Dynamic CO-CIN report to SAGE and NERVTAG

[OFFICIAL-SENSITIVE PROTECT]

Dynamic content updated: 2020-04-06 20:35:02.

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 06 April 2020, CO-CIN has recruited **7899 patients** with confirmed Coronavirus (Figure 1).

The CO-CIN dataset represents NA% (7899/NA) of cases of confirmed Coronovirus cases in the UK, per the PHE daily reports (last updated 9am 6 April).

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 396 had travelled abroad recently, and 1103 reported visiting or working in a hospital where COVID-19 cases are being managed.

The median age is 72 (range: 0-104), Male/Female 3426/2215.

The most common symptoms were cough (72%), fever (69%) and shortness of breath (63%) (Figure 3A). 213/4852 (4%) of patients have reported no symptoms. Comorbidity can be seen in Figure 3B. The most common comorbidities were chronic cardiac disease (28%), diabetes (without complications) (20%) and chronic pulmonary disease (18%). 1190/4925 (24%) of patients have reported no co morbidity. 24/402 (6%) 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 - 6576 days).

The median length of hospital stay was 5 days (range: 1-163, n = 1947).
325/2680 (12%) patients required high-flow oxygen after day 1 of treatment.

Currently 855 patient(s) have died and 875 required ICU. 1217 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.

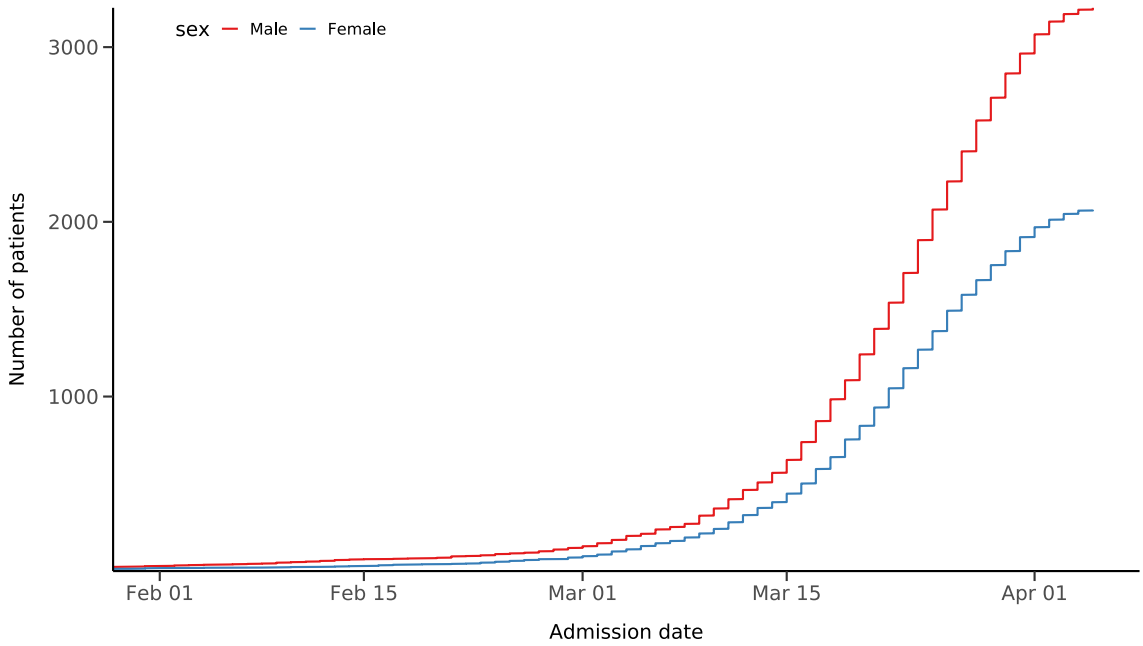
Prof Calum Semple, Professor in Child Health and Outbreak Medicine, University of Liverpool.
Dr Annemarie Docherty, Academic Consultant Intensive Care University of Edinburgh.
Dr Chris Green, Academic Consultant Infectious Disease University of Birmingham.
Prof Ewen Harrison, Director Centre for Medical 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

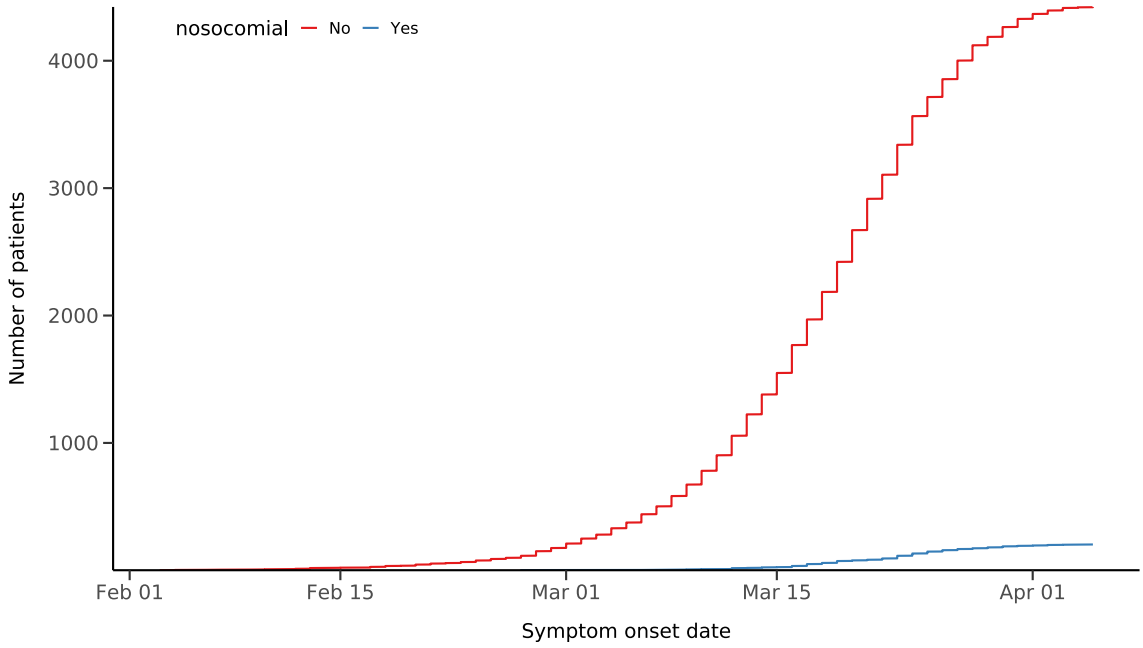
Hospital admission with COVID-19 by sex

Figure 1A



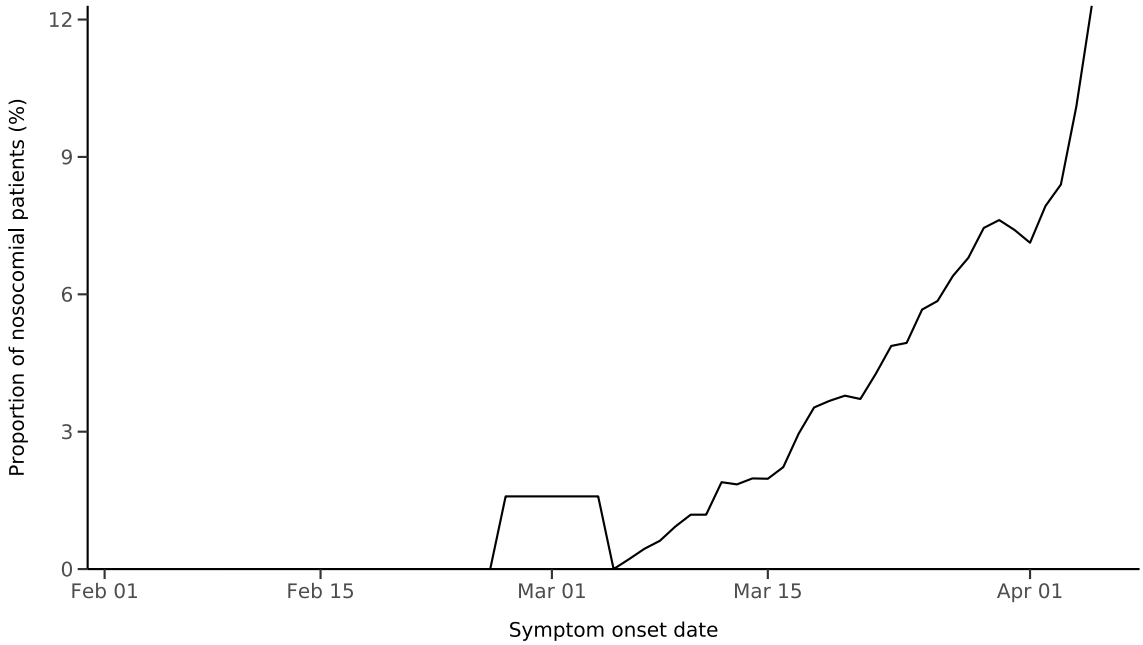
Nosocomial: symptom onset >=14 days post admission

Figure 1B



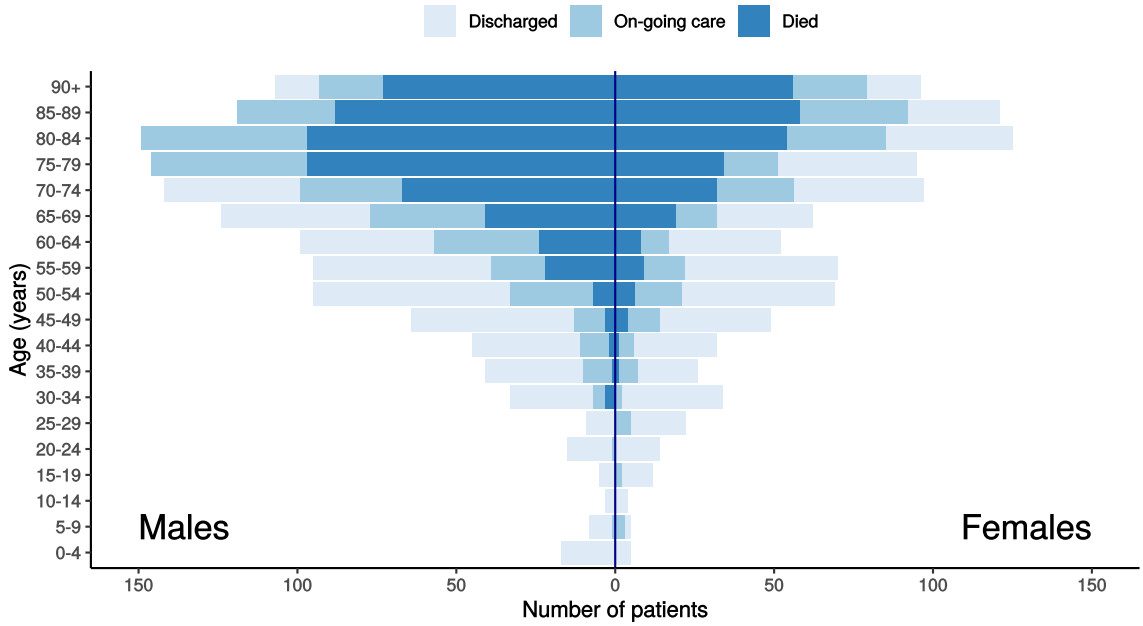
Proportion with sympton onset >=14 days after admission

Figure 1C - 7-day rolling percentage



All patients stratified by age, sex, and current status

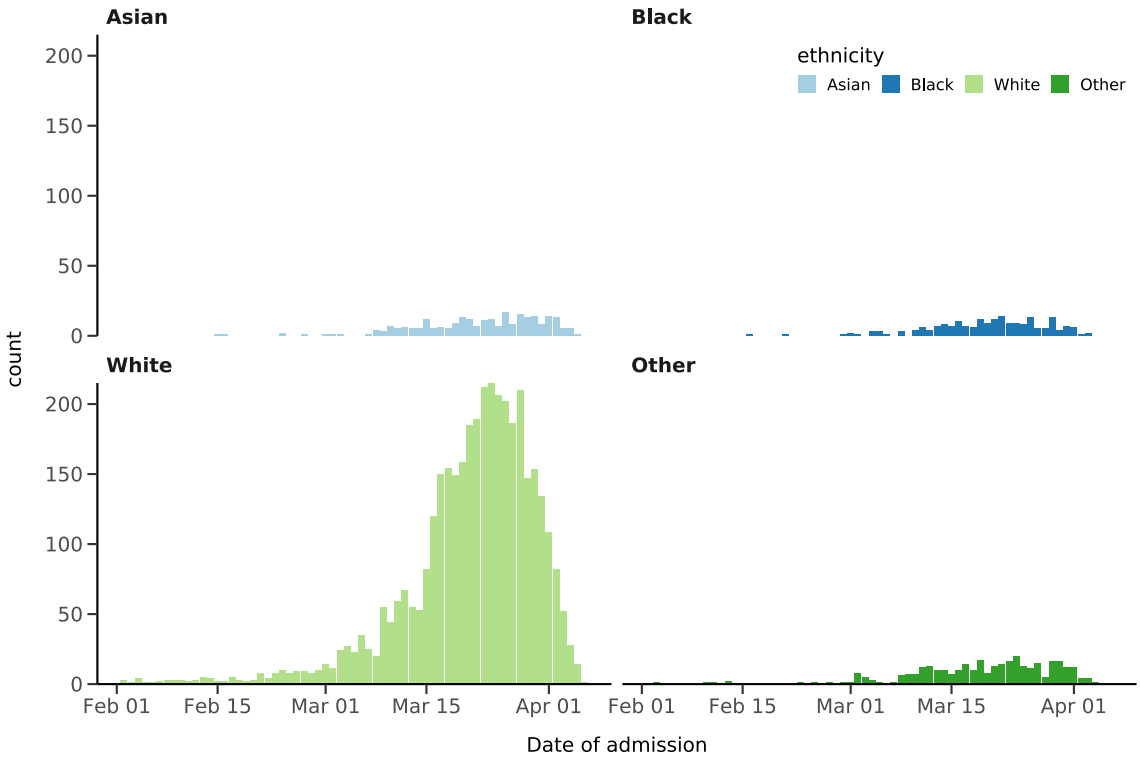
Figure 1D - 7-day rolling percentage



Hospital admission with COVID-19 by ethnicity

Figure 1

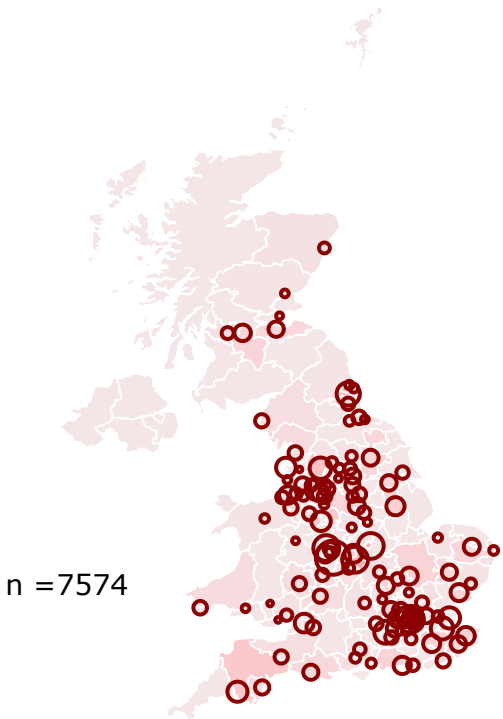
ED



Location by CCG / Healthboard

Figure 2

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

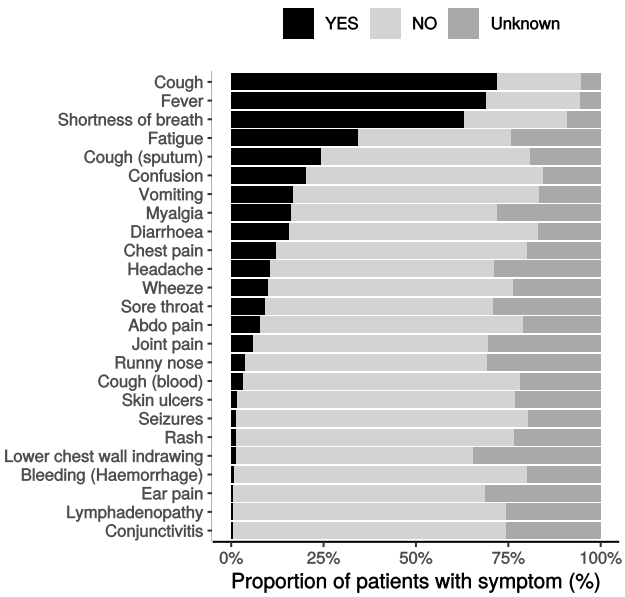


Symptoms and comorbidity

Figure 3

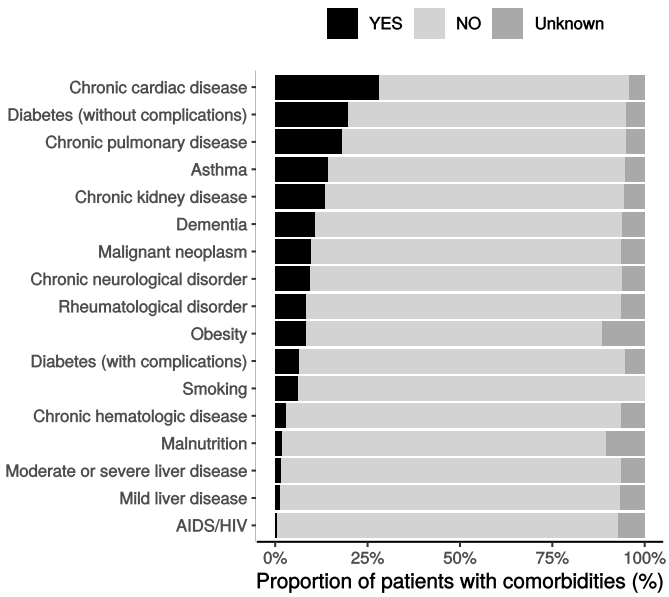
Symptoms on presentation to hospital (% patients, n = 4772)

Figure 3A



Comorbidity (% patients, n = 4829)

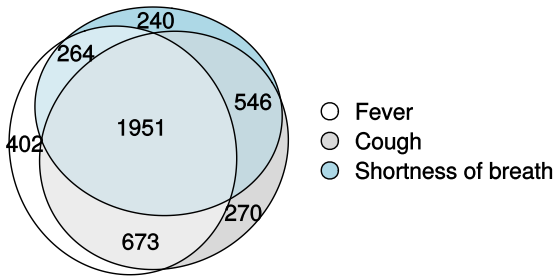
Figure 3B



Symptoms (diagnostic criteria)

Figure 4A

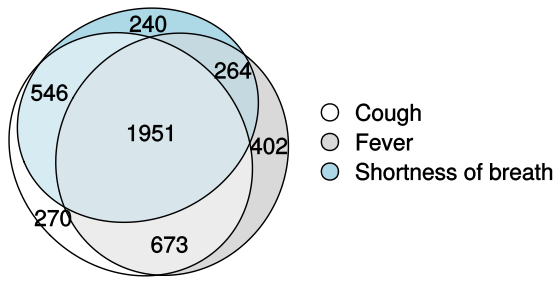
n = 4772



Symptoms (most common)

Figure 4B

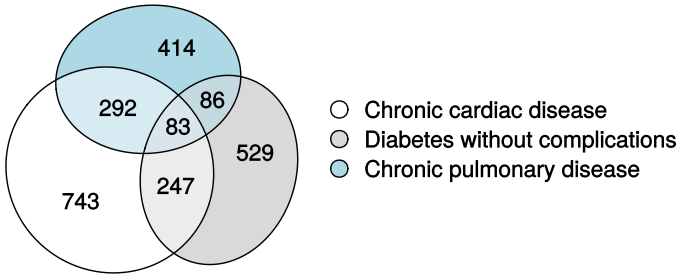
n = 4772



Comorbidity (most common)

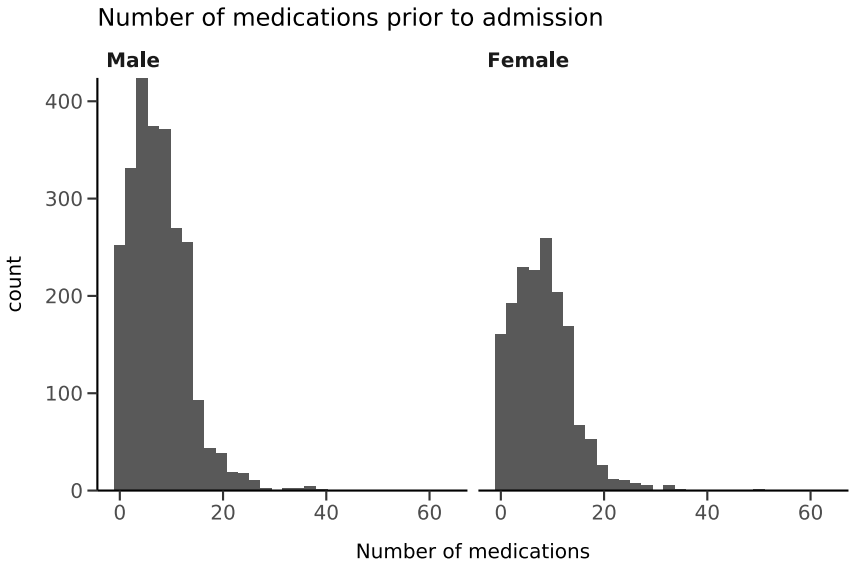
Figure 4C

n = 4829



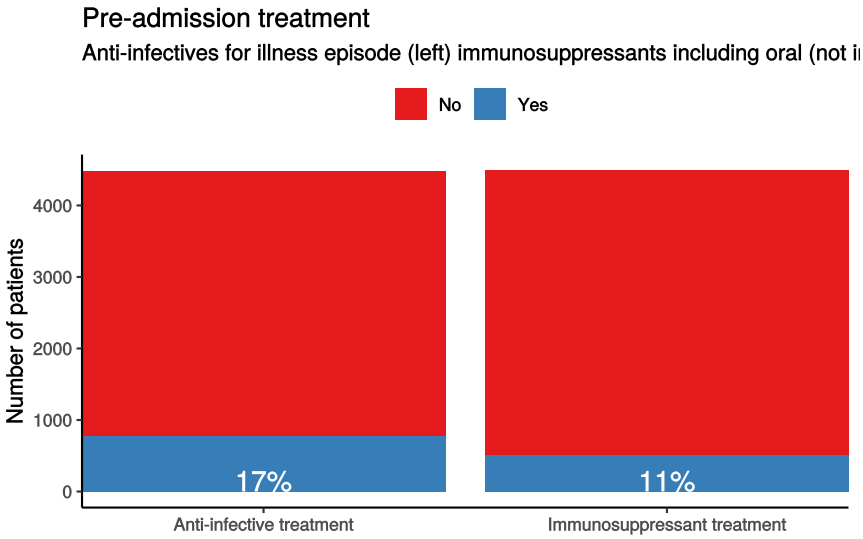
Medication prior to illness

Figure 5



Preadmission treatment

Figure 6



Patient flow

Figure 7A - All patients

N = 4882

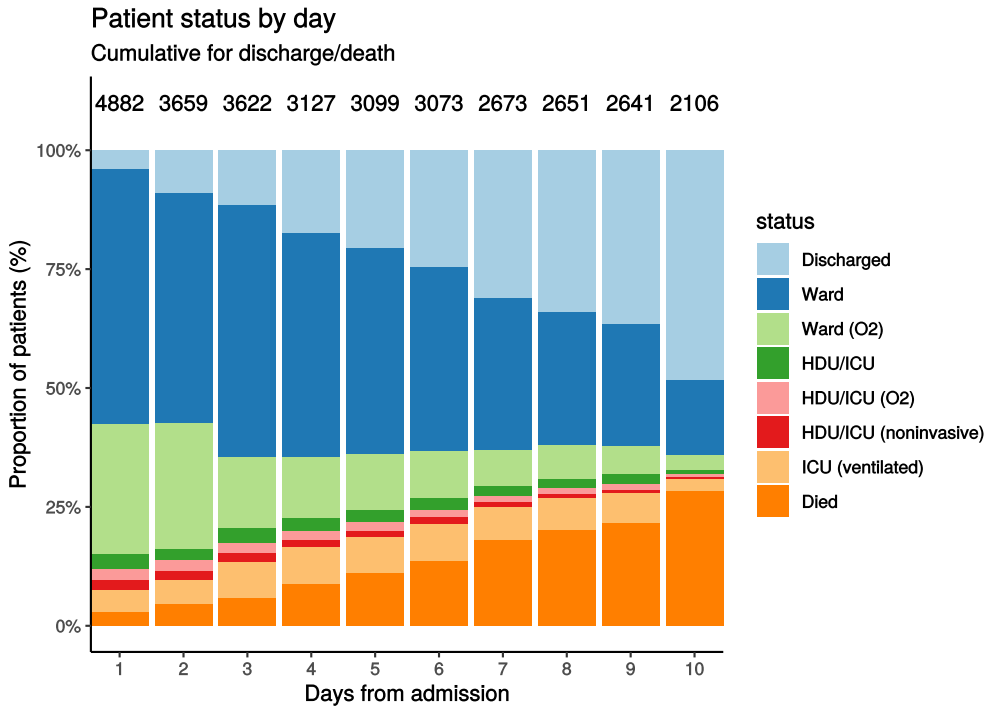
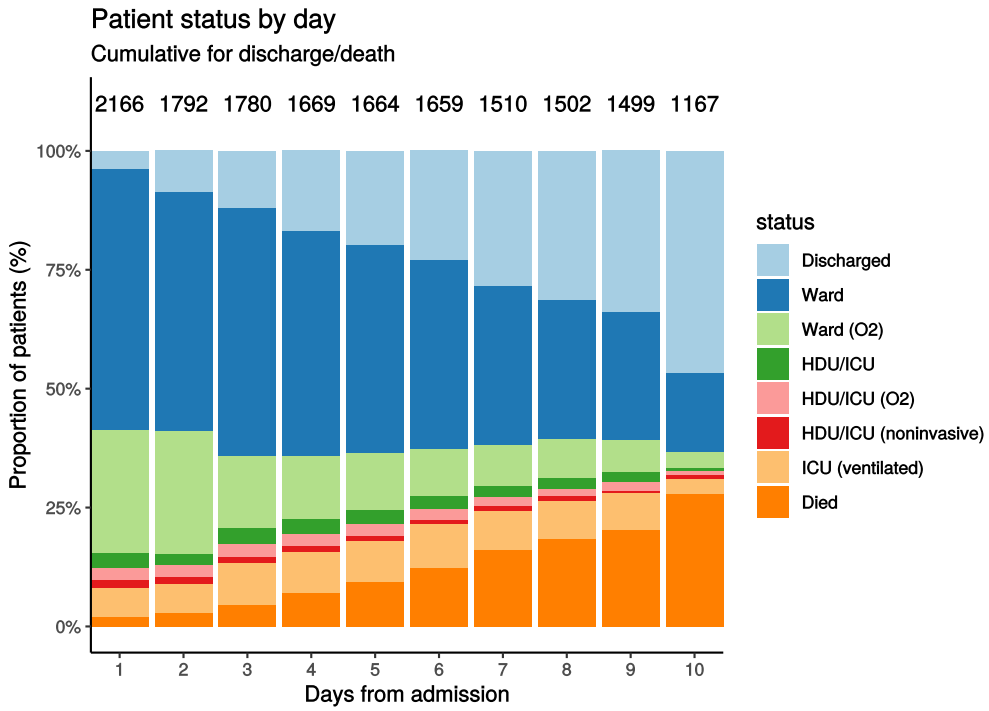


Figure 7B - Patients admitted >=14 days and <=28 days ago

N = 2166



Oxygen requirement

Figure 8A - All patients

N = 4574

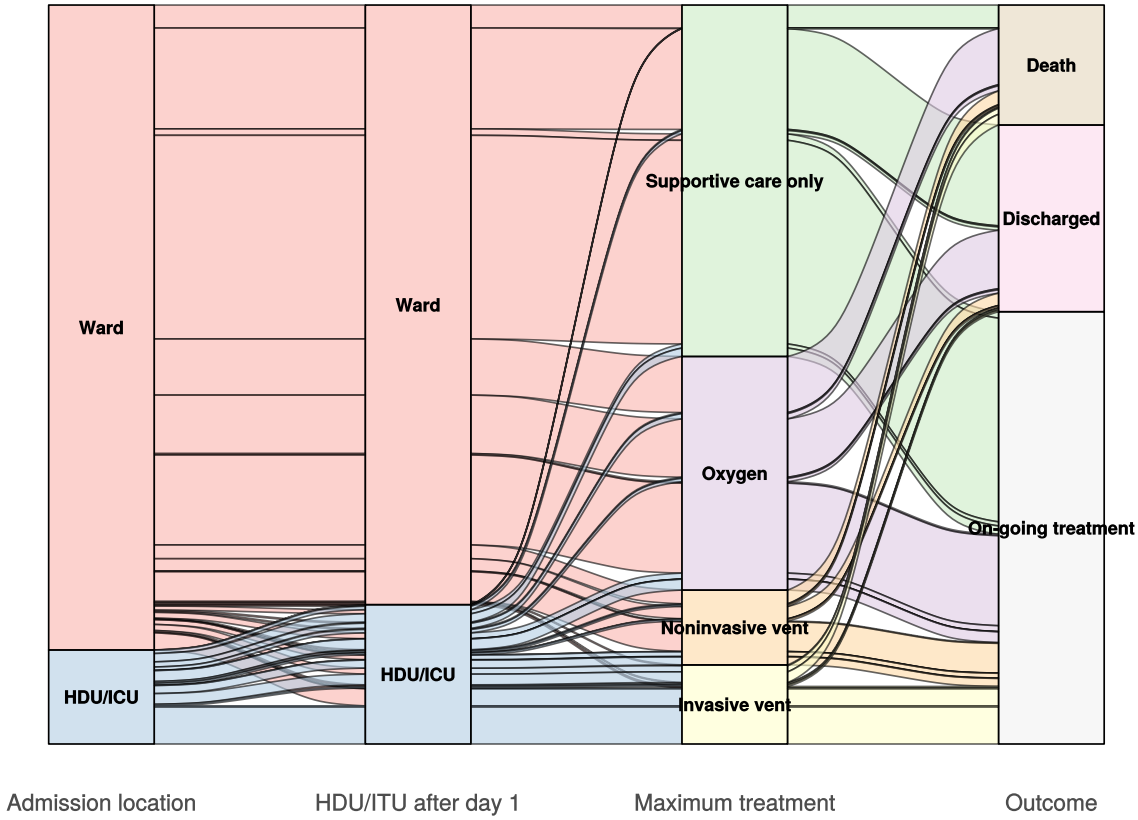
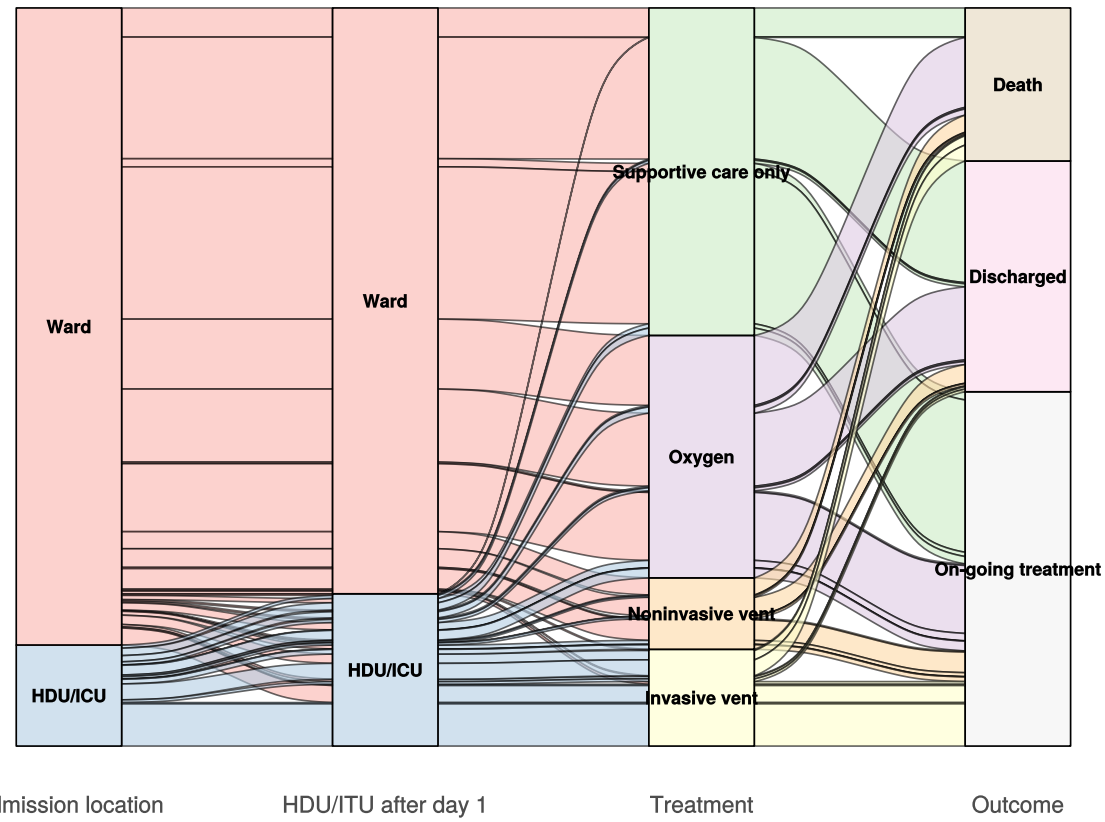


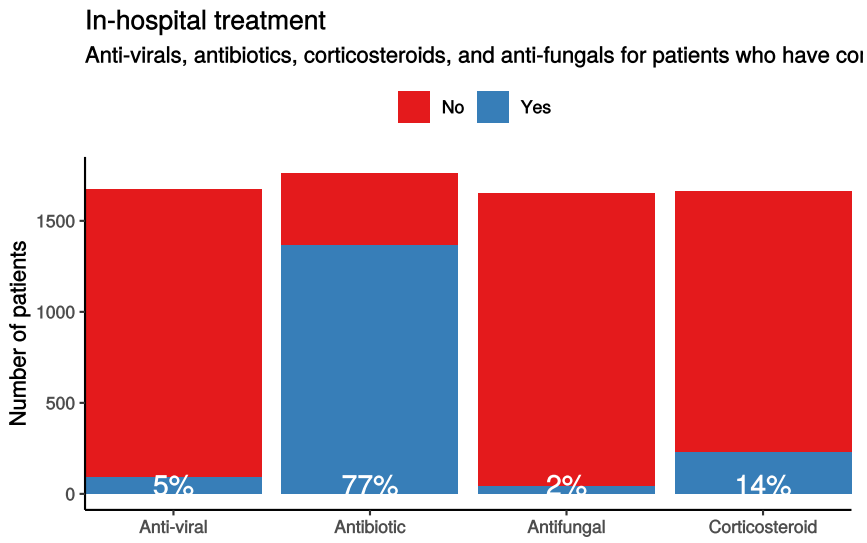
Figure 8B - Patients admitted >=14 days and <=28 days ago

N = 2057



In-hospital medical treatment

Figure 9

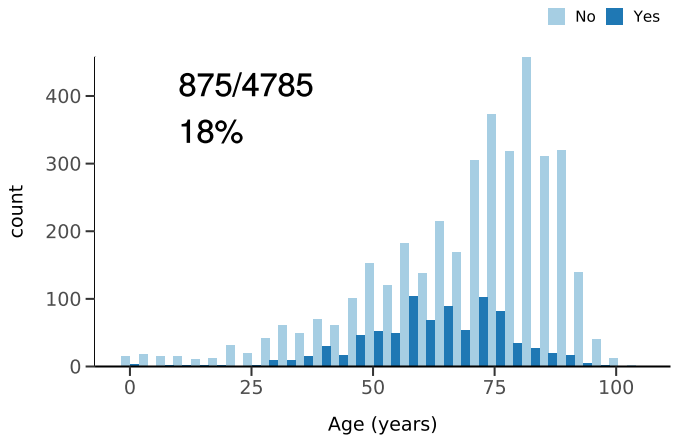


Treatment

Figure 10

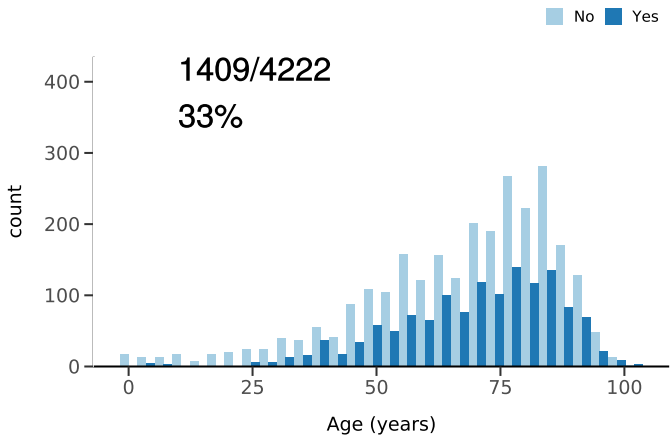
ICU/HDU admission

Figure 10A



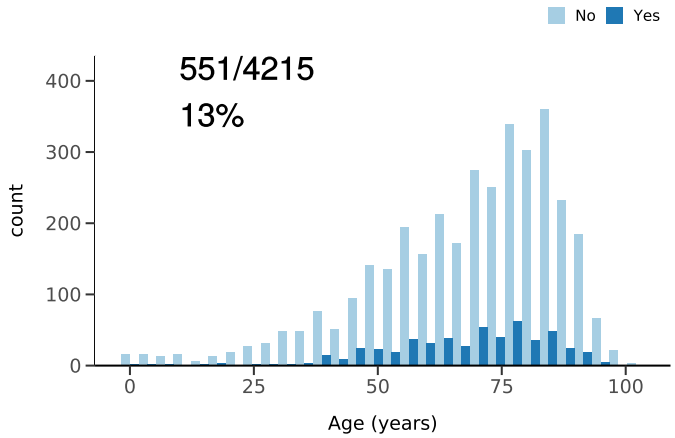
High flow oxygen

Figure 10B



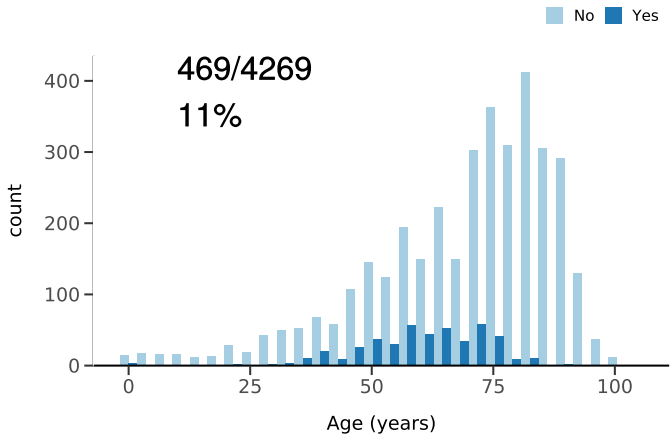
Noninvasive ventilation

Figure 10C



Invasive ventilation

Figure 10D

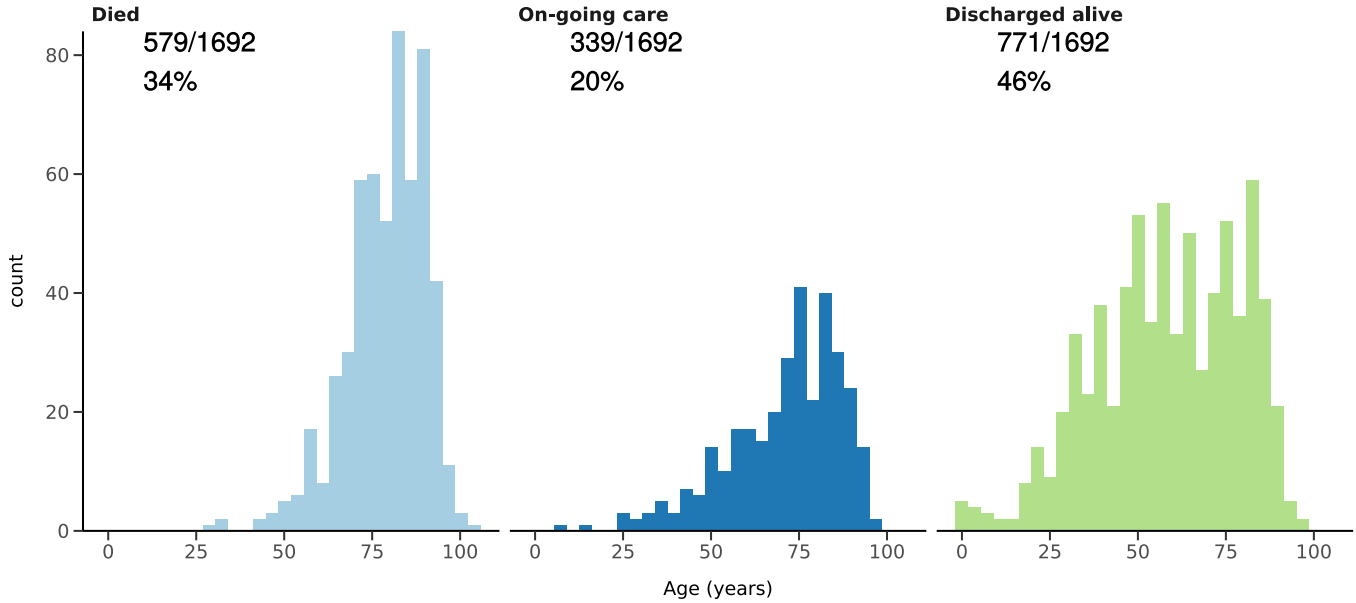


Status in patients admitted >=14 days from today

Figure 11

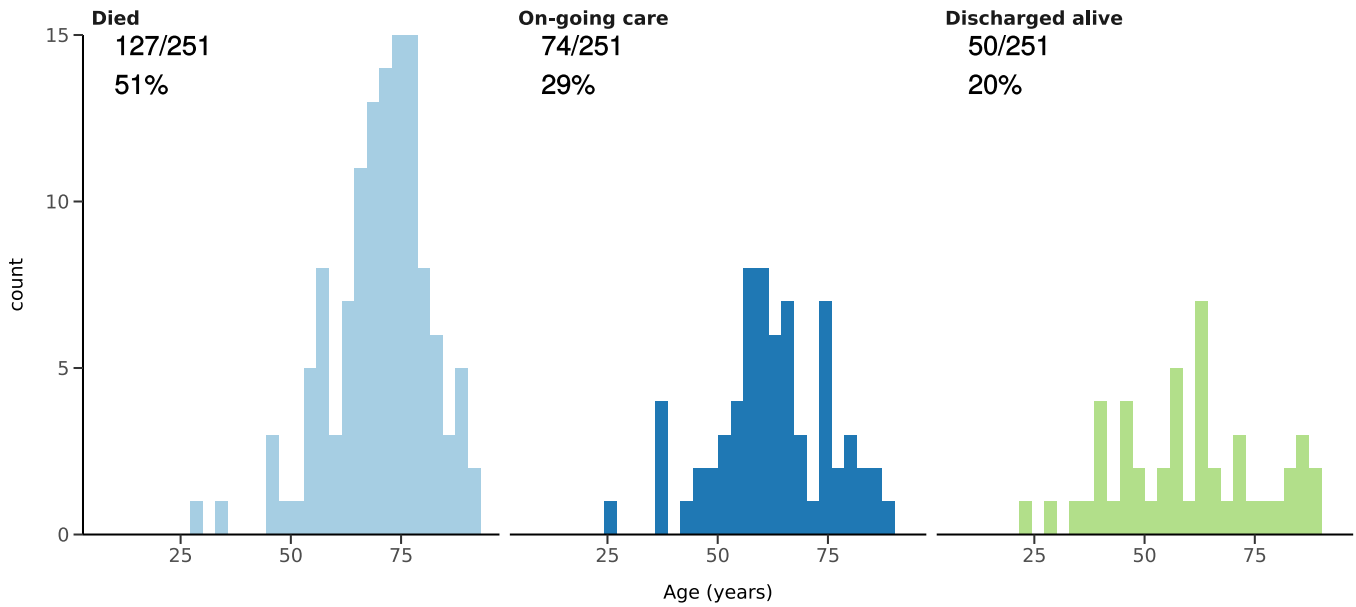
All: status in patients admitted >=14 days ago

Figure 11A



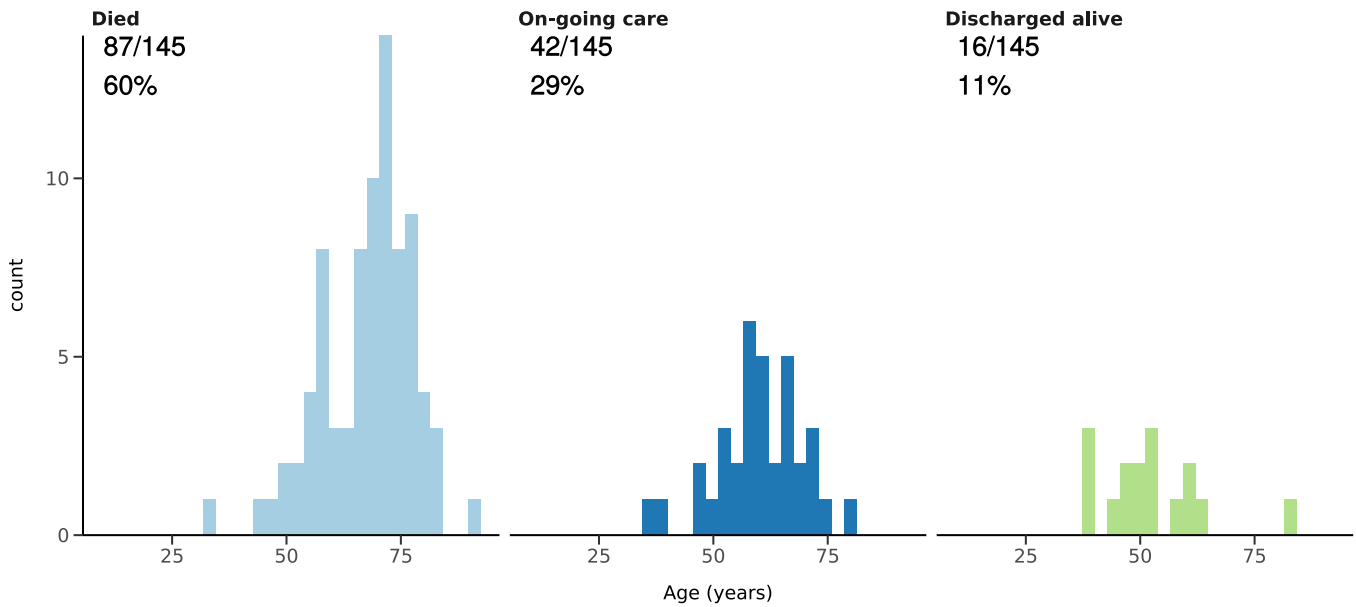
ICU/HDU admissions: status in patients admitted >=14 days ago

Figure 11B



Invasive ventilation: status in patients admitted >=14 days ago

Figure 11c



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	241 (96.4)	9 (3.6)	•	•
	50-69	255 (73.1)	94 (26.9)	9.87 (5.14-21.44, p<0.001)	11.95 (5.17-34.77, p<0.001)
	70-79	138 (46.9)	156 (53.1)	30.27 (15.81-65.63, p<0.001)	28.16 (12.10-82.28, p<0.001)
	80+	158 (33.6)	312 (66.4)	52.88 (27.99-113.58, p<0.001)	48.60 (21.02-141.53, p<0.001)
Sex at Birth	Male	467 (55.0)	382 (45.0)	•	•
	Female	351 (62.9)	207 (37.1)	0.72 (0.58-0.90, p=0.003)	0.76 (0.57-1.02, p=0.073)
Chronic cardiac disease	NO	598 (66.4)	302 (33.6)	•	•
	YES	158 (41.1)	226 (58.9)	2.83 (2.22-3.63, p<0.001)	1.27 (0.92-1.74, p=0.144)
Chronic pulmonary disease	NO	663 (63.0)	389 (37.0)	•	•
	YES	91 (39.1)	142 (60.9)	2.66 (1.99-3.57, p<0.001)	1.70 (1.18-2.45, p=0.004)
Chronic neurological disorder	NO	695 (60.8)	448 (39.2)	•	•
	YES	48 (41.7)	67 (58.3)	2.17 (1.47-3.21, p<0.001)	2.12 (1.27-3.56, p=0.004)
Chronic hematologic disease	NO	727 (60.0)	484 (40.0)	•	•
	YES	18 (38.3)	29 (61.7)	2.42 (1.34-4.48, p=0.004)	2.13 (0.92-5.00, p=0.078)
Chronic kidney disease	NO	680 (63.0)	399 (37.0)	•	•
	YES	68 (35.1)	126 (64.9)	3.16 (2.30-4.37, p<0.001)	2.13 (1.40-3.27, p<0.001)
Dementia	NO	690 (62.4)	416 (37.6)	•	•
	YES	51 (33.8)	100 (66.2)	3.25 (2.28-4.68, p<0.001)	1.42 (0.91-2.23, p=0.123)
Obesity	NO	644 (60.5)	420 (39.5)	•	•
	YES	64 (56.6)	49 (43.4)	1.17 (0.79-1.73, p=0.422)	1.81 (1.11-2.98, p=0.018)
Malignancy	NO	690 (61.0)	442 (39.0)	•	•
	YES	55 (42.6)	74 (57.4)	2.10 (1.46-3.05, p<0.001)	1.66 (1.06-2.62, p=0.028)

Number in dataframe = 2873, Number in model = 1087, Missing = 1786, AIC = 1143.8, C-statistic = 0.803, H&L = Chi-sq(8) 9.04 (p=0.339)

Figure 11 - Adjusted odds ratio plot

Death

Age on admission (years)	50-69	11.95 (5.17-34.77, p<0.001)
	70-79	28.16 (12.10-82.28, p<0.001)
	80+	48.60 (21.02-141.53, p<0.001)
Sex at Birth	Female	0.76 (0.57-1.02, p=0.073)
Chronic cardiac disease	YES	1.27 (0.92-1.74, p=0.144)
Chronic pulmonary disease	YES	1.70 (1.18-2.45, p=0.004)
Chronic neurological disorder	YES	2.12 (1.27-3.56, p=0.004)
Chronic hematologic disease	YES	2.13 (0.92-5.00, p=0.078)
Chronic kidney disease	YES	2.13 (1.40-3.27, p<0.001)
Dementia	YES	1.42 (0.91-2.23, p=0.123)
Obesity	YES	1.81 (1.11-2.98, p=0.018)
Malignancy	YES	1.66 (1.06-2.62, p=0.028)

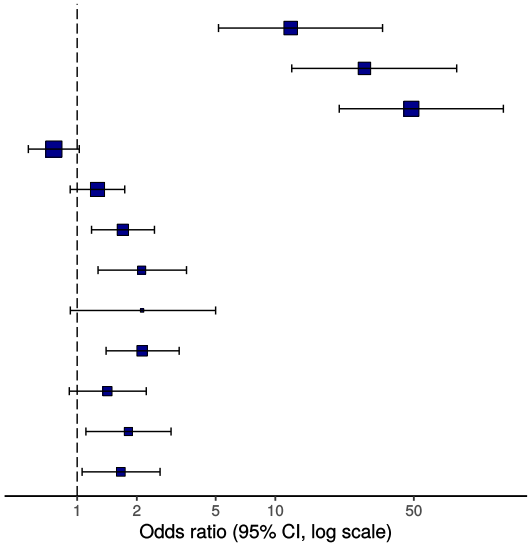
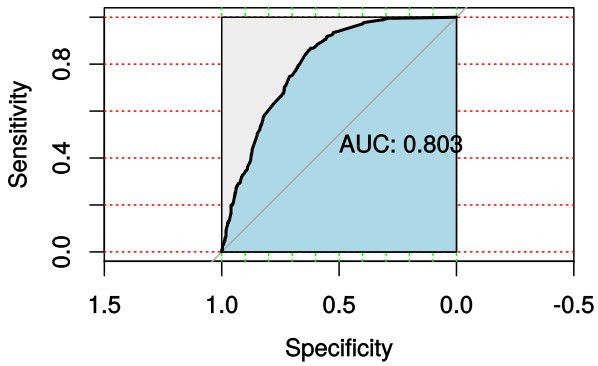


Figure 12 - ROC

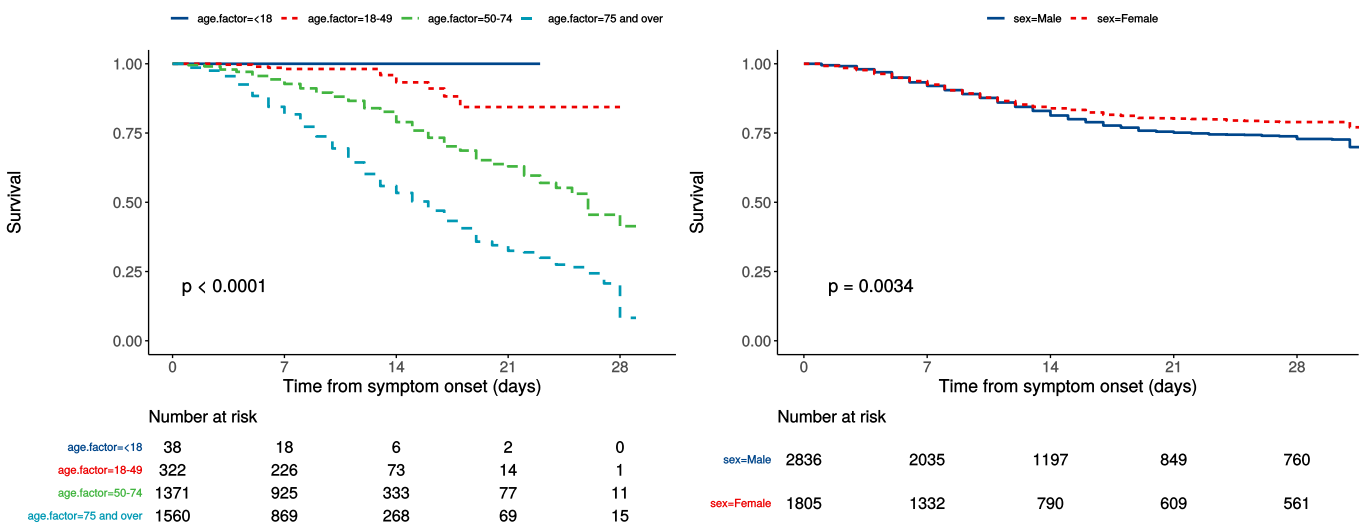


Survival models

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

Figure 13

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.

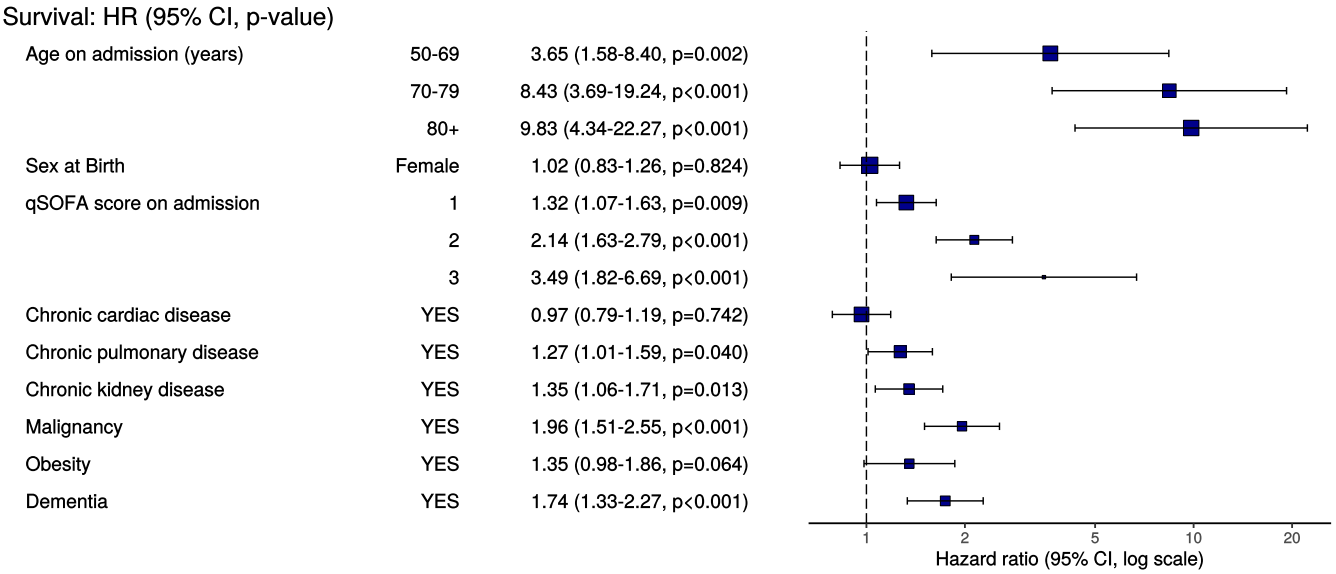
Time from symptom onset.

Dependent: Surv(time, status)		all	HR (univariable)	HR (multivariable)
Age on admission (years)	<50	430 (11.6)	•	•
	50-69	1122 (30.3)	3.69 (2.04-6.68, p<0.001)	3.65 (1.58-8.40, p=0.002)
	70-79	900 (24.3)	8.75 (4.89-15.67, p<0.001)	8.43 (3.69-19.24, p<0.001)
	80+	1247 (33.7)	12.79 (7.20-22.72, p<0.001)	9.83 (4.34-22.27, p<0.001)
Sex at Birth	Male	2364 (62.6)	•	•
	Female	1411 (37.4)	0.97 (0.84-1.13, p=0.735)	1.02 (0.83-1.26, p=0.824)
qSOFA score on admission	0	941 (40.1)	•	•
	1	1093 (46.6)	1.37 (1.14-1.66, p=0.001)	1.32 (1.07-1.63, p=0.009)
	2	285 (12.2)	2.02 (1.59-2.58, p<0.001)	2.14 (1.63-2.79, p<0.001)
	3	25 (1.1)	3.92 (2.13-7.23, p<0.001)	3.49 (1.82-6.69, p<0.001)
Symptomatic at presentation	No symptoms	76 (2.1)	•	•
	Symptoms	3496 (97.9)	0.57 (0.34-0.93, p=0.025)	•
Abdominal symptoms at presentation	No	2494 (71.2)	•	•
	Yes	1008 (28.8)	0.68 (0.57-0.82, p<0.001)	•
Chronic cardiac disease	NO	2316 (67.8)	•	•
	YES	1100 (32.2)	1.60 (1.37-1.86, p<0.001)	0.97 (0.79-1.19, p=0.742)
Chronic pulmonary disease	NO	2741 (80.7)	•	•
	YES	655 (19.3)	1.66 (1.39-1.97, p<0.001)	1.27 (1.01-1.59, p=0.040)
Asthma	NO	2858 (84.6)	•	•
	YES	521 (15.4)	0.72 (0.58-0.91, p=0.006)	•
Chronic kidney disease	NO	2894 (86.5)	•	•
	YES	452 (13.5)	2.43 (2.03-2.90, p<0.001)	1.35 (1.06-1.71, p=0.013)
Moderate/severe liver disease	NO	3263 (98.3)	•	•
	YES	55 (1.7)	1.64 (0.93-2.91, p=0.090)	•
Chronic neurological disorder	NO	2924 (87.9)	•	•
	YES	402 (12.1)	1.05 (0.86-1.29, p=0.624)	•
Malignancy	NO	3004 (90.3)	•	•
	YES	323 (9.7)	2.13 (1.71-2.65, p<0.001)	1.96 (1.51-2.55, p<0.001)
Chronic hematologic disease	NO	3200 (96.5)	•	•
	YES	115 (3.5)	1.74 (1.24-2.45, p=0.001)	•

Dependent: Surv(time, status)		all	HR (univariable)	HR (multivariable)
Obesity	NO	2823 (89.9)	•	•
	YES	316 (10.1)	1.05 (0.81-1.36, p=0.702)	1.35 (0.98-1.86, p=0.064)
Diabetes with complications	NO	3135 (93.7)	•	•
	YES	212 (6.3)	1.52 (1.16-2.00, p=0.003)	•
Rheumatologic disorder	NO	3011 (91.4)	•	•
	YES	283 (8.6)	1.45 (1.14-1.83, p=0.002)	•
Dementia	NO	2959 (88.9)	•	•
	YES	369 (11.1)	3.06 (2.51-3.73, p<0.001)	1.74 (1.33-2.27, p<0.001)
Malnutrition	NO	3107 (98.0)	•	•
	YES	63 (2.0)	1.74 (1.13-2.69, p=0.012)	•
Smoking	NO	2692 (94.4)	•	•
	YES	160 (5.6)	1.31 (0.92-1.88, p=0.136)	•

Number in dataframe = 4346, Number in model = 1955, Missing = 2391, Number of events = 472, Concordance = 0.723 (SE = 0.013), R-squared = 0.114(Max possible = 0.953), Likelihood ratio test = 236.801 (df = 13, p = 0.000)

Figure 14 - Multivariable Cox proportional hazards model



ROC = 0.7226915

Figure 15 - Predictions calibration plot

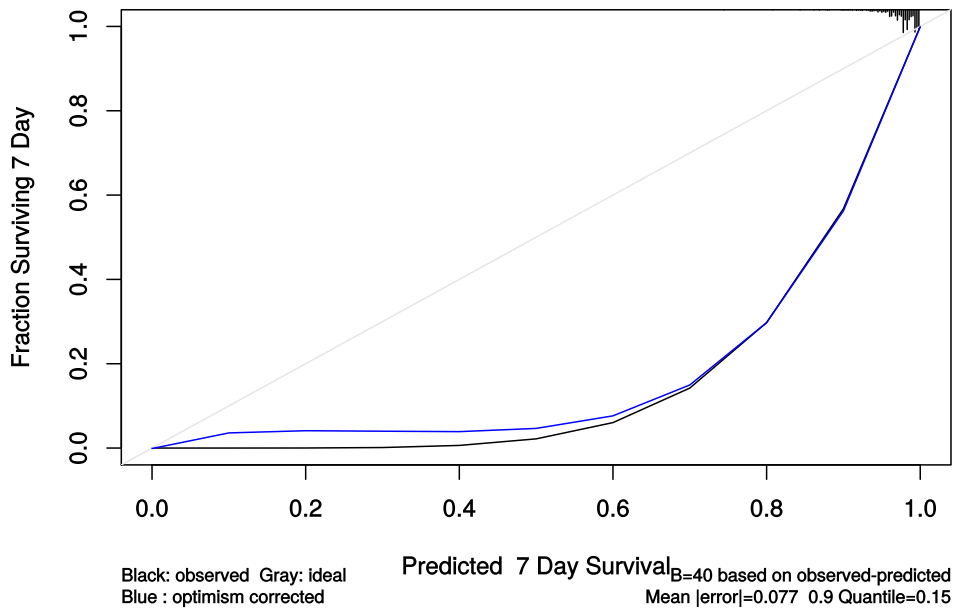


Figure 16 - Prognostic model predictions

Again, for demonstration of methods.

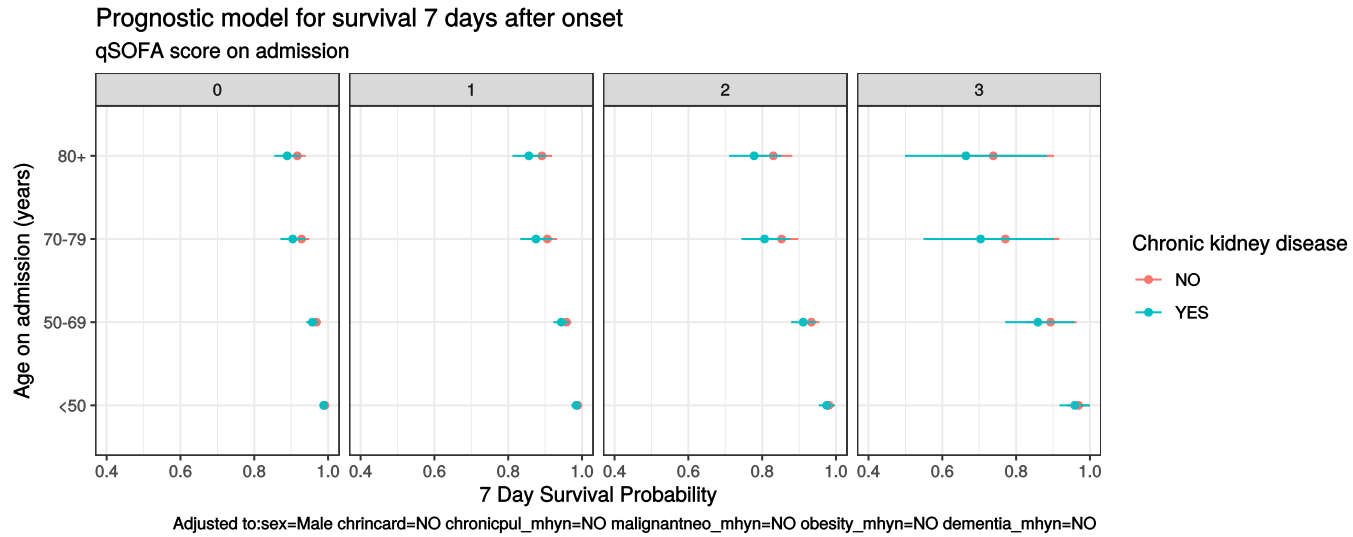


Figure 17 - Death by severity (NEWS) on admission

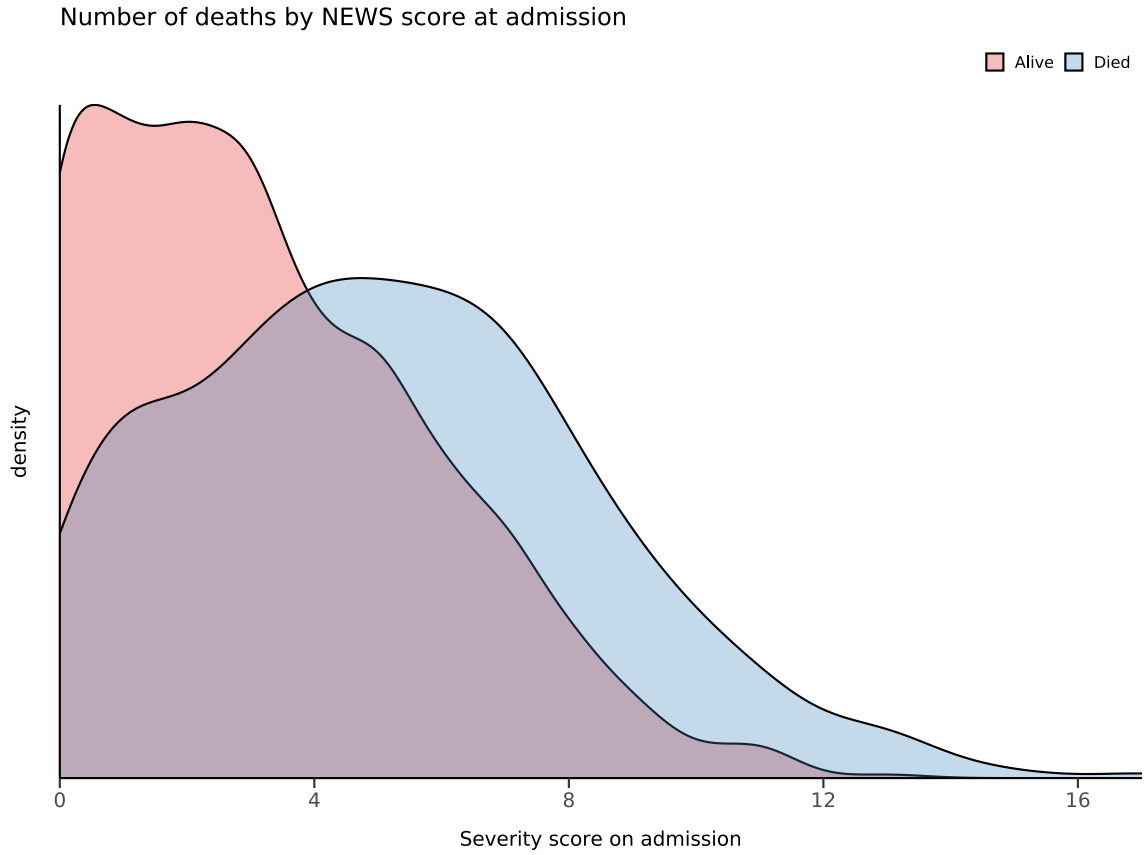


Figure 18 - Death by severity (NEWS) on admission stratified by age

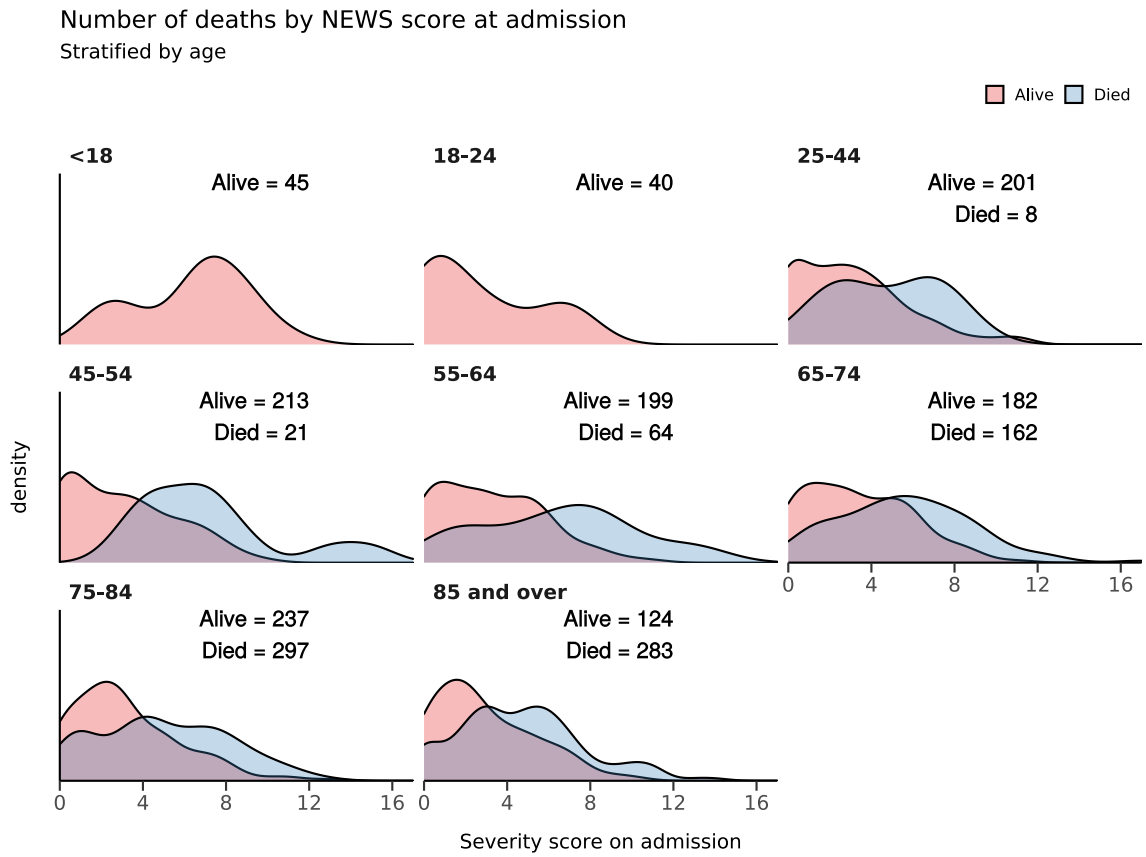
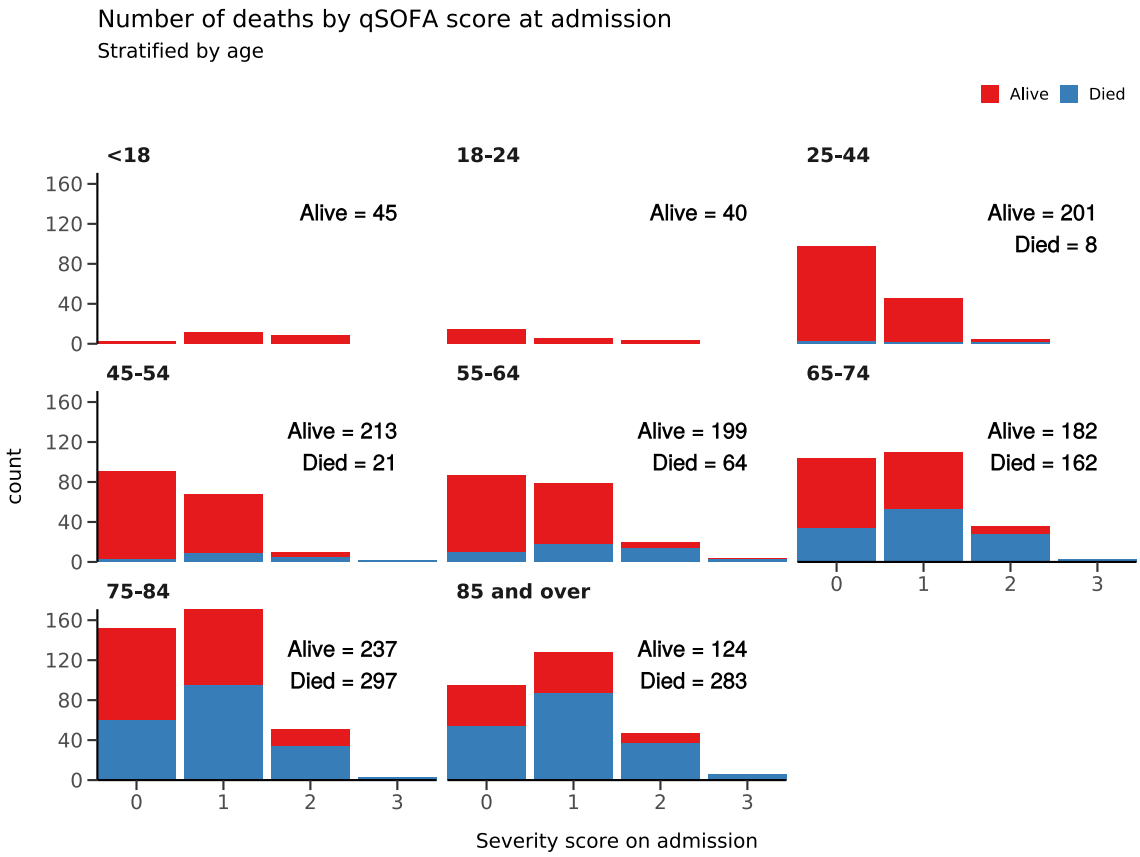


Figure 19 - Death by severity (qSOFA) on admission stratified by age



Healthcare workers

Healthcare worker		NO	YES	p
Total N (%)		4704 (96.5)	172 (3.5)	
NEWS score on admission	Median (IQR)	4.0 (4.0)	4.0 (4.0)	0.087
Death	No	1031 (57.4)	65 (95.6)	<0.001
	Yes	765 (42.6)	3 (4.4)	

Admission (detail)

Table 1

label	levels	all
Total N (%)		8028 (100.0)
Age on admission (years)	Mean (SD)	68.1 (18.5)
Sex at Birth	Male	3477 (43.3)
	Female	2236 (27.9)
	Not specified	11 (0.1)
	(Missing)	2304 (28.7)
Healthcare worker	YES	172 (2.1)
	NO	4704 (58.6)
	N/A	433 (5.4)
	(Missing)	2719 (33.9)

label	levels	all
Microbiology lab worker	YES	11 (0.1)
	NO	4856 (60.5)
	N/A	441 (5.5)
	(Missing)	2720 (33.9)
Onset to admission (days)	Mean (SD)	4.8 (96.6)
Transfer from other facility	Yes-facility is a study site	81 (1.0)
	Yes-facility is not a study site	266 (3.3)
	No	4743 (59.1)
	N/A	109 (1.4)
	(Missing)	2829 (35.2)
Travel in 14 d prior to symptoms	Yes	397 (4.9)
	No	3807 (47.4)
	N/A	595 (7.4)
	(Missing)	3229 (40.2)
Country	Antigua and Barbuda	1 (0.0)
	Australia	3 (0.0)
	Austria	12 (0.1)
	Barbados	8 (0.1)
	Brazil	1 (0.0)
	Bulgaria	2 (0.0)
	China	2 (0.0)
	Cyprus	11 (0.1)
	Czechia	1 (0.0)
	Dominican Republic	1 (0.0)
	Egypt	4 (0.0)
	France	22 (0.3)
	Germany	6 (0.1)
	Ghana	1 (0.0)
	Greece	1 (0.0)
	Hungary	1 (0.0)
	India	4 (0.0)
	Indonesia	1 (0.0)
	Iran	5 (0.1)
	Ireland	3 (0.0)
	Italy	71 (0.9)
	Japan	3 (0.0)

label	levels	all
	Malaysia	2 (0.0)
	Morocco	1 (0.0)
	Netherlands	5 (0.1)
	New Zealand	1 (0.0)
	Nigeria	1 (0.0)
	Norway	1 (0.0)
	Pakistan	1 (0.0)
	Philippines	4 (0.0)
	Poland	2 (0.0)
	Portugal	8 (0.1)
	Romania	3 (0.0)
	Singapore	2 (0.0)
	South Africa	3 (0.0)
	Spain	83 (1.0)
	Swaziland	1 (0.0)
	Switzerland	7 (0.1)
	Thailand	3 (0.0)
	Turkey	4 (0.0)
	United Arab Emirates	6 (0.1)
	United Kingdom	61 (0.8)
	Yemen	1 (0.0)
	(Missing)	7664 (95.5)
Country 2	Antigua and Barbuda	1 (0.0)
	Aruba	1 (0.0)
	Australia	2 (0.0)
	Austria	3 (0.0)
	Barbados	1 (0.0)
	Bulgaria	1 (0.0)
	Canada	1 (0.0)
	Cyprus	1 (0.0)
	Czechia	1 (0.0)
	Egypt	1 (0.0)
	France	5 (0.1)
	Germany	1 (0.0)
	India	1 (0.0)
	Indonesia	1 (0.0)

label	levels	all
	Italy	11 (0.1)
	Qatar	1 (0.0)
	Spain	12 (0.1)
	Switzerland	1 (0.0)
	Thailand	1 (0.0)
	Turkey	3 (0.0)
	(Missing)	7978 (99.4)
Animal, raw meat, insect bites 14 d prior	Yes	32 (0.4)
	No	1899 (23.7)
	Unknown	2734 (34.1)
	N/A	232 (2.9)
	(Missing)	3131 (39.0)
Animal / insect	Bee Sting	1 (3.7)
	Bird (pet)	1 (3.7)
	Cat (pet)	1 (3.7)
	chicken & beef	1 (3.7)
	Chickens	1 (3.7)
	COWS	1 (3.7)
	cows, rabbits, pigs goats	1 (3.7)
	dog	1 (3.7)
	Dog	4 (14.8)
	Dog Pet	1 (3.7)
	Dog, domestic animla living in their home.	1 (3.7)
	Dogs at home	1 (3.7)
	Domestic pet dog	1 (3.7)
	Domestic animals living in home	1 (3.7)
	domestic dog	1 (3.7)
	Domestic Pet	2 (7.4)
	Domestic pets	1 (3.7)
	Domestic Pets	1 (3.7)
	pet dog	1 (3.7)
	Pet dog	1 (3.7)
	Prepared raw chicken	1 (3.7)
	she has a cat	1 (3.7)
	Two cats	1 (3.7)

Symptoms (detail)

Table 2

Stratified: all		all
Total N (%)		8028 (100.0)
Fever	YES	3351 (41.7)
	NO	1222 (15.2)
	Unknown	268 (3.3)
	(Missing)	3187 (39.7)
Cough	YES	3494 (43.5)
	NO	1097 (13.7)
	Unknown	255 (3.2)
	(Missing)	3182 (39.6)
Cough (sputum)	YES	1161 (14.5)
	NO	2693 (33.5)
	Unknown	917 (11.4)
	(Missing)	3257 (40.6)
Cough (blood)	YES	153 (1.9)
	NO	3571 (44.5)
	Unknown	1033 (12.9)
	(Missing)	3271 (40.7)
Sore throat	YES	448 (5.6)
	NO	2905 (36.2)
	Unknown	1397 (17.4)
	(Missing)	3278 (40.8)
Runny nose	YES	174 (2.2)
	NO	3098 (38.6)
	Unknown	1473 (18.3)
	(Missing)	3283 (40.9)
Ear pain	YES	29 (0.4)
	NO	3215 (40.0)
	Unknown	1495 (18.6)
	(Missing)	3289 (41.0)
Wheeze	YES	479 (6.0)
	NO	3134 (39.0)
	Unknown	1131 (14.1)
	(Missing)	3284 (40.9)
Chest pain	YES	578 (7.2)
	NO	3210 (40.0)

Stratified: all		all
	Unknown	960 (12.0)
	(Missing)	3280 (40.9)
Muscle ache	YES	771 (9.6)
	NO	2634 (32.8)
	Unknown	1340 (16.7)
	(Missing)	3283 (40.9)
Joint pain	YES	283 (3.5)
	NO	2998 (37.3)
	Unknown	1454 (18.1)
	(Missing)	3293 (41.0)
Fatigue	YES	1627 (20.3)
	NO	1954 (24.3)
	Unknown	1165 (14.5)
	(Missing)	3282 (40.9)
Shortness of breath	YES	3039 (37.9)
	NO	1342 (16.7)
	Unknown	447 (5.6)
	(Missing)	3200 (39.9)
Lower chest wall indrawing	YES	63 (0.8)
	NO	3028 (37.7)
	Unknown	1640 (20.4)
	(Missing)	3297 (41.1)
Headache	YES	500 (6.2)
	NO	2858 (35.6)
	Unknown	1377 (17.2)
	(Missing)	3293 (41.0)
Confusion	YES	961 (12.0)
	NO	3055 (38.1)
	Unknown	740 (9.2)
	(Missing)	3272 (40.8)
Seizures	YES	68 (0.8)
	NO	3736 (46.5)
	Unknown	939 (11.7)
	(Missing)	3285 (40.9)
Abdominal pain	YES	363 (4.5)
	NO	3382 (42.1)

Stratified: all		all
	Unknown	998 (12.4)
	(Missing)	3285 (40.9)
Nausa/vomiting	YES	792 (9.9)
	NO	3170 (39.5)
	Unknown	797 (9.9)
	(Missing)	3269 (40.7)
Diarrhoea	YES	749 (9.3)
	NO	3197 (39.8)
	Unknown	808 (10.1)
	(Missing)	3274 (40.8)
Conjunctivitis	YES	17 (0.2)
	NO	3505 (43.7)
	Unknown	1210 (15.1)
	(Missing)	3296 (41.1)
Skin rash	YES	69 (0.9)
	NO	3556 (44.3)
	Unknown	1111 (13.8)
	(Missing)	3292 (41.0)
Skin ulcers	YES	73 (0.9)
	NO	3565 (44.4)
	Unknown	1100 (13.7)
	(Missing)	3290 (41.0)
Lymphadenopathy	YES	26 (0.3)
	NO	3489 (43.5)
	Unknown	1213 (15.1)
	(Missing)	3300 (41.1)
Bleeding (Haemorrhage)	YES	44 (0.5)
	NO	3741 (46.6)
	Unknown	948 (11.8)
	(Missing)	3295 (41.0)
If Bleeding (others)	YES	73 (0.9)
	NO	3620 (45.1)
	Unknown	1000 (12.5)
	(Missing)	3335 (41.5)

Comorbidity (detail)

Table 3

Stratified: all		all
Total N (%)		8028 (100.0)
Chronic cardiac disease	YES	1386 (17.3)
	NO	3299 (41.1)
	Unknown	211 (2.6)
	(Missing)	3132 (39.0)
Chronic pulmonary disease	YES	880 (11.0)
	NO	3783 (47.1)
	Unknown	243 (3.0)
	(Missing)	3122 (38.9)
Asthma	YES	697 (8.7)
	NO	3930 (49.0)
	Unknown	263 (3.3)
	(Missing)	3138 (39.1)
Chronic kidney disease	YES	649 (8.1)
	NO	3951 (49.2)
	Unknown	271 (3.4)
	(Missing)	3157 (39.3)
Moderate/severe liver disease	YES	77 (1.0)
	NO	4479 (55.8)
	Unknown	313 (3.9)
	(Missing)	3159 (39.3)
Mild Liver disease	YES	72 (0.9)
	NO	4472 (55.7)
	Unknown	321 (4.0)
	(Missing)	3163 (39.4)
Chronic neurological disorder	YES	461 (5.7)
	NO	4106 (51.1)
	Unknown	302 (3.8)
	(Missing)	3159 (39.3)
Malignancy	YES	472 (5.9)
	NO	4096 (51.0)
	Unknown	306 (3.8)
	(Missing)	3154 (39.3)
Chronic hematologic disease	YES	151 (1.9)
	NO	4399 (54.8)
	Unknown	314 (3.9)

Stratified: all		all
	(Missing)	3164 (39.4)
AIDS/HIV	YES	19 (0.2)
	NO	4509 (56.2)
	Unknown	344 (4.3)
	(Missing)	3156 (39.3)
Obesity	YES	406 (5.1)
	NO	3862 (48.1)
	Unknown	554 (6.9)
	(Missing)	3206 (39.9)
Diabetes with complications	YES	310 (3.9)
	NO	4303 (53.6)
	Unknown	265 (3.3)
	(Missing)	3150 (39.2)
Diabetes without complications	YES	958 (11.9)
	NO	3683 (45.9)
	Unknown	244 (3.0)
	(Missing)	3143 (39.2)
Rheumatologic disorder	YES	408 (5.1)
	NO	4130 (51.4)
	Unknown	316 (3.9)
	(Missing)	3174 (39.5)
Dementia	YES	531 (6.6)
	NO	4034 (50.2)
	Unknown	302 (3.8)
	(Missing)	3161 (39.4)
Malnutrition	YES	87 (1.1)
	NO	4246 (52.9)
	Unknown	508 (6.3)
	(Missing)	3187 (39.7)
Smoking	YES	235 (2.9)
	NO	3646 (45.4)
	(Missing)	4147 (51.7)