Dynamic CO-CIN report to SAGE and NERVTAG

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## Error in function (type, msg, asError = TRUE)  :
##   GnuTLS recv error (-9): A TLS packet with unexpected length was received.
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Dynamic content updated: 2020-06-10 14:14:09.

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 10 June 2020, CO-CIN has recruited **57321 patients** with confirmed Coronavirus (Figure 1).

The CO-CIN dataset represents 19.8% (57321/289,140) of cases of confirmed Coronovirus cases in the UK, per the PHE daily reports (last updated 9am on 9 June).

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

The geographical location of our patients can be seen in Figure 2, of these 985 had travelled abroad recently, and 7099 reported visiting or working in a hospital where COVID-19 cases are being managed.

The median age is 74 (range: 0-106), Male/Female 29034/21828.

The most common symptoms were cough (64%), fever (63%) and shortness of breath (62%) (Figure 3A). 2422/46248 (5%) 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 diabetes without complications (17%). 9908/46385 (21%) of patients have reported no co morbidity. 307/4143 (7%) 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 8 days (interquartile range: 4-17, n = 39915). 5929/37360 (16%) patients required high-flow oxygen after day 1 of treatment.

Currently 14307 patient(s) have died and 6727 required ICU. 24705 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).
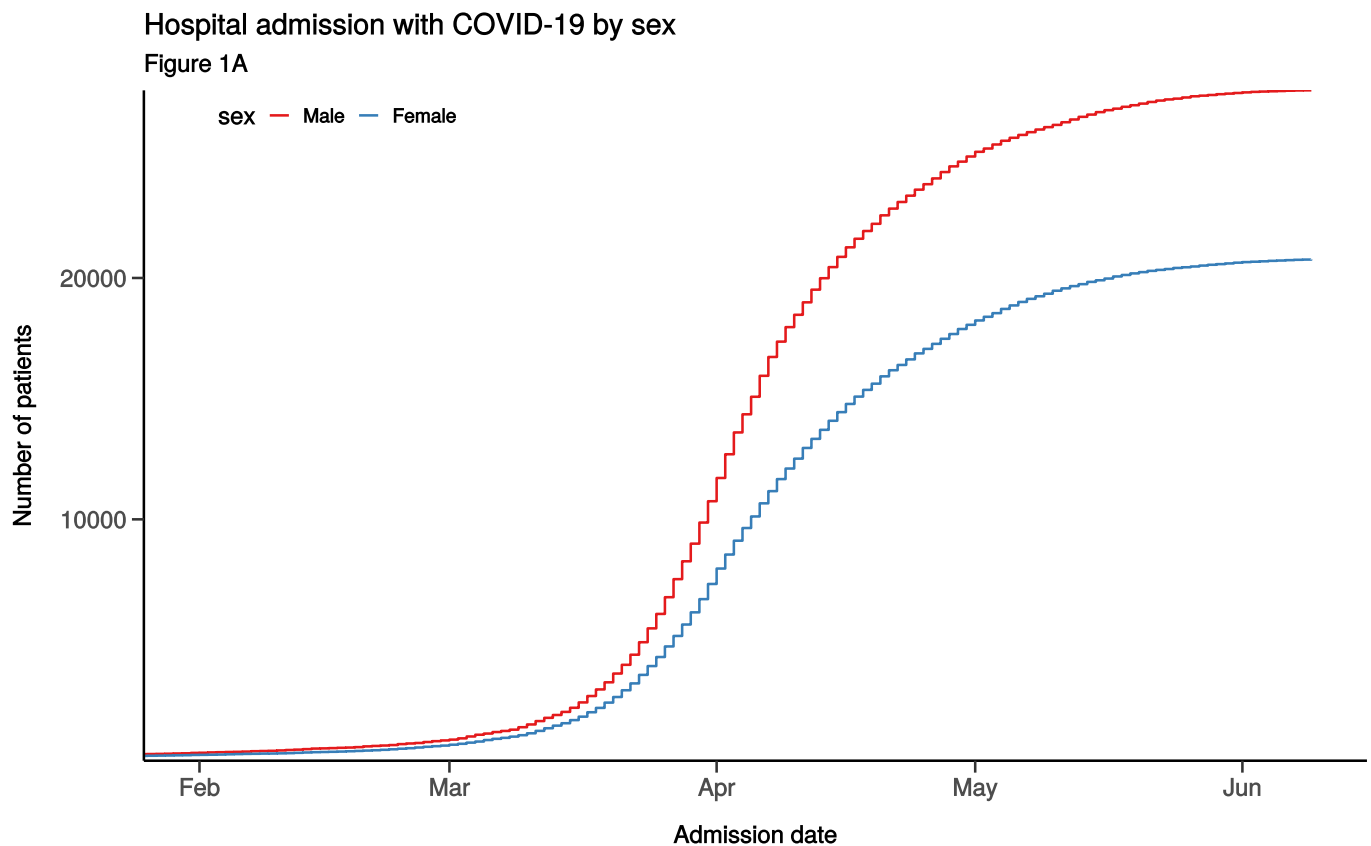Professor Tom Solomon, Director HPRU Emerging and Zoonotic Infection.
ISARIC Investigators (Prof. Peter Horby, Prof. Peter Openshaw, Dr Gail Carson, and Dr Kenneth Baillie).
Analytics: Lisa Norman, Riinu Pius, Thomas Drake, Cameron Fairfield, Stephen Knight, Kenneth McLean, Katie Shaw.

Admission
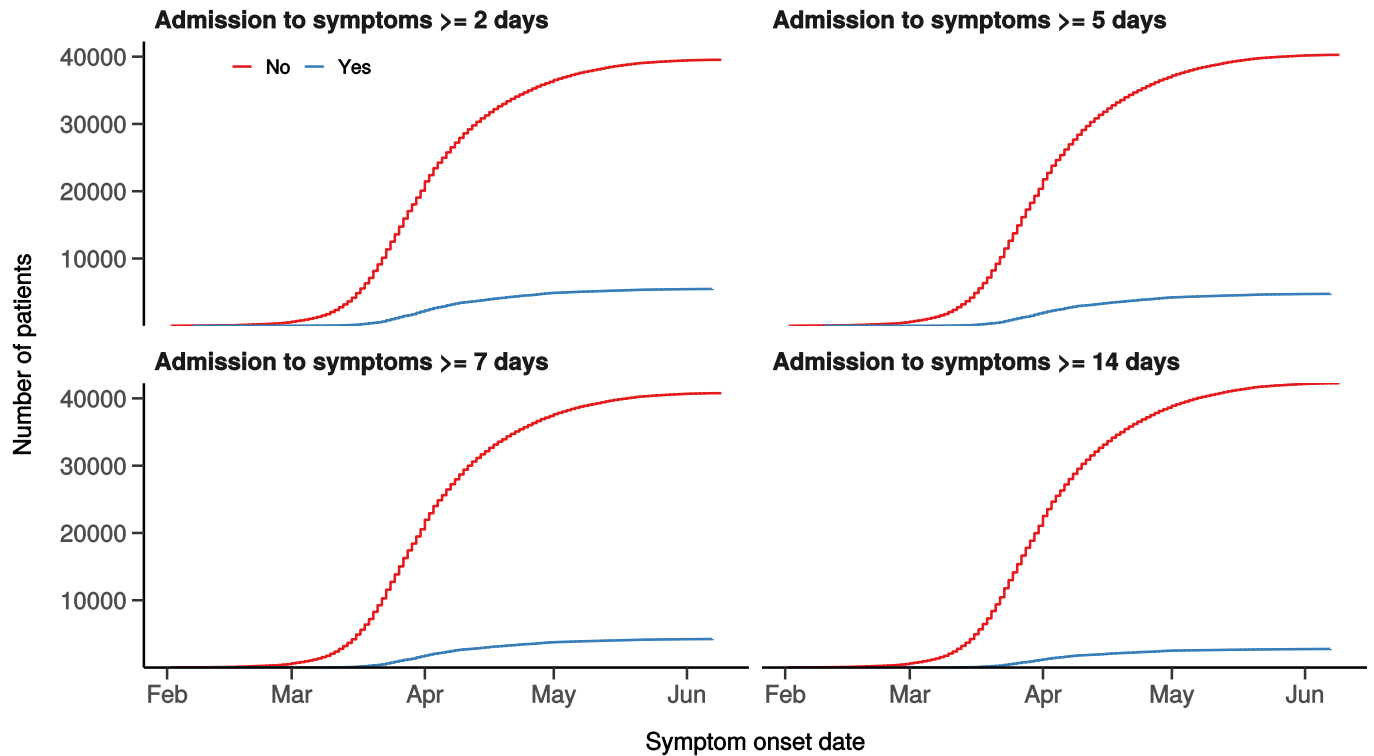
Figure 1

Hospital admission with COVID-19 by sex
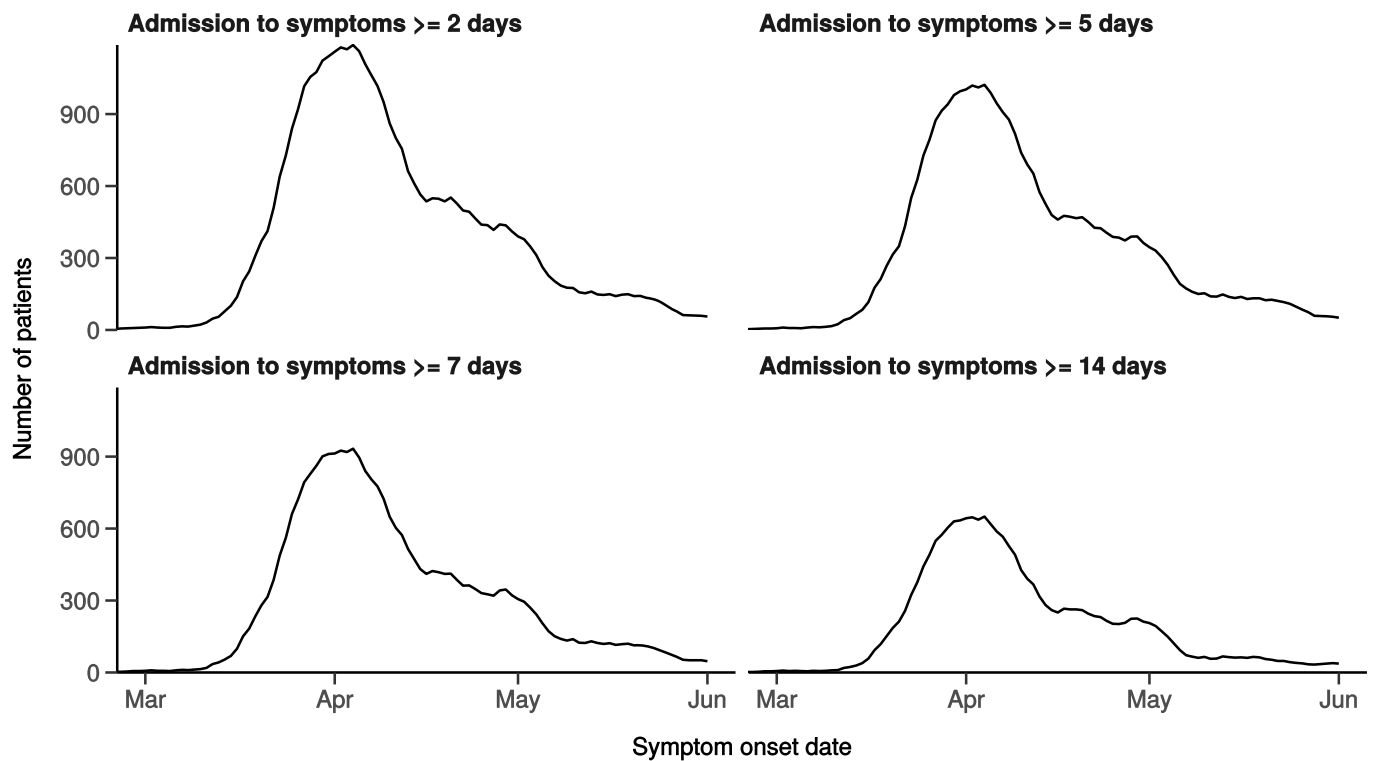Figure 1A

Number with symptom onset occuring after admission to hospital

Figure 1B

Number with symptom onset occuring after hospital admission

Figure 1C - 7-day rolling count. n = 45029

Proportion with symptom onset occuring after hospital admission

Figure 1D - 7-day rolling percentage. n = 45029
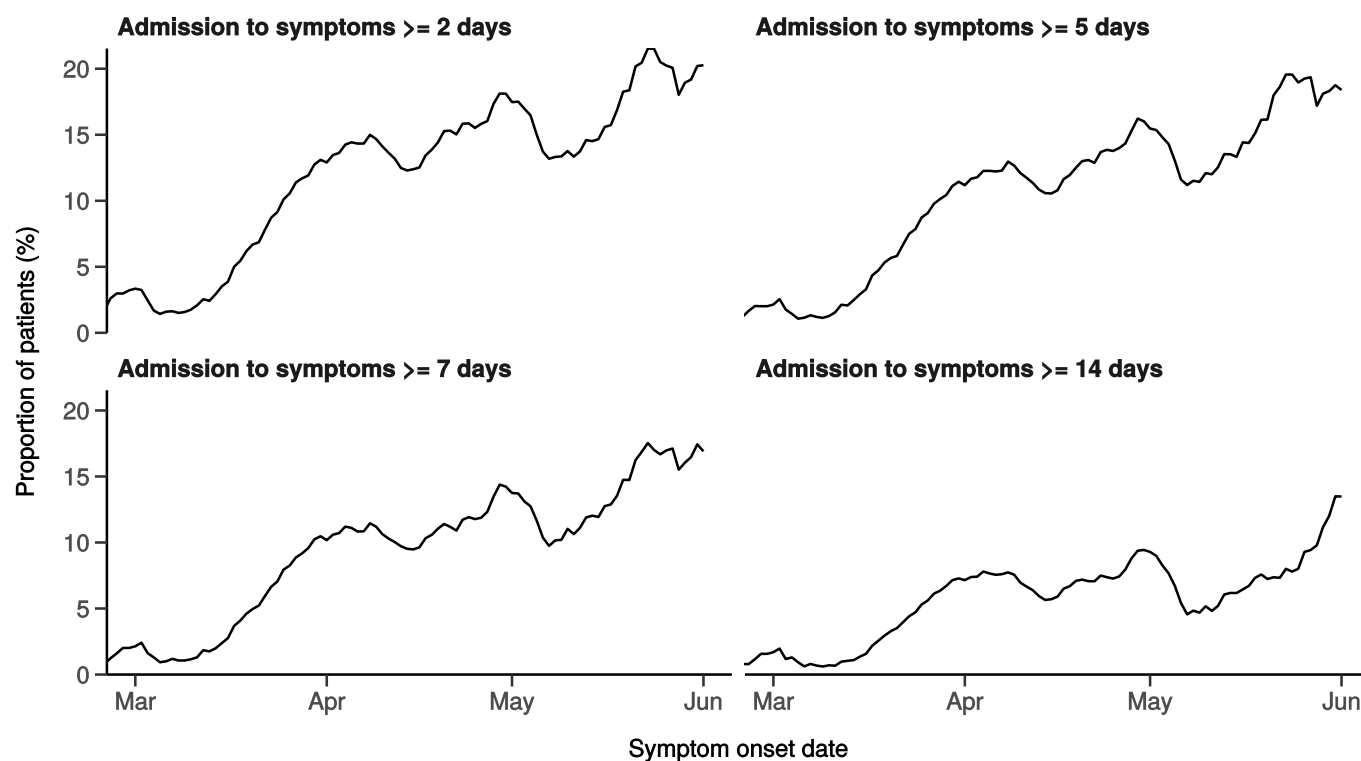
Patients with outcome stratified by age, and sex

Figure 1E
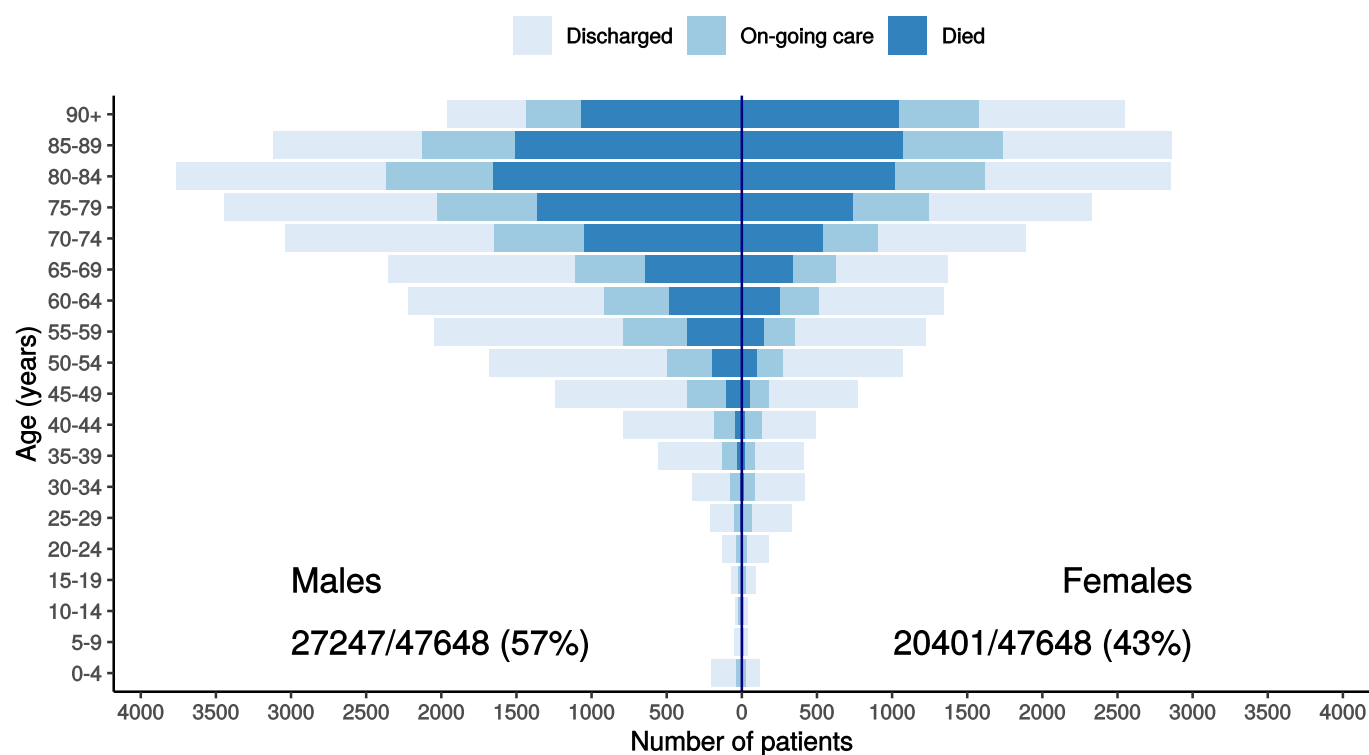
Hospital admission with COVID-19 by ethnicity
Figure 1F
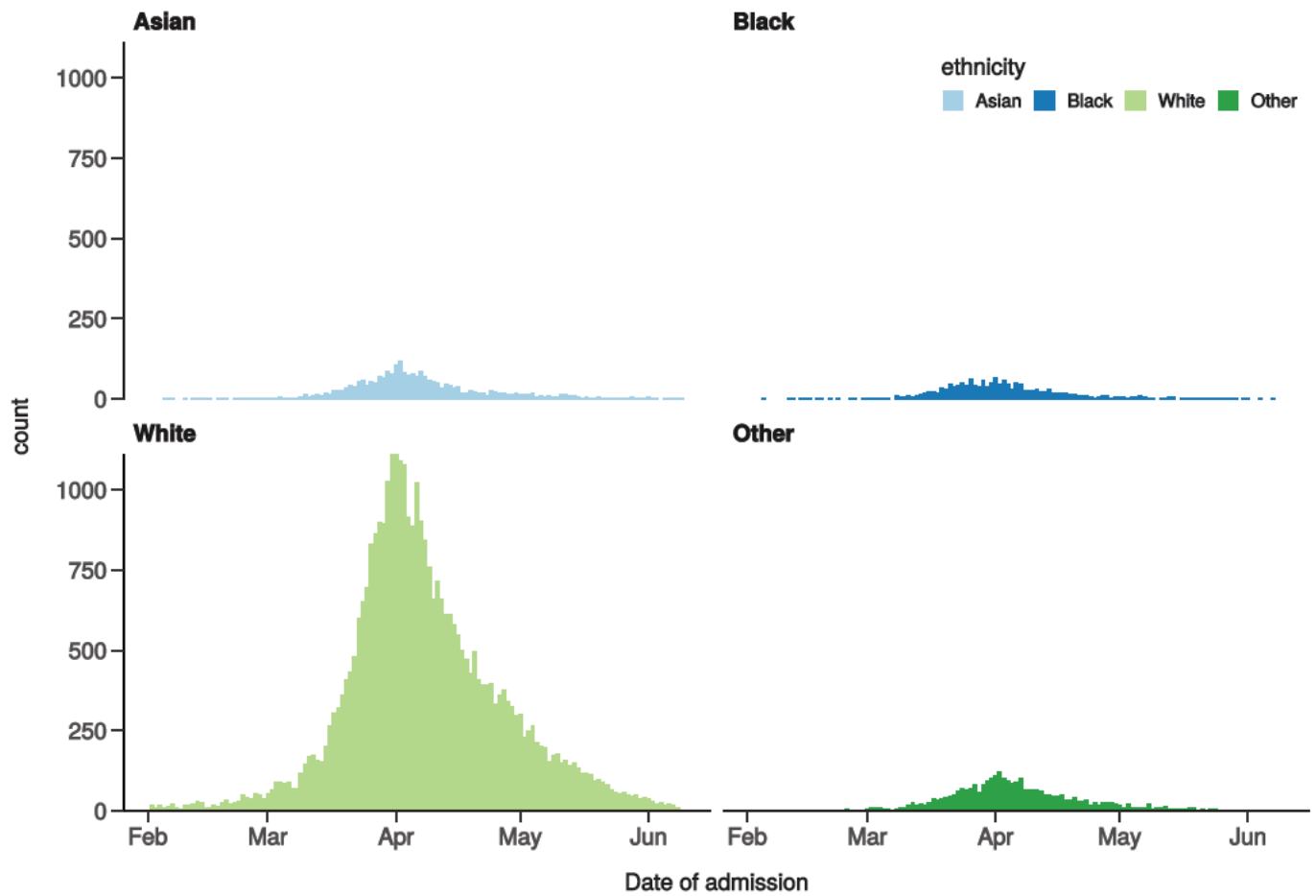
Location by CCG / Healthboard

Figure 2

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

n = 57971
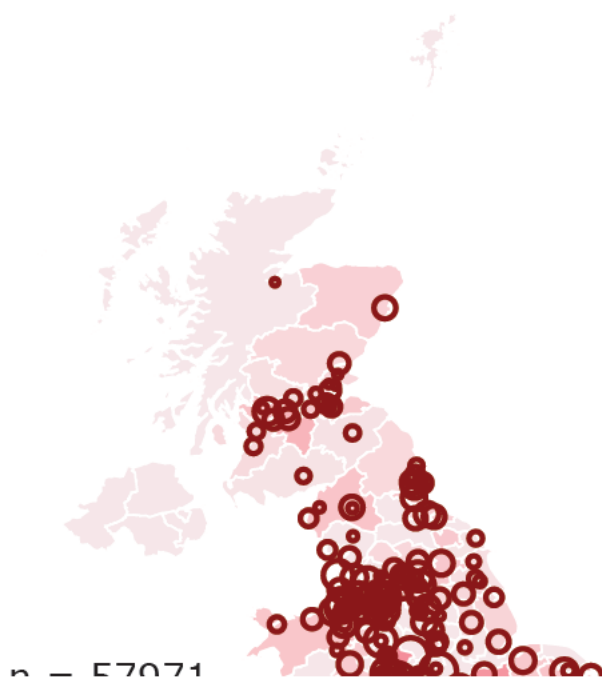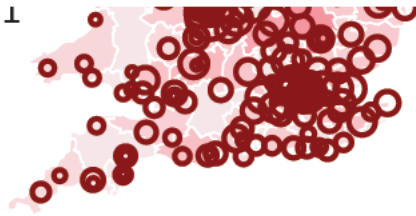
Symptoms and comorbidity

Figure 3A

Symptoms on presentation to hospital (% patients, n = 45990)
Figure 3A

Comorbidity (% patients, n = 46098)
Figure 3B
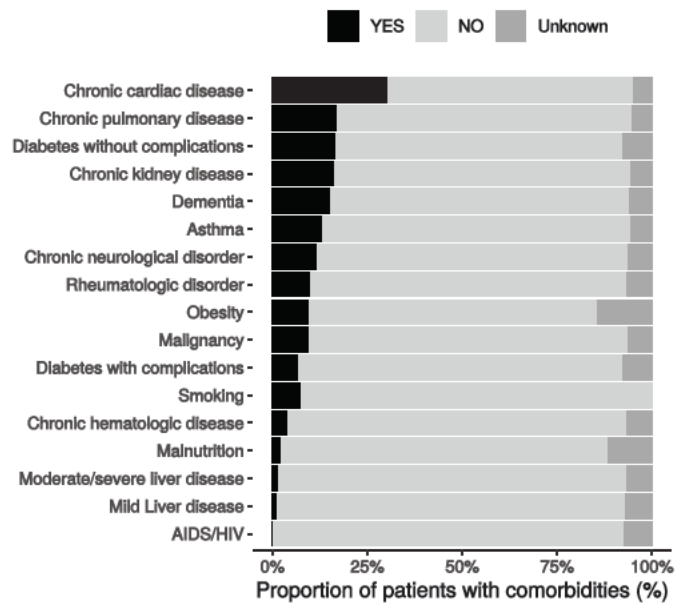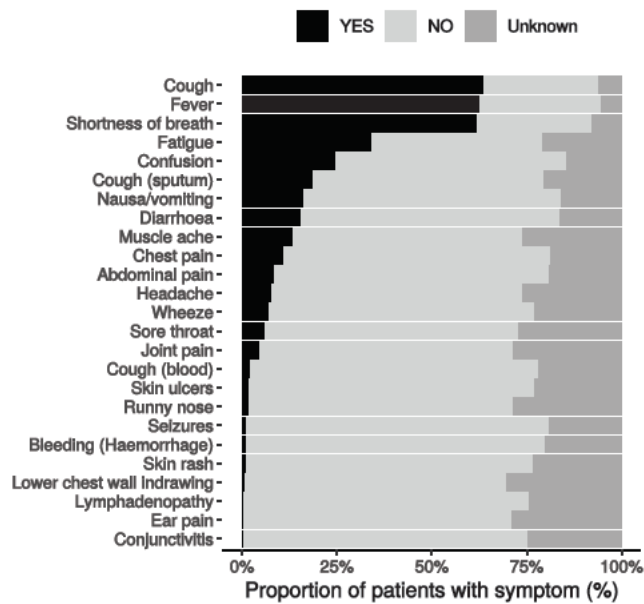
Figure 3C

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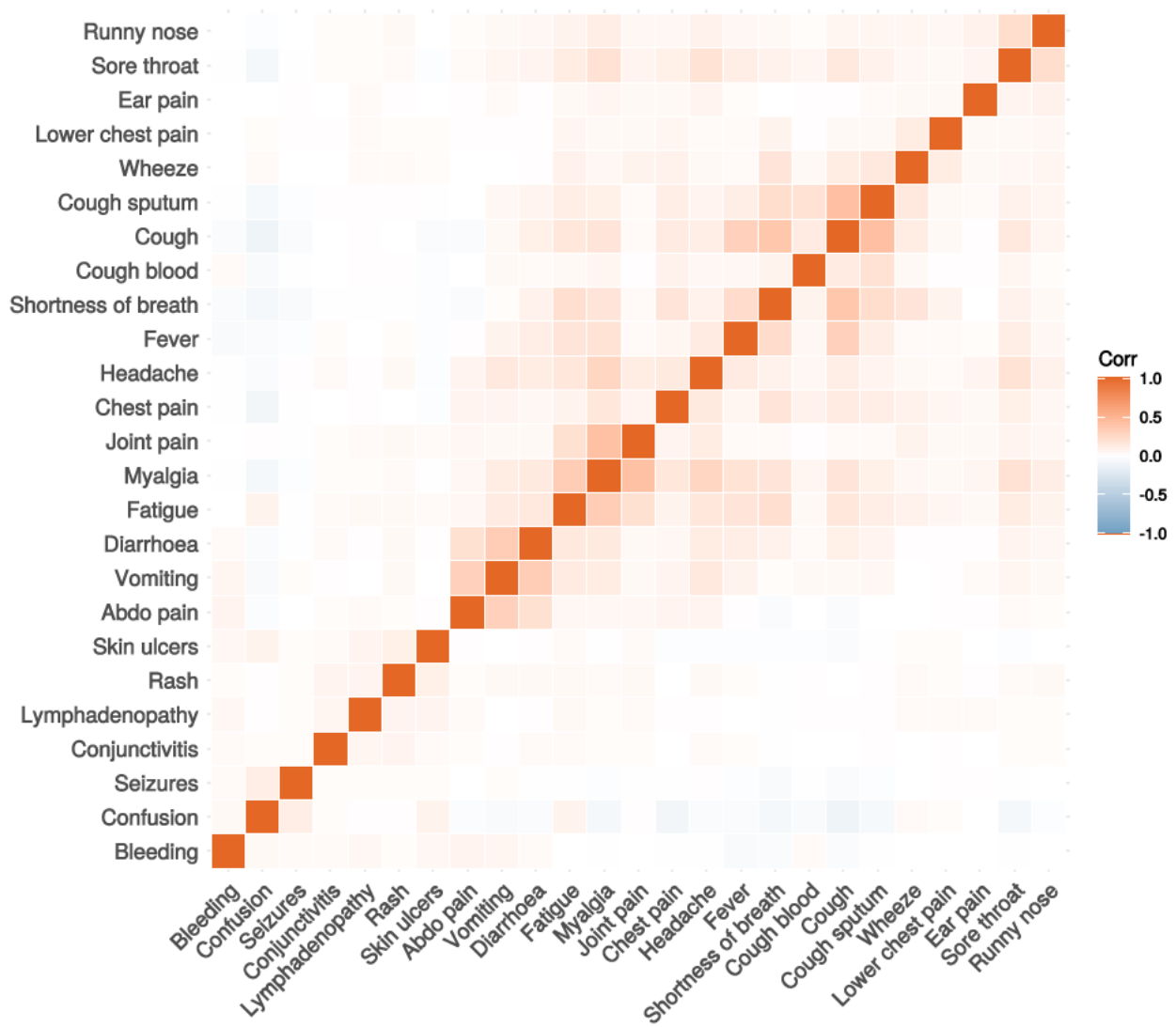
Symptoms (diagnostic criteria)

Figure 4A

n = 45990
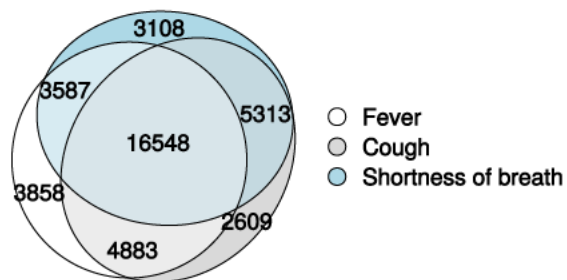
Symptoms (most common)

Figure 4B

n = 45990
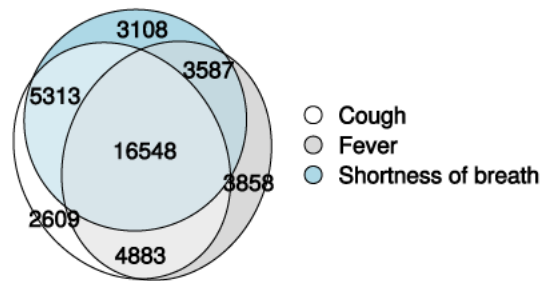
Comorbidity (most common)

Figure 4C

n = 46098
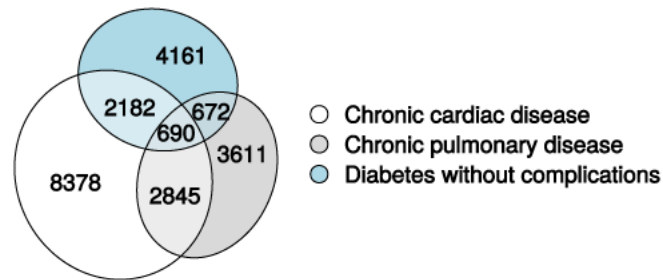
Medication prior to illness

Figure 5

Preadmission treatment

Figure 5

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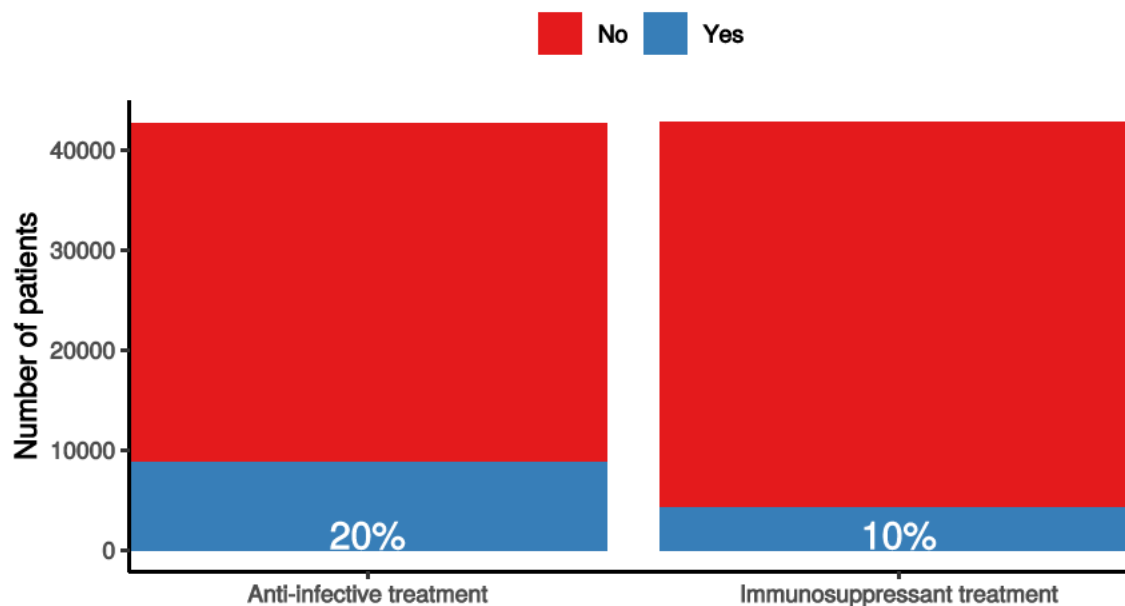
Patient flow

Figure 6A - All patients

Patient status by day

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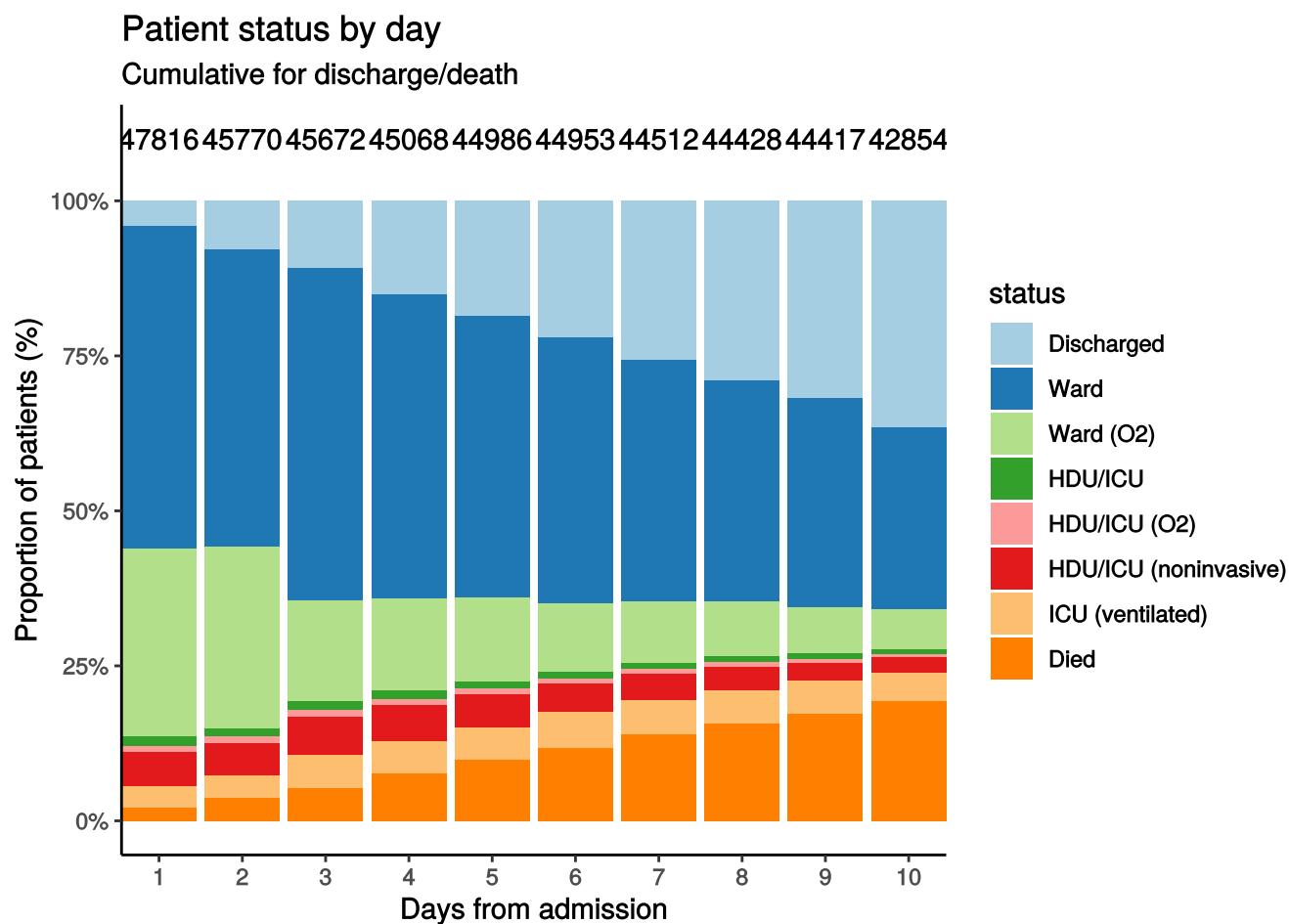
Figure 6B - Patients admitted >=14 days and <=28 days ago

N = 1686

Patient status by day
Cumulative for discharge/death
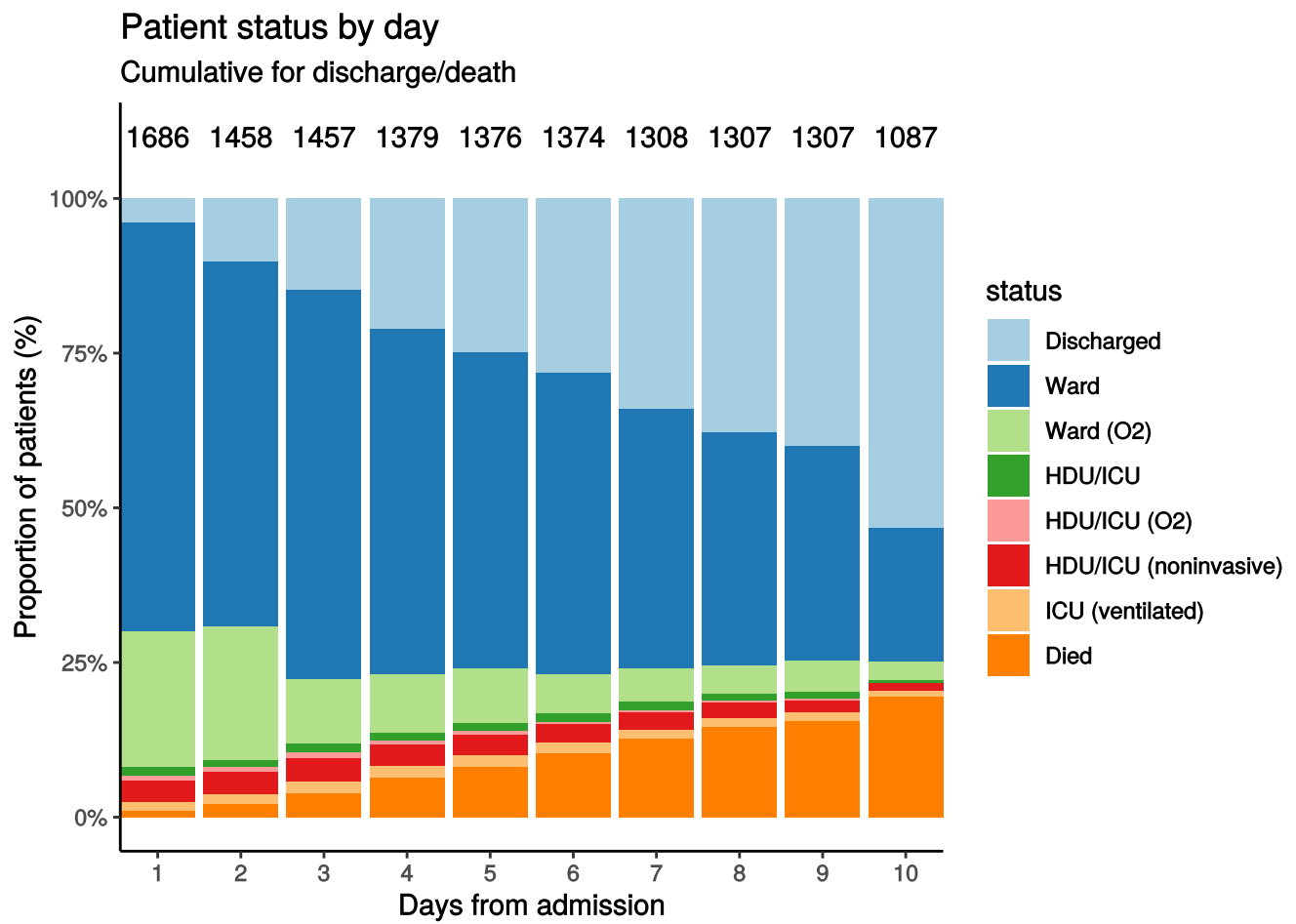
Oxygen requirement

Figure 7A - All patients

N = 44908

| Admission location | HDU/ITU after day 1 | Maximum treatment | Outcome |
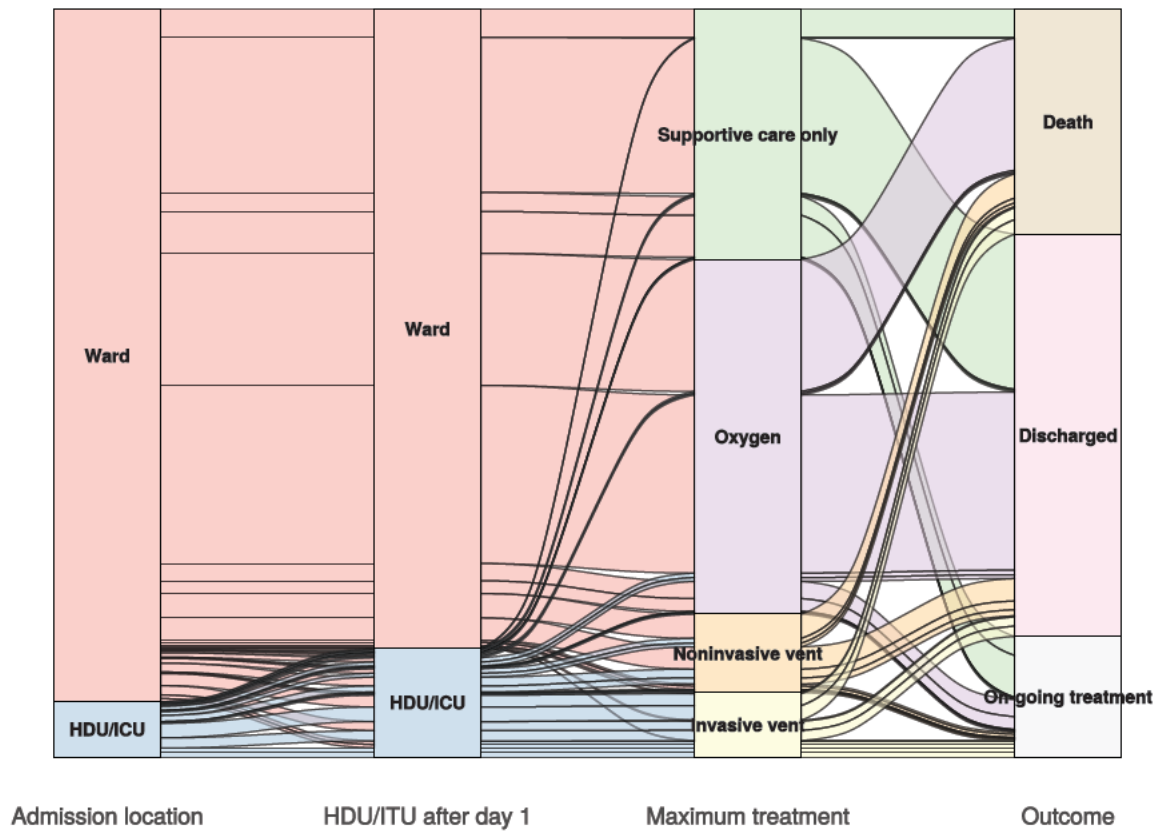
Figure 7B - Patients admitted >=14 days and <=28 days ago

N = 1634

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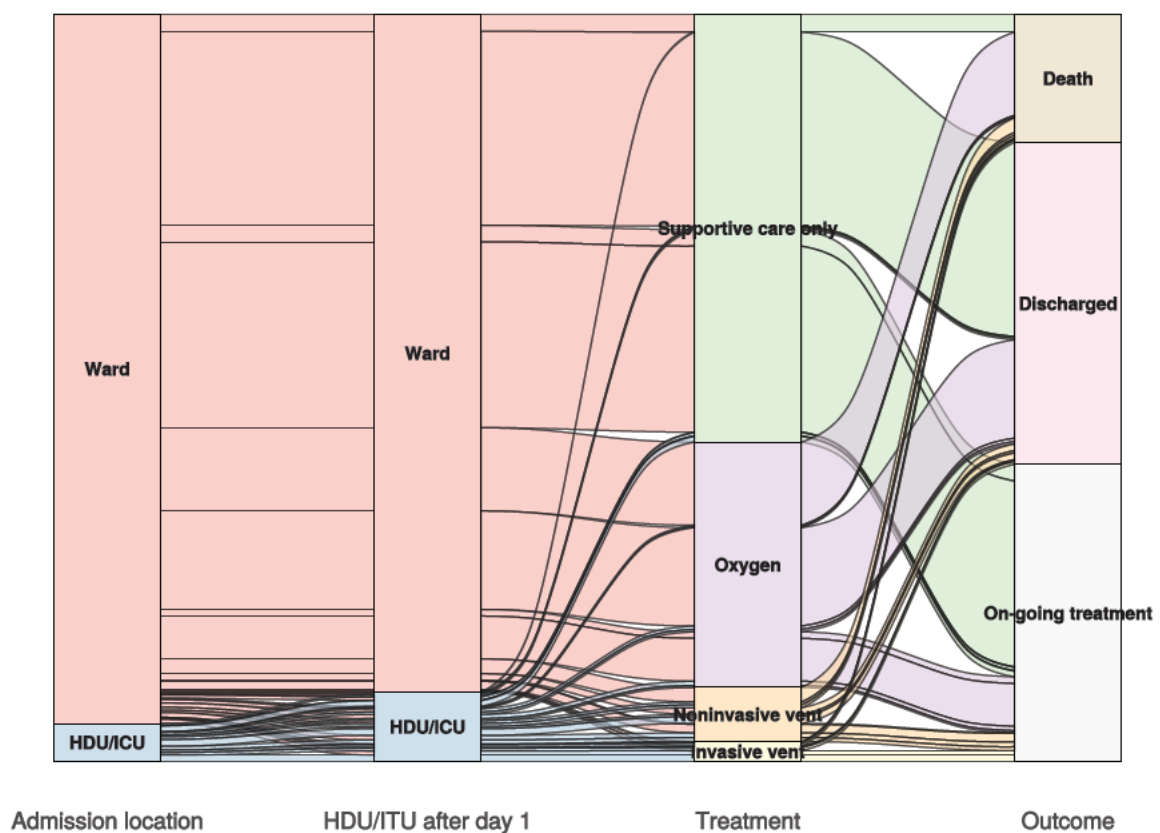
In-hospital medical treatment

Figure 8

In-hospital treatment

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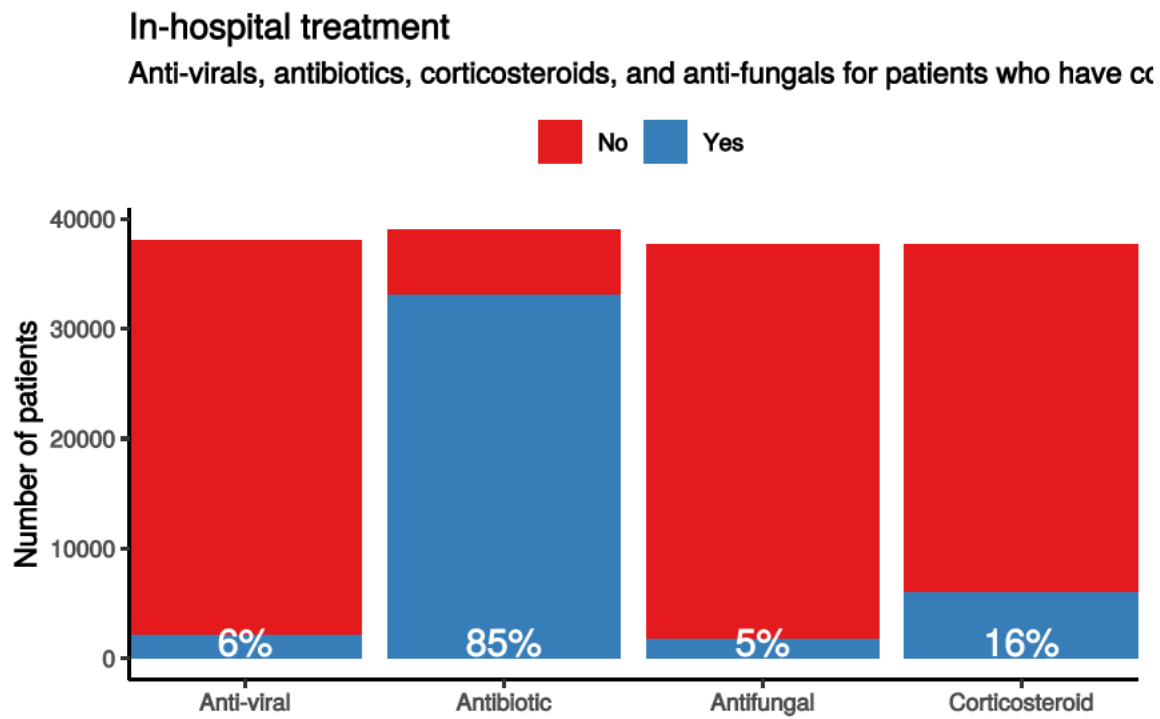
Treatment

Figure 9

ICU/HDU admission
Figure 10A

No ■ Yes ■

6727/45950
15%

count / Age (years)
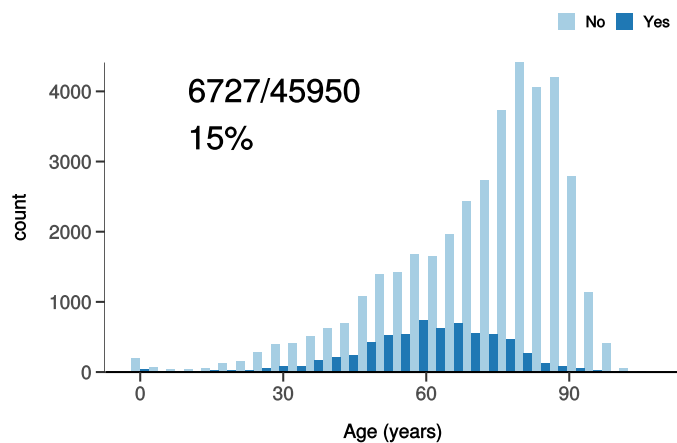
High flow oxygen
Figure 10B

No ■ Yes ■

27556/44292
62%

count / Age (years)

Noninvasive ventilation
Figure 10C

No ■ Yes ■

6829/44085
15%

count / Age (years)

Invasive ventilation
Figure 10D

No ■ Yes ■

3941/44207
9%

count / Age (years)
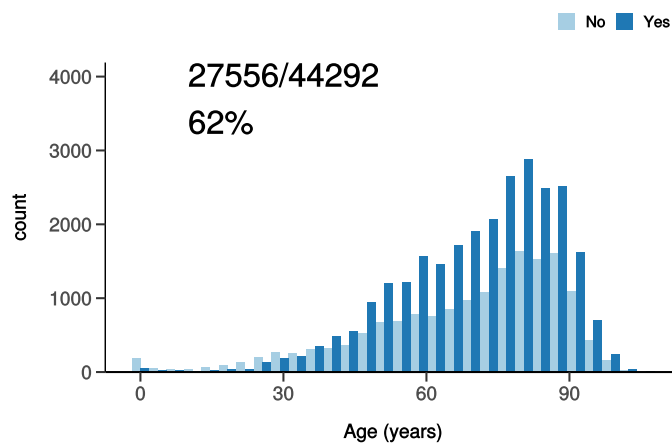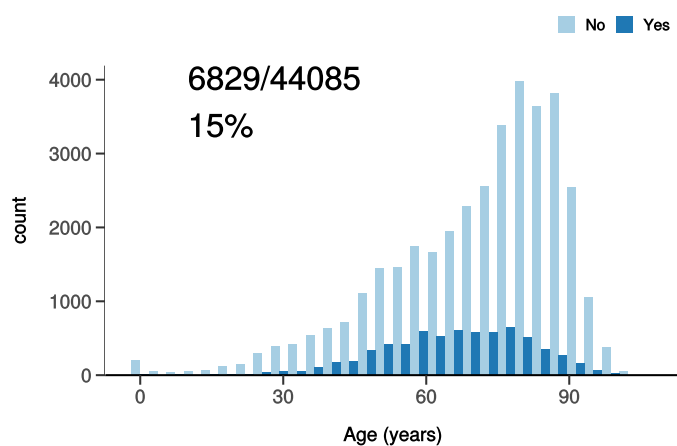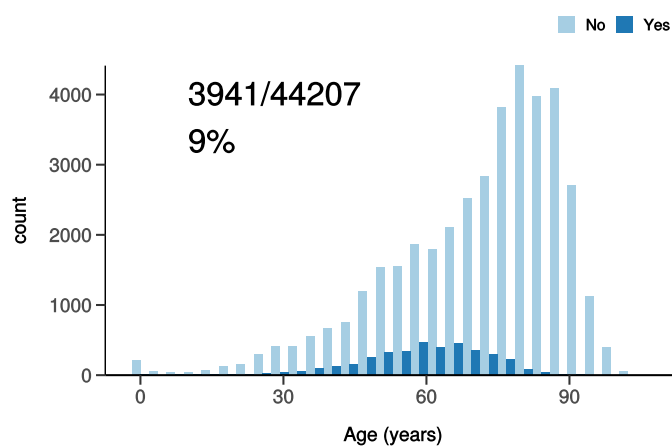
Status in patients admitted >=14 days from today

Figure 10

All patients

Died
12475/52874
24%

On-going care
17550/52874
33%

Discharged alive
22849/52874
43%

Number of patients

Age (years)
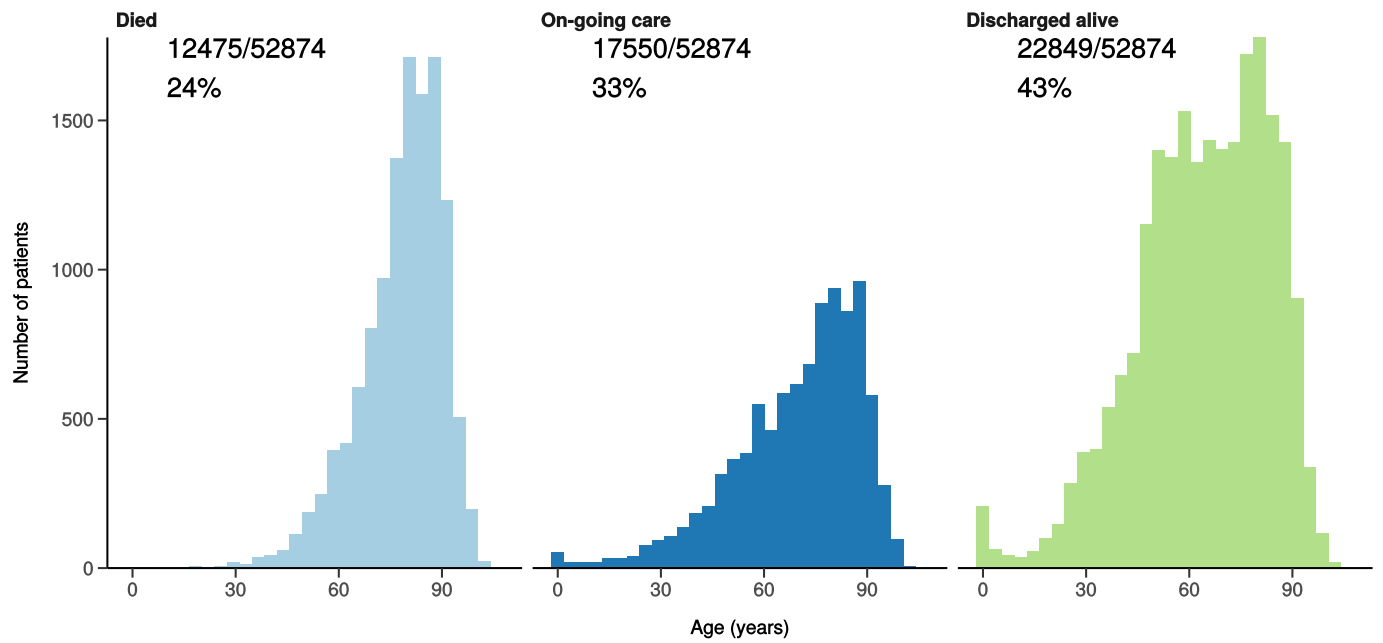
Patients admitted to ICU/HDU

Died
2237/6368
35%

On-going care
1508/6368
24%

Discharged alive
2623/6368
41%

Number of patients

Age (years)
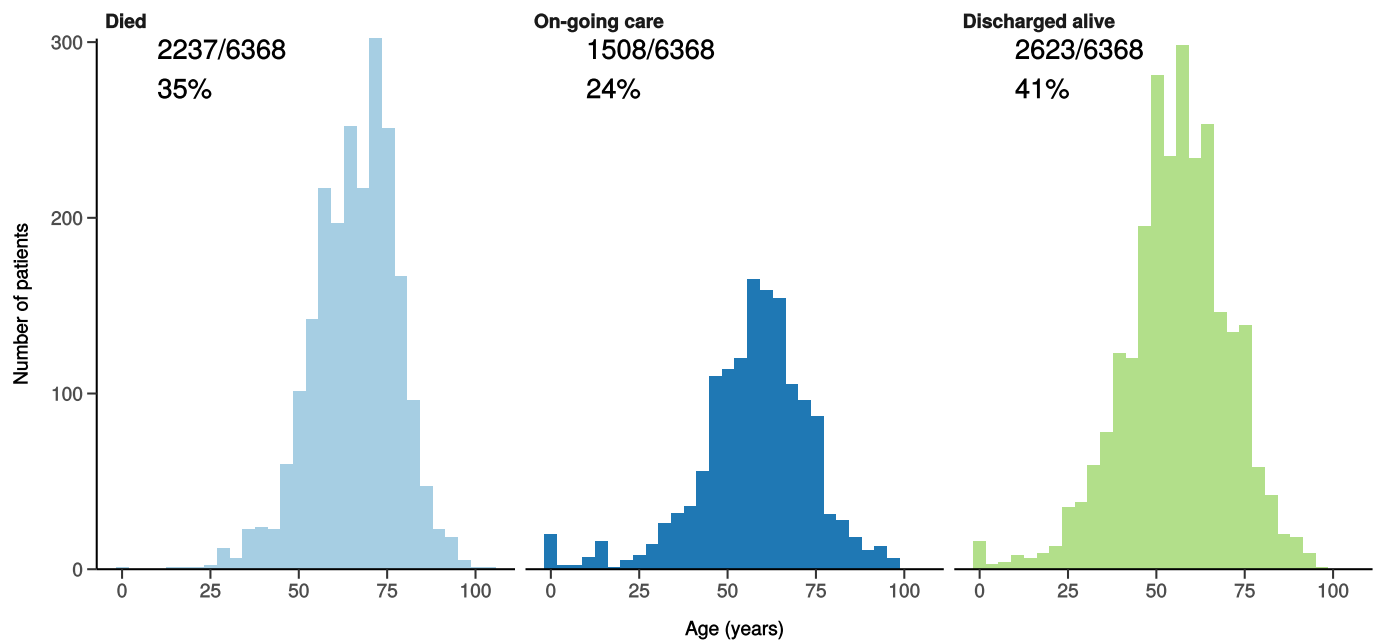
Patients receiving invasive ventilation

Died
1573/3765
42%

On-going care
1010/3765
27%

Discharged alive
1182/3765
31%

Number of patients

Age (years)
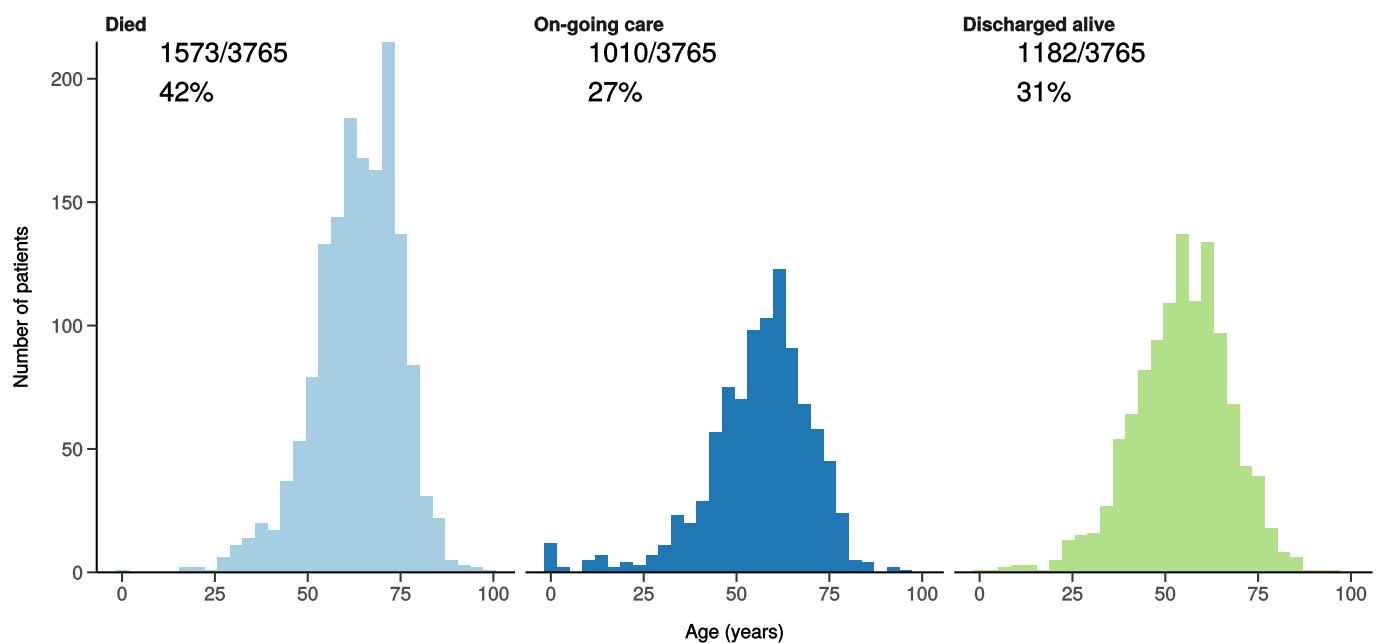
Length of stay stratified by age

Figure 11

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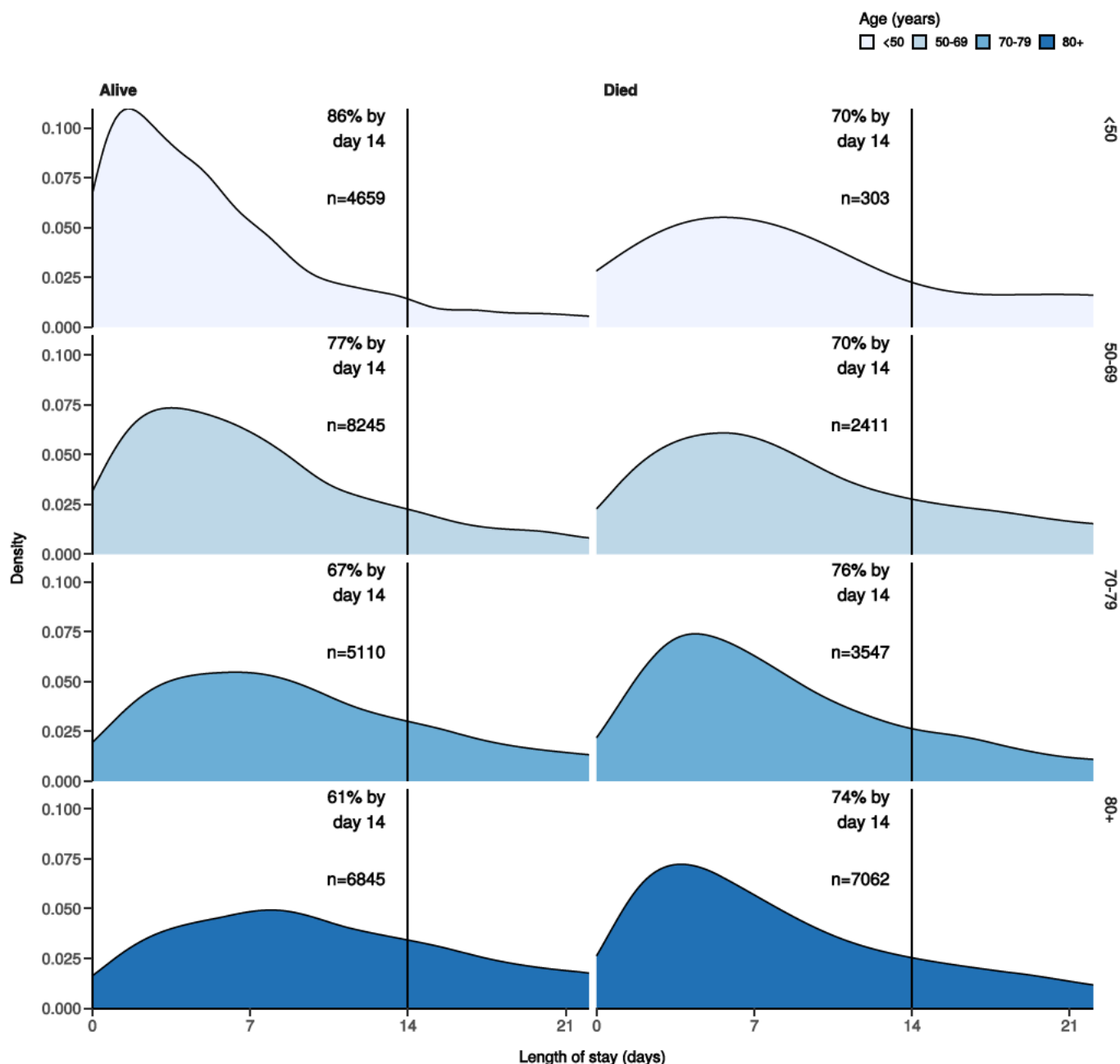
Predictors of death: logistic regression multivariable model

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	5275 (94.2)	323 (5.8)	•	•

Dependent: death		No	Yes	OR (univariable)	OR (multivariable)
	50-69	8920 (78.0)	2512 (22.0)	4.60 (4.08-5.20, p<0.001)	4.29 (3.75-4.93, p<0.001)
	70-79	5557 (60.0)	3708 (40.0)	10.90 (9.68-12.30, p<0.001)	8.99 (7.84-10.34, p<0.001)
	80+	7406 (50.0)	7399 (50.0)	16.32 (14.54-18.37, p<0.001)	13.29 (11.60-15.28, p<0.001)
Sex at Birth	Male	15195 (63.7)	8656 (36.3)	•	•
	Female	12251 (69.3)	5423 (30.7)	0.78 (0.75-0.81, p<0.001)	0.70 (0.66-0.73, p<0.001)
	Not specified	0 (NaN)	0 (NaN)	•	•
Chronic cardiac disease	NO	18769 (71.7)	7403 (28.3)	•	•
	YES	6848 (55.1)	5583 (44.9)	2.07 (1.98-2.16, p<0.001)	1.19 (1.13-1.26, p<0.001)
Chronic pulmonary disease	NO	21787 (68.9)	9847 (31.1)	•	•
	YES	3787 (55.5)	3040 (44.5)	1.78 (1.68-1.87, p<0.001)	1.31 (1.23-1.39, p<0.001)
Chronic neurological disorder	NO	22563 (67.6)	10831 (32.4)	•	•
	YES	2777 (59.1)	1923 (40.9)	1.44 (1.36-1.54, p<0.001)	1.16 (1.08-1.26, p<0.001)
Chronic hematologic disease	NO	24312 (67.0)	11975 (33.0)	•	•
	YES	957 (57.4)	710 (42.6)	1.51 (1.36-1.66, p<0.001)	1.22 (1.08-1.38, p=0.001)
Chronic kidney disease	NO	21912 (69.3)	9720 (30.7)	•	•
	YES	3547 (53.2)	3120 (46.8)	1.98 (1.88-2.09, p<0.001)	1.28 (1.20-1.37, p<0.001)
Dementia	NO	22286 (69.9)	9597 (30.1)	•	•

Dependent: death		No	Yes	OR (univariable)	OR (multivariable)
	YES	3087 (49.0)	3212 (51.0)	2.42 (2.29-2.55, p<0.001)	1.43 (1.34-1.53, p<0.001)
Obesity	NO	20462 (66.6)	10251 (33.4)	·	·
	YES	2785 (70.3)	1178 (29.7)	0.84 (0.79-0.91, p<0.001)	1.35 (1.24-1.47, p<0.001)
Malignancy	NO	23182 (68.0)	10891 (32.0)	·	·
	YES	2120 (53.8)	1821 (46.2)	1.83 (1.71-1.95, p<0.001)	1.38 (1.28-1.49, p<0.001)

Number in dataframe = 48066, Number in model = 32688, Missing = 15378, AIC = 36491.6, C-statistic = 0.723, H&L = Chi-sq(8) 80.74 (p<0.001)

Figure 12 - Adjusted odds ratio plot
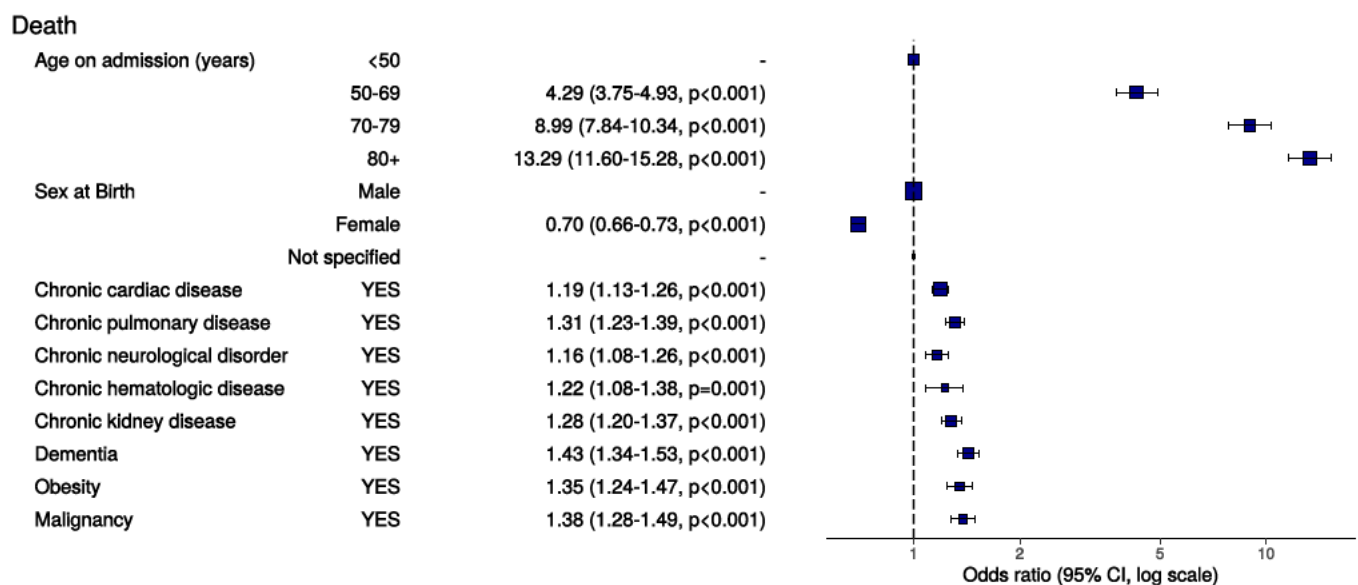
Figure 13 - ROC
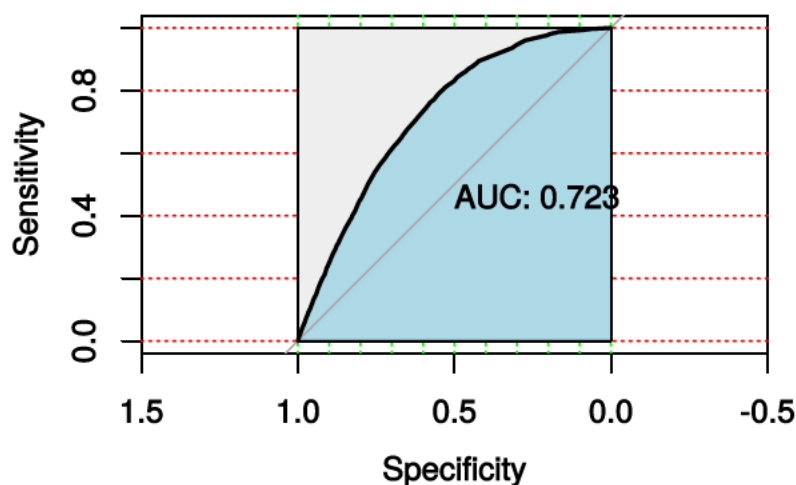
Survival models

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

Figure 14

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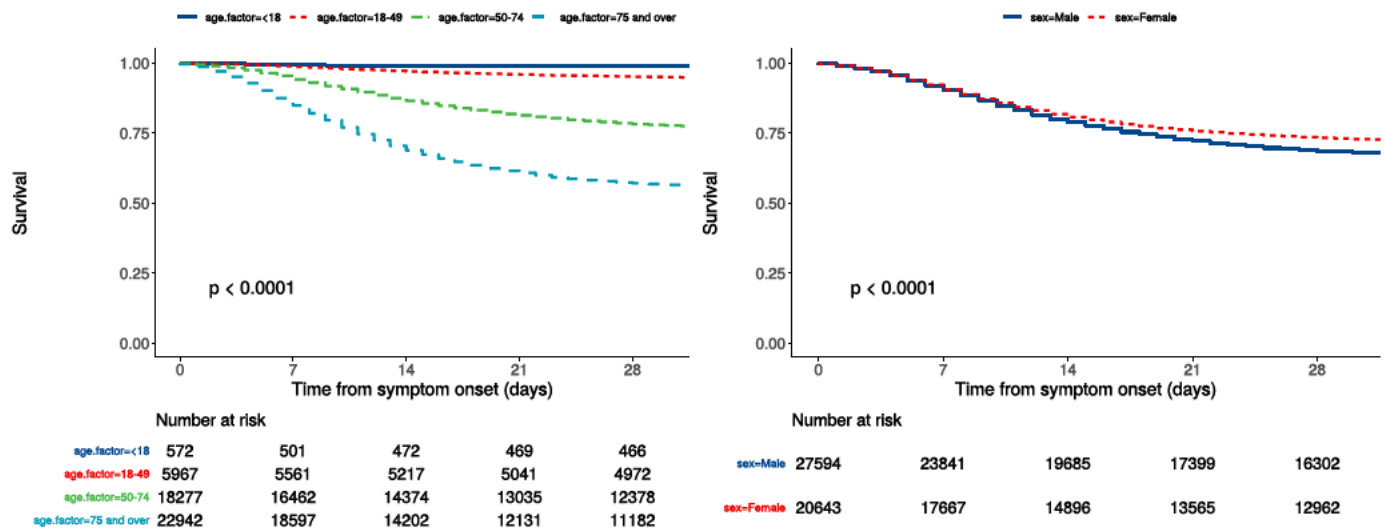
Cox proportional hazards model

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	6539 (13.7)	•	•
	50-69	13336 (27.9)	4.10 (3.65-4.60, p<0.001)	4.07 (3.52-4.71, p<0.001)
	70-79	10726 (22.5)	8.58 (7.65-9.61, p<0.001)	8.11 (7.02-9.37, p<0.001)
	80+	17157 (35.9)	11.93 (10.67-13.33, p<0.001)	10.89 (9.43-12.57, p<0.001)
Sex at Birth	Male	27594 (57.2)	•	•
	Female	20643 (42.8)	0.83 (0.80-0.86, p<0.001)	0.79 (0.76-0.83, p<0.001)

Dependent: Surv(time, status)		all	HR (univariable)	HR (multivariable)
qSOFA score on admission	0	15797 (41.2)	•	•
	1	17607 (45 9)	1 57 (1 51 1 64, p 0 001)	1 72 (1 64 1 80, p 0 001)
	2	4466 (11.6)	3.01 (2.85-3.17, p<0.001)	2.80 (2.64-2.98, p<0.001)
	3	499 (1.3)	4.94 (4.41-5.54, p<0.001)	4.43 (3.90-5.05, p<0.001)
Symptomatic at presentation	No s mptoms	1512 (3.3)	•	•
	Symptoms	44390 (96 7)	1 32 (1 18 1 46, p 0 001)	•
Chronic cardiac disease	NO	29541 (67.9)	•	•
	YES	13984 (32.1)	1.81 (1.75-1.88, p<0.001)	1.15 (1.10-1.20, p<0.001)
Chronic kidney disease	NO	35669 (82.7)	•	•
	YES	7480 (17 3)	1 74 (1 67 1 81, p 0 001)	1 24 (1 18 1 30, p 0 001)
Moderate/severe liver disease	NO	41880 (98.1)	•	•
	YES	815 (1.9)	1.31 (1.17-1.47, p<0.001)	1.50 (1.30-1.73, p<0.001)
Chronic neurological disorder	NO	37537 (87.5)	•	•
	YES	5348 (12 5)	1 37 (1 31 1 44, p 0 001)	•
Malignancy	NO	38394 (89.7)	•	•
	YES	4396 (10.3)	1.60 (1.52-1.68, p<0.001)	1.29 (1.22-1.37, p<0.001)
Chronic hematologic disease	NO	40854 (95.6)	•	•

Dependent: Surv(time, status)		all	HR (univariable)	HR (multivariable)
	YES	1859 (4.4)	1.38 (1.28-1.49, p<0.001)	•
Obesity	NO	34652 (88.7)	•	•
	YES	4421 (11.3)	0.86 (0.81-0.91, p<0.001)	1.18 (1.10-1.26, p<0.001)
Diabetes without complications	NO	34588 (81.9)	•	•
	YES	7633 (18.1)	1.22 (1.16-1.27, p<0.001)	•
Rheumatologic disorder	NO	37970 (89.1)	•	•
	YES	4647 (10.9)	1.20 (1.14-1.26, p<0.001)	•
Dementia	NO	35926 (83.5)	•	•
	YES	7085 (16.5)	2.10 (2.02-2.19, p<0.001)	1.21 (1.15-1.27, p<0.001)
Malnutrition	NO	39328 (97.3)	•	•
	YES	1079 (2.7)	1.50 (1.36-1.65, p<0.001)	•
smoking_mhyn_2levels	NO	27446 (92.4)	•	•
	YES	2250 (7.6)	0.89 (0.82-0.97, p=0.007)	•

Number in dataframe = 48513, Number in model = 31176, Missing = 17337, Number of events = 9197, Concordance = 0.722 (SE = 0.002), R-squared = 0.165(Max possible = 0.997), Likelihood ratio test = 5615.208 (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 (3.52-4.71, p<0.001)
	70-79	8.11 (7.02-9.37, p<0.001)
	80+	10.89 (9.43-12.57, p<0.001)
Sex at Birth	Female	0.79 (0.76-0.83, p<0.001)
qSOFA score on admission	0	-
	1	1.72 (1.64-1.80, p<0.001)
	2	2.80 (2.64-2.98, p<0.001)
	3	4.43 (3.90-5.05, p<0.001)
Chronic cardiac disease	YES	1.15 (1.10-1.20, p<0.001)
Chronic kidney disease	YES	1.24 (1.18-1.30, p<0.001)
Moderate/severe liver disease	YES	1.50 (1.30-1.73, p<0.001)
Malignancy	YES	1.29 (1.22-1.37, p<0.001)
Obesity	YES	1.18 (1.10-1.26, p<0.001)
Dementia	YES	1.21 (1.15-1.27, p<0.001)

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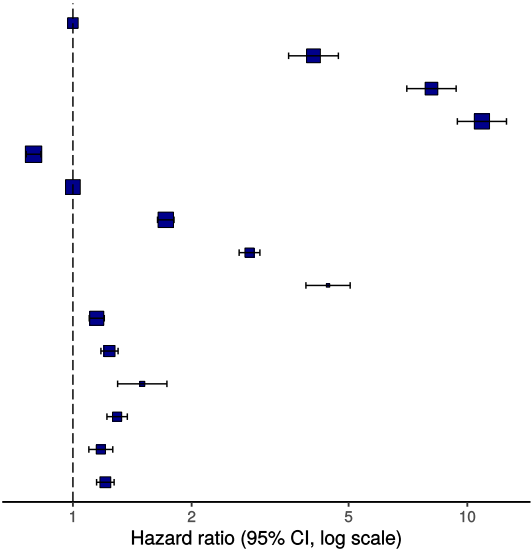
Figure 15b - Multivariable Cox proportional hazards model (age, sex, comorbidities only)

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

Age on admission (years)	<50	-
	50-69	3.94 (3.46-4.49, p<0.001)
	70-79	7.54 (6.62-8.58, p<0.001)
	80+	10.14 (8.91-11.54, p<0.001)
Sex at Birth	Female	0.77 (0.74-0.80, p<0.001)
Chronic cardiac disease	YES	1.14 (1.09-1.19, p<0.001)
Chronic pulmonary disease	YES	1.19 (1.14-1.25, p<0.001)
Chronic kidney disease	YES	1.20 (1.14-1.26, p<0.001)
Malignancy	YES	1.23 (1.17-1.30, p<0.001)
Obesity	YES	1.23 (1.16-1.32, p<0.001)
Dementia	YES	1.36 (1.30-1.42, p<0.001)

Hazard ratio (95% CI, log scale)
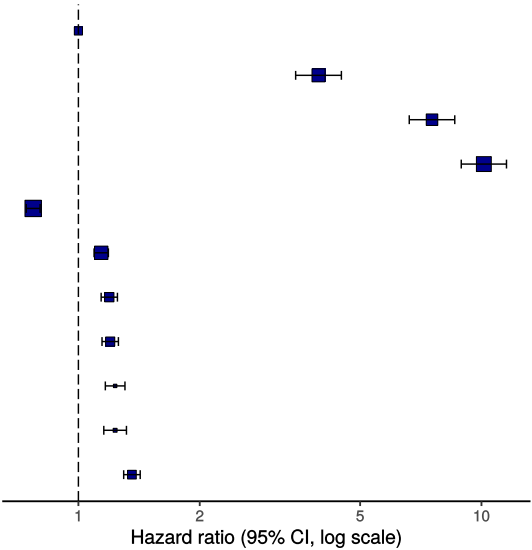
ROC = 0.7219493

Figure 16 - Predictions calibration plot

Black: observed Gray: ideal
Blue : optimism corrected

Predicted 7 Day Survival $_{B=40}$ based on observed-predicted
Mean |error|=0.214 0.9 Quantile=0.389
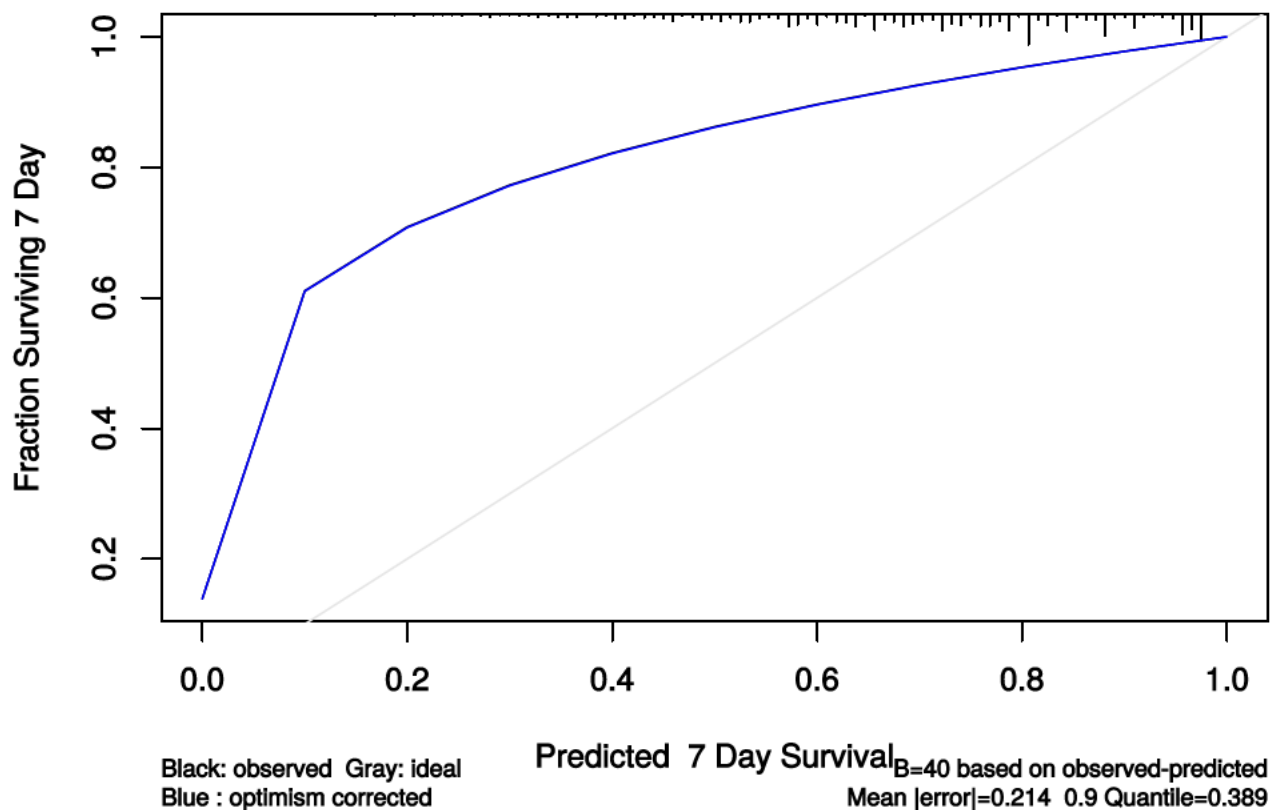
Figure 17 - Prognostic model predictions

Again, for demonstration of methods.

Prognostic model for survival 7 days after onset

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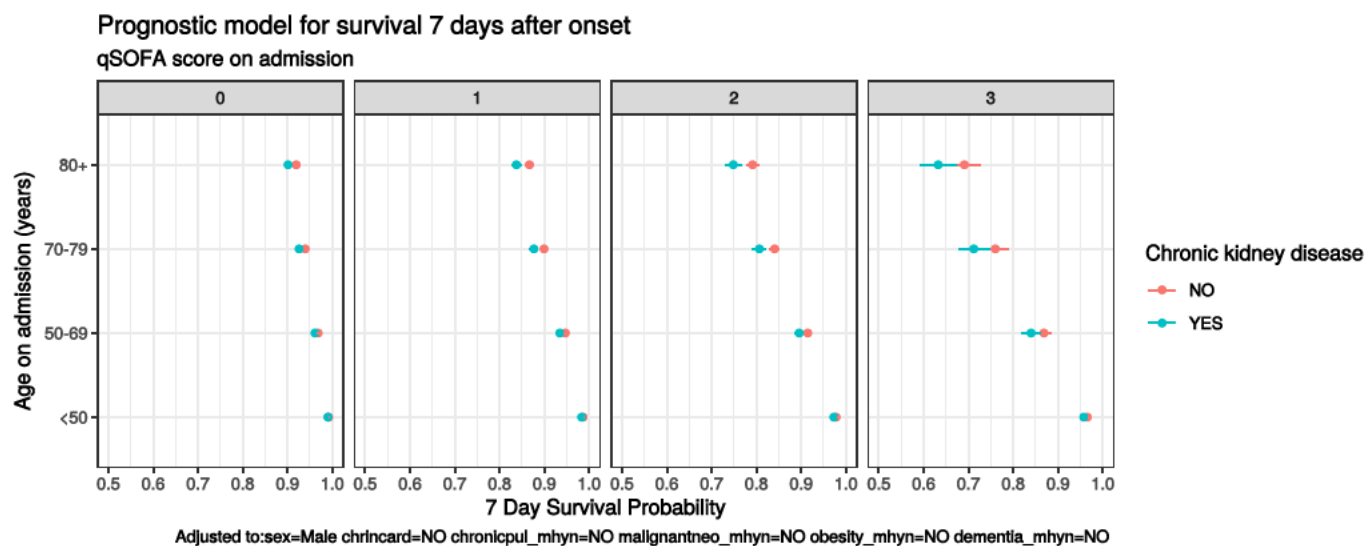
Figure 18 - Death by severity (NEWS) on admission

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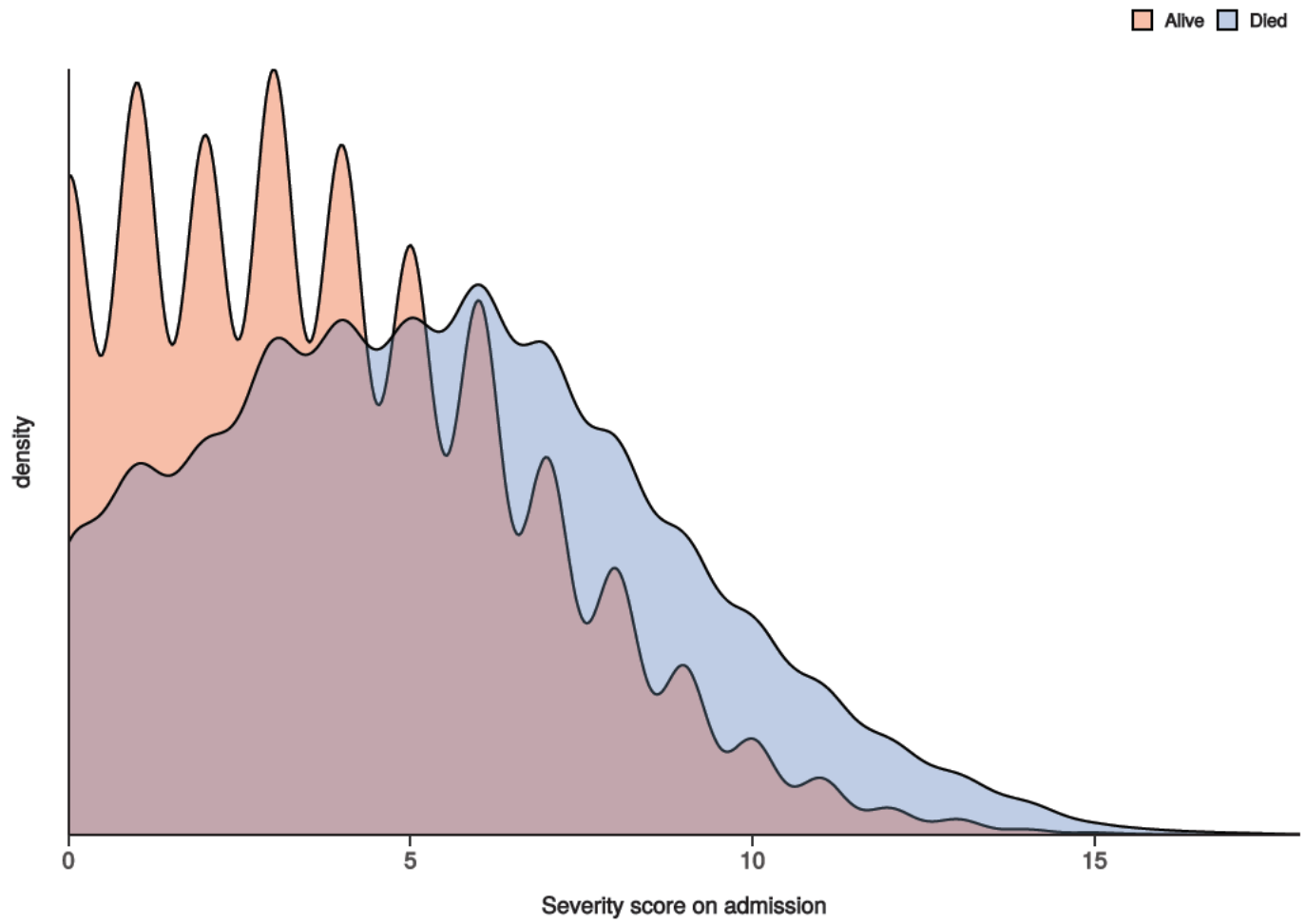
Figure 19 - Death by severity (NEWS) on admission stratified by age

Number of deaths by NEWS score at admission
Stratified by age

Alive ☐ Died

<18
Alive = 463
Died = 6

18-24
Alive = 337
Died = 10

25-44
Alive = 2936
Died = 154

45-54
Alive = 3707
Died = 451

55-64
Alive = 4661
Died = 1257

65-74
Alive = 4890
Died = 2600

75-84
Alive = 5988
Died = 4849

85 and over
Alive = 4391
Died = 4752

density

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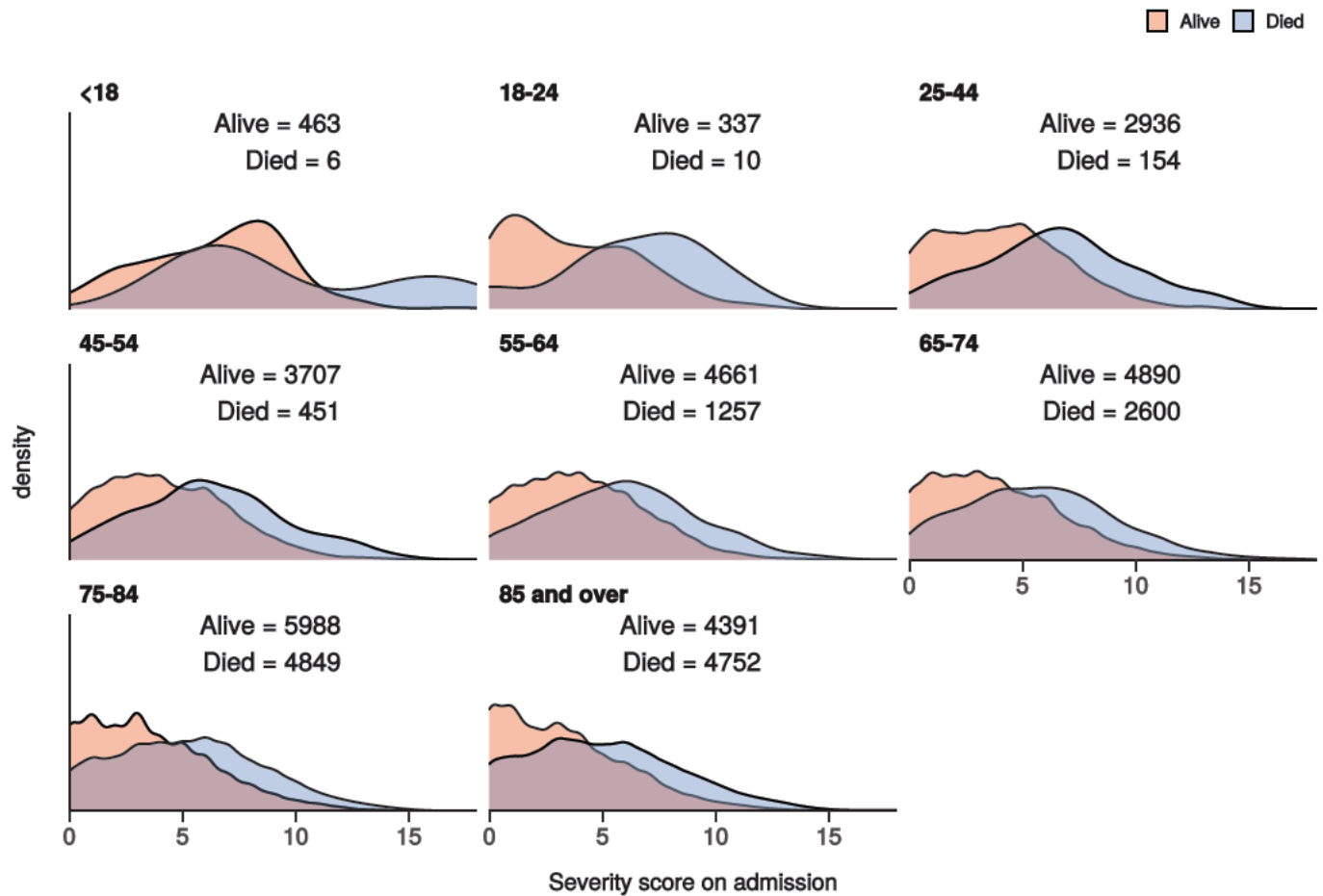
Figure 20 - Death by severity (qSOFA) on admission stratified by age

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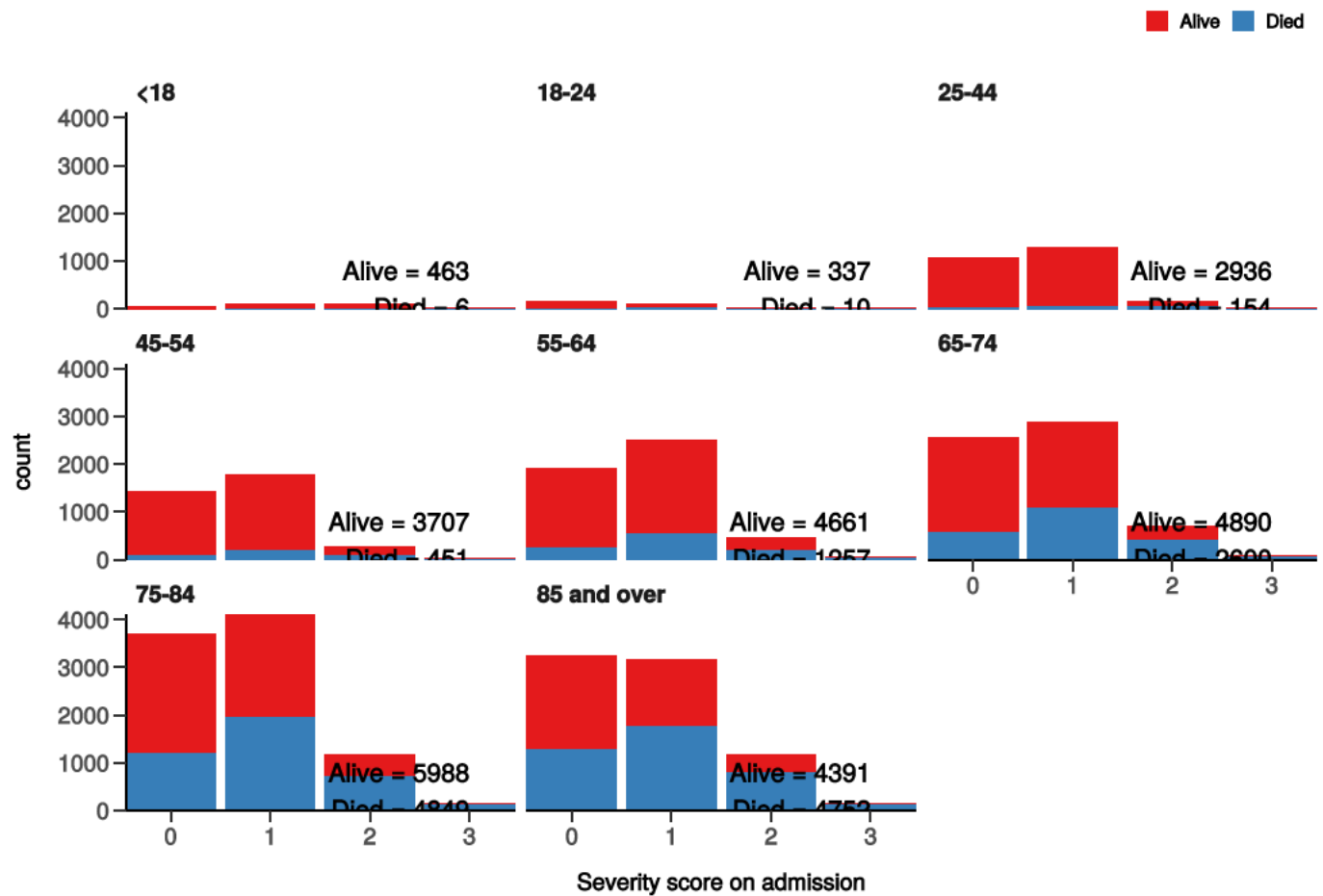
Healthcare workers

Healthcare worker		NO	YES	p
Total N (%)		42750 (94.8)	2329 (5.2)	
NEWS score on admission	Median (IQR)	4.0 (4.0)	4.0 (4.0)	0.285
Death	No	22744 (63.8)	1863 (92.9)	<0.001
	Yes	12885 (36.2)	142 (7.1)	

Admission (detail)

Table 1

label	levels	all
Total N (%)		57321 (100.0)
Age on admission (years)	Mean (SD)	69.9 (18.1)

label	levels	all
Sex at Birth	Male	29034 (50.7)
	Female	21828 (38.1)
	Not specified	98 (0.2)
	(Missing)	6361 (11.1)
Healthcare worker	YES	2329 (4.1)
	NO	42750 (74.6)
	N/A	5009 (8.7)
	(Missing)	7233 (12.6)
Microbiology lab worker	YES	83 (0.1)
	NO	23744 (41.4)
	N/A	2751 (4.8)
	(Missing)	30743 (53.6)
Onset to admission (days)	Mean (SD)	8.9 (1772.5)
Transfer from other facility	Yes-facility is a study site	1019 (1.8)
	Yes-facility is not a study site	2530 (4.4)
	No	41796 (72.9)
	N/A	1929 (3.4)
	(Missing)	10047 (17.5)
Travel in 14 d prior to symptoms	Yes	785 (1.4)
	No	20547 (35.8)
	N/A	4018 (7.0)
	(Missing)	31971 (55.8)
Country	Afghanistan	0 (0.0)
	Albania	0 (0.0)
	Algeria	0 (0.0)
	Andorra	1 (0.0)
	Angola	0 (0.0)

label	levels	all
	Antigua and Barbuda	4 (0 0)
	Argentina	1 (0.0)
	Armenia	0 (0.0)
	Aruba	0 (0.0)
	Australia	3 (0 0)
	Austria	22 (0.0)
	Azerbaijan	2 (0.0)
	The	0 (0.0)
	Bahrain	0 (0 0)
	Bangladesh	1 (0.0)
	Barbados	17 (0.0)
	Belarus	0 (0.0)
	Belgium	4 (0 0)
	Belize	0 (0.0)
	Benin	0 (0.0)
	Bhutan	0 (0.0)
	Bolivia	0 (0 0)
	Bosnia and Herzegovina	0 (0.0)
	Botswana	0 (0.0)
	Brazil	3 (0.0)
	Brunei	0 (0 0)
	Bulgaria	3 (0.0)
	Burkina Faso	0 (0.0)
	Burma	0 (0.0)
	Burundi	0 (0 0)
	Cambodia	1 (0.0)
	Cameroon	1 (0.0)

label	levels	all
	Canada	2 (0 0)
	Cabo Verde	1 (0.0)
	Centra 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)
	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)
label	Eritrea	0 (0 0)
	Estonia	0 (0.0)
	Ethiopia	0 (0.0)

label	levels	all
	Fiji	0 (0 0)
	Finland	0 (0.0)
	France	30 (0.1)
	Gabon	0 (0.0)
	Georgia	0 (0 0)
	Germany	8 (0.0)
	Ghana	2 (0.0)
	Greece	1 (0.0)
	Grenada	0 (0 0)
	Guatemala	0 (0.0)
	Guinea	0 (0.0)
	Guinea-Bissau	0 (0.0)
	Guyana	0 (0 0)
	Haiti	0 (0.0)
	Holy See	0 (0.0)
	Honduras	0 (0.0)
	Hong Kong	1 (0 0)
	Hungary	3 (0.0)
	Iceland	1 (0.0)
	India	9 (0.0)
	Indonesia	0 (0 0)
	Iran	6 (0.0)
	Iraq	0 (0.0)
	Ireland	7 (0.0)
	Israel	0 (0 0)
	Italy	89 (0.2)
	Jamaica	3 (0.0)

label	levels	all
	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)

label	levels	all
	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)
	Nether ands	9 (0.0)
	New Zealand	3 (0.0)
	Nicaragua	0 (0.0)
	Niger	0 (0 0)
	Nigeria	2 (0.0)
	North Korea	0 (0.0)
	Norway	2 (0.0)
	Oman	0 (0 0)
	Pakistan	9 (0.0)
	Palau	0 (0.0)
	Palestinian Territories	0 (0.0)
label	Panama	1 (0 0)
	Papua New Guinea	0 (0.0)
	Paraguay	0 (0.0)

label	levels	all
	Peru	0 (0.0)
	Philippines	5 (0.0)
	Poland	3 (0.0)
	Portugal	20 (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	0 (0.0)
	Singapore	4 (0.0)
	Sint Maarten	0 (0.0)
	Slovak a	1 (0.0)
	Slovenia	1 (0.0)
	Solomon Islands	0 (0.0)
	Somalia	2 (0.0)
	South Africa	9 (0.0)
	South Korea	1 (0.0)

label	levels	all
	South Sudan	0 (0.0)
	Spain	192 (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)
	Turkmenistan	0 (0.0)
	Tuvalu	0 (0.0)
	Uganda	0 (0.0)
	Ukraine	0 (0.0)
	United Arab Emirates	9 (0.0)
	United Kingdom	113 (0.2)
	Uruguay	0 (0.0)
	Uzbekistan	0 (0.0)

label	levels	all
	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)	56600 (98.7)
Country 2	Afghanistan	0 (0.0)
	Albania	0 (0.0)
	Algeria	1 (0.0)
	Andorra	0 (0.0)
	Angola	0 (0.0)
	Antigua and Barbuda	1 (0.0)
	Argentina	0 (0.0)
	Armenia	0 (0.0)
	Aruba	1 (0.0)
	Australia	2 (0.0)
	Austria	4 (0.0)
	Azerbaijan	0 (0.0)
	The	0 (0.0)
	Bahrain	0 (0.0)
	Bangladesh	0 (0.0)
	Barbados	2 (0.0)
	Belarus	0 (0.0)
	Belgium	0 (0.0)
	Belize	0 (0.0)
	Benin	0 (0.0)

label	levels	all
	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	1 (0.0)
	Cabo Verde	0 (0.0)
	Centra 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	4 (0.0)

label	levels	all
	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)
	Georgia	0 (0.0)
	Germany	3 (0.0)
	Ghana	0 (0.0)
	Greece	0 (0.0)
	Grenada	0 (0.0)
	Guatemala	0 (0.0)
	Guinea	0 (0.0)
	Guinea-Bissau	0 (0.0)
	Guyana	0 (0.0)
	Haiti	0 (0.0)
	Holy See	0 (0.0)

label	levels	all
	Honduras	0 (0.0)
	Hong Kong	0 (0.0)
	Hungary	0 (0.0)
	Iceland	0 (0.0)
	India	3 (0.0)
	Indonesia	1 (0.0)
	Iran	0 (0.0)
	Iraq	0 (0.0)
	Ireland	1 (0.0)
	Israel	1 (0.0)
	Italy	16 (0.0)
	Jamaica	1 (0.0)
	Japan	0 (0.0)
	Jordan	0 (0.0)
	Kazakhstan	0 (0.0)
	Kenya	0 (0.0)
	Kiribati	0 (0.0)
	South	0 (0.0)
	Kosovo	0 (0.0)
	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)

label	levels	all
	Liechtenstein	0 (0.0)
	Lithuania	0 (0.0)
	Luxembourg	0 (0.0)
	Macau	0 (0.0)
	Macedonia	0 (0.0)
	Madagascar	0 (0.0)
	Malawi	0 (0.0)
	Malaysia	0 (0.0)
	Maldives	0 (0.0)
	Mali	0 (0.0)
	Malta	0 (0.0)
	Marshall Islands	0 (0.0)
	Mauritania	0 (0.0)
	Mauritius	0 (0.0)
	Mexico	0 (0.0)
	Micronesia	0 (0.0)
	Moldova	0 (0.0)
	Monaco	0 (0.0)
	Mongolia	0 (0.0)
	Montenegro	0 (0.0)
	Morocco	1 (0.0)
	Mozambique	0 (0.0)
	Namibia	0 (0.0)
	Nauru	0 (0.0)
	Nepal	0 (0.0)
	Nether ands	2 (0.0)
	New Zealand	0 (0.0)

label	levels	all
	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)
	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)

label	levels	all
	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)
	Slovak a	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	20 (0.0)
	Sri Lanka	0 (0.0)
	Sudan	0 (0.0)
	Suriname	0 (0 0)
	Swaziland	0 (0.0)
	Sweden	0 (0.0)
	Switzerland	0 (0.0)
	Syria	0 (0 0)
	Taiwan	0 (0.0)
	Tajikistan	0 (0.0)
	Tanzania	0 (0.0)
	Thailand	1 (0 0)
	Timor-Leste	0 (0.0)
	Togo	0 (0.0)

label	levels	all
	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	0 (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)	57231 (99.8)
Animal, raw meat, insect bites 14 d prior	Yes	102 (0.2)
	No	9810 (17 1)
	Unknown	13899 (24.2)
	N/A	1677 (2.9)
	(Missing)	31833 (55.5)
Animal / insect	2 Budgerigars and 26 Cats at home	1 (1 0)
	2 cats	1 (1.0)
	2 dogs	1 (1.0)

label	levels	all
	Bee St ng	1 (1.0)
	Bird (pet)	1 (1.0)
	Birds at home	1 (1.0)
	Budgie	1 (1.0)
	budgies	1 (1.0)
	cat	2 (2.0)
	Cat	1 (1.0)
	CAT	1 (1.0)
	Cat (pet)	1 (1.0)
	Cat / Dog	1 (1.0)
	Cat, Dog (pets)	1 (1.0)
	cats	3 (3.0)
	chicken & beef	1 (1.0)
	Chickens	2 (2.0)
	COWS	1 (1.0)
	cows, rabbits, pigs goats	1 (1.0)
	DAILY CONTACT WITH DOMESTIC PET CAT	1 (1.0)
	dog	5 (5.0)
	Dog	12 (12.0)
	DOG	2 (2.0)
	DOG FAMILY PET	1 (1.0)
	Dog, domestic animla living in their home.	1 (1.0)
	Dogs	1 (1.0)
	dogs and cats	1 (1.0)
	Dogs at home	1 (1.0)
	domestic	1 (1.0)
	Domestic pet dog	1 (1.0)

label	levels	all
	DOMESTIC ANIMAL	2 (2.0)
	Domestic animal and faeces/nest	1 (1.0)
	domestic animal living in his home	1 (1.0)
	domestic animals	1 (1.0)
	Domestic animals living in his/her home	1 (1.0)
	Domestic Animals living in his/her home	1 (1.0)
	Domestic animals living in home	1 (1.0)
	Domestic cats	1 (1.0)
	domestic dog	1 (1.0)
	domestic Dog	1 (1.0)
	Domestic Per (dog)	1 (1.0)
	Domestic pest (cats)	1 (1.0)
	Domestic Pet	5 (5.0)
	Domestic Pet (Dog)	6 (6.0)
	Domestic pet cat	1 (1.0)
	Domestic pet Dog	1 (1.0)
	Domestic pet, dog	1 (1.0)
	Domestic pets	1 (1.0)
	Domestic Pets	2 (2.0)
	Domestic pets (dog)	1 (1.0)
	Domestic Pets Cat and Dog	1 (1.0)
	FARM ANIMALS - LAMBS	1 (1.0)
	Farm animals, cattle	1 (1.0)
	Guinea Pig	1 (1.0)
	HORSES	1 (1.0)
	pet dog	2 (2.0)
	Pet dog	1 (1.0)

label	levels	all
	Pet dog -ongoing daily contact	1 (1.0)
	pet dog at home	1 (1.0)
	Pet dog ongoing daily contact	1 (1.0)
	Prepared raw chicken	1 (1.0)
	raw chicken	1 (1.0)
	Raw Chicken	1 (1.0)
	Rodent	1 (1.0)
	she has a cat	1 (1.0)
	Sheep & Cattle	1 (1.0)
	Two cats	1 (1.0)
	unknown	1 (1.0)

Symptoms (detail)

Table 2

Stratified: all		all
Total N (%)		57321 (100.0)
Fever	YES	28876 (50.4)
	NO	14627 (25.5)
	Unknown	2487 (4.3)
	(Missing)	11331 (19.8)
Cough	YES	29353 (51.2)
	NO	13901 (24.3)
	Unknown	2742 (4.8)
	(Missing)	11325 (19.8)
Cough (sputum)	YES	8619 (15.0)
	NO	27911 (48.7)

	Unknown	9306 (16.2)
	(Missing)	11485 (20.0)
Cough (blood)	YES	1037 (1.8)
	NO	34729 (60.6)
	Unknown	10039 (17.5)
	(Missing)	11516 (20.1)
Sore throat	YES	2798 (4.9)
	NO	30580 (53.3)
	Unknown	12428 (21.7)
	(Missing)	11515 (20.1)
Runny nose	YES	889 (1.6)
	NO	31825 (55.5)
	Unknown	13082 (22.8)
	(Missing)	11525 (20.1)
Ear pain	YES	170 (0.3)
	NO	32464 (56.6)
	Unknown	13164 (23.0)
	(Missing)	11523 (20.1)
Wheeze	YES	3236 (5.6)
	NO	32094 (56.0)
	Unknown	10481 (18.3)
	(Missing)	11510 (20.1)
Chest pain	YES	5113 (8.9)
	NO	32124 (56.0)
	Unknown	8581 (15.0)
	(Missing)	11503 (20.1)
Muscle ache	YES	6196 (10.8)

Stratified: all		all
	NO	27710 (48.3)
	Unknown	11878 (20.7)
	(Missing)	11537 (20.1)
Joint pain	YES	2229 (3.9)
	NO	30468 (53.2)
	Unknown	13070 (22.8)
	(Missing)	11554 (20.2)
Fatigue	YES	15695 (27.4)
	NO	20554 (35.9)
	Unknown	9582 (16.7)
	(Missing)	11490 (20.0)
Shortness of breath	YES	28556 (49.8)
	NO	13883 (24.2)
	Unknown	3562 (6.2)
	(Missing)	11320 (19.7)
Lower chest wall indrawing	YES	441 (0.8)
	NO	31484 (54.9)
	Unknown	13852 (24.2)
	(Missing)	11544 (20.1)
Headache	YES	3654 (6.4)
	NO	30195 (52.7)
	Unknown	11955 (20.9)
	(Missing)	11517 (20.1)
Confusion	YES	11408 (19.9)
	NO	27885 (48.6)
	Unknown	6581 (11.5)
	(Missing)	11447 (20.0)

Stratified: all		all
Seizures	YES	620 (1.1)
	NO	36513 (63.7)
	Unknown	8662 (15.1)
	(Missing)	11526 (20.1)
Abdominal pain	YES	3991 (7.0)
	NO	33120 (57.8)
	Unknown	8729 (15.2)
	(Missing)	11481 (20.0)
Nausa/vomiting	YES	7521 (13.1)
	NO	31057 (54.2)
	Unknown	7277 (12.7)
	(Missing)	11466 (20.0)
Diarrhoea	YES	7124 (12.4)
	NO	31232 (54.5)
	Unknown	7490 (13.1)
	(Missing)	11475 (20.0)
Conjunctivitis	YES	148 (0.3)
	NO	34326 (59.9)
	Unknown	11328 (19.8)
	(Missing)	11519 (20.1)
Skin rash	YES	551 (1.0)
	NO	34683 (60.5)
	Unknown	10578 (18.5)
	(Missing)	11509 (20.1)
Skin ulcers	YES	923 (1.6)
	NO	34349 (59.9)
	Unknown	10521 (18.4)

Stratified: all		all
	(Missing)	11528 (20.1)
Lymphadenopathy	YES	238 (0.4)
	NO	34448 (60.1)
	Unknown	11116 (19.4)
	(Missing)	11519 (20.1)
Bleeding (Haemorrhage)	YES	608 (1.1)
	NO	36007 (62.8)
	Unknown	9178 (16.0)
	(Missing)	11528 (20.1)
If Bleeding (others)	YES	459 (0.8)
	NO	19028 (33.2)
	Unknown	5262 (9.2)
	(Missing)	32572 (56.8)

Comorbidity (detail)

Table 3

Stratified: all		all
Total N (%)		57321 (100.0)
Chronic cardiac disease	YES	14095 (24.6)
	O	29731 (51.9)
	Unknown	2272 (4.0)
	Missing)	11223 (19.6)
Chronic pulmonary disease	YES	7818 (13.6)
	O	35834 (62.5)
	Unknown	2421 (4.2)
	Missing)	11248 (19.6)

Stratified: all		all
Asthma	YES	6066 (10.6)
	O	37402 (65.3)
	Unknown	2564 (4.5)
	Missing)	11289 (19.7)
Chronic kidney disease	YES	7548 (13.2)
	O	35898 (62.6)
	Unknown	2605 (4.5)
	Missing)	11270 (19.7)
Moderate/severe liver disease	YES	821 (1.4)
	O	42162 (73.6)
	Unknown	3042 (5.3)
	Missing)	11296 (19.7)
Mild Liver disease	YES	653 (1.1)
	O	42216 (73.6)
	Unknown	3152 (5.5)
	Missing)	11300 (19.7)
Chronic neurological disorder	YES	5397 (9.4)
	O	37774 (65.9)
	Unknown	2855 (5.0)
	Missing)	11295 (19.7)
Malignancy	YES	4447 (7.8)
	O	38633 (67.4)
	Unknown	2962 (5.2)
	Missing)	11279 (19.7)
Chronic hematologic disease	YES	1870 (3.3)
	O	41129 (71.8)
	Unknown	3009 (5.2)

Stratified: all		all
	Missing)	11313 (19.7)
AIDS/HIV	YES	178 (0.3)
	O	42397 (74.0)
	Unknown	3446 (6.0)
	Missing)	11300 (19.7)
Obesity	YES	4448 (7.8)
	O	34889 (60.9)
	Unknown	6587 (11.5)
	Missing)	11397 (19.9)
Diabetes with complications	YES	3183 (5.6)
	O	39211 (68.4)
	Unknown	3621 (6.3)
	Missing)	11306 (19.7)
Diabetes without complications	YES	7705 (13.4)
	O	34806 (60.7)
	Unknown	3511 (6.1)
	Missing)	11299 (19.7)
Rheumatologic disorder	YES	4679 (8.2)
	O	38233 (66.7)
	Unknown	3096 (5.4)
	Missing)	11313 (19.7)
Dementia	YES	7140 (12.5)
	O	36165 (63.1)
	Unknown	2734 (4.8)
	Missing)	11282 (19.7)
Malnutrition	YES	1090 (1.9)
	O	39582 (69.1)

Stratified: all		all
	Unknown	5269 (9 2)
	Missing)	11380 (19.9)
Smoking	YES	2262 (3.9)
	O	27622 (48.2)
	Missing)	27437 (47 9)