

label	levels	all
	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)

label	levels	all
	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)

label	levels	all
	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	196 (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)

label	levels	all
	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)	69515 (98.9)
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)

label	levels	all
	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 dIvoire	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)

label	levels	all
	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)

label	levels	all
	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)

label	levels	all
	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)

label	levels	all
	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)	70253 (100.0)

label	levels	all
Animal, raw meat, insect bites 14 d prior	Yes	108 (0.2)
	No	10341 (14.7)
	Unknown	14566 (20.7)
	N/A	1765 (2.5)
	(Missing)	43473 (61.9)
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 (%)		70253 (100.0)
Fever	YES	36629 (52.1)
	NO	20282 (28.9)
	Unknown	3264 (4.6)
	(Missing)	10078 (14.3)
Cough	YES	37095 (52.8)
	NO	19493 (27.7)
	Unknown	3586 (5.1)
	(Missing)	10079 (14.3)
Cough (sputum)	YES	10948 (15.6)
	NO	37554 (53.5)
	Unknown	11558 (16.5)
	(Missing)	10193 (14.5)
Cough (blood)	YES	1329 (1.9)
	NO	46324 (65.9)
	Unknown	12389 (17.6)
	(Missing)	10211 (14.5)
Sore throat	YES	3465 (4.9)
	NO	40831 (58.1)
	Unknown	15755 (22.4)
	(Missing)	10202 (14.5)
Runny nose	YES	1070 (1.5)
	NO	42485 (60.5)
	Unknown	16487 (23.5)
	(Missing)	10211 (14.5)
Ear pain	YES	214 (0.3)
	NO	43158 (61.4)
	Unknown	16665 (23.7)

Stratified: all		all
	(Missing)	10216 (14.5)
Wheeze	YES	4051 (5.8)
	NO	42892 (61.1)
	Unknown	13104 (18.7)
	(Missing)	10206 (14.5)
Chest pain	YES	6632 (9.4)
	NO	42729 (60.8)
	Unknown	10701 (15.2)
	(Missing)	10191 (14.5)
Muscle ache	YES	7893 (11.2)
	NO	37013 (52.7)
	Unknown	15133 (21.5)
	(Missing)	10214 (14.5)
Joint pain	YES	2888 (4.1)
	NO	40585 (57.8)
	Unknown	16546 (23.6)
	(Missing)	10234 (14.6)
Fatigue	YES	20322 (28.9)
	NO	27583 (39.3)
	Unknown	12149 (17.3)
	(Missing)	10199 (14.5)
Shortness of breath	YES	36414 (51.8)
	NO	19225 (27.4)
	Unknown	4550 (6.5)
	(Missing)	10064 (14.3)
Lower chest wall indrawing	YES	529 (0.8)
	NO	42309 (60.2)
	Unknown	17178 (24.5)
	(Missing)	10237 (14.6)
Headache	YES	4603 (6.6)
	NO	40334 (57.4)
	Unknown	15092 (21.5)
	(Missing)	10224 (14.6)
Confusion	YES	15123 (21.5)
	NO	36665 (52.2)
	Unknown	8295 (11.8)

Stratified: all		all
	(Missing)	10170 (14.5)
Seizures	YES	811 (1.2)
	NO	48363 (68.8)
	Unknown	10851 (15.4)
	(Missing)	10228 (14.6)
Abdominal pain	YES	5293 (7.5)
	NO	43792 (62.3)
	Unknown	10979 (15.6)
	(Missing)	10189 (14.5)
Nausa/vomiting	YES	9791 (13.9)
	NO	41181 (58.6)
	Unknown	9107 (13.0)
	(Missing)	10174 (14.5)
Diarrhoea	YES	9102 (13.0)
	NO	41597 (59.2)
	Unknown	9375 (13.3)
	(Missing)	10179 (14.5)
Conjunctivitis	YES	198 (0.3)
	NO	45569 (64.9)
	Unknown	14265 (20.3)
	(Missing)	10221 (14.5)
Skin rash	YES	716 (1.0)
	NO	45983 (65.5)
	Unknown	13340 (19.0)
	(Missing)	10214 (14.5)
Skin ulcers	YES	1224 (1.7)
	NO	45572 (64.9)
	Unknown	13231 (18.8)
	(Missing)	10226 (14.6)
Lymphadenopathy	YES	310 (0.4)
	NO	45730 (65.1)
	Unknown	13980 (19.9)
	(Missing)	10233 (14.6)
Bleeding (Haemorrhage)	YES	899 (1.3)
	NO	47567 (67.7)
	Unknown	11556 (16.4)

Stratified: all		all
	(Missing)	10231 (14.6)
If Bleeding (others)	YES	493 (0.7)
	NO	20188 (28.7)
	Unknown	5522 (7.9)
	(Missing)	44050 (62.7)

Comorbidity (detail)

Table 3

Stratified: all		all
Total N (%)		70253 (100.0)
Chronic cardiac disease	YES	18700 (26.6)
	NO	38506 (54.8)
	Unknown	3052 (4.3)
	(Missing)	9995 (14.2)
Chronic pulmonary disease	YES	10220 (14.5)
	NO	46722 (66.5)
	Unknown	3300 (4.7)
	(Missing)	10011 (14.2)
Asthma	YES	7775 (11.1)
	NO	48996 (69.7)
	Unknown	3437 (4.9)
	(Missing)	10045 (14.3)
Chronic kidney disease	YES	10061 (14.3)
	NO	46689 (66.5)
	Unknown	3489 (5.0)
	(Missing)	10014 (14.3)
Moderate/severe liver disease	YES	1102 (1.6)
	NO	55049 (78.4)
	Unknown	4055 (5.8)
	(Missing)	10047 (14.3)
Mild Liver disease	YES	856 (1.2)
	NO	55138 (78.5)
	Unknown	4209 (6.0)
	(Missing)	10050 (14.3)
Chronic neurological disorder	YES	7247 (10.3)
	NO	49164 (70.0)

Stratified: all		all
	Unknown	3794 (5.4)
	(Missing)	10048 (14.3)
Malignancy	YES	5864 (8.3)
	NO	50415 (71.8)
	Unknown	3929 (5.6)
	(Missing)	10045 (14.3)
Chronic hematologic disease	YES	2486 (3.5)
	NO	53707 (76.4)
	Unknown	3991 (5.7)
	(Missing)	10069 (14.3)
AIDS/HIV	YES	225 (0.3)
	NO	55373 (78.8)
	Unknown	4604 (6.6)
	(Missing)	10051 (14.3)
Obesity	YES	5877 (8.4)
	NO	45244 (64.4)
	Unknown	9015 (12.8)
	(Missing)	10117 (14.4)
Diabetes with complications	YES	4112 (5.9)
	NO	50831 (72.4)
	Unknown	5258 (7.5)
	(Missing)	10052 (14.3)
Diabetes without complications	YES	9447 (13.4)
	NO	45624 (64.9)
	Unknown	5137 (7.3)
	(Missing)	10045 (14.3)
Rheumatologic disorder	YES	6268 (8.9)
	NO	49757 (70.8)
	Unknown	4161 (5.9)
	(Missing)	10067 (14.3)
Dementia	YES	9670 (13.8)
	NO	46896 (66.8)
	Unknown	3662 (5.2)
	(Missing)	10025 (14.3)
Malnutrition	YES	1451 (2.1)
	NO	51525 (73.3)

Stratified: all		all
	Unknown	7185 (10.2)
	(Missing)	10092 (14.4)
Smoking	YES	3061 (4.4)
	NO	34423 (49.0)
	(Missing)	32769 (46.6)