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25 years and counting...

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# ICNARC report on COVID-19 in critical care:

## England, Wales and Northern Ireland

## 22 January 2021

This report presents analyses of data on patients critically ill with confirmed COVID-19, reported to ICNARC up to 23:59 on 21 January 2021, from critical care units participating in the Case Mix Programme (the national clinical audit covering all NHS adult, general intensive care and combined intensive care/high dependency units in England, Wales and Northern Ireland, plus some additional specialist and non-NHS critical care units) and increasing numbers of surge/other areas providing critical care.

Data are reported separately for patients critically ill with confirmed COVID-19 either at or after the start of critical care:

- admitted from 1 September 2020 to date; and
- admitted up to 31 August 2020.

Please note that adult critical care units in Scotland, paediatric intensive care units and neonatal intensive care units do not participate in the Case Mix Programme.

## Reporting process

Critical care units/areas participating in the Case Mix Programme are asked to:

- log a case with ICNARC by submitting a record, with minimal data, as soon as they have an admission with confirmed COVID-19;
- resubmit data, including first 24-hour physiology, as soon as possible after the end of the first 24 hours in critical care;
- resubmit data for the whole critical care stay, including critical care outcome and organ support, when the patient leaves critical care; and
- submit final data when the patient leaves acute hospital.

 

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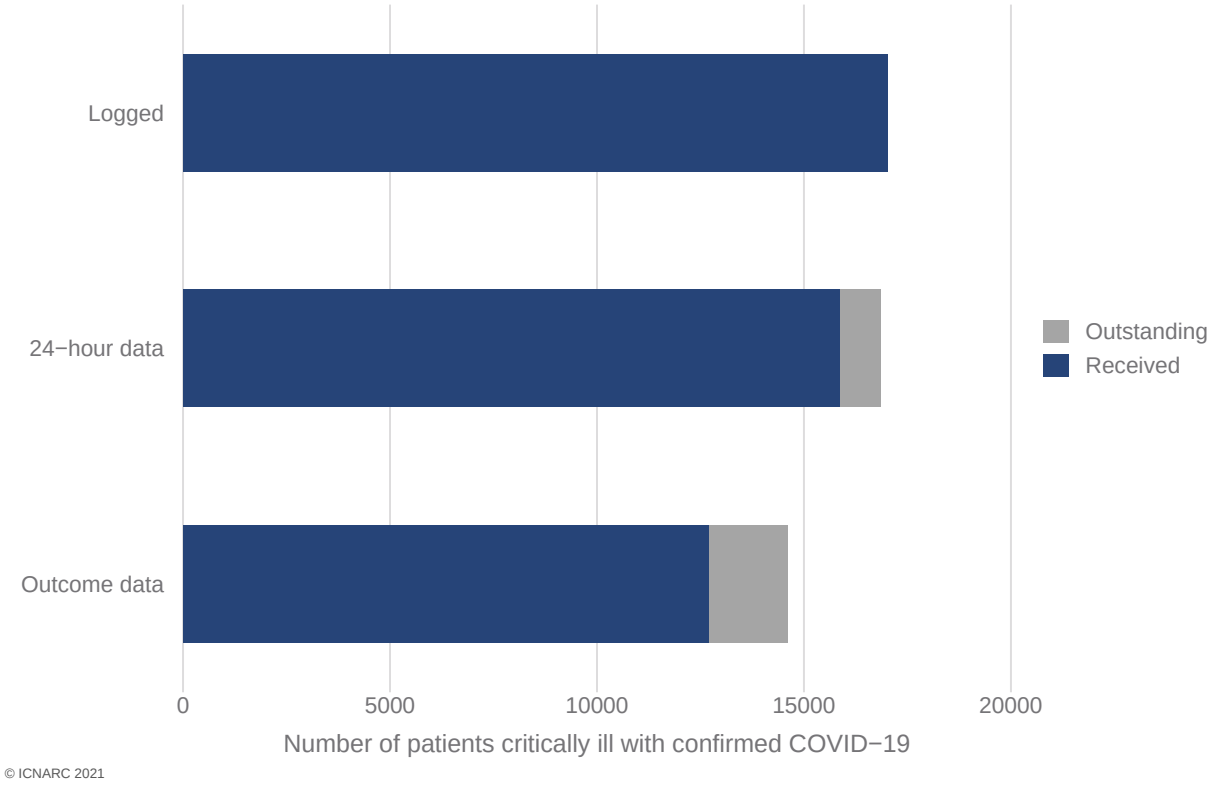
* Please see individual notes for Tables/Figures.

ICNARC have logged data for 19,905 admissions of 17,015 patients critically ill with confirmed COVID-19, either at or after the start of critical care, admitted from 1 September 2020 to date in England, Wales and Northern Ireland. Of these, data covering the first 24 hours of critical care have been submitted to ICNARC for 15,861 patients (Figure 1). Of the 17,015 total patients, 12,703 have outcomes reported and 4312 patients were last reported as still receiving critical care. These patients are compared with a cohort of 10,938 patients with confirmed COVID-19 admitted up to 31 August 2020.

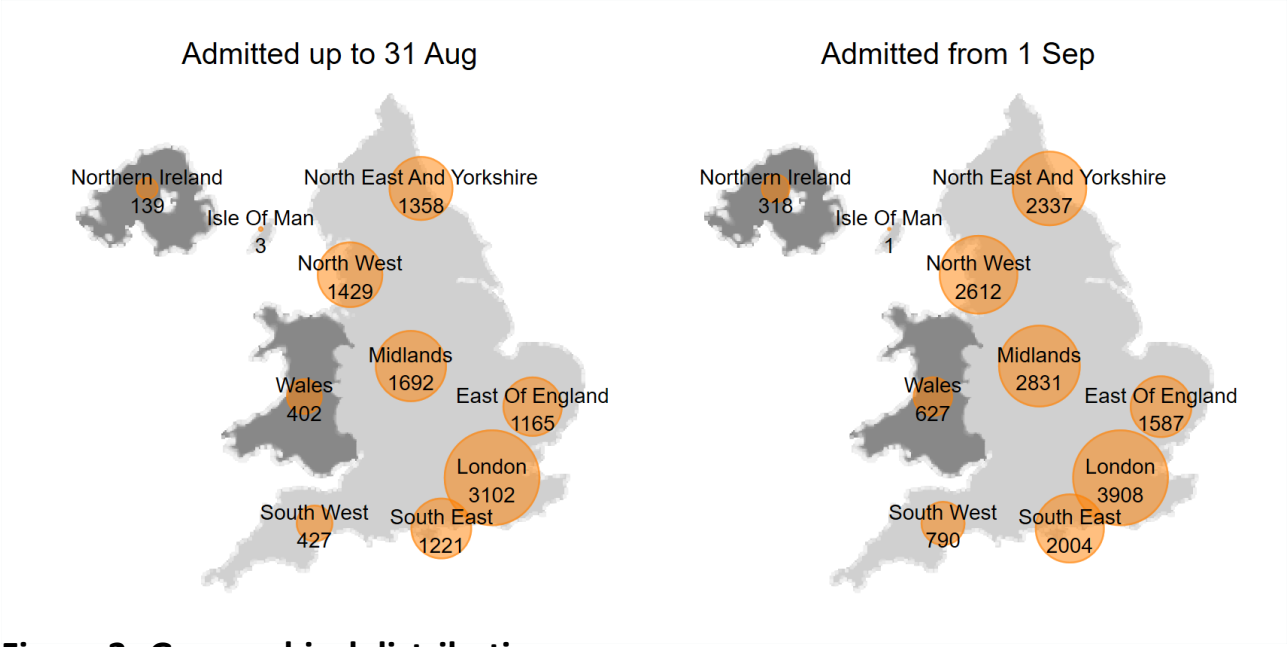



## Figure 1. Numbers of patients with data included in this report and outstanding *

Numbers of critically ill patients with confirmed COVID-19 admitted from 1 September 2020 to date with data included in this report and outstanding.

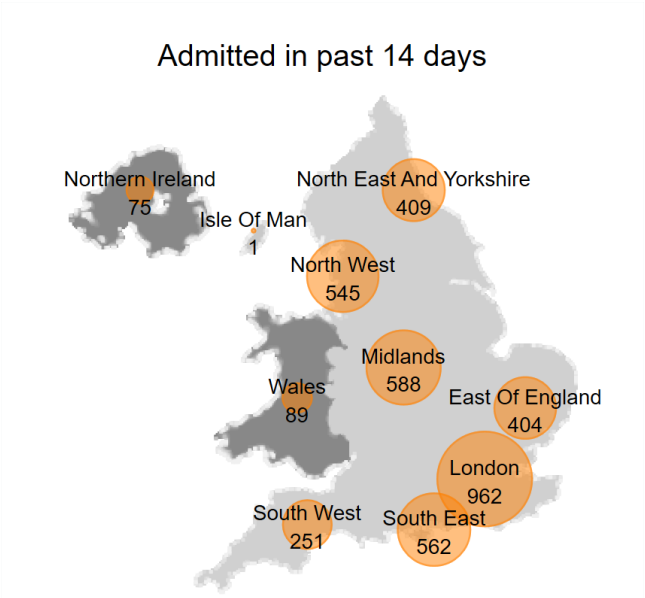
* Please note that 24-hour data are considered outstanding when a case was logged at least 48 hours previously and outcome data are considered outstanding when 24-hour data have been received and at least 10 days have elapsed since the start of critical care.

Of the 17,015 patients critically ill with confirmed COVID-19 admitted from 1 September 2020 to date, the largest numbers were admitted in the London, Midlands, North West, and North East And Yorkshire regions (Figure 2). Of the patients included in this week's report, 3886 patients were admitted to critical care within the past 14 days (8 January 2021 to 21 January 2021). The geographical spread of these patients is shown in Figure 3.




## Figure 2. Geographical distribution

Geographical distribution of patients critically ill with confirmed COVID-19 by NHS region.




## Figure 3. Geographical distribution – past 14 days

Geographical distribution of patients critically ill with confirmed COVID-19 admitted during the past 14 days by NHS region.

The numbers of new patients, cumulative numbers of patients and numbers of patients in critical care by date are shown in Figures 4-15. Please note that these figures are affected by a variable lag time for submission of data.

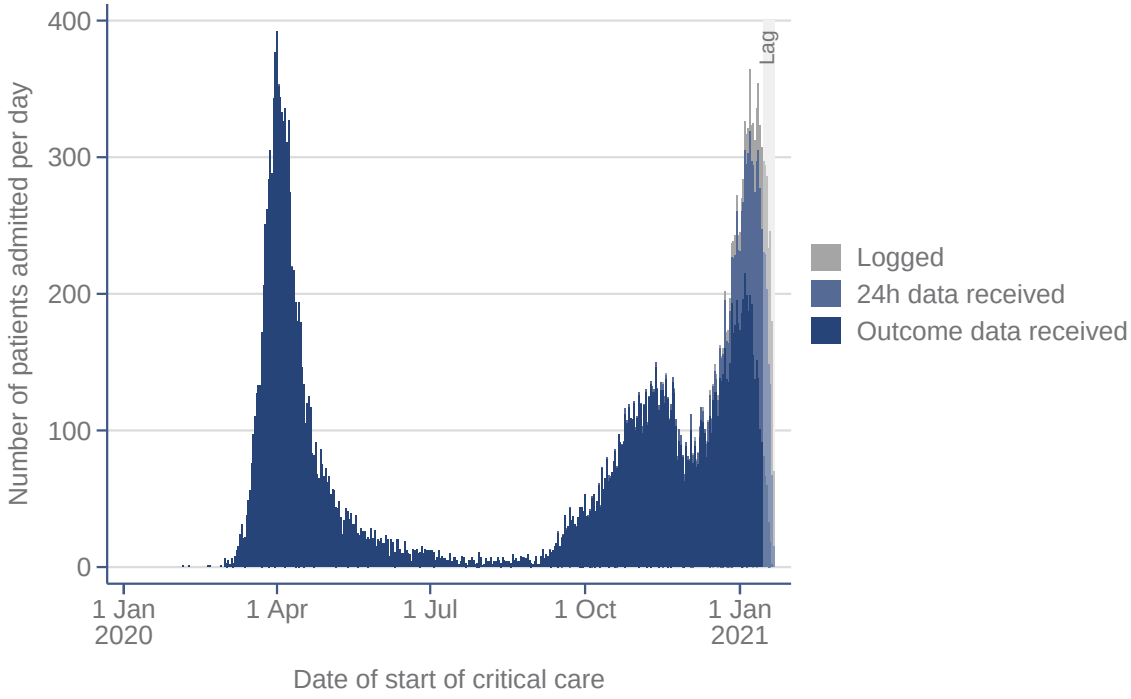





**Figure 4. Number of new patients by start of critical care**

Number of new patients critically ill with confirmed COVID-19 by date of start of critical care over the entire epidemic.

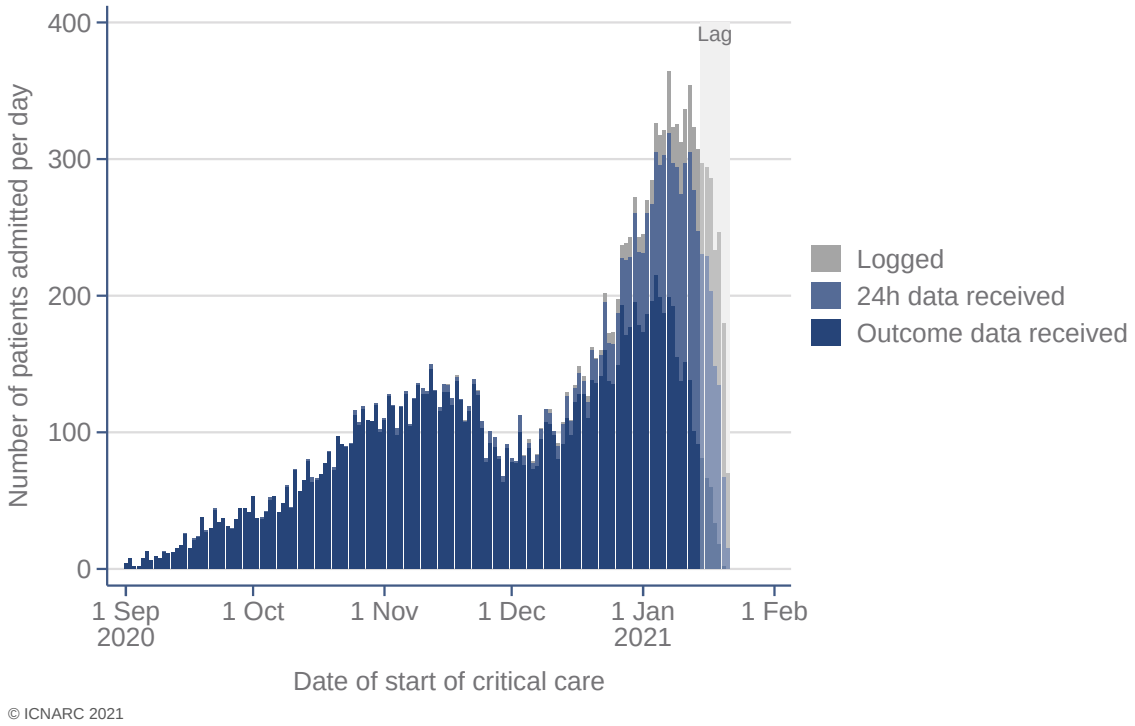





**Figure 5. Number of new patients admitted from 1 September 2020 by date of start of critical care**

Number of new patients critically ill with confirmed COVID-19 admitted from 1 September 2020 to date by date of start of critical care.

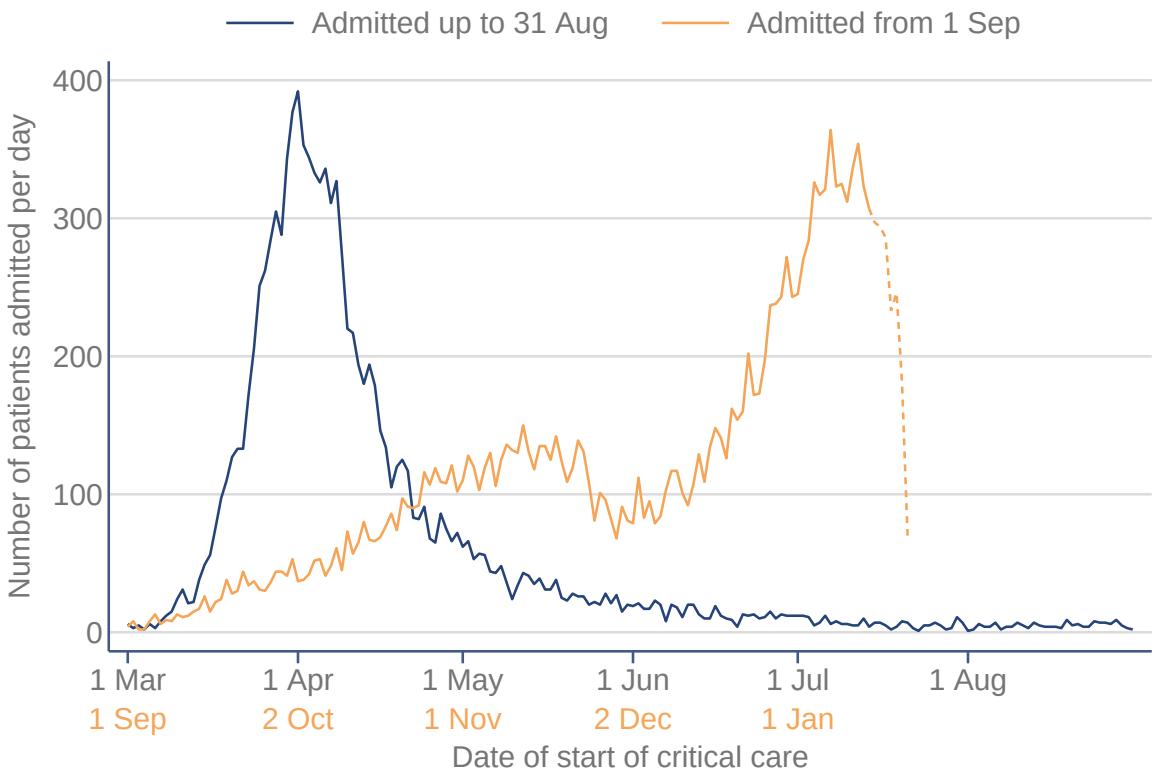





**Figure 6. Number of new patients from 1 March 2020 to 31 August 2020 versus 1 September 2020 to date ***

Comparison of the number of new patients critically ill with confirmed COVID-19 by date of start of critical care from 1 March 2020 to 31 August 2020 versus 1 September 2020 to date.

* Dashed line indicates lag in data submission.

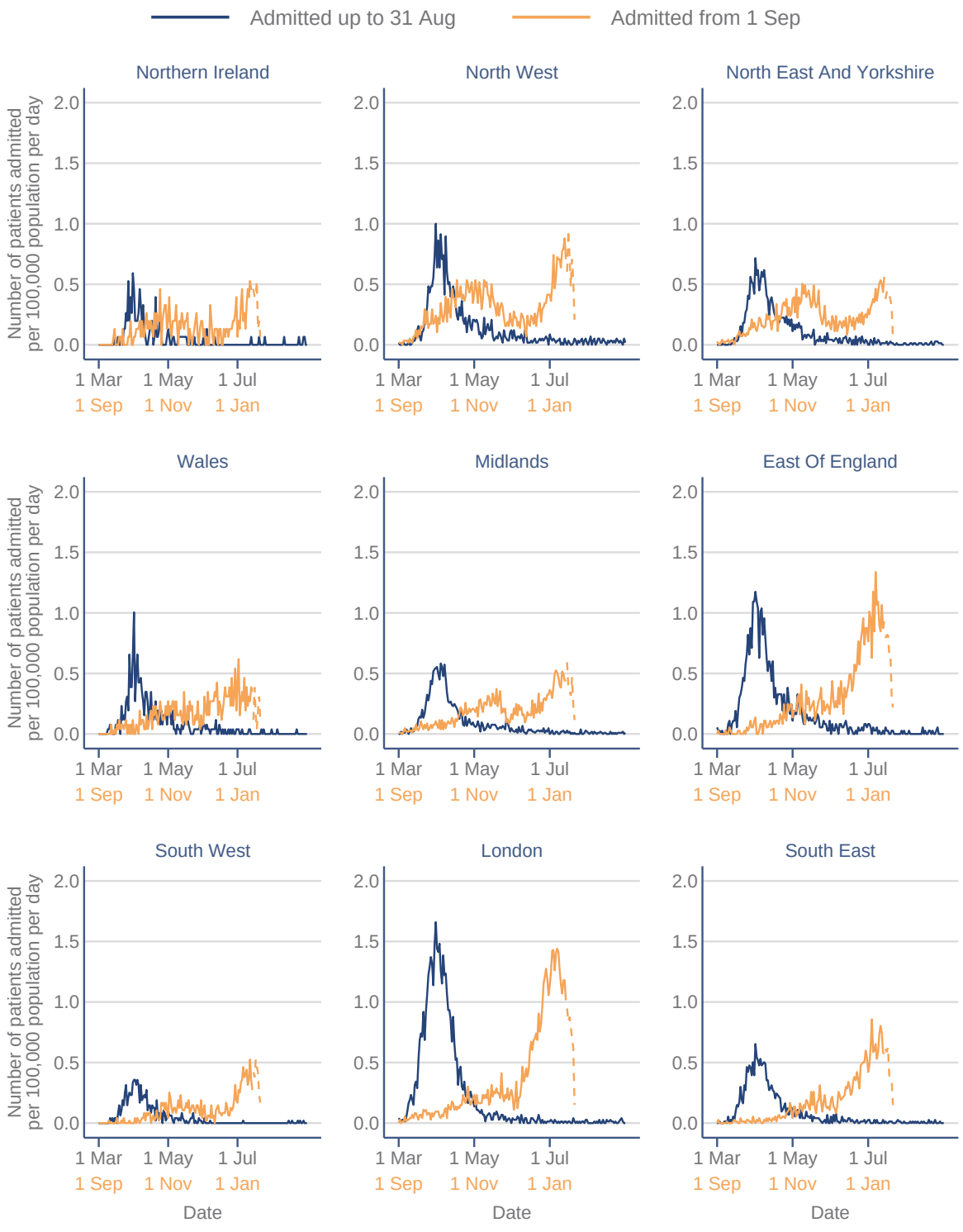





**Figure 7. Number of new patients from 1 March 2020 to 31 August 2020 versus 1 September 2020 to date by region ***

Number of new patients critically ill with confirmed COVID-19 by date of start of critical care from 1 March 2020 to 31 August 2020 versus 1 September 2020 to date by region.

* Dashed line indicates lag in data submission.

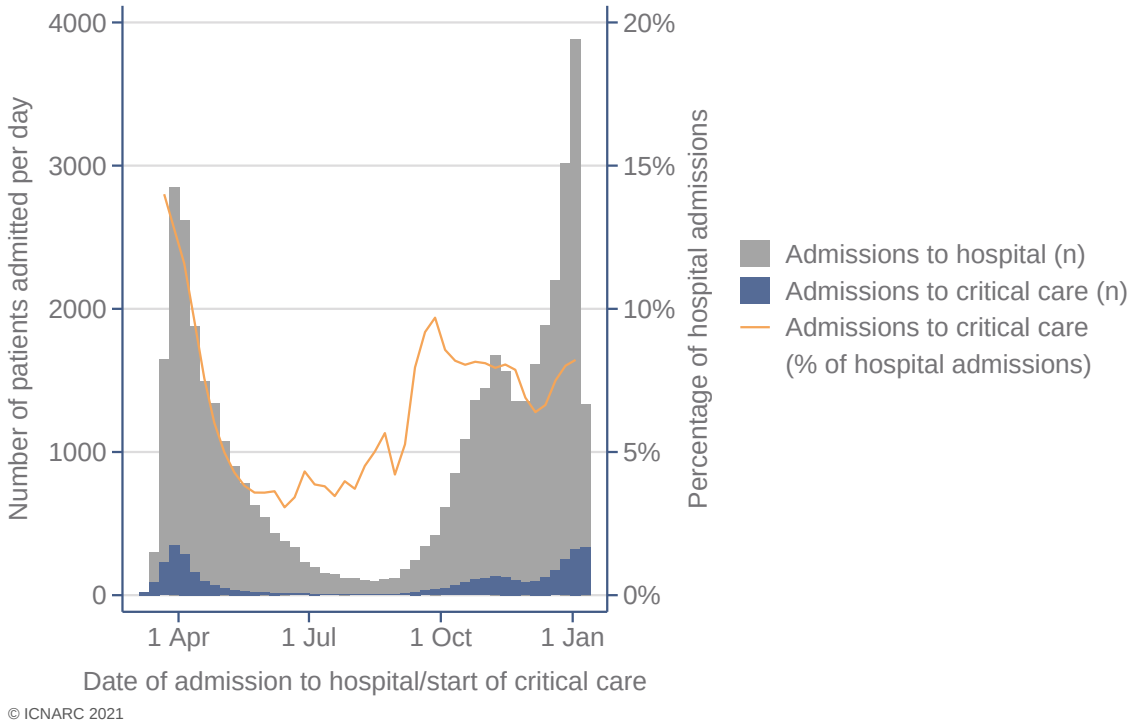



**Figure 8. Number of new patients admitted to critical care compared with hospital admissions**

Comparison of the number of new patients critically ill with confirmed COVID-19 by date of start of critical care versus the total number of hospital admissions (source: https://coronavirus.data.gov.uk/details/healthcare).

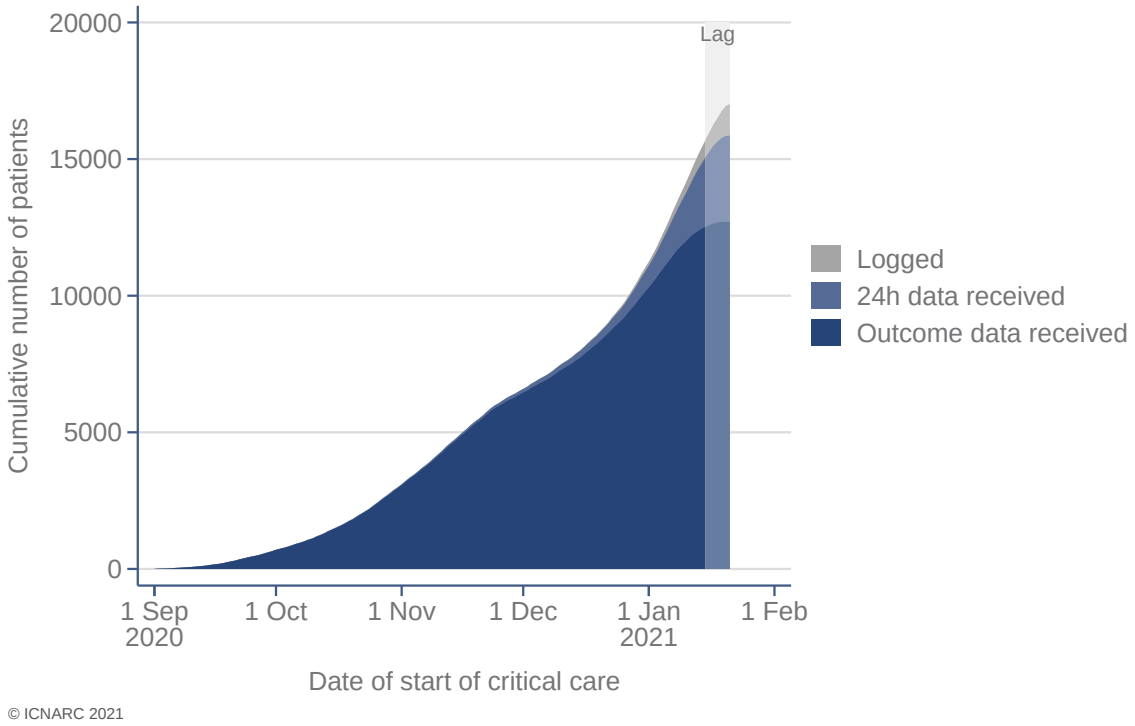





**Figure 9. Cumulative number of patients**

Cumulative number of patients critically ill with confirmed COVID-19 admitted from 1 September 2020 by date of start of critical care.

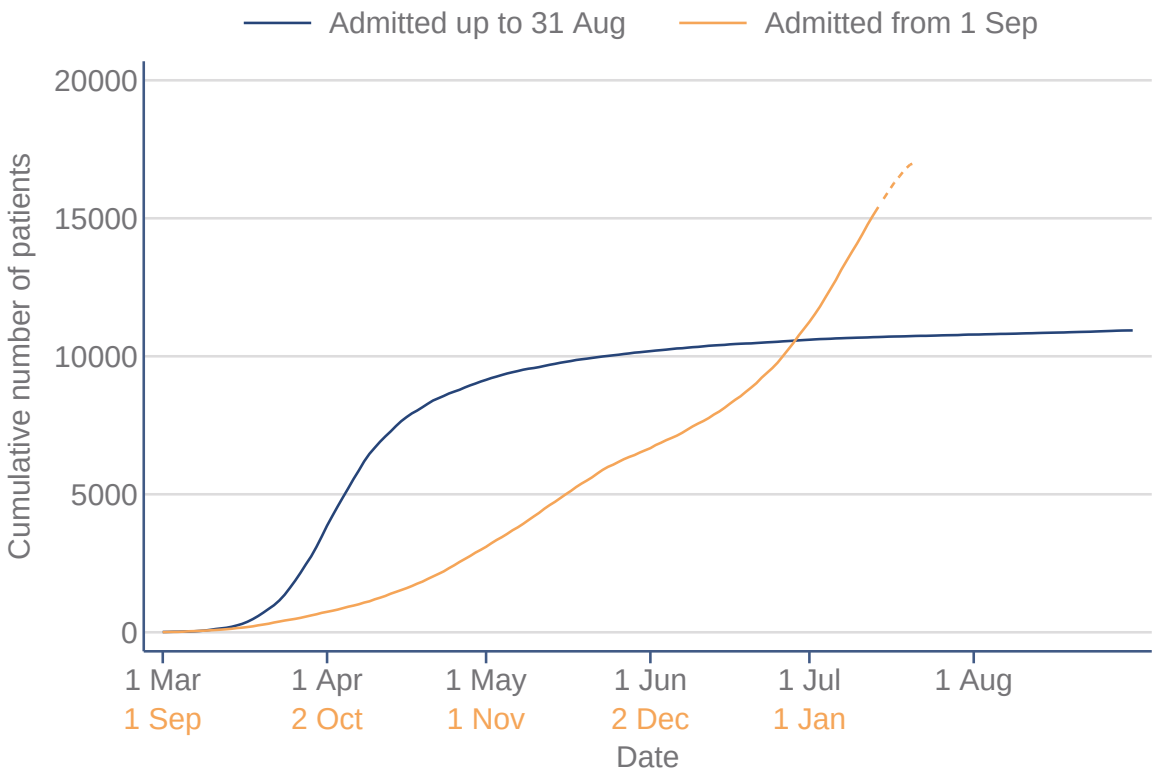





**Figure 10. Cumulative number of patients from 1 March 2020 to 31 August 2020 versus 1 September 2020 to date ***

Comparison of the cumulative number of patients critically ill with confirmed COVID-19 by date of start of critical care from 1 March 2020 to 31 August 2020 versus 1 September 2020 to date.

* Dashed line indicates lag in data submission.

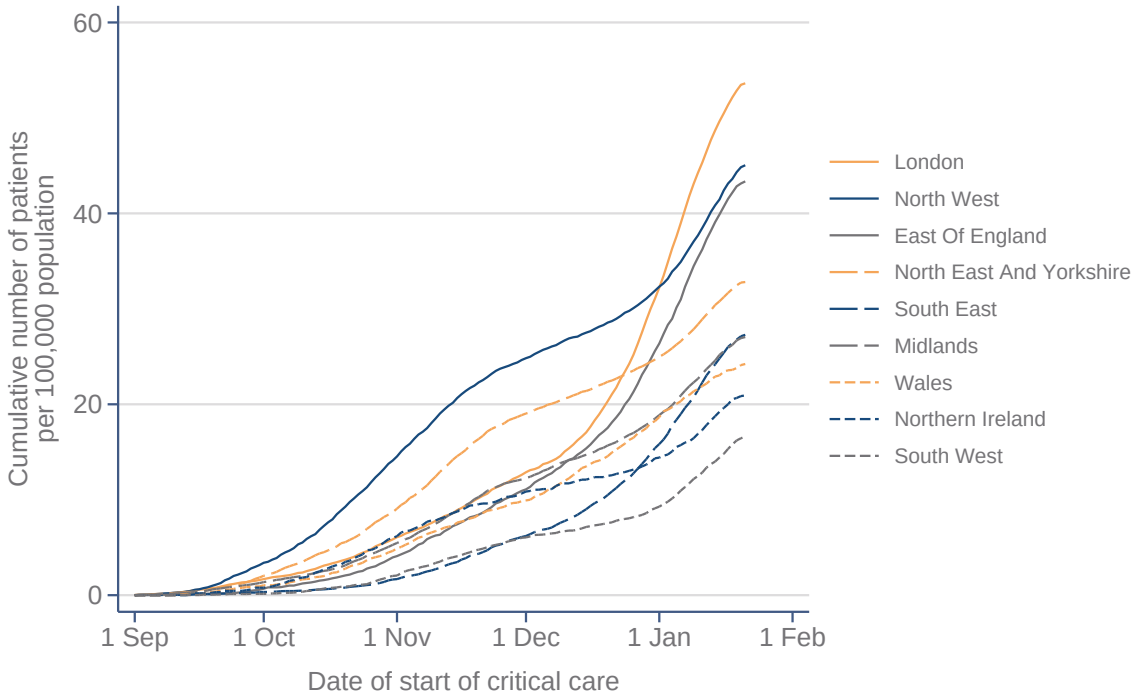



**Figure 11. Cumulative number of patients per 100,000 adult population by region**

Cumulative number of patients critically ill with confirmed COVID-19 admitted from 1 September 2020 per 100,000 adult population by region.

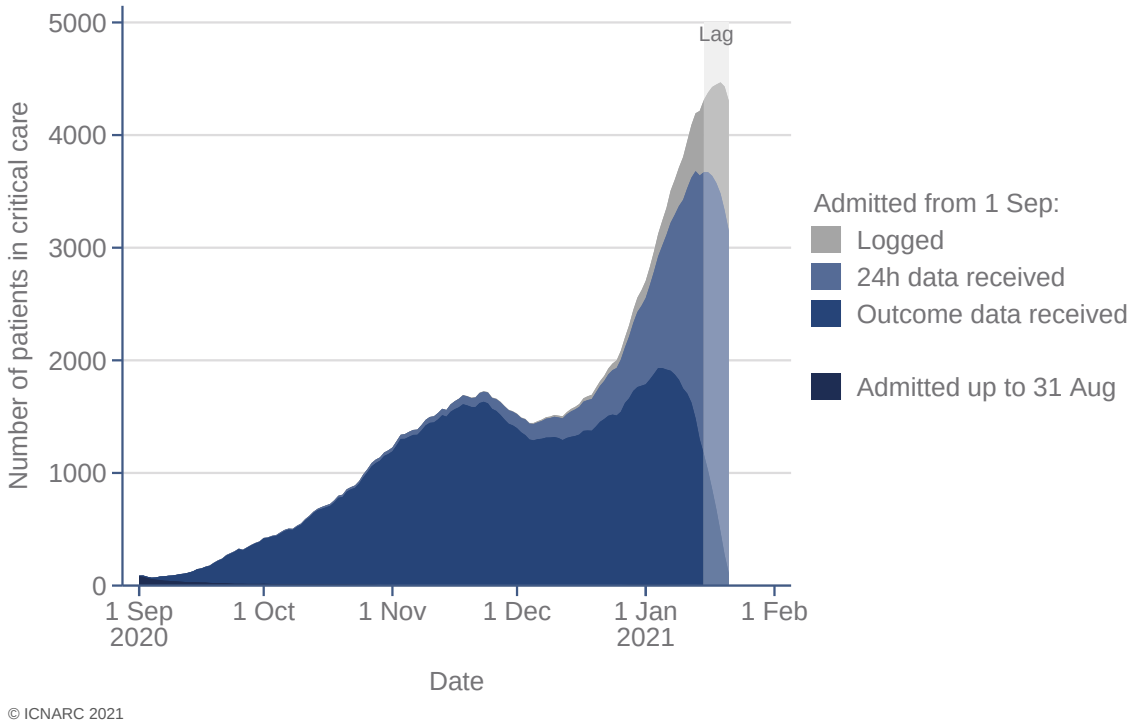





**Figure 12. Number of patients in critical care ***

Number of patients with confirmed COVID-19 in critical care from 1 September 2020 by date.

* Please note patients whose outcome data have not been received are assumed to remain in critical care as of 21 January 2021.

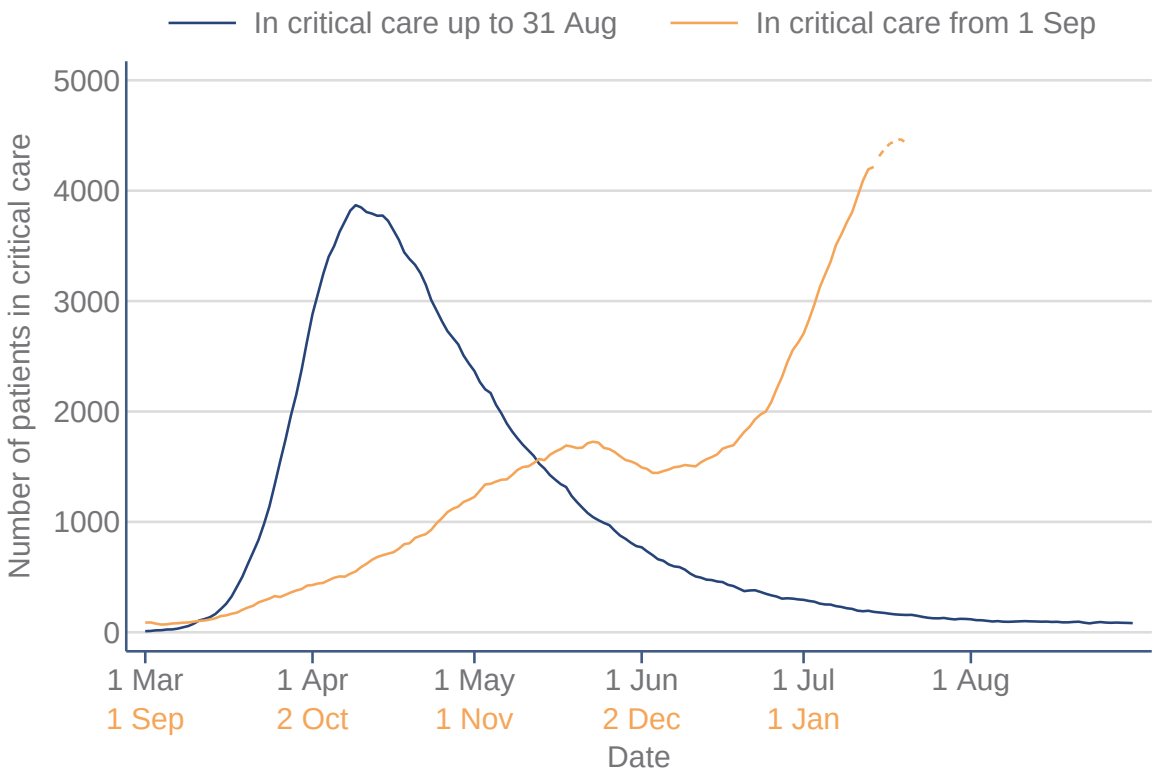





**Figure 13. Number of patients in critical care * from 1 March 2020 to 31 August 2020 versus 1 September 2020 to date**

Number of patients with confirmed COVID-19 in critical care by date * from 1 March 2020 to 31 August 2020 versus 1 September 2020 to date.

* Please note patients whose outcome data have not been received are assumed to remain in critical care as of 21 January 2021. Dashed line indicates lag in data submission.

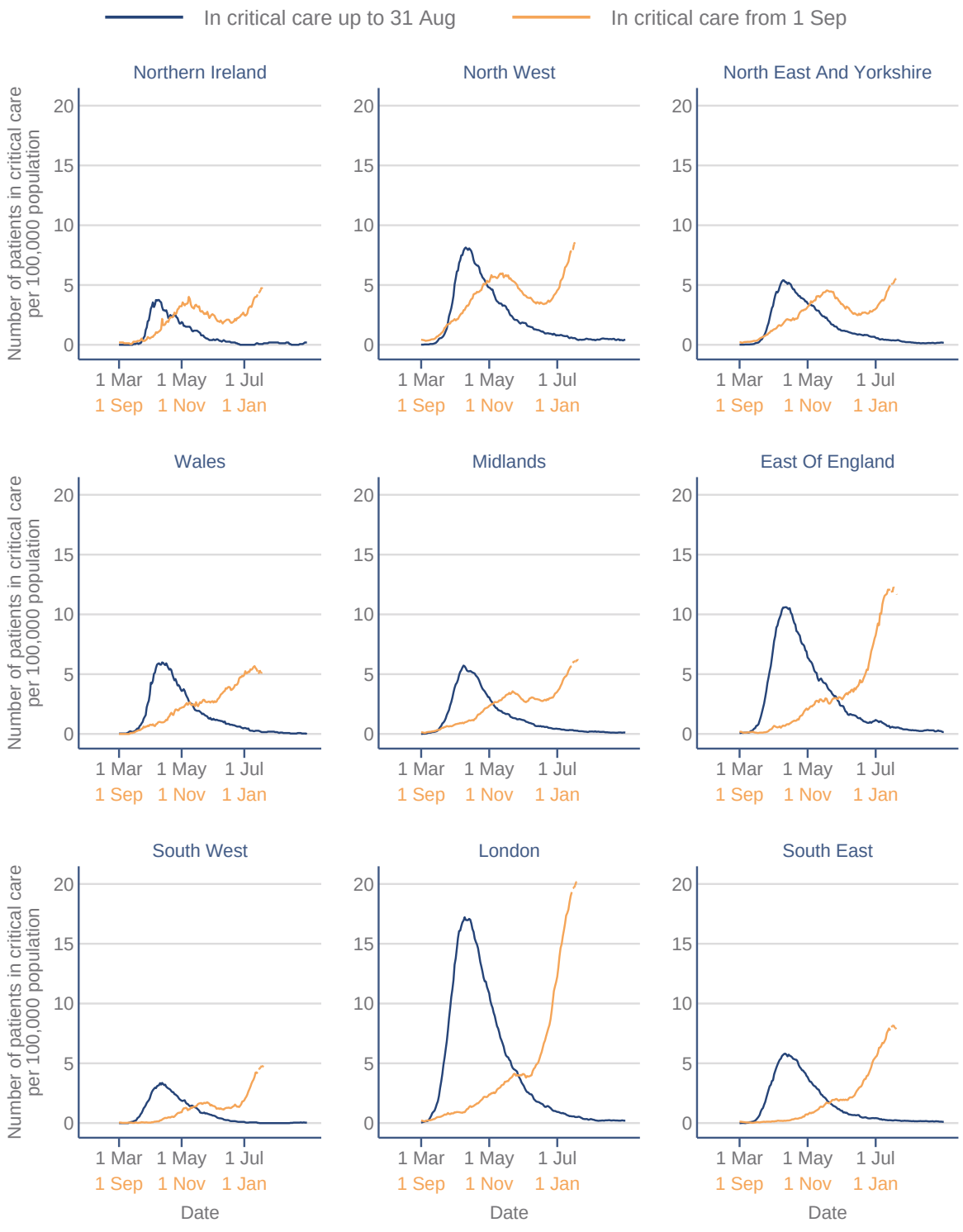





**Figure 14. Number of patients in critical care * from 1 March 2020 to 31 August 2020 versus 1 September 2020 to date by region**

Number of patients with confirmed COVID-19 in critical care by date * from 1 March 2020 to 31 August 2020 versus 1 September 2020 to date by region.

* Please note patients whose outcome data have not been received are assumed to remain in critical care as of 21 January 2021. Dashed line indicates lag in data submission.

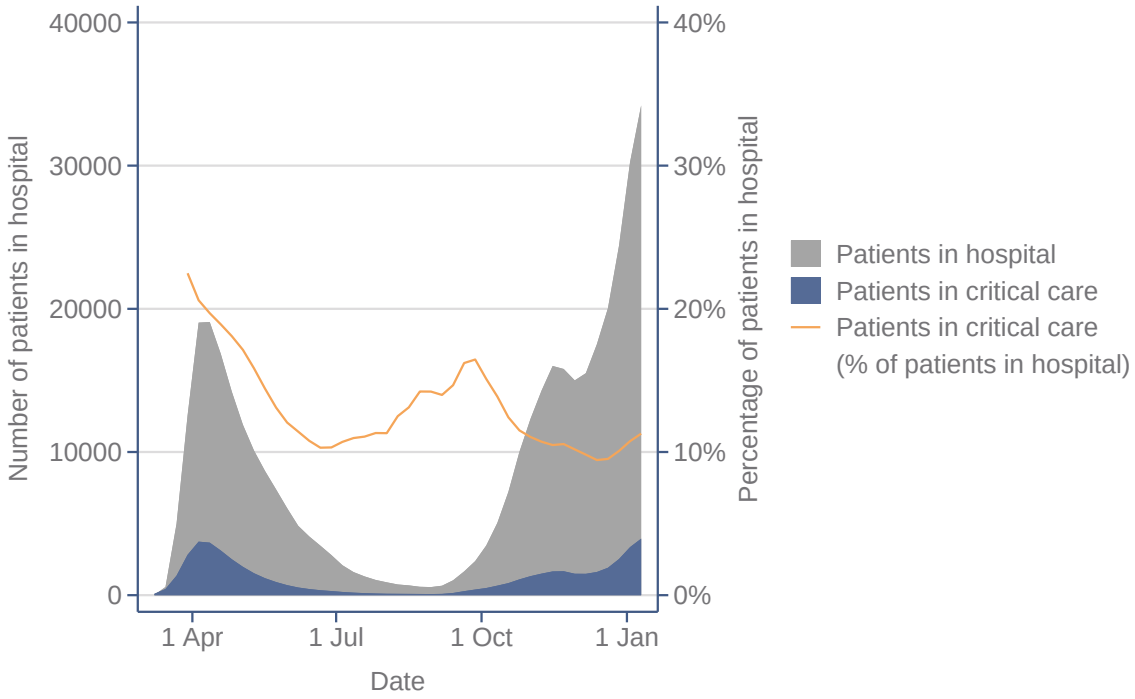



**Figure 15. Number of patients in critical care compared with number in hospital**

Comparison of the number of patients with confirmed COVID-19 in critical care by date * versus the total number in hospital (source: https://coronavirus.data.gov.uk/details/healthcare).

* Please note patients whose outcome data have not been received are assumed to remain in critical care as of 21 January 2021.

Figure 16 shows the average daily number of patients in critical care for each month over the past five years. For 2020, this is broken down into the numbers of: elective admissions (not COVID-19) – those admitted directly following elective or scheduled surgery or for a planned medical procedure; non-elective admissions (not COVID-19); confirmed COVID-19 admitted to an ICU; and confirmed COVID-19 managed in a surge area outside of ICU.

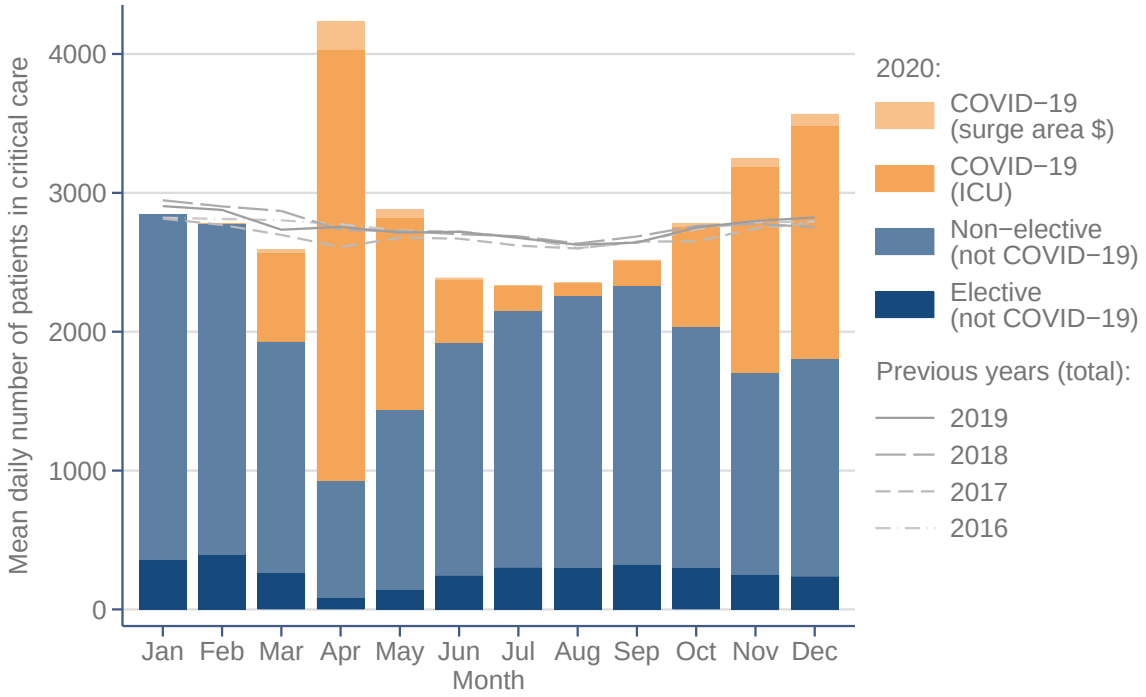





**Figure 16. Average daily number of patients in critical care by month, 2016-2020 ***

* Please note that data for patients without COVID-19 are submitted by participating critical care units either monthly or quarterly. Values have been adjusted for coverage.

$ Not all surge patients are identifiable from ICU data and not all surge areas are covered.

The numbers of admissions with acute myocardial infarction, stroke, trauma and self-harm (with drugs or other substances) recorded as primary or secondary reason for admission to critical care (with or without recording of COVID-19 as the other reason for admission) are shown in Figures 17 to 20.

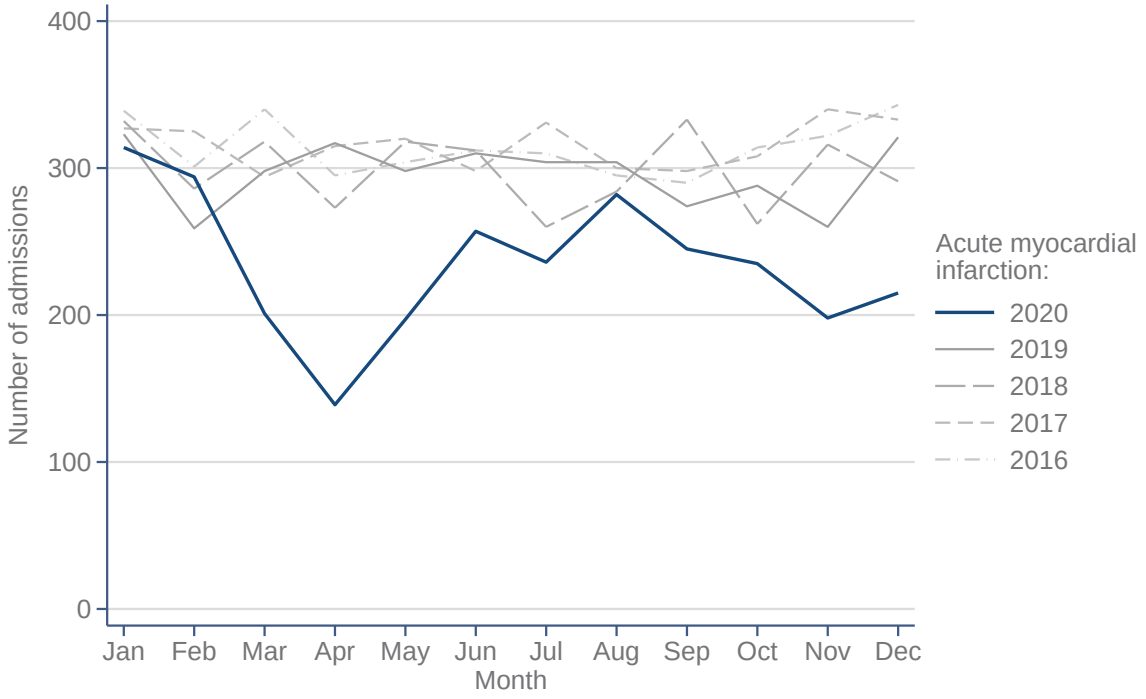





**Figure 17. Number of admissions with acute myocardial infarction by month, 2016-2020 ***

* Please note that data for patients without COVID-19 are submitted by participating critical care units either monthly or quarterly. Values have been adjusted for coverage.

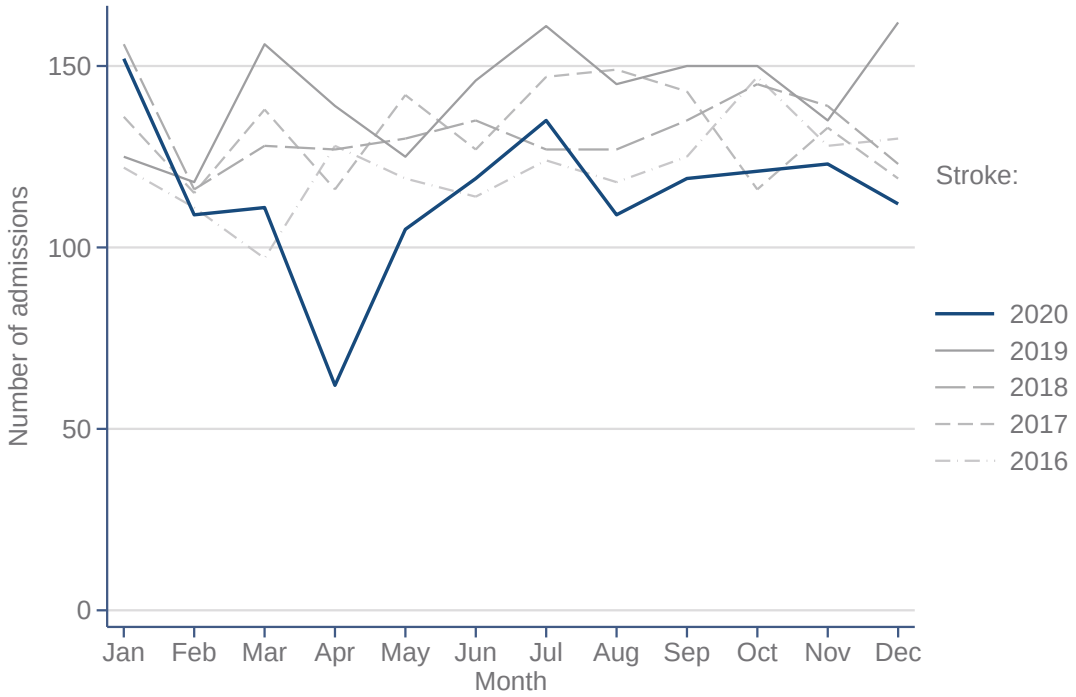





**Figure 18. Number of admissions with stroke by month, 2016-2020 ***

* Please note that data for patients without COVID-19 are submitted by participating critical care units either monthly or quarterly. Values have been adjusted for coverage.

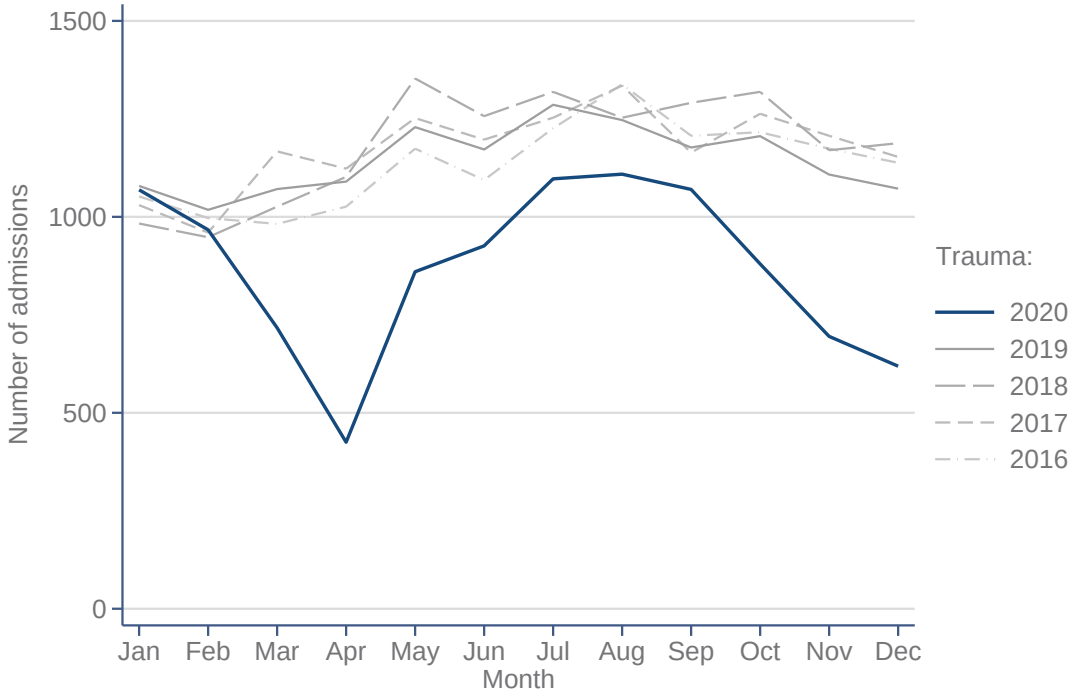





**Figure 19. Number of admissions with trauma by month, 2016-2020 ***

* Please note that data for patients without COVID-19 are submitted by participating critical care units either monthly or quarterly. Values have been adjusted for coverage.

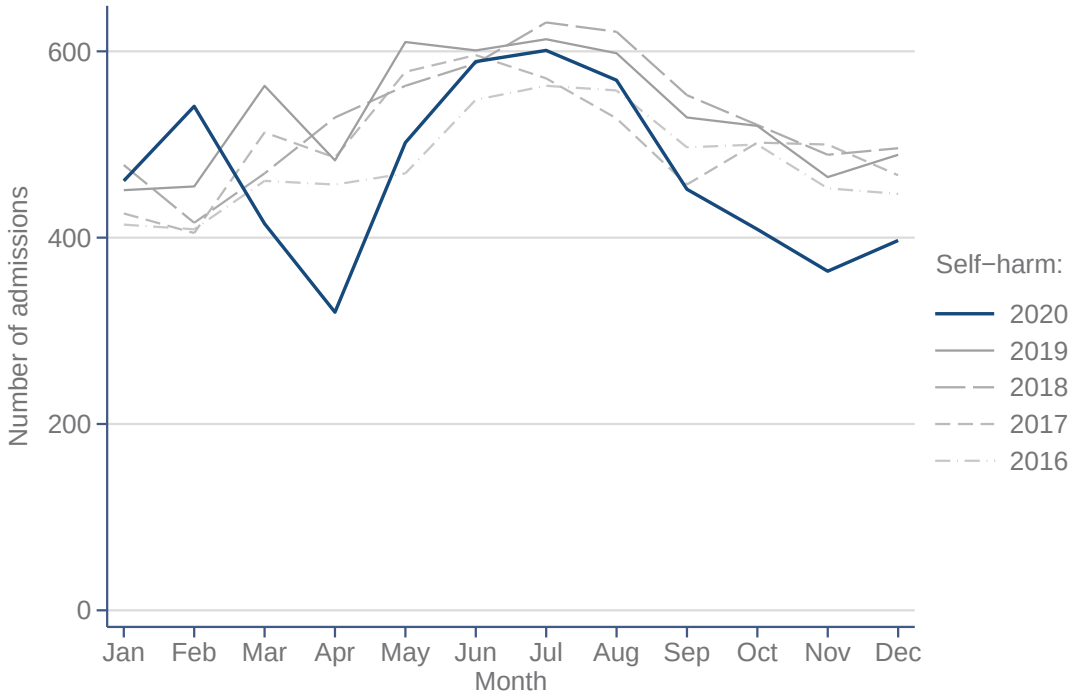





**Figure 20. Number of admissions with self-harm (drugs or other substances) by month, 2016-2020 ***

* Please note that data for patients without COVID-19 are submitted by participating critical care units either monthly or quarterly. Values have been adjusted for coverage.

## Admissions to critical care – pneumonia (not COVID-19)

Figure 21 shows the total numbers of admissions to critical care over the past five years by month of admission reported as due to pneumonia (not COVID-19), compared with the numbers with confirmed COVID-19. Figure 22 shows the number of these pneumonia admissions that were specifically coded as due to influenza. Note that not all admissions due to influenza will be coded as viral pneumonia (influenza) as if the organism has not yet been identified, then these will likely be coded under pneumonia (no organism isolated).

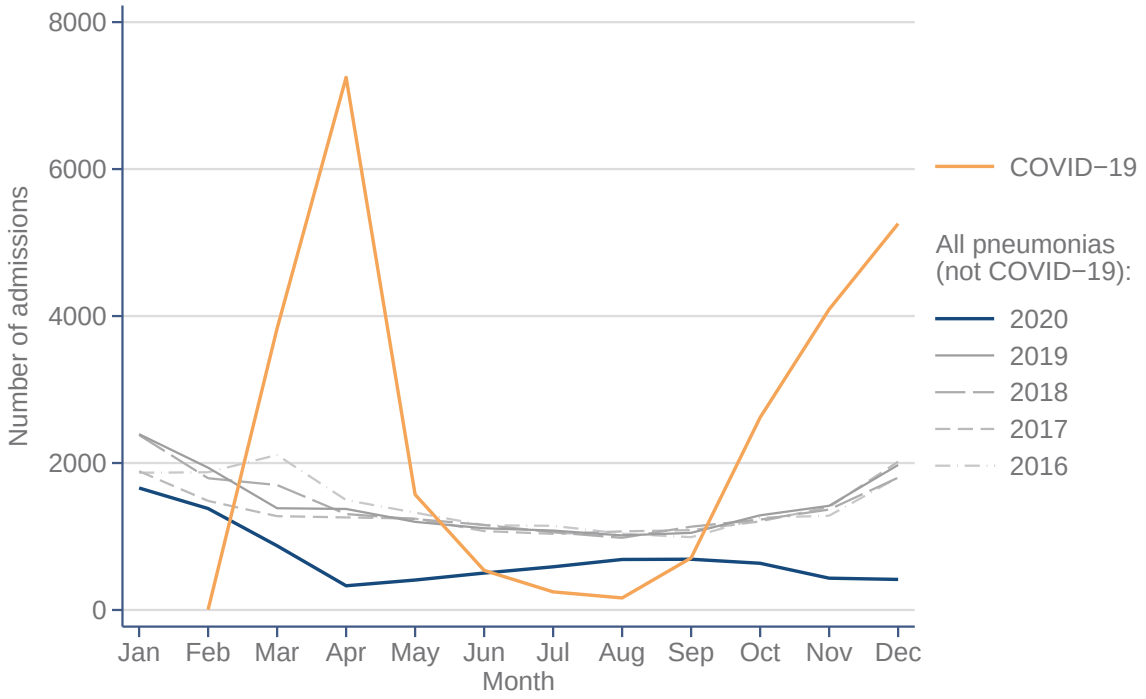





**Figure 21. Number of admissions with pneumonia (not COVID-19) by month, 2016-2020 *, compared with confirmed COVID-19 during 2020**

* Please note that data for patients without COVID-19 are submitted by participating critical care units either monthly or quarterly. Values have been adjusted for coverage.

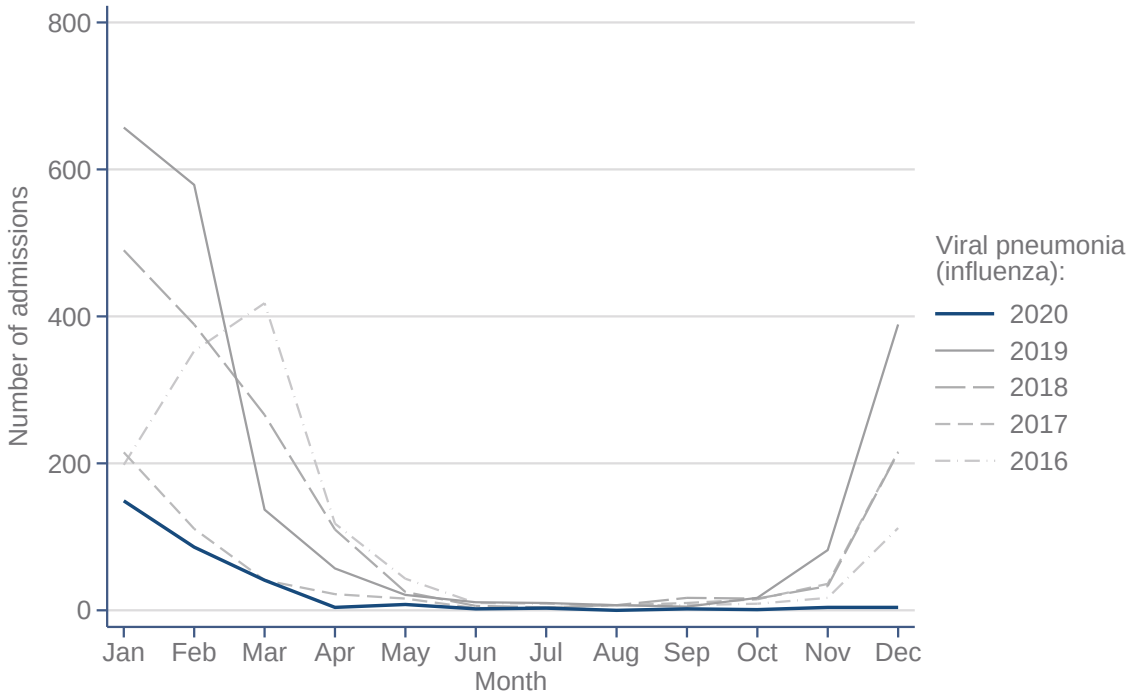





**Figure 22. Number of admissions with viral pneumonia (influenza) by month, 2016-2020 ***

* Please note that data for patients without COVID-19 are submitted by participating critical care units either monthly or quarterly. Values have been adjusted for coverage.

## Patient characteristics

Characteristics of patients critically ill with confirmed COVID-19 admitted from 1 September 2020 to date are summarised in Tables 1-3 and compared with those admitted up to 31 August 2020.

### Table 1. Patient characteristics: demographics

| Demographics | Patients with confirmed COVID-19 | |
|---|---|---|
| | Admitted from 1 Sep (N=17,015) | Admitted up to 31 Aug (N=10,938) |
| Age at admission (years) [N=17006] | | |
| Mean (SD) | 59.8 (13.4) | 58.8 (12.7) |
| Median (IQR) | 61 (52, 70) | 60 (51, 68) |
| Sex, n (%) [N=16999] | | |
| Female | 5756 (33.9) | 3276 (30.0) |
| Male | 11243 (66.1) | 7656 (70.0) |
| Ethnicity, n (%) [N=15657] | | |
| White | 11243 (71.8) | 6949 (66.0) |
| Mixed | 232 (1.5) | 191 (1.8) |
| Asian | 2563 (16.4) | 1679 (15.9) |
| Black | 834 (5.3) | 1007 (9.6) |
| Other | 785 (5.0) | 702 (6.7) |
| Index of Multiple Deprivation (IMD) quintile *, n (%) [N=16676] | | |
| 1 (least deprived) | 2124 (12.7) | 1545 (14.3) |
| 2 | 2525 (15.1) | 1738 (16.1) |
| 3 | 3073 (18.4) | 2084 (19.3) |
| 4 | 4039 (24.2) | 2614 (24.2) |
| 5 (most deprived) | 4915 (29.5) | 2808 (26.0) |
| Urban/rural classification *, n (%) [N=16445] | | |
| Major conurbation | 7419 (45.1) | 5224 (48.8) |
| Minor conurbation | 624 (3.8) | 337 (3.1) |
| City and town | 6620 (40.3) | 3992 (37.3) |
| Rural | 1778 (10.8) | 1153 (10.8) |

* Please see Definitions on page 99.

## Table 2. Patient characteristics: medical history

| | Patients with confirmed COVID-19 | |
|---|---|---|
| **Medical history** | **Admitted from 1 Sep (N=17,015)** | **Admitted up to 31 Aug (N=10,938)** |
| Dependency prior to admission to acute hospital, n (%) [N=15261] | | |
| Able to live without assistance in daily activities | 13485 (88.4) | 9683 (89.3) |
| Some assistance with daily activities | 1727 (11.3) | 1115 (10.3) |
| Total assistance with all daily activities | 49 (0.3) | 40 (0.4) |
| Very severe comorbidities *, n (%) [N=15654] | | |
| Cardiovascular | 122 (0.8) | 69 (0.6) |
| Respiratory | 170 (1.1) | 123 (1.1) |
| Renal | 271 (1.7) | 187 (1.7) |
| Liver | 94 (0.6) | 52 (0.5) |
| Metastatic disease | 103 (0.7) | 59 (0.5) |
| Haematological malignancy | 241 (1.5) | 215 (2.0) |
| Immunocompromised | 531 (3.4) | 387 (3.6) |
| Body mass index *, n (%) [N=14628] | | |
| <18.5 | 104 (0.7) | 79 (0.8) |
| 18.5-<25 | 2923 (20.0) | 2645 (25.4) |
| 25-<30 | 4600 (31.4) | 3572 (34.4) |
| 30-<40 | 5331 (36.4) | 3269 (31.4) |
| ≥40 | 1670 (11.4) | 832 (8.0) |
| CPR within previous 24h, n (%) [N=16003] | | |
| In the community | 108 (0.7) | 50 (0.5) |
| In hospital | 152 (0.9) | 76 (0.7) |
| Prior hospital length of stay [N=16760] | | |
| Mean (SD) | 3.2 (12.0) | 2.5 (6.2) |
| Median (IQR) | 1 (0, 3) | 1 (0, 3) |
| Currently or recently pregnant, n (% of females aged 16-49) [N=1398] | | |
| Currently pregnant | 92 (6.6) | 29 (3.7) |
| Recently pregnant (within 6 weeks) | 82 (5.9) | 41 (5.2) |
| Not known to be pregnant | 1224 (87.6) | 720 (91.1) |

* Please see Definitions on page 99.

## Table 3. Patient characteristics: indicators of acute severity

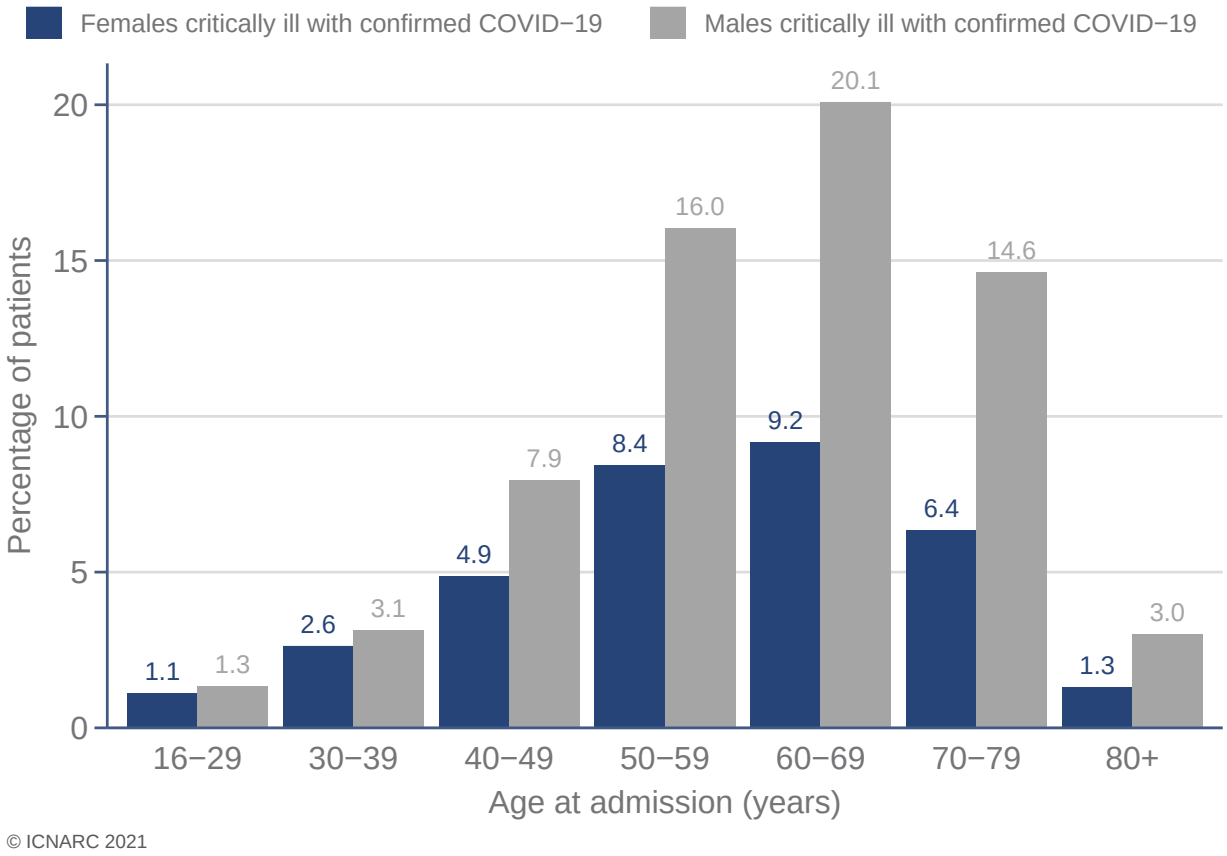
| | Patients with confirmed COVID-19 and 24h data received | |
|---|---|---|
| **Indicators of acute severity** | **Admitted from 1 Sep (N=15,861)** | **Admitted up to 31 Aug (N=10,938)** |
| Invasively ventilated within first 24h *, n (%) [N=14560] | 4012 (27.6) | 5868 (54.3) |
| APACHE II Score [N=14936] | | |
| Mean (SD) | 14.5 (5.3) | 15.1 (5.3) |
| Median (IQR) | 14 (11, 17) | 15 (11, 18) |
| $PaO_2$ /$FiO_2$ ratio † (kPa), median (IQR) [N=13803] | 13.2 (9.8, 18.4) | 15.8 (11.3, 22.0) |
| $PaO_2$ /$FiO_2$ ratio †, n (%) [N=13803] | | |
| $<$ 13.3 kPa ($<$ 100 mmHg) | 7010 (50.8) | 3810 (37.0) |
| 13.3-26.6 kPa (100-200 mmHg) | 5344 (38.7) | 4936 (47.9) |
| $\geq$ 26.7 kPa ($\geq$ 200 mmHg) | 1449 (10.5) | 1560 (15.1) |
| $FiO_2$ †, median (IQR) [N=13803] | 0.60 (0.45, 0.80) | 0.50 (0.40, 0.70) |

* Please see Definitions on page 99. Indicators of acute severity are based on data from the first 24 hours of critical care.

† Derived from the arterial blood gas with the lowest $PaO_2$ during the first 24 hours of critical care.

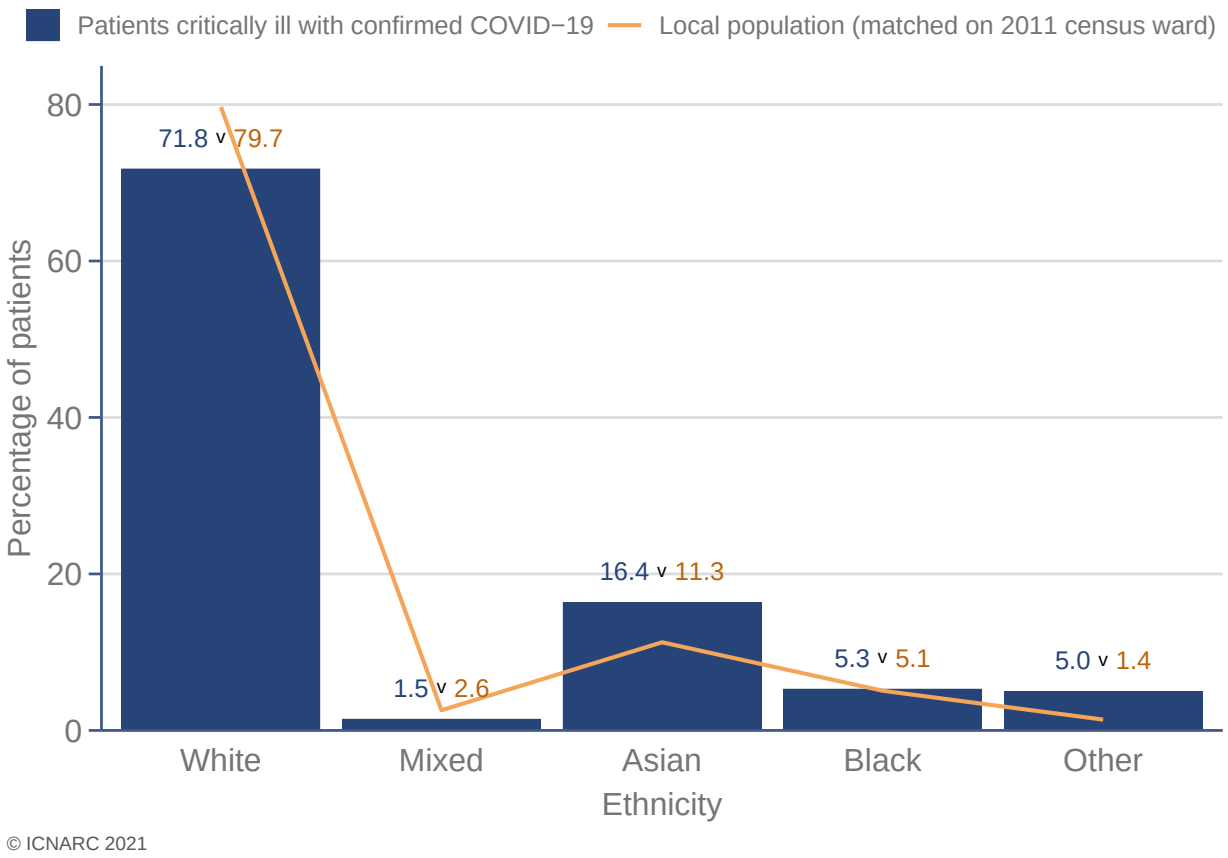
The distribution of age and sex is presented in Figure 23.




## Figure 23. Age and sex distribution

Age and sex distribution of patients critically ill with confirmed COVID-19 admitted from 1 September 2020 to date.

The distribution of ethnicity, matched on 2011 census ward for location of patients critically ill with COVID-19, is presented in Figure 24.




## Figure 24. Ethnicity distribution compared with the local population

Ethnicity distribution of patients critically ill with confirmed COVID-19 admitted from 1 September 2020 to date compared with the local population (linked to 2011 census ward).

The distribution of Index of Multiple Deprivation (IMD) is presented in Figure 25.

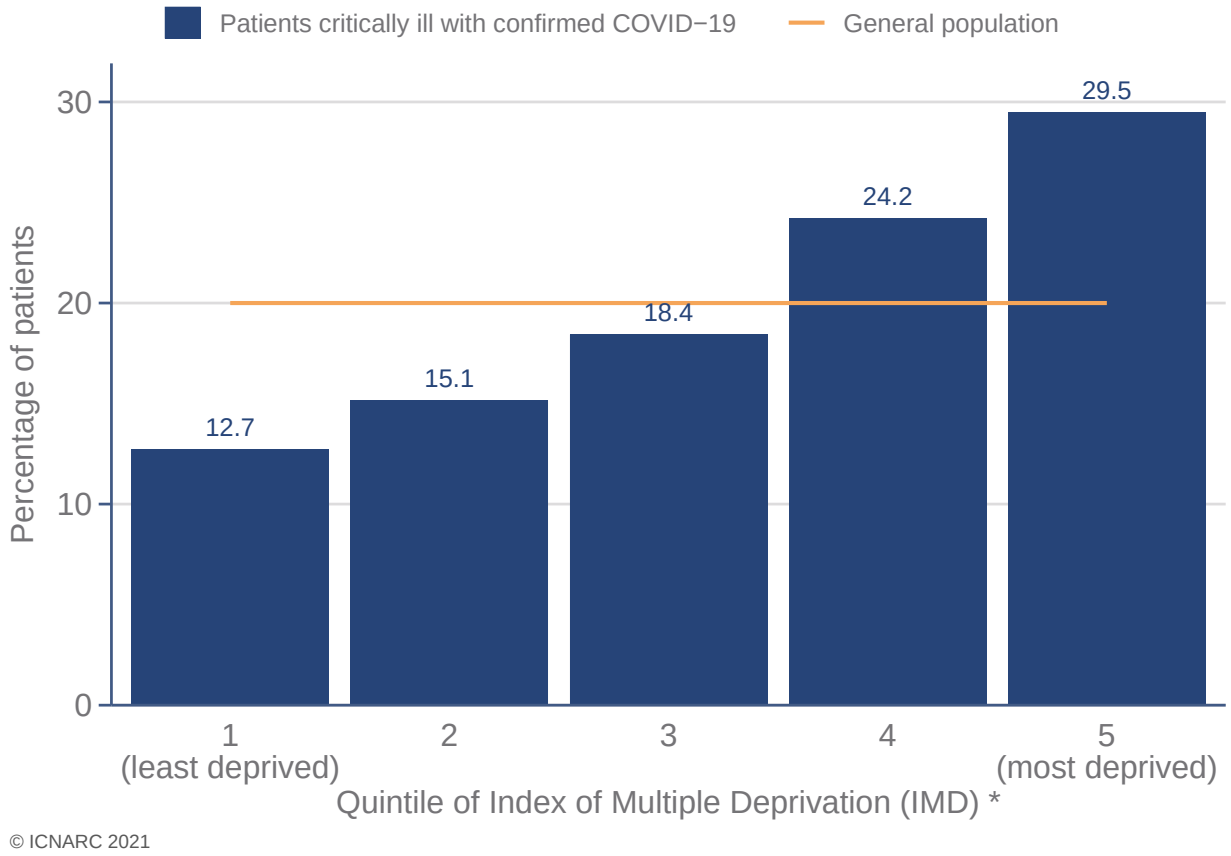



**Figure 25. Index of Multiple Deprivation * distribution compared with the general population**

Index of Multiple Deprivation (IMD) * distribution of patients critically ill with confirmed COVID-19 admitted from 1 September 2020 to date compared with the general population.

* Please see Definitions on page 99.

The distribution of patients by the urban/rural classification of their usual residence, compared with the age-matched general population (Office for National Statistics 2020), is presented in Figure 26.

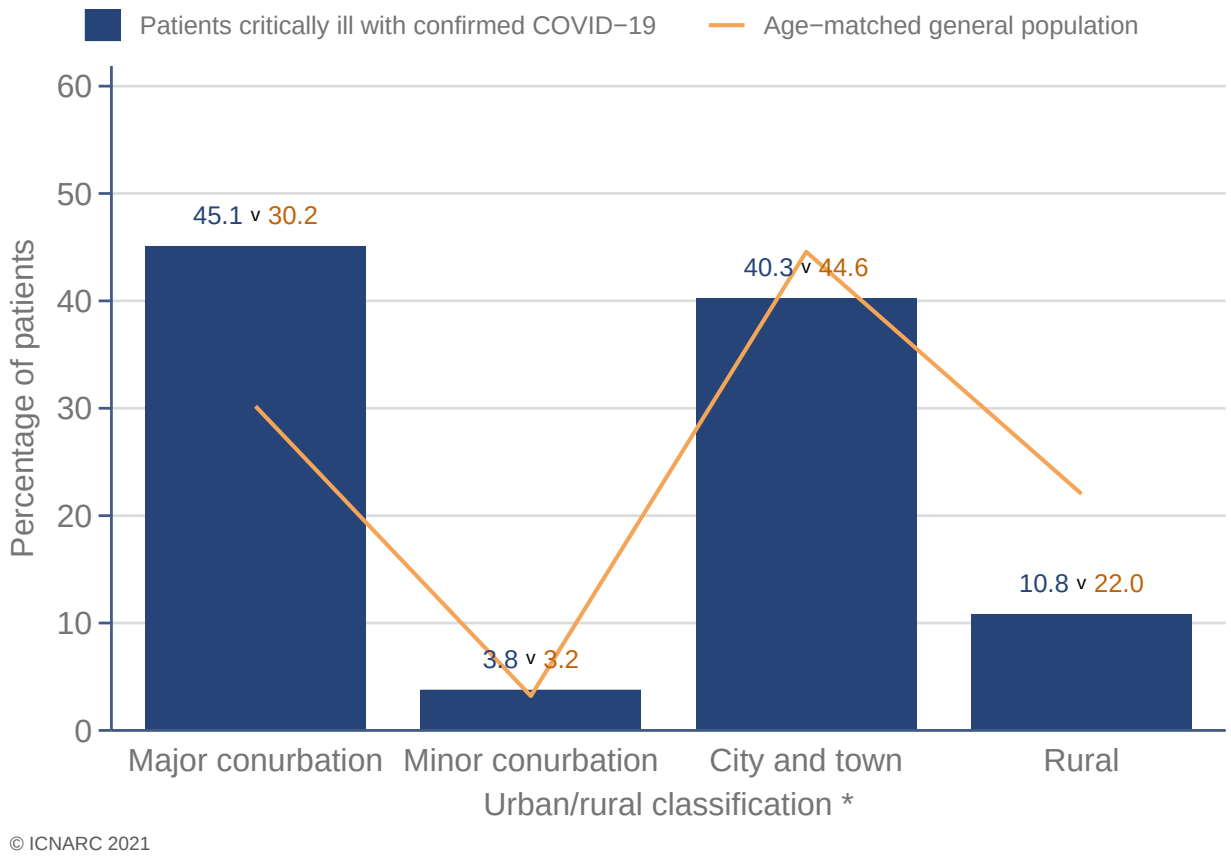



**Figure 26. Urban/rural * distribution compared with the age-matched general population**

Urban/rural * distribution of patients critically ill with confirmed COVID-19 admitted from 1 September 2020 to date compared with the age-matched general population.

* Please see Definitions on page 99.

The distribution of body mass index (BMI), compared with an age- and sex-matched population (from the Health Survey for England 2018), is presented in Figure 27.

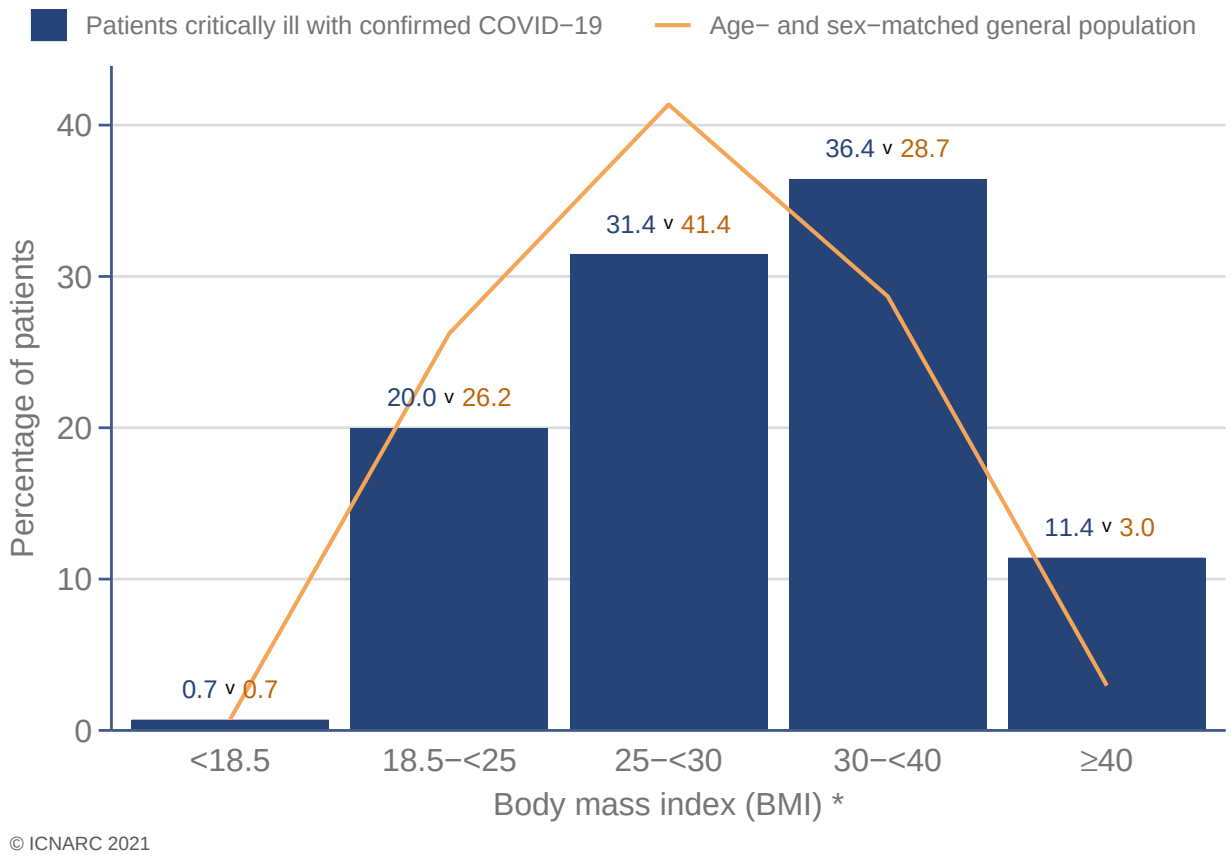



**Figure 27. Body mass index * distribution compared with the age- and sex-matched general population**

Body mass index (BMI) * distribution of patients critically ill with confirmed COVID-19 admitted from 1 September 2020 compared with the age- and sex-matched general population (Health Survey for England 2018).

* Please see Definitions on page 99.

Characteristics of patients critically ill with confirmed COVID-19 and receiving invasive ventilation during the first 24 hours in critical care admitted from 1 September 2020 to date are summarised in Tables 4-6 and compared with those admitted up to 31 August 2020.

## Table 4. Patient characteristics: demographics (invasively ventilated first 24 hours)

| | Patients with confirmed COVID-19 invasively ventilated first 24 hours * | |
|---|---|---|
| **Demographics** | **Admitted from 1 Sep (N=4012)** | **Admitted up to 31 Aug (N=5868)** |
| Age at admission (years) [N=4010] | | |
| Mean (SD) | 59.2 (13.2) | 58.5 (12.1) |
| Median (IQR) | 61 (52, 69) | 59 (51, 67) |
| Sex, n (%) [N=4009] | | |
| Female | 1377 (34.3) | 1608 (27.4) |
| Male | 2632 (65.7) | 4255 (72.6) |
| Ethnicity, n (%) [N=3751] | | |
| White | 2535 (67.6) | 3468 (61.5) |
| Mixed | 58 (1.5) | 115 (2.0) |
| Asian | 711 (19.0) | 964 (17.1) |
| Black | 229 (6.1) | 651 (11.5) |
| Other | 218 (5.8) | 443 (7.9) |
| Index of Multiple Deprivation (IMD) quintile *, n (%) [N=3953] | | |
| 1 (least deprived) | 480 (12.1) | 786 (13.6) |
| 2 | 573 (14.5) | 925 (16.0) |
| 3 | 727 (18.4) | 1152 (19.9) |
| 4 | 1001 (25.3) | 1488 (25.7) |
| 5 (most deprived) | 1172 (29.6) | 1448 (25.0) |
| Urban/rural classification *, n (%) [N=3824] | | |
| Major conurbation | 2020 (52.8) | 3130 (54.6) |
| Minor conurbation | 87 (2.3) | 119 (2.1) |
| City and town | 1369 (35.8) | 1910 (33.3) |
| Rural | 347 (9.1) | 567 (9.9) |

* Please see Definitions on page 99.

## Table 5. Patient characteristics: medical history (invasively ventilated first 24 hours)

| | Patients with confirmed COVID-19 invasively ventilated first 24 hours * | |
|---|---|---|
| **Medical history** | **Admitted from 1 Sep (N=4012)** | **Admitted up to 31 Aug (N=5868)** |
| Dependency prior to admission to acute hospital, n (%) [N=3892] | | |
| Able to live without assistance in daily activities | 3449 (88.6) | 5363 (92.3) |
| Some assistance with daily activities | 434 (11.2) | 440 (7.6) |
| Total assistance with all daily activities | 9 (0.2) | 10 (0.2) |
| Very severe comorbidities *, n (%) [N=3909] | | |
| Cardiovascular | 35 (0.9) | 20 (0.3) |
| Respiratory | 33 (0.8) | 33 (0.6) |
| Renal | 52 (1.3) | 79 (1.4) |
| Liver | 36 (0.9) | 23 (0.4) |
| Metastatic disease | 12 (0.3) | 20 (0.3) |
| Haematological malignancy | 47 (1.2) | 76 (1.3) |
| Immunocompromised | 128 (3.3) | 162 (2.8) |
| Body mass index *, n (%) [N=3786] | | |
| <18.5 | 30 (0.8) | 30 (0.5) |
| 18.5-<25 | 771 (20.4) | 1415 (24.8) |
| 25-<30 | 1205 (31.8) | 1981 (34.7) |
| 30-<40 | 1337 (35.3) | 1853 (32.5) |
| ≥40 | 443 (11.7) | 424 (7.4) |
| CPR within previous 24h, n (%) [N=3960] | | |
| In the community | 74 (1.9) | 39 (0.7) |
| In hospital | 109 (2.8) | 58 (1.0) |
| Prior hospital length of stay [N=4002] | | |
| Mean (SD) | 3.8 (14.5) | 2.2 (5.3) |
| Median (IQR) | 1 (0, 4) | 1 (0, 3) |
| Currently or recently pregnant, n (% of females aged 16-49) [N=359] | | |
| Currently pregnant | 20 (5.6) | 9 (2.4) |
| Recently pregnant (within 6 weeks) | 27 (7.5) | 22 (5.9) |
| Not known to be pregnant | 312 (86.9) | 344 (91.7) |

* Please see Definitions on page 99.

## Table 6. Patient characteristics: indicators of acute severity (invasively ventilated first 24 hours)

| | Patients with confirmed COVID-19 invasively ventilated first 24 hours * | |
|---|---|---|
| **Indicators of acute severity** | **Admitted from 1 Sep (N=4012)** | **Admitted up to 31 Aug (N=5868)** |
| APACHE II Score [N=4010] | | |
| Mean (SD) | 16.5 (5.4) | 15.6 (5.2) |
| Median (IQR) | 16 (13, 19) | 15 (12, 19) |
| $PaO_2$ /$FiO_2$ ratio † (kPa), median (IQR) [N=4001] | 12.6 (8.7, 19.0) | 15.5 (10.8, 21.6) |
| $PaO_2$ /$FiO_2$ ratio †, n (%) [N=4001] | | |
| $<$ 13.3 kPa ($<$ 100 mmHg) | 2135 (53.4) | 2280 (39.0) |
| 13.3-26.6 kPa (100-200 mmHg) | 1375 (34.4) | 2784 (47.6) |
| $\geq$ 26.7 kPa ($\geq$ 200 mmHg) | 491 (12.3) | 783 (13.4) |
| $FiO_2$ †, median (IQR) [N=4001] | 0.65 (0.45, 0.90) | 0.55 (0.40, 0.75) |

* Please see Definitions on page 99. Indicators of acute severity are based on data from the first 24 hours of critical care.

† Derived from the arterial blood gas with the lowest $PaO_2$ during the first 24 hours of critical care.

## Patient characteristics – advanced respiratory support

Characteristics of patients critically ill with confirmed COVID-19 that received advanced respiratory support at any time during their critical care stay admitted from 1 September 2020 to date are summarised in Tables 7-9 and compared with those admitted up to 31 August 2020.

### Table 7. Patient characteristics: demographics (any advanced respiratory support)

| | Patients with confirmed COVID-19 and advanced respiratory support * | |
|---|---|---|
| **Demographics** | **Admitted from 1 Sep (N=5651)** | **Admitted up to 31 Aug (N=7877)** |
| Age at admission (years) [N=5647] | | |
| Mean (SD) | 60.7 (12.7) | 58.6 (11.9) |
| Median (IQR) | 62 (53, 70) | 60 (51, 67) |
| Sex, n (%) [N=5647] | | |
| Female | 1803 (31.9) | 2203 (28.0) |
| Male | 3844 (68.1) | 5669 (72.0) |
| Ethnicity, n (%) [N=5370] | | |
| White | 3836 (71.4) | 4751 (62.6) |
| Mixed | 77 (1.4) | 148 (2.0) |
| Asian | 984 (18.3) | 1296 (17.1) |
| Black | 236 (4.4) | 824 (10.9) |
| Other | 237 (4.4) | 565 (7.4) |
| Index of Multiple Deprivation (IMD) quintile *, n (%) [N=5582] | | |
| 1 (least deprived) | 669 (12.0) | 1063 (13.7) |
| 2 | 830 (14.9) | 1229 (15.8) |
| 3 | 985 (17.6) | 1552 (19.9) |
| 4 | 1334 (23.9) | 1942 (24.9) |
| 5 (most deprived) | 1764 (31.6) | 1998 (25.7) |
| Urban/rural classification *, n (%) [N=5451] | | |
| Major conurbation | 2530 (46.4) | 4021 (52.2) |
| Minor conurbation | 204 (3.7) | 205 (2.7) |
| City and town | 2124 (39.0) | 2675 (34.7) |
| Rural | 592 (10.9) | 802 (10.4) |

* Please see Definitions on page 99.

## Table 8. Patient characteristics: medical history (any advanced respiratory support)

| | Patients with confirmed COVID-19 and advanced respiratory support * | |
|---|---|---|
| **Medical history** | **Admitted from 1 Sep (N=5651)** | **Admitted up to 31 Aug (N=7877)** |
| Dependency prior to admission to acute hospital, n (%) [N=5443] | | |
| Able to live without assistance in daily activities | 4829 (88.7) | 7180 (92.0) |
| Some assistance with daily activities | 601 (11.0) | 613 (7.9) |
| Total assistance with all daily activities | 13 (0.2) | 11 (0.1) |
| Very severe comorbidities *, n (%) [N=5484] | | |
| Cardiovascular | 40 (0.7) | 26 (0.3) |
| Respiratory | 55 (1.0) | 48 (0.6) |
| Renal | 95 (1.7) | 94 (1.2) |
| Liver | 50 (0.9) | 31 (0.4) |
| Metastatic disease | 25 (0.5) | 24 (0.3) |
| Haematological malignancy | 101 (1.8) | 129 (1.7) |
| Immunocompromised | 210 (3.8) | 234 (3.0) |
| Body mass index *, n (%) [N=5280] | | |
| <18.5 | 29 (0.5) | 41 (0.5) |
| 18.5-<25 | 1073 (20.3) | 1886 (24.8) |
| 25-<30 | 1712 (32.4) | 2635 (34.7) |
| 30-<40 | 1898 (35.9) | 2469 (32.5) |
| ≥40 | 568 (10.8) | 567 (7.5) |
| CPR within previous 24h, n (%) [N=5576] | | |
| In the community | 84 (1.5) | 45 (0.6) |
| In hospital | 120 (2.2) | 70 (0.9) |
| Prior hospital length of stay [N=5631] | | |
| Mean (SD) | 3.5 (11.7) | 2.2 (5.3) |
| Median (IQR) | 1 (0, 4) | 1 (0, 3) |
| Currently or recently pregnant, n (% of females aged 16-49) [N=426] | | |
| Currently pregnant | 22 (5.2) | 15 (2.9) |
| Recently pregnant (within 6 weeks) | 27 (6.3) | 27 (5.2) |
| Not known to be pregnant | 377 (88.5) | 481 (92.0) |

* Please see Definitions on page 99.

## Table 9. Patient characteristics: indicators of acute severity (any advanced respiratory support)

| | Patients with confirmed COVID-19 and advanced respiratory support * | |
|---|---|---|
| **Indicators of acute severity** | **Admitted from 1 Sep (N=5651)** | **Admitted up to 31 Aug (N=7877)** |
| APACHE II Score [N=5409] | | |
| Mean (SD) | 15.9 (5.4) | 15.4 (5.1) |
| Median (IQR) | 15 (12, 19) | 15 (12, 18) |
| $PaO_2$ /$FiO_2$ ratio † (kPa), median (IQR) [N=5242] | 12.2 (8.9, 17.2) | 15.0 (10.8, 21.0) |
| $PaO_2$ /$FiO_2$ ratio †, n (%) [N=5242] | | |
| $<$ 13.3 kPa ($<$ 100 mmHg) | 3046 (58.1) | 3100 (40.3) |
| 13.3-26.6 kPa (100-200 mmHg) | 1676 (32.0) | 3626 (47.2) |
| $\geq$ 26.7 kPa ($\geq$ 200 mmHg) | 520 (9.9) | 964 (12.5) |
| $FiO_2$ †, median (IQR) [N=5242] | 0.65 (0.50, 0.85) | 0.55 (0.40, 0.70) |

* Please see Definitions on page 99. Indicators of acute severity are based on data from the first 24 hours of critical care.

† Derived from the arterial blood gas with the lowest $PaO_2$ during the first 24 hours of critical care.

## Patient characteristics – basic respiratory support only

Characteristics of patients critically ill with confirmed COVID-19 that received basic respiratory support only during their critical care stay admitted from 1 September 2020 to date are summarised in Tables 10-12 and compared with those admitted up to 31 August 2020.

### Table 10. Patient characteristics: demographics (basic respiratory support only)

| | Patients with confirmed COVID-19 and basic respiratory support only * | |
|---|---|---|
| **Demographics** | **Admitted from 1 Sep (N=6348)** | **Admitted up to 31 Aug (N=2793)** |
| Age at admission (years) [N=6346] | | |
| Mean (SD) | 59.7 (14.5) | 59.4 (14.3) |
| Median (IQR) | 61 (50, 71) | 60 (50, 70) |
| Sex, n (%) [N=6345] | | |
| Female | 2215 (34.9) | 960 (34.4) |
| Male | 4130 (65.1) | 1832 (65.6) |
| Ethnicity, n (%) [N=6007] | | |
| White | 4552 (75.8) | 2019 (74.9) |
| Mixed | 89 (1.5) | 41 (1.5) |
| Asian | 840 (14.0) | 351 (13.0) |
| Black | 278 (4.6) | 164 (6.1) |
| Other | 248 (4.1) | 120 (4.5) |
| Index of Multiple Deprivation (IMD) quintile *, n (%) [N=6261] | | |
| 1 (least deprived) | 835 (13.3) | 441 (16.1) |
| 2 | 979 (15.6) | 465 (16.9) |
| 3 | 1139 (18.2) | 489 (17.8) |
| 4 | 1463 (23.4) | 602 (21.9) |
| 5 (most deprived) | 1845 (29.5) | 749 (27.3) |
| Urban/rural classification *, n (%) [N=6248] | | |
| Major conurbation | 2489 (39.8) | 1049 (38.2) |
| Minor conurbation | 309 (4.9) | 128 (4.7) |
| City and town | 2734 (43.8) | 1242 (45.2) |
| Rural | 714 (11.4) | 325 (11.8) |

* Please see Definitions on page 99.

## Table 11. Patient characteristics: medical history (basic respiratory support only)

| | Patients with confirmed COVID-19 and basic respiratory support only * | |
|---|---|---|
| **Medical history** | **Admitted from 1 Sep (N=6348)** | **Admitted up to 31 Aug (N=2793)** |
| Dependency prior to admission to acute hospital, n (%) [N=6104] | | |
| Able to live without assistance in daily activities | 5268 (86.3) | 2297 (83.0) |
| Some assistance with daily activities | 809 (13.3) | 447 (16.1) |
| Total assistance with all daily activities | 27 (0.4) | 24 (0.9) |
| Very severe comorbidities *, n (%) [N=6176] | | |
| Cardiovascular | 58 (0.9) | 39 (1.4) |
| Respiratory | 86 (1.4) | 72 (2.6) |
| Renal | 110 (1.8) | 76 (2.7) |
| Liver | 21 (0.3) | 18 (0.7) |
| Metastatic disease | 56 (0.9) | 26 (0.9) |
| Haematological malignancy | 95 (1.5) | 78 (2.8) |
| Immunocompromised | 214 (3.5) | 137 (4.9) |
| Body mass index *, n (%) [N=5794] | | |
| <18.5 | 46 (0.8) | 28 (1.1) |
| 18.5-<25 | 1069 (18.5) | 668 (26.3) |
| 25-<30 | 1832 (31.6) | 857 (33.8) |
| 30-<40 | 2138 (36.9) | 736 (29.0) |
| ≥40 | 709 (12.2) | 250 (9.8) |
| CPR within previous 24h, n (%) [N=6241] | | |
| In the community | 11 (0.2) | 5 (0.2) |
| In hospital | 6 (0.1) | 3 (0.1) |
| Prior hospital length of stay [N=6307] | | |
| Mean (SD) | 2.8 (9.0) | 3.0 (7.3) |
| Median (IQR) | 1 (0, 3) | 1 (0, 3) |
| Currently or recently pregnant, n (% of females aged 16-49) [N=578] | | |
| Currently pregnant | 38 (6.6) | 11 (4.6) |
| Recently pregnant (within 6 weeks) | 28 (4.8) | 11 (4.6) |
| Not known to be pregnant | 512 (88.6) | 217 (90.8) |

* Please see Definitions on page 99.

## Table 12. Patient characteristics: indicators of acute severity (basic respiratory support only)

| | Patients with confirmed COVID-19 and basic respiratory support only * | |
|---|---|---|
| **Indicators of acute severity** | **Admitted from 1 Sep (N=6348)** | **Admitted up to 31 Aug (N=2793)** |
| APACHE II Score [N=6150] | | |
| Mean (SD) | 13.5 (5.1) | 14.2 (5.5) |
| Median (IQR) | 13 (10, 16) | 14 (10, 17) |
| $PaO_2$ /$FiO_2$ ratio † (kPa), median (IQR) [N=5552] | 14.2 (10.9, 19.3) | 17.5 (12.5, 24.0) |
| $PaO_2$ /$FiO_2$ ratio †, n (%) [N=5552] | | |
| $<$ 13.3 kPa ($<$ 100 mmHg) | 2403 (43.3) | 703 (29.1) |
| 13.3-26.6 kPa (100-200 mmHg) | 2630 (47.4) | 1273 (52.7) |
| $\geq$ 26.7 kPa ($\geq$ 200 mmHg) | 519 (9.3) | 438 (18.1) |
| $FiO_2$ †, median (IQR) [N=5552] | 0.60 (0.40, 0.70) | 0.50 (0.35, 0.60) |

* Please see Definitions on page 99. Indicators of acute severity are based on data from the first 24 hours of critical care.

† Derived from the arterial blood gas with the lowest $PaO_2$ during the first 24 hours of critical care.

Characteristics of patients critically ill with confirmed COVID-19 that received renal support at any time during their critical care stay admitted from 1 September 2020 to date are summarised in Tables 13-15 and compared with those admitted up to 31 August 2020.

## Table 13. Patient characteristics: demographics (any renal support)

| Demographics | Patients with confirmed COVID-19 and renal support * | |
|---|---|---|
| | Admitted from 1 Sep (N=1733) | Admitted up to 31 Aug (N=2928) |
| Age at admission (years) [N=1733] | | |
| Mean (SD) | 61.9 (11.9) | 59.1 (11.0) |
| Median (IQR) | 63 (55, 71) | 60 (52, 67) |
| Sex, n (%) [N=1732] | | |
| Female | 471 (27.2) | 671 (22.9) |
| Male | 1261 (72.8) | 2255 (77.1) |
| Ethnicity, n (%) [N=1644] | | |
| White | 1105 (67.2) | 1663 (59.0) |
| Mixed | 20 (1.2) | 49 (1.7) |
| Asian | 338 (20.6) | 482 (17.1) |
| Black | 102 (6.2) | 419 (14.9) |
| Other | 79 (4.8) | 206 (7.3) |
| Index of Multiple Deprivation (IMD) quintile *, n (%) [N=1713] | | |
| 1 (least deprived) | 194 (11.3) | 368 (12.7) |
| 2 | 255 (14.9) | 442 (15.3) |
| 3 | 315 (18.4) | 609 (21.0) |
| 4 | 454 (26.5) | 732 (25.3) |
| 5 (most deprived) | 495 (28.9) | 747 (25.8) |
| Urban/rural classification *, n (%) [N=1675] | | |
| Major conurbation | 827 (49.4) | 1575 (55.0) |
| Minor conurbation | 50 (3.0) | 61 (2.1) |
| City and town | 624 (37.3) | 955 (33.3) |
| Rural | 174 (10.4) | 274 (9.6) |

* Please see Definitions on page 99.

## Table 14. Patient characteristics: medical history (any renal support)

| | Patients with confirmed COVID-19 and renal support * | |
|---|---|---|
| **Medical history** | **Admitted from 1 Sep (N=1733)** | **Admitted up to 31 Aug (N=2928)** |
| Dependency prior to admission to acute hospital, n (%) [N=1684] | | |
| Able to live without assistance in daily activities | 1430 (84.9) | 2669 (91.7) |
| Some assistance with daily activities | 251 (14.9) | 236 (8.1) |
| Total assistance with all daily activities | 3 (0.2) | 6 (0.2) |
| Very severe comorbidities *, n (%) [N=1693] | | |
| Cardiovascular | 19 (1.1) | 15 (0.5) |
| Respiratory | 17 (1.0) | 17 (0.6) |
| Renal | 191 (11.3) | 150 (5.2) |
| Liver | 17 (1.0) | 6 (0.2) |
| Metastatic disease | 15 (0.9) | 13 (0.4) |
| Haematological malignancy | 38 (2.2) | 52 (1.8) |
| Immunocompromised | 83 (4.9) | 93 (3.2) |
| Body mass index *, n (%) [N=1630] | | |
| <18.5 | 7 (0.4) | 16 (0.6) |
| 18.5-<25 | 351 (21.5) | 653 (23.0) |
| 25-<30 | 568 (34.8) | 969 (34.1) |
| 30-<40 | 559 (34.3) | 985 (34.6) |
| ≥40 | 145 (8.9) | 222 (7.8) |
| CPR within previous 24h, n (%) [N=1721] | | |
| In the community | 18 (1.0) | 10 (0.3) |
| In hospital | 36 (2.1) | 18 (0.6) |
| Prior hospital length of stay [N=1731] | | |
| Mean (SD) | 4.1 (11.2) | 2.3 (5.3) |
| Median (IQR) | 1 (0, 5) | 1 (0, 3) |
| Currently or recently pregnant, n (% of females aged 16-49) [N=91] | | |
| Currently pregnant | 1 (1.1) | 3 (1.9) |
| Recently pregnant (within 6 weeks) | 3 (3.3) | 4 (2.5) |
| Not known to be pregnant | 87 (95.6) | 152 (95.6) |

* Please see Definitions on page 99.

## Table 15. Patient characteristics: indicators of acute severity (any renal support)

| | Patients with confirmed COVID-19 and renal support * | |
|---|---|---|
| **Indicators of acute severity** | **Admitted from 1 Sep (N=1733)** | **Admitted up to 31 Aug (N=2928)** |
| Invasively ventilated within first 24h *, n (%) [N=1668] | 733 (43.9) | 2121 (73.0) |
| APACHE II Score [N=1682] | | |
| Mean (SD) | 18.3 (6.0) | 17.0 (5.6) |
| Median (IQR) | 18 (14, 22) | 16 (13, 20) |
| $PaO_2$ /$FiO_2$ ratio † (kPa), median (IQR) [N=1601] | 12.4 (9.1, 18.1) | 14.4 (10.5, 20.0) |
| $PaO_2$ /$FiO_2$ ratio †, n (%) [N=1601] | | |
| $<$ 13.3 kPa ($<$ 100 mmHg) | 887 (55.4) | 1251 (43.9) |
| 13.3-26.6 kPa (100-200 mmHg) | 534 (33.4) | 1291 (45.3) |
| $\geq$ 26.7 kPa ($\geq$ 200 mmHg) | 180 (11.2) | 308 (10.8) |
| $FiO_2$ †, median (IQR) [N=1601] | 0.60 (0.45, 0.80) | 0.60 (0.44, 0.75) |

* Please see Definitions on page 99. Indicators of acute severity are based on data from the first 24 hours of critical care.

† Derived from the arterial blood gas with the lowest $PaO_2$ during the first 24 hours of critical care.

From 1 September to date, there have been 1745 inter-hospital critical care transfers of 1607 patients with confirmed COVID-19, of which 1372 transfers of 1314 patients were classified as being for comparable critical care. The percentage of transfers by month is shown in Figure 28, and the transfers for comparable critical care by region are shown in Figure 29.

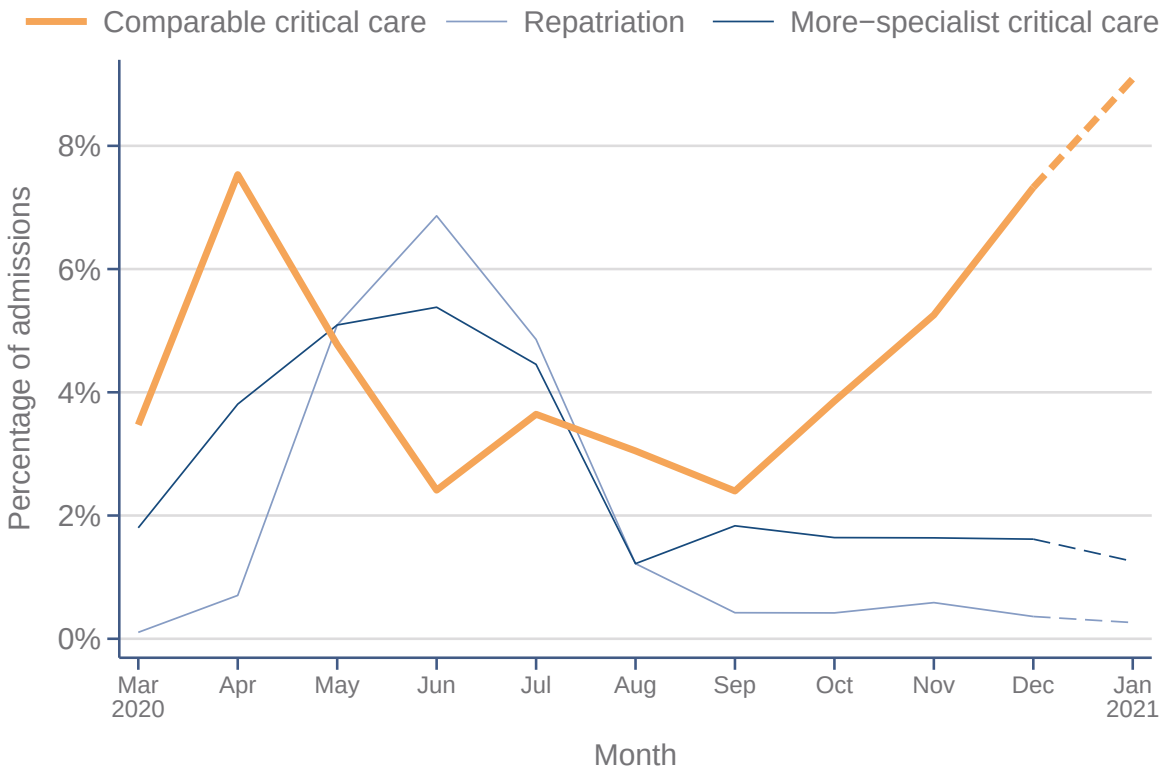





**Figure 28. Inter-hospital critical care transfers**

Percentage of critical care admissions with confirmed COVID-19 that were transfers between critical care units in different hospitals by month of admission and reason for transfer *.

* Please see Definitions on page 99. Dashed line indicates incomplete month.

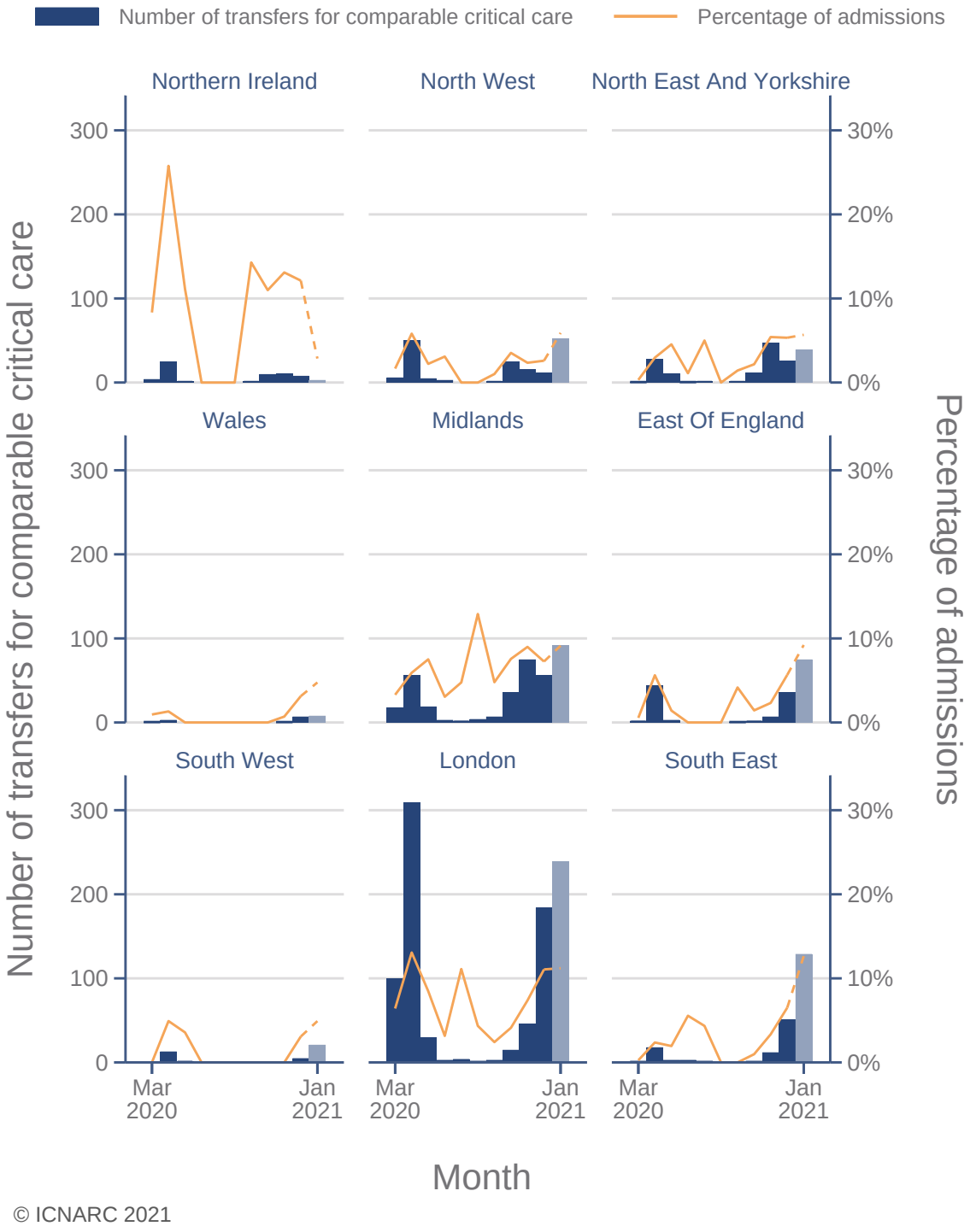





**Figure 29. Inter-hospital critical care transfers for comparable critical care by region**

Number and percentage of critical care admissions with confirmed COVID-19 that were transfers between critical care units in different hospitals for comparable critical care * by month of admission.

* Please see Definitions on page 99. Dashed line and shading indicates incomplete month.

The distribution of the number of days from critical care admission to transfer for comparable critical care for patients critically ill with confirmed COVID-19 is shown in Figure 30.

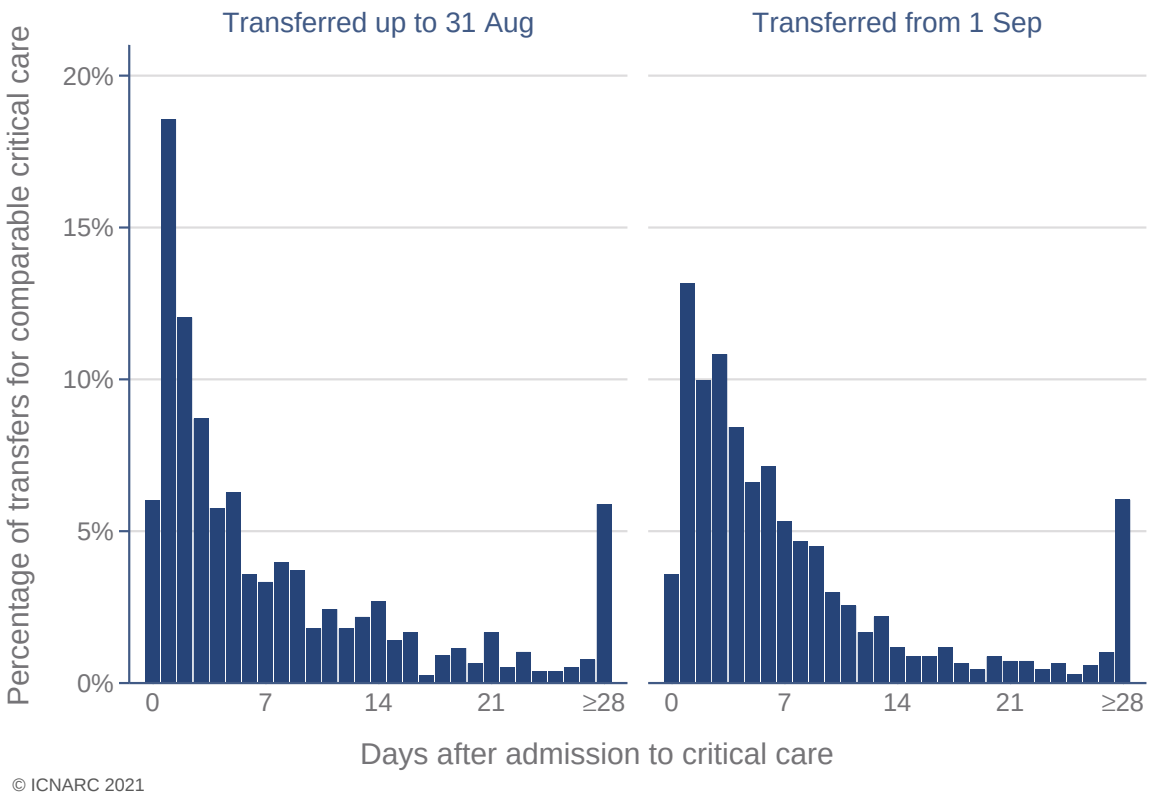
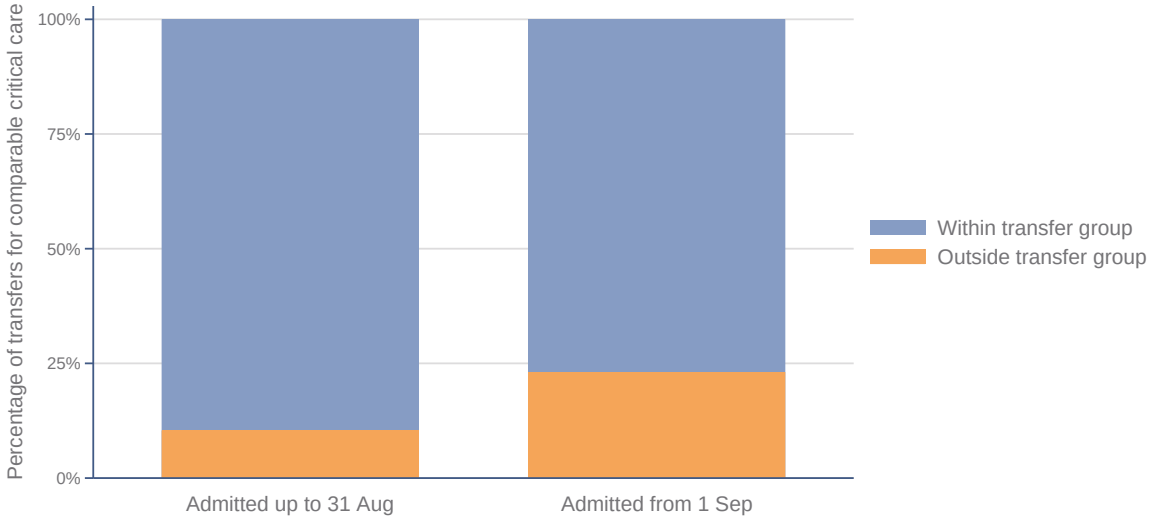



**Figure 30. Timing of inter-hospital critical care transfers for comparable critical care**

Percentage of patients critically ill with confirmed COVID-19 transferred for comparable critical care * by number of days from critical care admission to first transfer.

* Please see Definitions on page 99.

The percentage of transfers for comparable critical care that were to a hospital within or outside of the critical care unit's local transfer group is shown overall in Figure 31 and by month of transfer in Figure 32.






## Figure 31. Inter-hospital critical care transfers for comparable critical care within and outside transfer group *

Percentage of transfers for comparable critical care * of patients critically ill with confirmed COVID-19 by whether the hospital was within or outside the local transfer group.

* Please see Definitions on page 99.

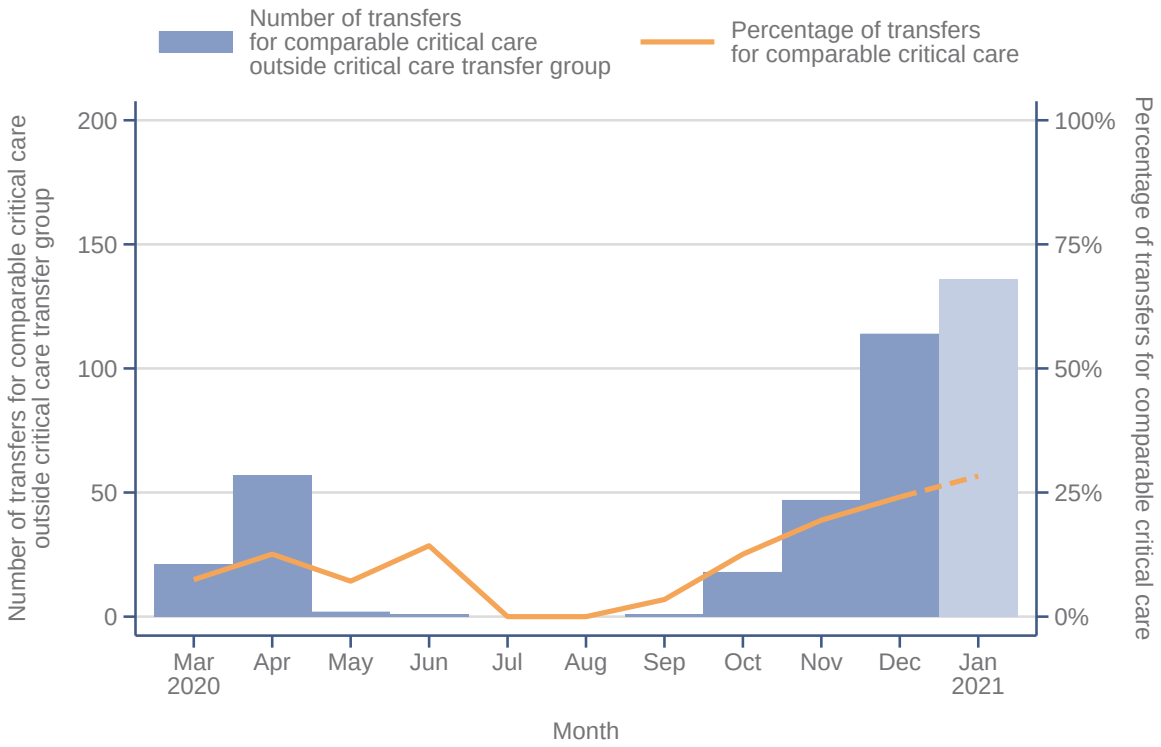





**Figure 32. Inter-hospital critical care transfers for comparable critical care outside transfer group * by month**

Number and percentage of transfers for comparable critical care * of patients critically ill with confirmed COVID-19 that were outside the local transfer group by month of transfer.

* Please see Definitions on page 99. Dashed line and shading indicates incomplete month.

Characteristics of patients critically ill with confirmed COVID-19 that were transferred to a critical care unit in another hospital for comparable critical care admitted from 1 September 2020 to date are summarised in Tables 16-18 and compared with those admitted up to 31 August 2020.

## Table 16. Patient characteristics: demographics (any transfer for comparable critical care)

| | Patients with confirmed COVID-19 transferred for comparable critical care | |
|---|---|---|
| **Demographics** | **Admitted from 1 Sep (N=1314)** | **Admitted up to 31 Aug (N=747)** |
| Age at admission (years) [N=1314] | | |
| Mean (SD) | 59.7 (12.1) | 57.8 (11.2) |
| Median (IQR) | 61 (53, 68) | 59 (51, 66) |
| Sex, n (%) [N=1309] | | |
| Female | 418 (31.9) | 175 (23.5) |
| Male | 891 (68.1) | 570 (76.5) |
| Ethnicity, n (%) [N=1272] | | |
| White | 804 (63.2) | 359 (49.0) |
| Mixed | 16 (1.3) | 18 (2.5) |
| Asian | 267 (21.0) | 196 (26.8) |
| Black | 97 (7.6) | 86 (11.7) |
| Other | 88 (6.9) | 73 (10.0) |
| Index of Multiple Deprivation (IMD) quintile *, n (%) [N=1301] | | |
| 1 (least deprived) | 153 (11.8) | 93 (12.5) |
| 2 | 199 (15.3) | 92 (12.4) |
| 3 | 241 (18.5) | 150 (20.2) |
| 4 | 312 (24.0) | 217 (29.2) |
| 5 (most deprived) | 396 (30.4) | 190 (25.6) |
| Urban/rural classification *, n (%) [N=1267] | | |
| Major conurbation | 749 (59.1) | 530 (74.0) |
| Minor conurbation | 33 (2.6) | 27 (3.8) |
| City and town | 394 (31.1) | 126 (17.6) |
| Rural | 91 (7.2) | 33 (4.6) |

* Please see Definitions on page 99.

## Table 17. Patient characteristics: medical history (any transfer for comparable critical care)

| | Patients with confirmed COVID-19 transferred for comparable critical care | |
|---|---|---|
| **Medical history** | **Admitted from 1 Sep (N=1314)** | **Admitted up to 31 Aug (N=747)** |
| Dependency prior to admission to acute hospital, n (%) [N=1226] | | |
| Able to live without assistance in daily activities | 1125 (91.8) | 701 (95.4) |
| Some assistance with daily activities | 97 (7.9) | 32 (4.4) |
| Total assistance with all daily activities | 4 (0.3) | 2 (0.3) |
| Very severe comorbidities *, n (%) [N=1260] | | |
| Cardiovascular | 2 (0.2) | 0 (0.0) |
| Respiratory | 4 (0.3) | 4 (0.5) |
| Renal | 9 (0.7) | 4 (0.5) |
| Liver | 4 (0.3) | 0 (0.0) |
| Metastatic disease | 0 (0.0) | 1 (0.1) |
| Haematological malignancy | 12 (1.0) | 5 (0.7) |
| Immunocompromised | 26 (2.1) | 14 (1.9) |
| Body mass index *, n (%) [N=1152] | | |
| <18.5 | 9 (0.8) | 5 (0.7) |
| 18.5-<25 | 208 (18.1) | 171 (23.4) |
| 25-<30 | 389 (33.8) | 288 (39.4) |
| 30-<40 | 441 (38.3) | 232 (31.7) |
| ≥40 | 105 (9.1) | 35 (4.8) |
| CPR within previous 24h, n (%) [N=1285] | | |
| In the community | 5 (0.4) | 0 (0.0) |
| In hospital | 8 (0.6) | 6 (0.8) |
| Prior hospital length of stay [N=1304] | | |
| Mean (SD) | 2.5 (4.3) | 1.9 (3.6) |
| Median (IQR) | 1 (0, 3) | 1 (0, 3) |
| Currently or recently pregnant, n (% of females aged 16-49) [N=93] | | |
| Currently pregnant | 4 (4.3) | 1 (3.1) |
| Recently pregnant (within 6 weeks) | 3 (3.2) | 1 (3.1) |
| Not known to be pregnant | 86 (92.5) | 30 (93.8) |

* Please see Definitions on page 99.

## Table 18. Patient characteristics: indicators of acute severity (any transfer for comparable critical care)

| | Patients with confirmed COVID-19 transferred for comparable critical care | |
|---|---|---|
| **Indicators of acute severity** | **Admitted from 1 Sep (N=1314)** | **Admitted up to 31 Aug (N=747)** |
| Invasively ventilated within first 24h *, n (%) [N=1157] | 665 (57.5) | 598 (81.8) |
| APACHE II Score [N=1177] | | |
| Mean (SD) | 14.8 (4.8) | 14.4 (4.9) |
| Median (IQR) | 14 (12, 17) | 14 (11, 17) |
| $PaO_2$ /$FiO_2$ ratio † (kPa), median (IQR) [N=1124] | 12.2 (9.2, 16.0) | 15.1 (10.9, 19.8) |
| $PaO_2$ /$FiO_2$ ratio †, n (%) [N=1124] | | |
| $<$ 13.3 kPa ($<$ 100 mmHg) | 658 (58.5) | 282 (38.8) |
| 13.3-26.6 kPa (100-200 mmHg) | 398 (35.4) | 375 (51.6) |
| $\geq$ 26.7 kPa ($\geq$ 200 mmHg) | 68 (6.0) | 70 (9.6) |
| $FiO_2$ †, median (IQR) [N=1124] | 0.65 (0.50, 0.80) | 0.60 (0.45, 0.75) |

* Please see Definitions on page 99. Indicators of acute severity are based on data from the first 24 hours of critical care.

† Derived from the arterial blood gas with the lowest $PaO_2$ during the first 24 hours of critical care.

Critical care outcomes have been received for 12,703 (of 17,015) patients. Of these, 4868 have died and 7835 have been discharged from critical care (Figures 33 and 34). The remaining 4312 were last reported to still be receiving critical care.

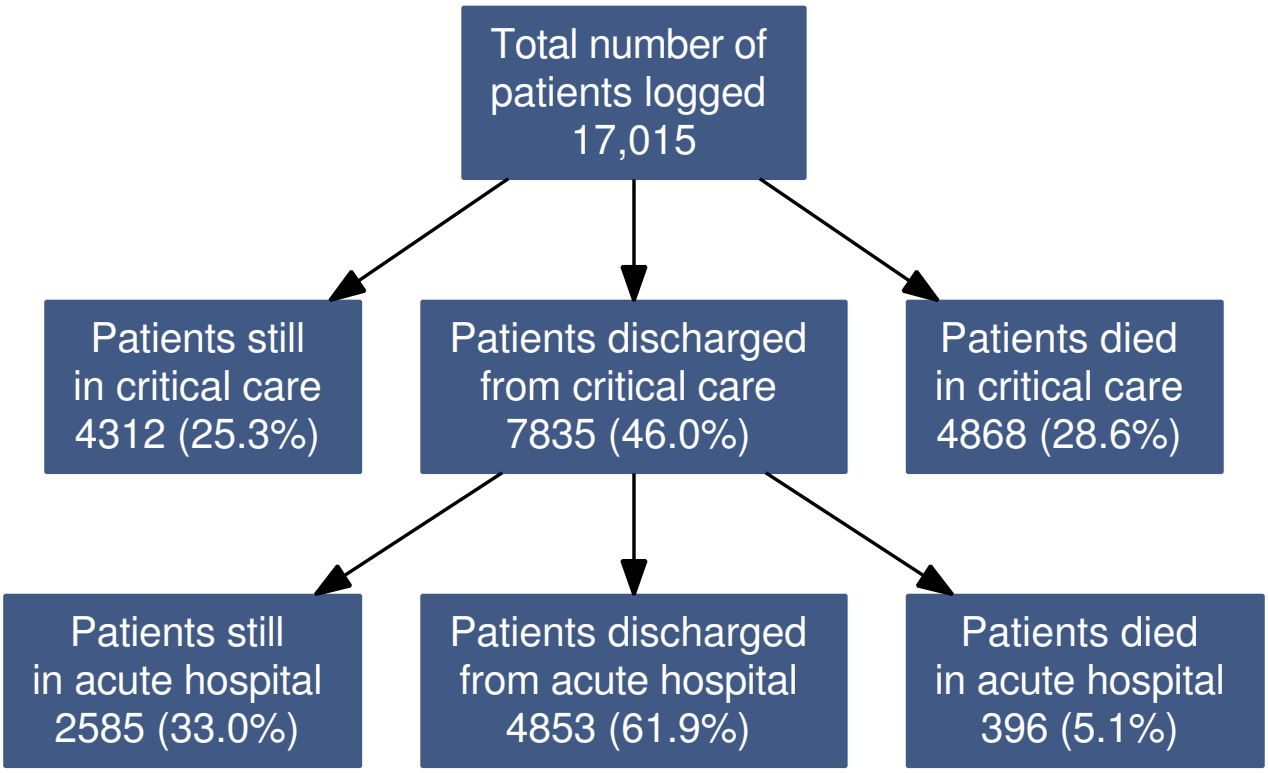
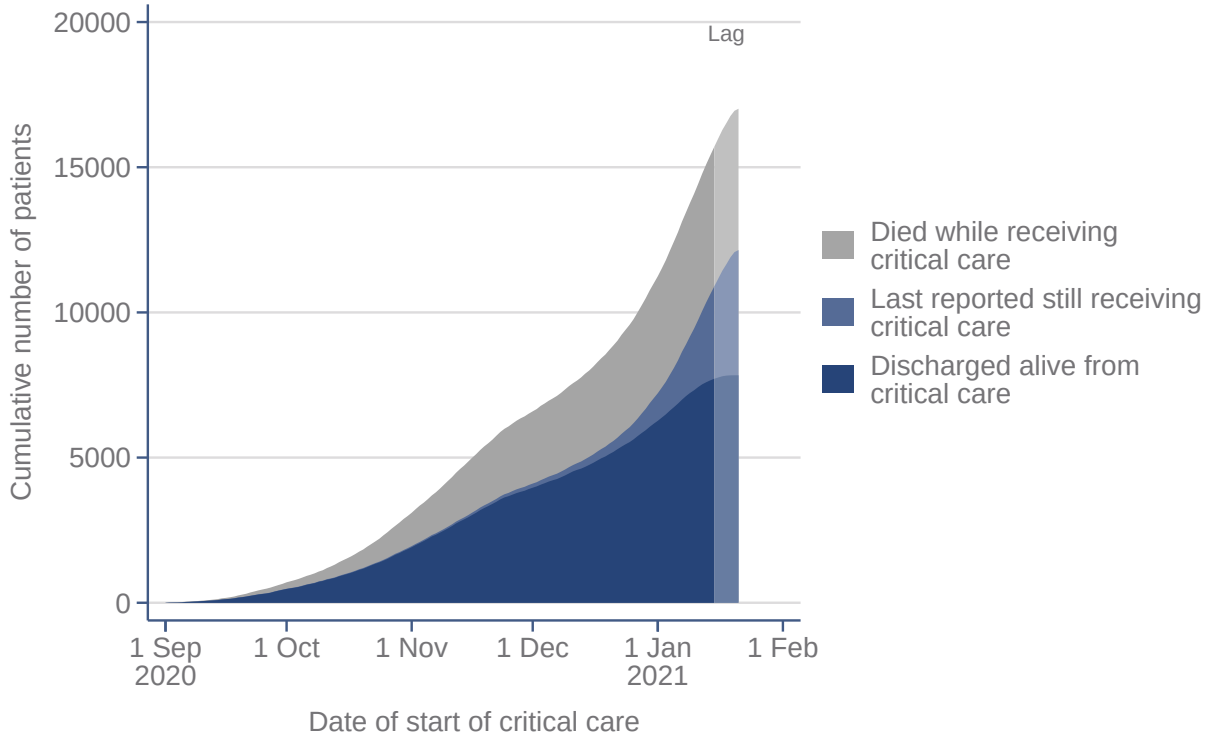



**Figure 33. Critical care and acute hospital outcomes**

Critical care and acute hospital outcomes for patients admitted from 1 September 2020 to date.




## Figure 34. Cumulative outcomes *

Cumulative outcomes for patients admitted from 1 September 2020 to date by date of start of critical care.

* Please note that patients whose outcome data have not been received are assumed to remain in critical care as of 21 January 2021.

Critical care outcome, duration of critical care and organ support for patients critically ill with confirmed COVID-19 admitted from 1 September 2020 to date for whom outcomes have been received are summarised in Table 19 and compared with those admitted up to 31 August 2020.

## Table 19. Critical care outcome, duration of critical care and organ support

| | Patients with confirmed COVID-19 and outcome received | |
|---|---|---|
| **Critical care outcome** | **Admitted from 1 Sep (N=17,015)** | **Admitted up to 31 Aug (N=10,938)** |
| Outcome at end of critical care, n (%) | | |
| Discharged | 7835 (46.0) | 6623 (60.6) |
| Died | 4868 (28.6) | 4312 (39.4) |
| Still receiving critical care | 4312 (25.3) | 3 (0.0) |
| **Duration of critical care** | **(N=12,672)** | **(N=10,929)** |
| Duration of critical care (days) †, median (IQR) | | |
| Survivors | 6 (3, 10) | 12 (5, 28) |
| Non-survivors | 10 (5, 16) | 9 (5, 16) |
| **Organ support (Critical Care Minimum Dataset) *** | **(N=12,546)** | **(N=10,934)** |
| Receipt of organ support, at any point, n (%) | | |
| Advanced respiratory support | 5651 (45.0) | 7877 (72.0) |
| Basic respiratory support only | 6348 (50.6) | 2793 (25.5) |
| No respiratory support | 547 (4.4) | 264 (2.4) |
| Advanced cardiovascular support | 2345 (18.7) | 3366 (30.8) |
| Basic cardiovascular support only | 9397 (74.9) | 7107 (65.0) |
| No cardiovascular support | 804 (6.4) | 461 (4.2) |
| Renal support | 1733 (13.8) | 2928 (26.8) |
| Liver support | 74 (0.6) | 114 (1.0) |
| Neurological support | 725 (5.8) | 996 (9.1) |
| Duration of organ support (calendar days), median (IQR) | | |
| Advanced respiratory support | 10 (5, 17) | 14 (7, 24) |
| Total (advanced + basic) respiratory support | 7 (4, 14) | 11 (5, 22) |
| Advanced cardiovascular support | 2 (1, 5) | 3 (2, 6) |
| Total (advanced + basic) cardiovascular support | 7 (4, 14) | 11 (5, 22) |
| Renal support | 5 (2, 10) | 8 (3, 15) |

Please note that the results for patients admitted from 1 September 2020 are biased towards patients with shorter lengths of stay in critical care prior to discharge or death, i.e. those who died or recovered quickly.

* Please see Definitions on page 99.

† Duration of critical care is the total over all critical care admissions for the the same patient and excludes any time spent outside critical care areas (e.g. prior to any readmissions).

## Outcomes, duration of critical care and organ support – invasively ventilated first 24 hours

Critical care outcome, duration of critical care and organ support for patients critically ill with confirmed COVID-19 and receiving invasive ventilation during the first 24 hours in critical care admitted from 1 September 2020 to date for whom outcomes have been received are summarised in Table 20 and compared with those admitted up to 31 August 2020.

## Table 20. Critical care outcome, duration of critical care and organ support (invasively ventilated first 24 hours)

| | Patients with confirmed COVID-19 invasively ventilated first 24 hours * | |
|---|---|---|
| **Critical care outcome** | **Admitted from 1 Sep (N=4012)** | **Admitted up to 31 Aug (N=5868)** |
| Outcome at end of critical care, n (%) | | |
| Discharged | 1250 (31.2) | 3131 (53.4) |
| Died | 1611 (40.2) | 2735 (46.6) |
| Still receiving critical care | 1151 (28.7) | 2 (0.0) |
| **Duration of critical care** | **(N=2857)** | **(N=5863)** |
| Duration of critical care (days) †, median (IQR) | | |
| Survivors | 12 (6, 23) | 22 (12, 35) |
| Non-survivors | 10 (4, 16) | 10 (5, 17) |
| **Organ support (Critical Care Minimum Dataset) *** | **(N=2826)** | **(N=5865)** |
| Receipt of organ support, at any point, n (%) | | |
| Advanced cardiovascular support | 1136 (40.2) | 2392 (40.8) |
| Basic cardiovascular support only | 1685 (59.6) | 3460 (59.0) |
| No cardiovascular support | 5 (0.2) | 13 (0.2) |
| Renal support | 733 (25.9) | 2121 (36.2) |
| Liver support | 41 (1.5) | 80 (1.4) |
| Neurological support | 384 (13.6) | 719 (12.3) |
| Duration of organ support (calendar days), median (IQR) | | |
| Advanced respiratory support | 10 (4, 17) | 14 (7, 24) |
| Total (advanced + basic) respiratory support | 11 (6, 18) | 15 (8, 26) |
| Advanced cardiovascular support | 2 (1, 5) | 3 (2, 6) |
| Total (advanced + basic) cardiovascular support | 11 (6, 18) | 15 (8, 26) |
| Renal support | 5 (2, 11) | 8 (4, 16) |

Please note that the results for patients admitted from 1 September 2020 are biased towards patients with shorter lengths of stay in critical care prior to discharge or death, i.e. those who died or recovered quickly.

* Please see Definitions on page 99.

† Duration of critical care is the total over all critical care admissions for the the same patient and excludes any time spent outside critical care areas (e.g. prior to any readmissions).

## Outcomes, duration of critical care and organ support – advanced respiratory support

Critical care outcome, duration of critical care and organ support for patients critically ill with confirmed COVID-19 that received advanced respiratory support at any time during their critical care stay admitted from 1 September 2020 to date for whom outcomes have been received are summarised in Table 21 and compared with those admitted up to 31 August 2020.

## Table 21. Critical care outcome, duration of critical care and organ support (any advanced respiratory support)

| | Patients with confirmed COVID-19 and advanced respiratory support * | |
|---|---|---|
| **Critical care outcome** | **Admitted from 1 Sep (N=9021 ‡)** | **Admitted up to 31 Aug (N=7877)** |
| Outcome at end of critical care, n (%) | | |
| Discharged | 2113 (23.4) | 4121 (52.3) |
| Died | 3538 (39.2) | 3756 (47.7) |
| Still receiving critical care ‡ | 3370 (37.4) | 0 (0.0) |
| **Duration of critical care** | **(N=5640)** | **(N=7872)** |
| Duration of critical care (days) †, median (IQR) | | |
| Survivors | 13 (7, 27) | 23 (12, 37) |
| Non-survivors | 12 (7, 18) | 10 (6, 17) |
| **Organ support (Critical Care Minimum Dataset) *** | **(N=5651)** | **(N=7877)** |
| Receipt of organ support, at any point, n (%) | | |
| Advanced cardiovascular support | 2206 (39.0) | 3296 (41.8) |
| Basic cardiovascular support only | 3433 (60.8) | 4565 (58.0) |
| No cardiovascular support | 12 (0.2) | 16 (0.2) |
| Renal support | 1495 (26.5) | 2778 (35.3) |
| Liver support | 67 (1.2) | 110 (1.4) |
| Neurological support | 673 (11.9) | 970 (12.3) |
| Duration of organ support (calendar days), median (IQR) | | |
| Advanced respiratory support | 10 (5, 17) | 14 (7, 24) |
| Total (advanced + basic) respiratory support | 13 (7, 20) | 16 (8, 27) |
| Advanced cardiovascular support | 2 (1, 5) | 3 (2, 6) |
| Total (advanced + basic) cardiovascular support | 13 (7, 20) | 16 (9, 27) |
| Renal support | 5 (3, 11) | 8 (4, 15) |

Please note that the results for patients admitted from 1 September 2020 are biased towards patients with shorter lengths of stay in critical care prior to discharge or death, i.e. those who died or recovered quickly.

* Please see Definitions on page 99.

† Duration of critical care is the total over all critical care admissions for the the same patient and excludes any time spent outside critical care areas (e.g. prior to any readmissions).

‡ Numbers of patients still receiving critical care estimated based on observed, incomplete organ support data received.

## Outcomes, duration of critical care and organ support – basic respiratory support only

Critical care outcome, duration of critical care and organ support for patients critically ill with confirmed COVID-19 that received basic respiratory support only during their critical care stay admitted from 1 September 2020 to date for whom outcomes have been received are summarised in Table 22 and compared with those admitted up to 31 August 2020.

## Table 22. Critical care outcome, duration of critical care and organ support (basic respiratory support only)

| | Patients with confirmed COVID-19 and basic respiratory support only * | |
|---|---|---|
| **Critical care outcome** | **Admitted from 1 Sep (N=7447 ‡)** | **Admitted up to 31 Aug (N=2793)** |
| Outcome at end of critical care, n (%) | | |
| Discharged | 5162 (69.3) | 2252 (80.6) |
| Died | 1186 (15.9) | 541 (19.4) |
| Still receiving critical care ‡ | 1099 (14.8) | 0 (0.0) |
| **Duration of critical care** | **(N=6329)** | **(N=2792)** |
| Duration of critical care (days) †, median (IQR) | | |
| Survivors | 5 (3, 7) | 4 (2, 7) |
| Non-survivors | 5 (2, 9) | 4 (2, 7) |
| **Organ support (Critical Care Minimum Dataset) *** | **(N=6348)** | **(N=2793)** |
| Receipt of organ support, at any point, n (%) | | |
| Advanced cardiovascular support | 118 (1.9) | 53 (1.9) |
| Basic cardiovascular support only | 5704 (89.9) | 2329 (83.4) |
| No cardiovascular support | 526 (8.3) | 411 (14.7) |
| Renal support | 190 (3.0) | 115 (4.1) |
| Liver support | 4 (0.1) | 3 (0.1) |
| Neurological support | 46 (0.7) | 22 (0.8) |
| Duration of organ support (calendar days), median (IQR) | | |
| Total (advanced + basic) respiratory support | 5 (3, 8) | 4 (3, 7) |
| Advanced cardiovascular support | 2 (1, 3) | 2 (1, 3) |
| Total (advanced + basic) cardiovascular support | 5 (3, 8) | 5 (3, 7) |
| Renal support | 4 (2, 6) | 3 (2, 5) |

Please note that the results for patients admitted from 1 September 2020 are biased towards patients with shorter lengths of stay in critical care prior to discharge or death, i.e. those who died or recovered quickly.

* Please see Definitions on page 99.

† Duration of critical care is the total over all critical care admissions for the the same patient and excludes any time spent outside critical care areas (e.g. prior to any readmissions).

‡ Numbers of patients still receiving critical care estimated based on observed, incomplete organ support data received.

## Outcomes, duration of critical care and organ support – renal support

Critical care outcome, duration of critical care and organ support for patients critically ill with confirmed COVID-19 that received renal support at any time during their critical care stay admitted from 1 September 2020 to date for whom outcomes have been received are summarised in Table 23 and compared with those admitted up to 31 August 2020.

## Table 23. Critical care outcome, duration of critical care and organ support (any renal support)

| | Patients with confirmed COVID-19 and renal support * | |
|---|---|---|
| **Critical care outcome** | **Admitted from 1 Sep (N=2214 ‡)** | **Admitted up to 31 Aug (N=2928)** |
| Outcome at end of critical care, n (%) | | |
| Discharged | 409 (18.5) | 1277 (43.6) |
| Died | 1324 (59.8) | 1651 (56.4) |
| Still receiving critical care ‡ | 481 (21.7) | 0 (0.0) |
| **Duration of critical care** | **(N=1732)** | **(N=2928)** |
| Duration of critical care (days) †, median (IQR) | | |
| Survivors | 15 (5, 37) | 32 (19, 46) |
| Non-survivors | 13 (7, 20) | 13 (7, 20) |
| **Organ support (Critical Care Minimum Dataset) *** | **(N=1733)** | **(N=2928)** |
| Receipt of organ support, at any point, n (%) | | |
| Advanced respiratory support | 1495 (86.3) | 2778 (94.9) |
| Basic respiratory support only | 190 (11.0) | 115 (3.9) |
| No respiratory support | 48 (2.8) | 35 (1.2) |
| Advanced cardiovascular support | 908 (52.4) | 1586 (54.2) |
| Basic cardiovascular support only | 804 (46.4) | 1333 (45.5) |
| No cardiovascular support | 21 (1.2) | 9 (0.3) |
| Liver support | 41 (2.4) | 78 (2.7) |
| Neurological support | 199 (11.5) | 411 (14.0) |
| Duration of organ support (calendar days), median (IQR) | | |
| Advanced respiratory support | 12 (7, 20) | 18 (11, 30) |
| Total (advanced + basic) respiratory support | 14 (8, 22) | 19 (11, 33) |
| Advanced cardiovascular support | 3 (2, 5) | 4 (2, 7) |
| Total (advanced + basic) cardiovascular support | 14 (8, 22) | 19 (11, 32) |
| Renal support | 5 (2, 10) | 8 (3, 15) |

Please note that the results for patients admitted from 1 September 2020 are biased towards patients with shorter lengths of stay in critical care prior to discharge or death, i.e. those who died or recovered quickly.

* Please see Definitions on page 99.

† Duration of critical care is the total over all critical care admissions for the the same patient and excludes any time spent outside critical care areas (e.g. prior to any readmissions).

‡ Numbers of patients still receiving critical care estimated based on observed, incomplete organ support data received.

To explore the potential impact of the new variant of COVID-19 (B.1.1.7), Tables 24-26 present the patient characteristics split into time periods of September to November 2020 compared with December 2020 to date. Tables 27-32 break these characteristics down further into the regions in which the new variant was first identified to be spreading widely (London, South East and East Of England) compared with all other regions.

## Table 24. Patient characteristics: demographics (September to November versus December to date)

| | Patients with confirmed COVID-19 | |
|---|---|---|
| **Demographics** | **Admitted 1 Sep - 30 Nov (N=6095)** | **Admitted from 1 Dec (N=9975)** |
| Age at admission (years) | | |
| Mean (SD) | 61.1 (13.7) | 58.9 (13.2) |
| Median (IQR) | 63 (53, 71) | 60 (51, 69) |
| Sex, n (%) | | |
| Female | 1886 (31.0) | 3564 (35.8) |
| Male | 4204 (69.0) | 6400 (64.2) |
| Ethnicity, n (%) | | |
| White | 4332 (73.9) | 6085 (68.3) |
| Mixed | 56 (1.0) | 164 (1.8) |
| Asian | 995 (17.0) | 1532 (17.2) |
| Black | 242 (4.1) | 588 (6.6) |
| Other | 235 (4.0) | 545 (6.1) |
| Index of Multiple Deprivation (IMD) quintile *, n (%) | | |
| 1 (least deprived) | 709 (11.8) | 1295 (13.3) |
| 2 | 840 (14.0) | 1527 (15.7) |
| 3 | 999 (16.6) | 1924 (19.7) |
| 4 | 1410 (23.4) | 2413 (24.8) |
| 5 (most deprived) | 2061 (34.2) | 2588 (26.6) |
| Urban/rural classification *, n (%) | | |
| Major conurbation | 2815 (46.5) | 4603 (47.0) |
| Minor conurbation | 359 (5.9) | 264 (2.7) |
| City and town | 2284 (37.7) | 3880 (39.6) |
| Rural | 594 (9.8) | 1040 (10.6) |

* Please see Definitions on page 99.

## Table 25. Patient characteristics: medical history (September to November versus December to date)

| | Patients with confirmed COVID-19 | |
|---|---|---|
| **Medical history** | **Admitted 1 Sep - 30 Nov (N=6095)** | **Admitted from 1 Dec (N=9975)** |
| Dependency prior to admission to acute hospital, n (%) | | |
| Able to live without assistance in daily activities | 5232 (87.4) | 7533 (89.2) |
| Some assistance with daily activities | 738 (12.3) | 878 (10.4) |
| Total assistance with all daily activities | 17 (0.3) | 31 (0.4) |
| Very severe comorbidities *, n (%) | | |
| Cardiovascular | 46 (0.8) | 70 (0.8) |
| Respiratory | 61 (1.0) | 93 (1.1) |
| Renal | 107 (1.8) | 147 (1.7) |
| Liver | 40 (0.7) | 48 (0.5) |
| Metastatic disease | 47 (0.8) | 55 (0.6) |
| Haematological malignancy | 107 (1.8) | 116 (1.3) |
| Immunocompromised | 235 (3.9) | 256 (2.9) |
| Body mass index *, n (%) | | |
| <18.5 | 42 (0.7) | 57 (0.7) |
| 18.5-<25 | 1137 (19.8) | 1597 (19.9) |
| 25-<30 | 1923 (33.4) | 2437 (30.3) |
| 30-<40 | 2059 (35.8) | 2978 (37.0) |
| ≥40 | 593 (10.3) | 970 (12.1) |
| CPR within previous 24h, n (%) | | |
| In the community | 37 (0.6) | 60 (0.7) |
| In hospital | 48 (0.8) | 94 (1.0) |
| Prior hospital length of stay | | |
| Mean (SD) | 2.8 (6.2) | 3.4 (14.8) |
| Median (IQR) | 1 (0, 3) | 1 (0, 3) |
| Currently or recently pregnant, n (% of females aged 16-49) | | |
| Currently pregnant | 36 (8.0) | 55 (6.2) |
| Recently pregnant (within 6 weeks) | 21 (4.7) | 55 (6.2) |
| Not known to be pregnant | 393 (87.3) | 771 (87.5) |

* Please see Definitions on page 99.

## Table 26. Patient characteristics: indicators of acute severity (September to November versus December to date)

| | Patients with confirmed COVID-19 and 24h data received | |
|---|---|---|
| **Indicators of acute severity** | **Admitted 1 Sep - 30 Nov (N=6095)** | **Admitted from 1 Dec (N=9975)** |
| Invasively ventilated within first 24h *, n (%) | 1321 (22.0) | 2270 (29.3) |
| APACHE II Score | | |
| Mean (SD) | 14.8 (5.2) | 14.1 (5.3) |
| Median (IQR) | 14 (11, 18) | 14 (11, 17) |
| $PaO_2$ /$FiO_2$ ratio † (kPa), median (IQR) | 13.5 (10.0, 19.0) | 13.0 (9.7, 18.2) |
| $PaO_2$ /$FiO_2$ ratio †, n (%) | | |
| $<$ 13.3 kPa ($<$ 100 mmHg) | 2775 (48.8) | 3798 (51.8) |
| 13.3-26.6 kPa (100-200 mmHg) | 2287 (40.2) | 2774 (37.9) |
| $\geq$ 26.7 kPa ($\geq$ 200 mmHg) | 626 (11.0) | 753 (10.3) |
| $FiO_2$ †, median (IQR) | 0.60 (0.45, 0.75) | 0.60 (0.45, 0.80) |

* Please see Definitions on page 99. Indicators of acute severity are based on data from the first 24 hours of critical care.

† Derived from the arterial blood gas with the lowest $PaO_2$ during the first 24 hours of critical care.

## Table 27. Patient characteristics: demographics (London, South East and East of England)

| | Patients with confirmed COVID-19 | |
|---|---|---|
| **Demographics** | **Admitted 1 Sep - 30 Nov (N=1767)** | **Admitted from 1 Dec (N=5732)** |
| Age at admission (years) | | |
| Mean (SD) | 61.4 (14.5) | 58.9 (13.2) |
| Median (IQR) | 62 (53, 72) | 60 (51, 69) |
| Sex, n (%) | | |
| Female | 586 (33.2) | 2074 (36.2) |
| Male | 1180 (66.8) | 3648 (63.8) |
| Ethnicity, n (%) | | |
| White | 1054 (63.1) | 3090 (60.6) |
| Mixed | 27 (1.6) | 105 (2.1) |
| Asian | 336 (20.1) | 980 (19.2) |
| Black | 115 (6.9) | 471 (9.2) |
| Other | 138 (8.3) | 457 (9.0) |
| Index of Multiple Deprivation (IMD) quintile *, n (%) | | |
| 1 (least deprived) | 286 (16.6) | 790 (14.2) |
| 2 | 270 (15.6) | 911 (16.3) |
| 3 | 382 (22.1) | 1270 (22.7) |
| 4 | 488 (28.2) | 1573 (28.2) |
| 5 (most deprived) | 302 (17.5) | 1039 (18.6) |
| Urban/rural classification *, n (%) | | |
| Major conurbation | 957 (55.0) | 3104 (55.4) |
| Minor conurbation | 2 (0.1) | 1 (0.0) |
| City and town | 635 (36.5) | 2000 (35.7) |
| Rural | 147 (8.4) | 494 (8.8) |

* Please see Definitions on page 99.

## Table 28. Patient characteristics: medical history (London, South East and East of England)

| | Patients with confirmed COVID-19 | |
|---|---|---|
| **Medical history** | **Admitted 1 Sep - 30 Nov (N=1767)** | **Admitted from 1 Dec (N=5732)** |
| Dependency prior to admission to acute hospital, n (%) | | |
| Able to live without assistance in daily activities | 1445 (83.7) | 4344 (89.0) |
| Some assistance with daily activities | 272 (15.8) | 520 (10.7) |
| Total assistance with all daily activities | 9 (0.5) | 18 (0.4) |
| Very severe comorbidities *, n (%) | | |
| Cardiovascular | 10 (0.6) | 30 (0.6) |
| Respiratory | 13 (0.7) | 43 (0.8) |
| Renal | 50 (2.9) | 95 (1.8) |
| Liver | 16 (0.9) | 32 (0.6) |
| Metastatic disease | 16 (0.9) | 31 (0.6) |
| Haematological malignancy | 31 (1.8) | 68 (1.3) |
| Immunocompromised | 75 (4.3) | 154 (3.0) |
| Body mass index *, n (%) | | |
| <18.5 | 19 (1.2) | 36 (0.8) |
| 18.5-<25 | 372 (22.9) | 1045 (22.3) |
| 25-<30 | 553 (34.0) | 1440 (30.7) |
| 30-<40 | 538 (33.1) | 1634 (34.8) |
| ≥40 | 145 (8.9) | 534 (11.4) |
| CPR within previous 24h, n (%) | | |
| In the community | 12 (0.7) | 30 (0.6) |
| In hospital | 16 (0.9) | 57 (1.1) |
| Prior hospital length of stay | | |
| Mean (SD) | 3.2 (6.7) | 3.6 (16.6) |
| Median (IQR) | 1 (0, 3) | 1 (0, 4) |
| Currently or recently pregnant, n (% of females aged 16-49) | | |
| Currently pregnant | 10 (8.1) | 37 (7.1) |
| Recently pregnant (within 6 weeks) | 8 (6.5) | 32 (6.2) |
| Not known to be pregnant | 106 (85.5) | 450 (86.7) |

* Please see Definitions on page 99.

## Table 29. Patient characteristics: indicators of acute severity (London, South East and East of England)

| | Patients with confirmed COVID-19 and 24h data received | |
|---|---|---|
| **Indicators of acute severity** | **Admitted 1 Sep - 30 Nov (N=1767)** | **Admitted from 1 Dec (N=5732)** |
| Invasively ventilated within first 24h *, n (%) | 435 (25.3) | 1520 (34.3) |
| APACHE II Score | | |
| Mean (SD) | 14.9 (5.5) | 14.3 (5.3) |
| Median (IQR) | 14 (11, 18) | 14 (11, 17) |
| $PaO_2$ /$FiO_2$ ratio † (kPa), median (IQR) | 14.3 (10.3, 20.9) | 12.9 (9.7, 18.0) |
| $PaO_2$ /$FiO_2$ ratio †, n (%) | | |
| $<$ 13.3 kPa ($<$ 100 mmHg) | 718 (44.4) | 2178 (52.7) |
| 13.3-26.6 kPa (100-200 mmHg) | 644 (39.8) | 1478 (35.8) |
| $\geq$ 26.7 kPa ($\geq$ 200 mmHg) | 255 (15.8) | 476 (11.5) |
| $FiO_2$ †, median (IQR) | 0.60 (0.40, 0.70) | 0.60 (0.45, 0.80) |

* Please see Definitions on page 99. Indicators of acute severity are based on data from the first 24 hours of critical care.

† Derived from the arterial blood gas with the lowest $PaO_2$ during the first 24 hours of critical care.

## Table 30. Patient characteristics: demographics (all other regions)

| | Patients with confirmed COVID-19 | |
|---|---|---|
| **Demographics** | **Admitted 1 Sep - 30 Nov (N=4328)** | **Admitted from 1 Dec (N=4243)** |
| Age at admission (years) | | |
| Mean (SD) | 60.9 (13.4) | 59.0 (13.3) |
| Median (IQR) | 63 (53, 71) | 60 (51, 69) |
| Sex, n (%) | | |
| Female | 1300 (30.1) | 1490 (35.1) |
| Male | 3024 (69.9) | 2752 (64.9) |
| Ethnicity, n (%) | | |
| White | 3278 (78.2) | 2995 (78.6) |
| Mixed | 29 (0.7) | 59 (1.5) |
| Asian | 659 (15.7) | 552 (14.5) |
| Black | 127 (3.0) | 117 (3.1) |
| Other | 97 (2.3) | 88 (2.3) |
| Index of Multiple Deprivation (IMD) quintile *, n (%) | | |
| 1 (least deprived) | 423 (9.9) | 505 (12.1) |
| 2 | 570 (13.3) | 616 (14.8) |
| 3 | 617 (14.4) | 654 (15.7) |
| 4 | 922 (21.5) | 840 (20.2) |
| 5 (most deprived) | 1759 (41.0) | 1549 (37.2) |
| Urban/rural classification *, n (%) | | |
| Major conurbation | 1858 (43.1) | 1499 (35.8) |
| Minor conurbation | 357 (8.3) | 263 (6.3) |
| City and town | 1649 (38.2) | 1880 (44.9) |
| Rural | 447 (10.4) | 546 (13.0) |

* Please see Definitions on page 99.

## Table 31. Patient characteristics: medical history (all other regions)

| | Patients with confirmed COVID-19 | |
|---|---|---|
| **Medical history** | **Admitted 1 Sep - 30 Nov (N=4328)** | **Admitted from 1 Dec (N=4243)** |
| Dependency prior to admission to acute hospital, n (%) | | |
| Able to live without assistance in daily activities | 3787 (88.9) | 3189 (89.6) |
| Some assistance with daily activities | 466 (10.9) | 358 (10.1) |
| Total assistance with all daily activities | 8 (0.2) | 13 (0.4) |
| Very severe comorbidities *, n (%) | | |
| Cardiovascular | 36 (0.8) | 40 (1.1) |
| Respiratory | 48 (1.1) | 50 (1.4) |
| Renal | 57 (1.3) | 52 (1.4) |
| Liver | 24 (0.6) | 16 (0.4) |
| Metastatic disease | 31 (0.7) | 24 (0.7) |
| Haematological malignancy | 76 (1.8) | 48 (1.3) |
| Immunocompromised | 160 (3.8) | 102 (2.8) |
| Body mass index *, n (%) | | |
| <18.5 | 23 (0.6) | 21 (0.6) |
| 18.5-<25 | 765 (18.5) | 552 (16.5) |
| 25-<30 | 1370 (33.2) | 997 (29.8) |
| 30-<40 | 1521 (36.9) | 1344 (40.1) |
| ≥40 | 448 (10.9) | 436 (13.0) |
| CPR within previous 24h, n (%) | | |
| In the community | 25 (0.6) | 30 (0.8) |
| In hospital | 32 (0.7) | 37 (1.0) |
| Prior hospital length of stay | | |
| Mean (SD) | 2.6 (6.0) | 3.2 (11.8) |
| Median (IQR) | 1 (0, 3) | 1 (0, 3) |
| Currently or recently pregnant, n (% of females aged 16-49) | | |
| Currently pregnant | 26 (8.0) | 18 (5.0) |
| Recently pregnant (within 6 weeks) | 13 (4.0) | 23 (6.4) |
| Not known to be pregnant | 287 (88.0) | 321 (88.7) |

* Please see Definitions on page 99.

## Table 32. Patient characteristics: indicators of acute severity (all other regions)

| | Patients with confirmed COVID-19 and 24h data received | |
|---|---|---|
| **Indicators of acute severity** | **Admitted 1 Sep - 30 Nov (N=4328)** | **Admitted from 1 Dec (N=4243)** |
| Invasively ventilated within first 24h *, n (%) | 886 (20.6) | 750 (22.5) |
| APACHE II Score | | |
| Mean (SD) | 14.7 (5.1) | 14.0 (5.3) |
| Median (IQR) | 14 (11, 17) | 14 (11, 17) |
| $PaO_2$ /$FiO_2$ ratio † (kPa), median (IQR) | 13.2 (9.9, 18.3) | 13.2 (9.7, 18.2) |
| $PaO_2$ /$FiO_2$ ratio †, n (%) | | |
| $<$ 13.3 kPa ($<$ 100 mmHg) | 2057 (50.5) | 1620 (50.7) |
| 13.3-26.6 kPa (100-200 mmHg) | 1643 (40.4) | 1296 (40.6) |
| $\geq$ 26.7 kPa ($\geq$ 200 mmHg) | 371 (9.1) | 277 (8.7) |
| $FiO_2$ †, median (IQR) | 0.60 (0.45, 0.80) | 0.60 (0.45, 0.80) |

* Please see Definitions on page 99. Indicators of acute severity are based on data from the first 24 hours of critical care.

† Derived from the arterial blood gas with the lowest $PaO_2$ during the first 24 hours of critical care.

The numbers of critically ill women with confirmed COVID-19 reported to be currently and recently pregnant on admisison to critical care are shown in Figure 35 and, as a percentage of women aged 16-49 years, in Figure 36. Characteristics and critical care outcome of women aged 16-49 years by pregnancy status are reported in Table 33 for women admitted from 1 September and compared with women admitted up to 31 August in Table 34.

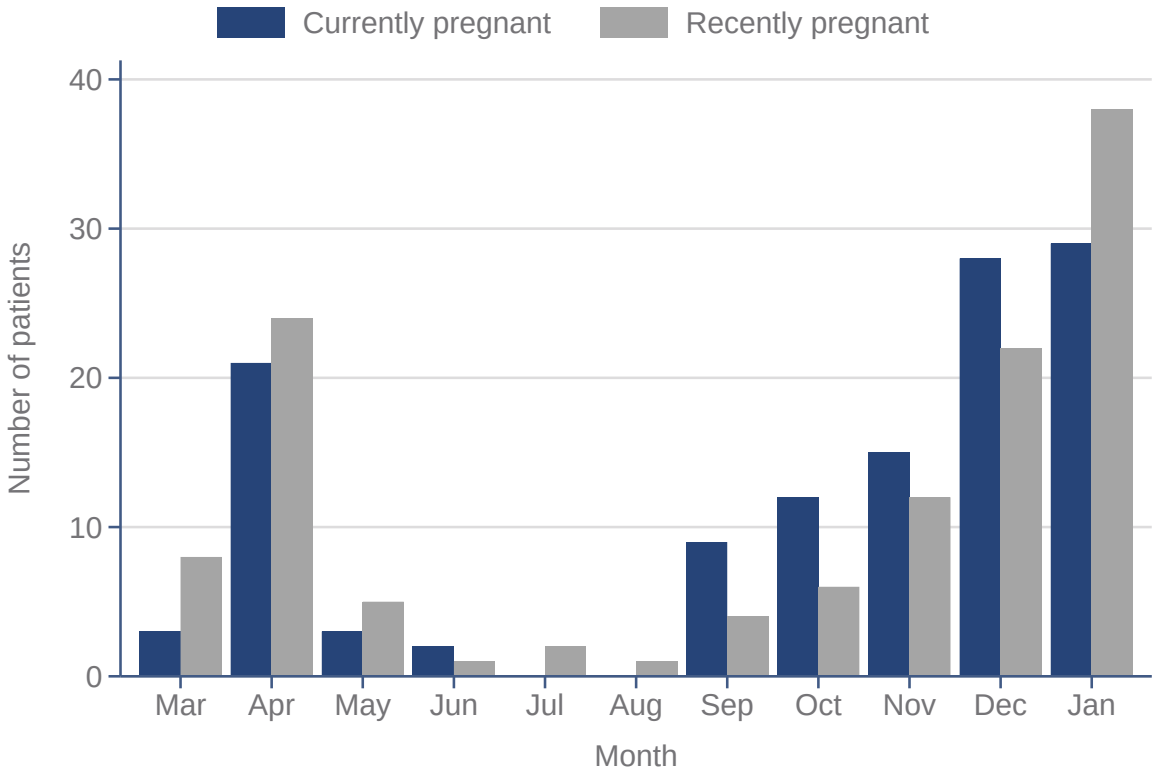





**Figure 35. Numbers currently and recently pregnant**

Monthly trend in the number of women reported to be currently or recently pregnant on admission to critical care.

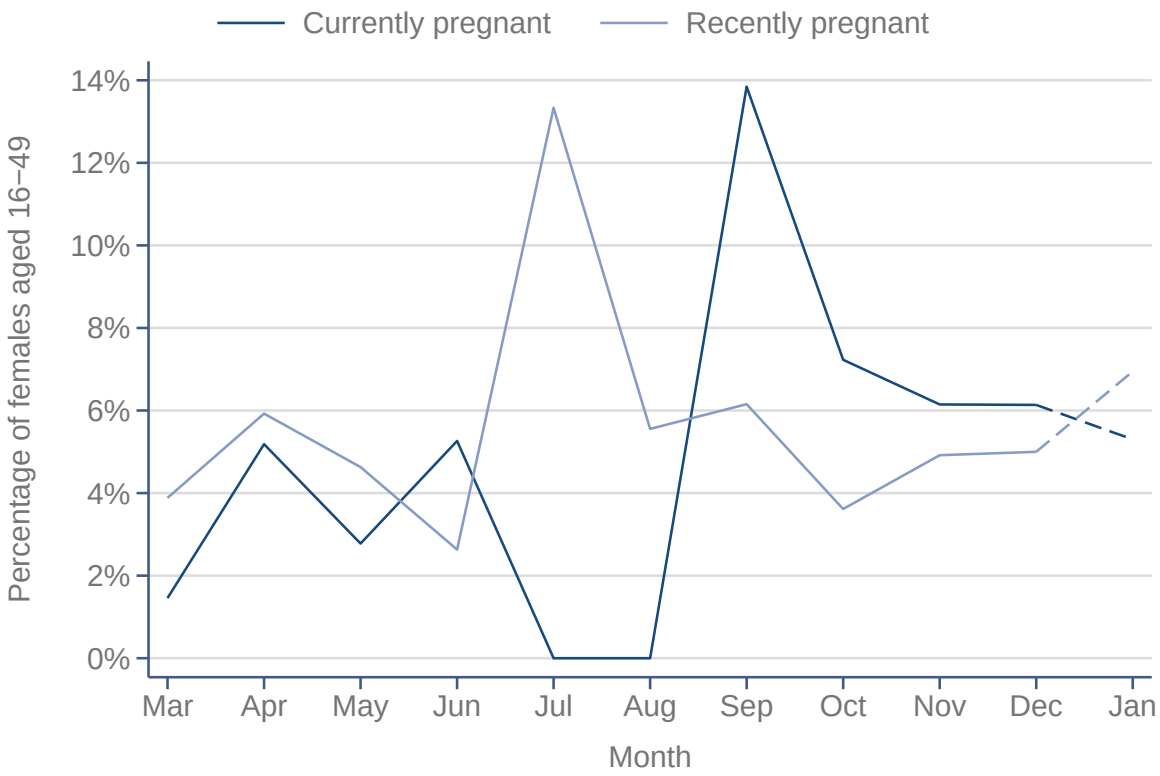





**Figure 36. Percentages currently and recently pregnant**

Monthly trend in the percentage of women aged 16-49 years reported to be currently or recently pregnant on admission to critical care.

## Table 33. Characteristics of females aged 16-49 admitted from 1 September by pregnancy status

| Characteristics | Women with confirmed COVID-19 aged 16-49 years | | |
|---|---|---|---|
| | Currently pregnant (N=92) | Recently pregnant (N=82) | Not known to be pregnant (N=1224) |
| Age at admission (years) | | | |
| Mean (SD) | 33.1 (5.7) | 33.1 (6.0) | 40.4 (7.6) |
| Median (IQR) | 34 (30, 37) | 34 (29, 37) | 42 (36, 47) |
| Ethnicity, n (%) | | | |
| White | 31 (35.6) | 45 (56.3) | 773 (66.6) |
| Mixed | 3 (3.4) | 5 (6.3) | 19 (1.6) |
| Asian | 32 (36.8) | 15 (18.8) | 220 (19.0) |
| Black | 16 (18.4) | 9 (11.3) | 83 (7.2) |
| Other | 5 (5.7) | 6 (7.5) | 65 (5.6) |
| IMD quintile *, n (%) | | | |
| 1 (least deprived) | 5 (5.6) | 8 (10.3) | 112 (9.3) |
| 2 | 6 (6.7) | 12 (15.4) | 146 (12.1) |
| 3 | 13 (14.6) | 13 (16.7) | 195 (16.2) |
| 4 | 29 (32.6) | 17 (21.8) | 322 (26.7) |
| 5 (most deprived) | 36 (40.4) | 28 (35.9) | 430 (35.7) |
| First pregnancy, n (%) | N/A | 40 (51.9) | N/A |
| Invasively ventilated within first 24h *, n (%) | 20 (24.4) | 27 (40.9) | 312 (29.0) |
| APACHE II Score | | | |
| Mean (SD) | 11.8 (3.9) | 10.8 (4.5) | 12.3 (5.0) |
| Median (IQR) | 12 (10, 14) | 11 (8, 14) | 12 (9, 15) |
| $PaO_2$ /$FiO_2$ ratio † (kPa), median (IQR) | 15.3 (10.8, 26.8) | 19.2 (12.2, 29.7) | 14.0 (10.0, 21.0) |
| $PaO_2$ /$FiO_2$ ratio †, n (%) | | | |
| $<$ 13.3 kPa ($<$ 100 mmHg) | 26 (34.2) | 26 (34.2) | 26 (34.2) |
| 13.3-26.6 kPa (100-200 mmHg) | 19 (29.7) | 19 (29.7) | 19 (29.7) |
| $\geq$ 26.7 kPa ($\geq$ 200 mmHg) | 464 (45.4) | 464 (45.4) | 464 (45.4) |
| $FiO_2$ †, median (IQR) | 0.57 (0.35, 0.78) | 0.40 (0.34, 0.61) | 0.60 (0.40, 0.75) |
| Outcome at end of critical care, n (%) | | | |
| Discharged | 63 (68.5) | 59 (72.0) | 784 (64.1) |
| Died | 3 (3.3) | 1 (1.2) | 169 (13.8) |
| Still receiving critical care | 26 (28.3) | 22 (26.8) | 271 (22.1) |

* Please see Definitions on page 99. Indicators of acute severity are based on data from the first 24 hours of critical care. N/A denotes not available.

† Derived from the arterial blood gas with the lowest $PaO_2$ during the first 24 hours of critical care.

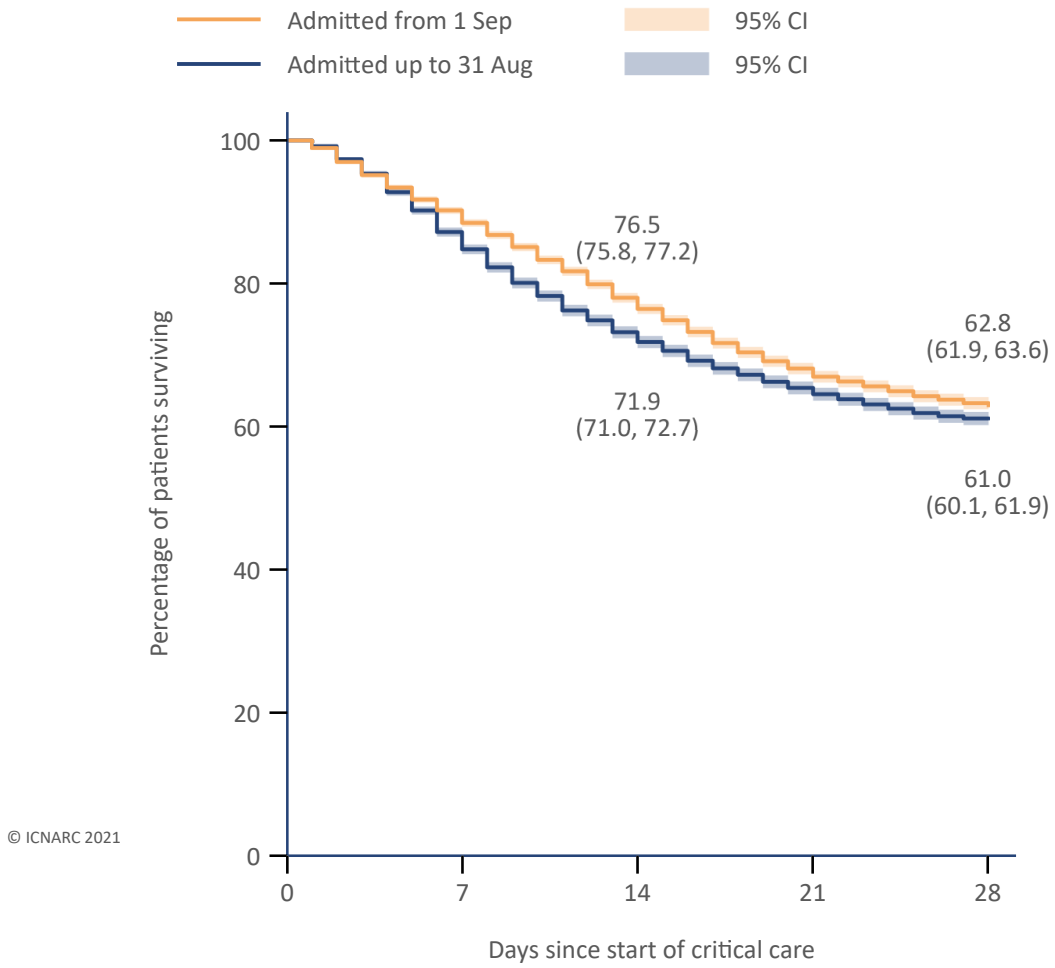
## Table 34. Characteristics of females aged 16-49 admitted up to 31 August by pregnancy status

| | Women with confirmed COVID-19 aged 16-49 years | | |
|---|---|---|---|
| **Characteristics** | **Currently pregnant (N=29)** | **Recently pregnant (N=41)** | **Not known to be pregnant (N=720)** |
| Age at admission (years) | | | |
| Mean (SD) | 34.2 (5.7) | 32.3 (5.4) | 40.3 (7.6) |
| Median (IQR) | 34 (31, 39) | 32 (28, 35) | 42 (35, 46) |
| Ethnicity, n (%) | | | |
| White | 12 (42.9) | 13 (32.5) | 412 (59.1) |
| Mixed | 0 (0.0) | 1 (2.5) | 16 (2.3) |
| Asian | 6 (21.4) | 10 (25.0) | 135 (19.4) |
| Black | 4 (14.3) | 10 (25.0) | 81 (11.6) |
| Other | 6 (21.4) | 6 (15.0) | 53 (7.6) |
| IMD quintile *, n (%) | | | |
| 1 (least deprived) | 5 (17.2) | 2 (4.9) | 77 (10.9) |
| 2 | 4 (13.8) | 2 (4.9) | 84 (11.9) |
| 3 | 4 (13.8) | 10 (24.4) | 124 (17.5) |
| 4 | 8 (27.6) | 12 (29.3) | 161 (22.7) |
| 5 (most deprived) | 8 (27.6) | 15 (36.6) | 262 (37.0) |
| First pregnancy, n (%) | N/A | 15 (36.6) | N/A |
| Invasively ventilated within first 24h *, n (%) | 9 (32.1) | 22 (53.7) | 344 (48.5) |
| APACHE II Score | | | |
| Mean (SD) | 11.7 (3.9) | 11.7 (4.6) | 13.2 (5.5) |
| Median (IQR) | 11 (9, 14) | 12 (9, 14) | 12 (10, 16) |
| $PaO_2$ /$FiO_2$ ratio † (kPa), median (IQR) | 18.7 (14.3, 29.2) | 22.0 (15.6, 34.7) | 17.2 (12.1, 25.1) |
| $PaO_2$ /$FiO_2$ ratio †, n (%) | | | |
| $<$ 13.3 kPa ($<$ 100 mmHg) | 6 (21.4) | 6 (21.4) | 6 (21.4) |
| 13.3-26.6 kPa (100-200 mmHg) | 6 (15.4) | 6 (15.4) | 6 (15.4) |
| $\geq$ 26.7 kPa ($\geq$ 200 mmHg) | 214 (31.9) | 214 (31.9) | 214 (31.9) |
| $FiO_2$ †, median (IQR) | 0.50 (0.35, 0.60) | 0.40 (0.28, 0.50) | 0.50 (0.35, 0.65) |
| Outcome at end of critical care, n (%) | | | |
| Discharged | 28 (96.6) | 37 (90.2) | 557 (77.4) |
| Died | 1 (3.4) | 4 (9.8) | 163 (22.6) |
| Still receiving critical care | 0 (0.0) | 0 (0.0) | 0 (0.0) |

* Please see Definitions on page 99. Indicators of acute severity are based on data from the first 24 hours of critical care. N/A denotes not available.

† Derived from the arterial blood gas with the lowest $PaO_2$ during the first 24 hours of critical care.

A Kaplan-Meier plot of in-hospital survival to 28 days following admission to critical care for patients critically ill with confirmed COVID-19 admitted from 1 September 2020 to date is shown in Figure 37 and compared with those admitted up to 31 August 2020.

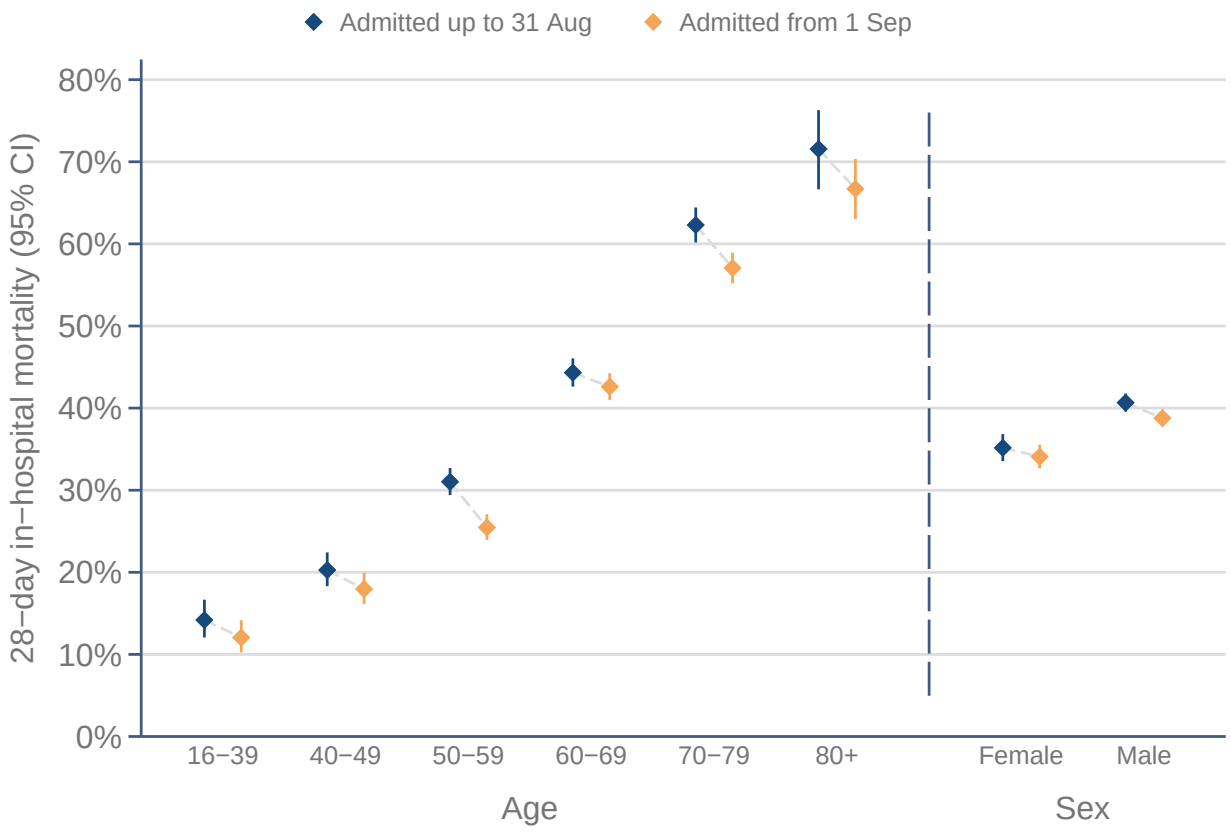



| | | | | | |
|---|---|---|---|---|---|
| **Admitted from 1 Sep** | | | | | |
| At risk | 15860 | 12891 | 9524 | 7059 | 5715 |
| Died (in hospital) | 0 | 1786 | 3423 | 4523 | 4944 |
| Censored | 0 | 1183 | 2913 | 4278 | 5201 |
| **Admitted up to 31 Aug** | | | | | |
| At risk | 10938 | 9273 | 7861 | 7066 | 6669 |
| Died (in hospital) | 0 | 1665 | 3077 | 3872 | 4268 |
| Censored | 0 | 0 | 0 | 0 | 1 |

## Figure 37. In-hospital survival to 28 days following admission to critical care

Kaplan-Meier survival analysis. Patients last reported to be still receiving critical care censored on the most recent date of data submission by the treating unit. Patients discharged from acute hospital within 28 days assumed to survive to 28 days. Please note that these survival curves are not adjusted for differences in patient characteristics (see Tables 1-3).

28-day in-hospital mortality for patients critically ill with confirmed COVID-19 admitted from 1 September 2020 to date by patient characteristics (demographics, medical history and indicators of acute severity) is presented in Figures 38-41 and compared with those admitted up to 31 August 2020.






## Figure 38. 28-day in-hospital mortality by patient characteristics (demographics)

Estimates of 28-day in-hospital mortality based on Kaplan-Meier survival analysis. Patients last reported to be still receiving critical care censored on the most recent date of data submission by the treating unit. Patients discharged from acute hospital within 28 days assumed to survive to 28 days. Please note that these estimates are not adjusted for differences in other patient characteristics (see Tables 1-3).

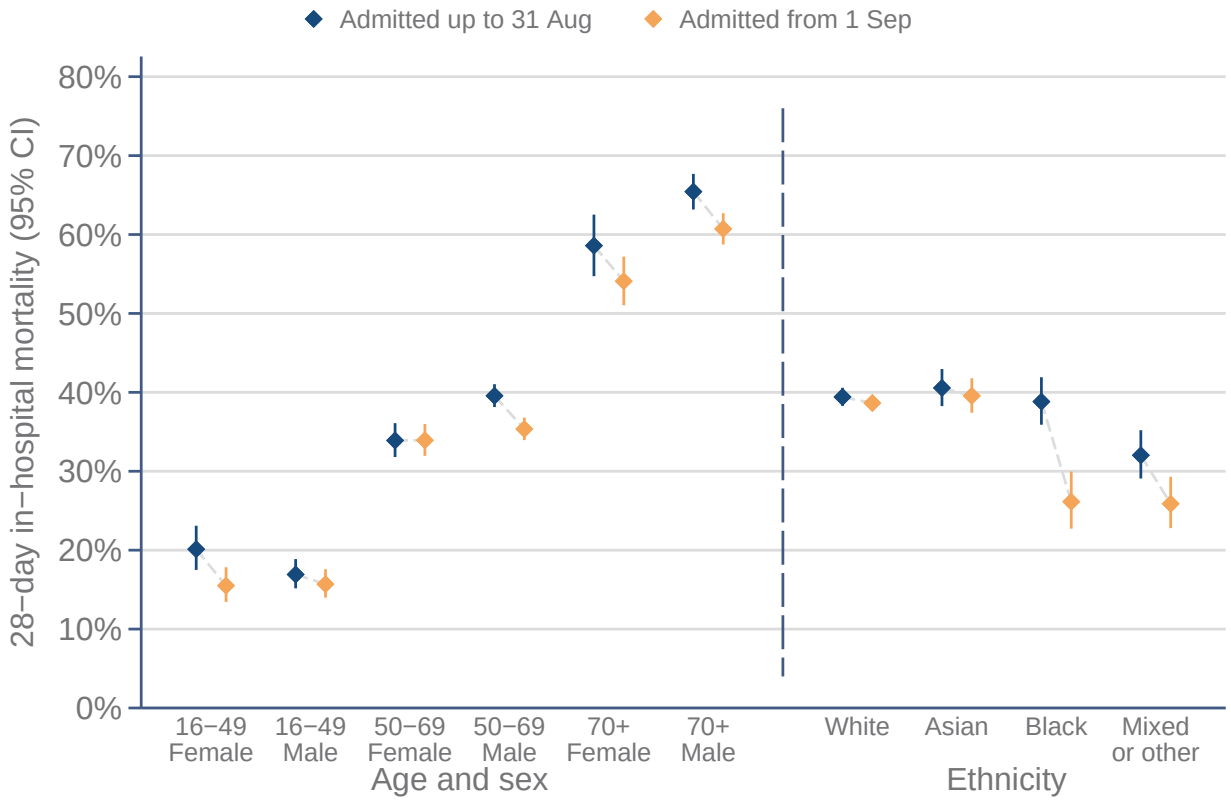





**Figure 39. 28-day in-hospital mortality by patient characteristics (demographics continued)**

Estimates of 28-day in-hospital mortality based on Kaplan-Meier survival analysis. Patients last reported to be still receiving critical care censored on the most recent date of data submission by the treating unit. Patients discharged from acute hospital within 28 days assumed to survive to 28 days. Please note that these estimates are not adjusted for differences in other patient characteristics (see Tables 1-3).

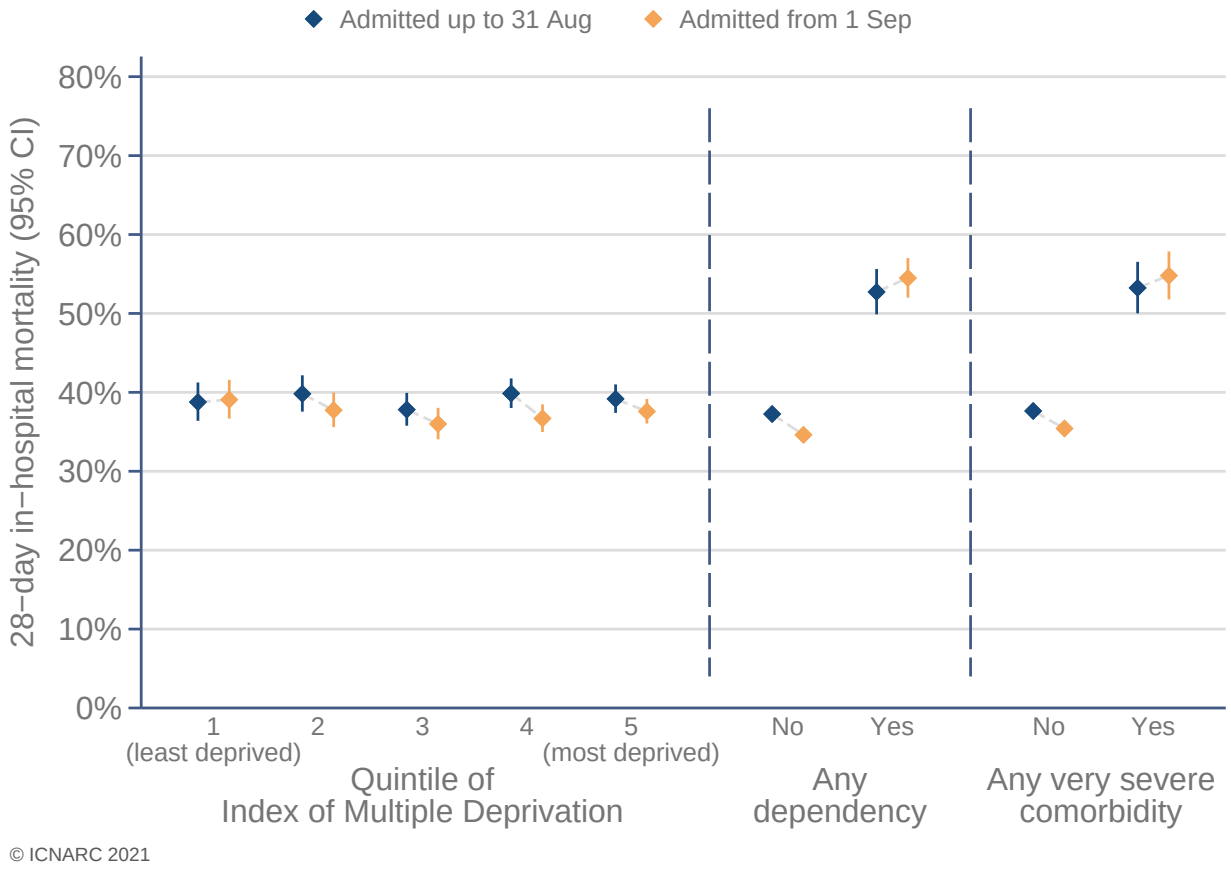



**Figure 40. 28-day in-hospital mortality by patient characteristics (demographics and medical history)**

Estimates of 28-day in-hospital mortality based on Kaplan-Meier survival analysis. Patients last reported to be still receiving critical care censored on the most recent date of data submission by the treating unit. Patients discharged from acute hospital within 28 days assumed to survive to 28 days. Please note that these estimates are not adjusted for differences in other patient characteristics (see Tables 1-3).

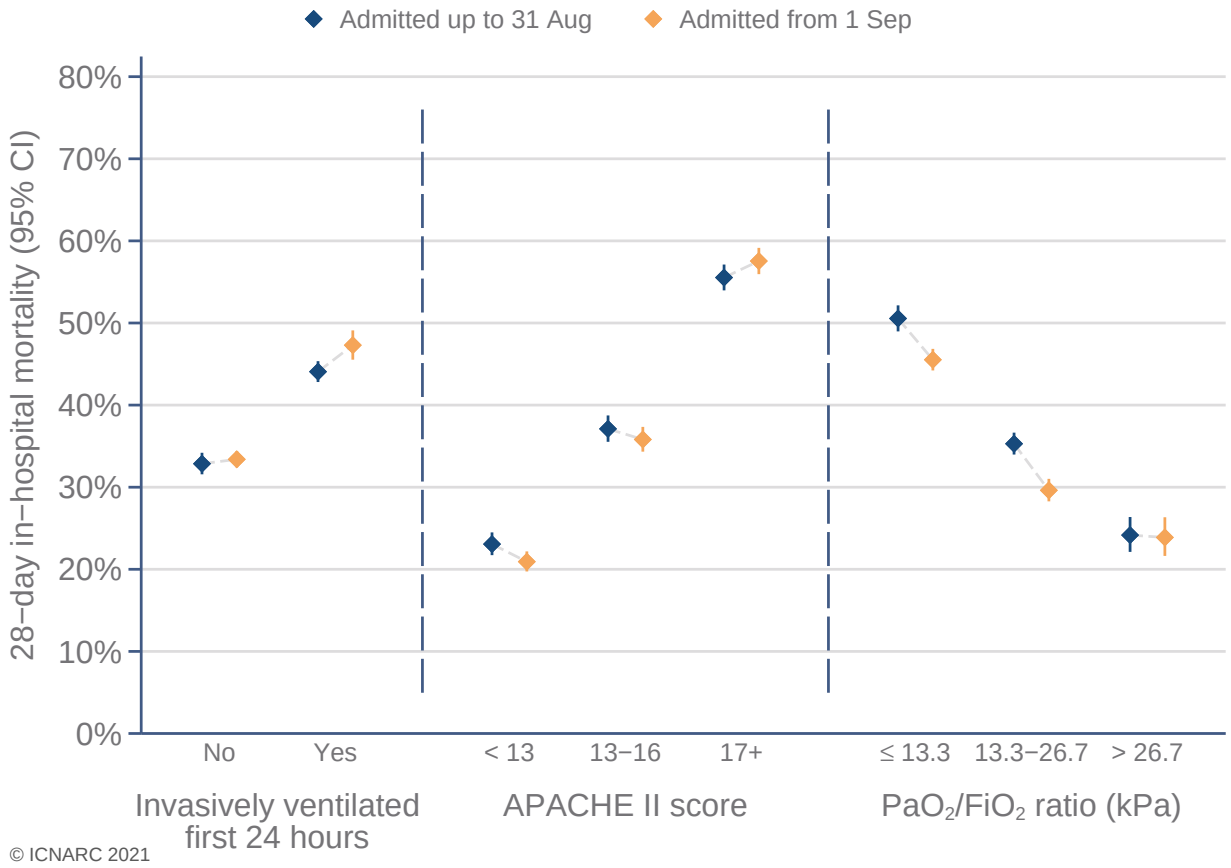



**Figure 41. 28-day in-hospital mortality by patient characteristics (indicators of acute severity *)**

Estimates of 28-day in-hospital mortality based on Kaplan-Meier survival analysis. Patients last reported to be still receiving critical care censored on the most recent date of data submission by the treating unit. Patients discharged from acute hospital within 28 days assumed to survive to 28 days. Please note that these estimates are not adjusted for differences in other patient characteristics (see Tables 1-3).

* Please see Definitions on page 99. Indicators of acute severity are based on data from the first 24 hours of critical care.

# 28-day in-hospital outcome - by patient characteristics and invasive ventilation first 24 hours

28-day in-hospital mortality for patients critically ill with confirmed COVID-19 admitted from 1 September 2020 to date by patient characteristics (demographics and indicators of acute severity) separately for those invasively ventilated and not invasively ventilated during the first 24 hours of critical care is presented in Figures 42-44 and compared with those admitted up to 31 August 2020.

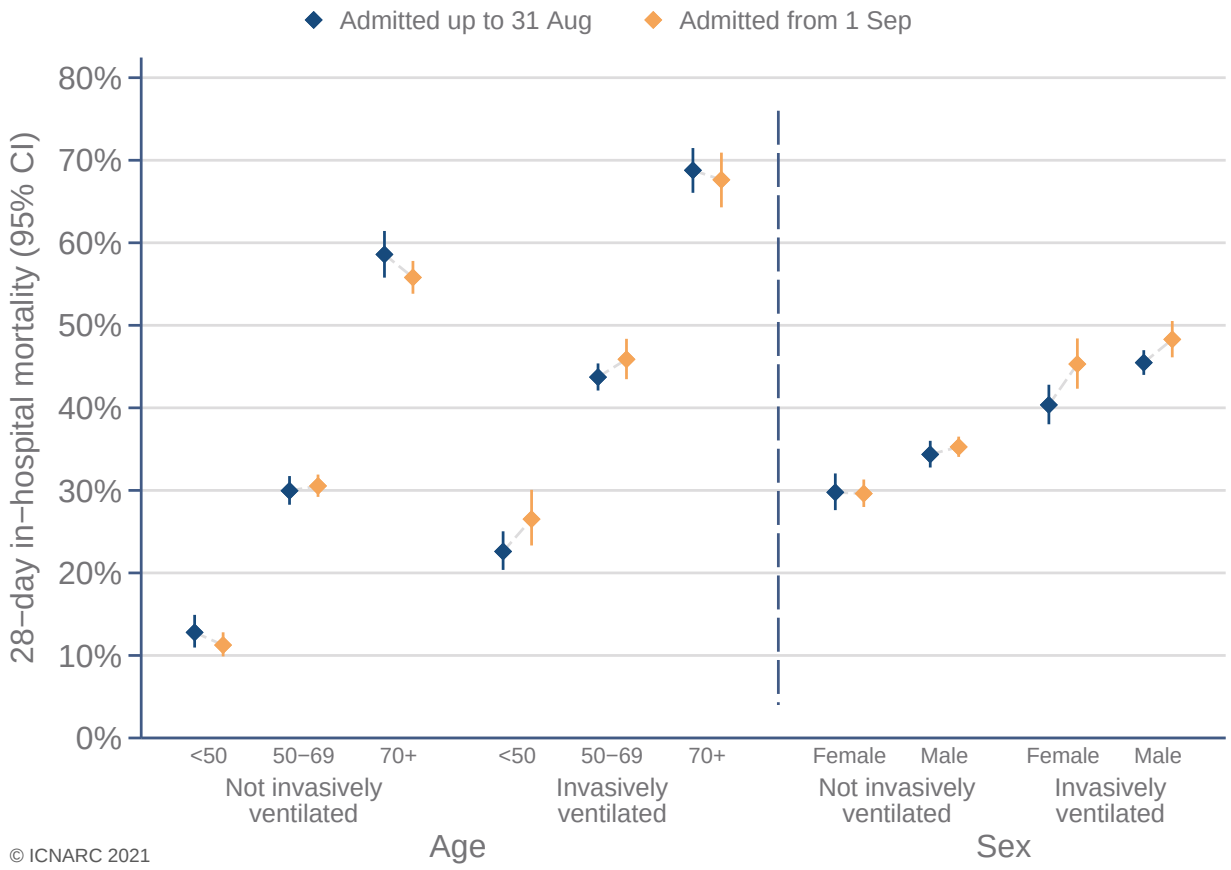



**Figure 42. 28-day in-hospital mortality by patient characteristics and invasive ventilation (demographics)**

Estimates of 28-day in-hospital mortality based on Kaplan-Meier survival analysis. Patients last reported to be still receiving critical care censored on the most recent date of data submission by the treating unit. Patients discharged from acute hospital within 28 days assumed to survive to 28 days. Please note that these estimates are not adjusted for differences in other patient characteristics (see Tables 1-3).

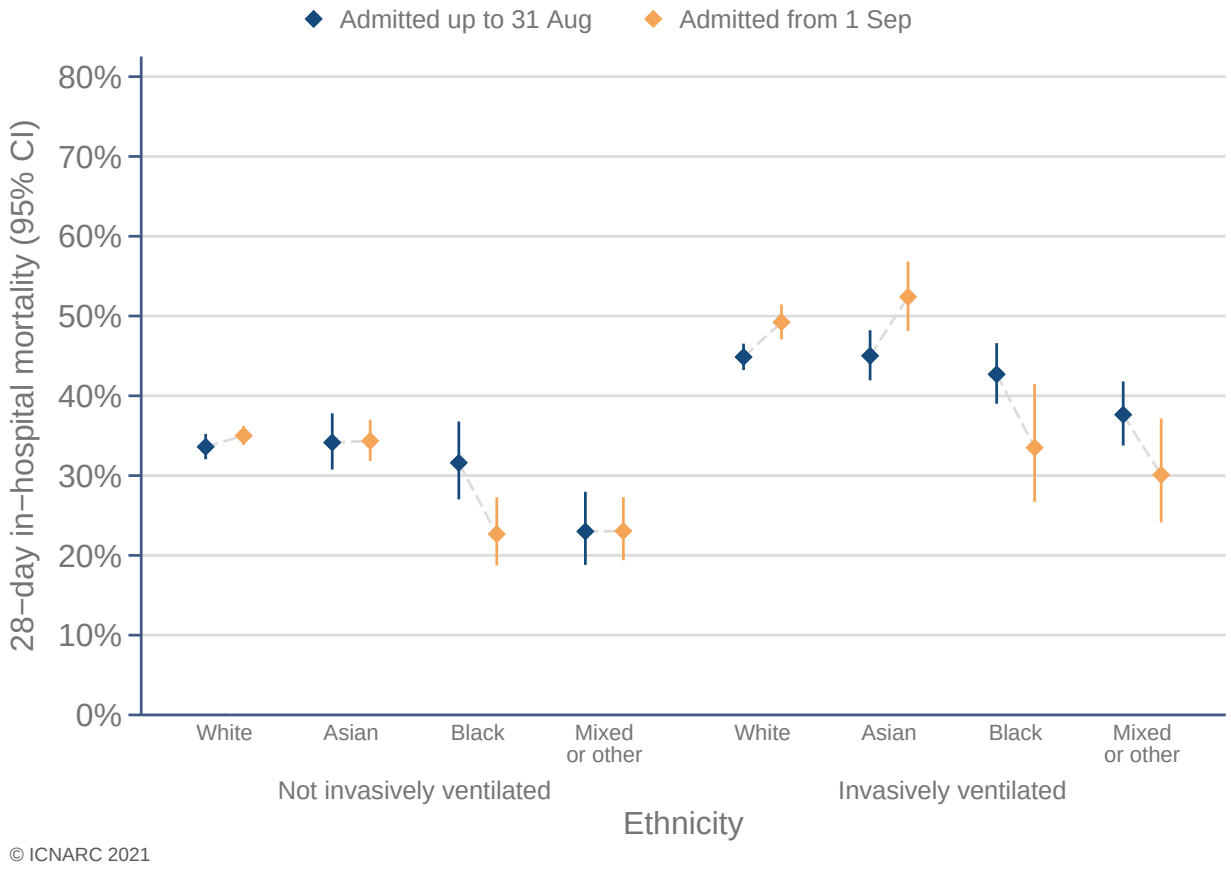



**Figure 43. 28-day in-hospital mortality by patient characteristics and invasive ventilation (demographics continued)**

Estimates of 28-day in-hospital mortality based on Kaplan-Meier survival analysis. Patients last reported to be still receiving critical care censored on the most recent date of data submission by the treating unit. Patients discharged from acute hospital within 28 days assumed to survive to 28 days. Please note that these estimates are not adjusted for differences in other patient characteristics (see Tables 1-3).

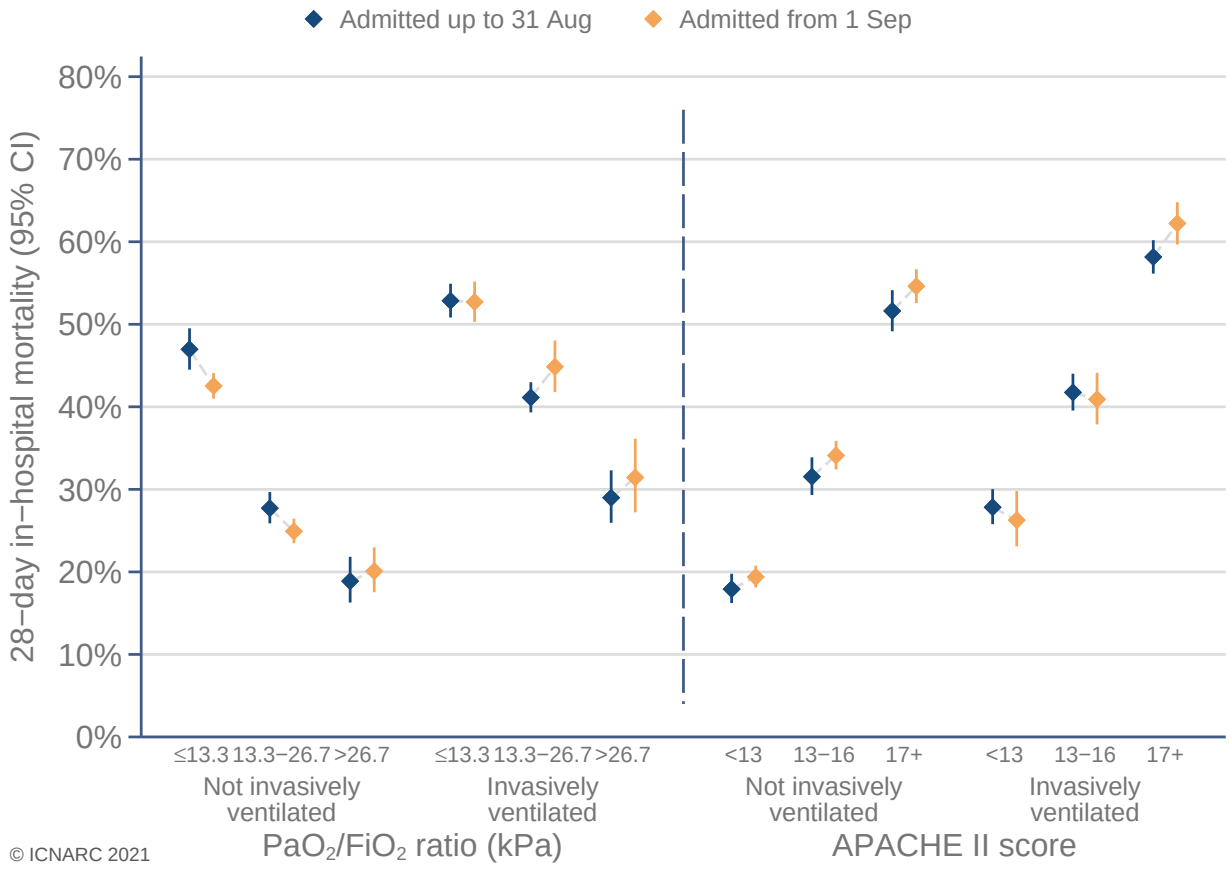



**Figure 44. 28-day in-hospital mortality by patient characteristics and invasive ventilation (acute severity)**

Estimates of 28-day in-hospital mortality based on Kaplan-Meier survival analysis. Patients last reported to be still receiving critical care censored on the most recent date of data submission by the treating unit. Patients discharged from acute hospital within 28 days assumed to survive to 28 days. Please note that these estimates are not adjusted for differences in other patient characteristics (see Tables 1-3).

* Please see Definitions on page 99. Indicators of acute severity are based on data from the first 24 hours of critical care.

28-day in-hospital mortality for patients critically ill with confirmed COVID-19 admitted from 1 September 2020 to date by the number of days in hospital prior to admission to critical care, separately for those invasively ventilated and not invasively ventilated during the first 24 hours of critical care, is presented in Figure 45 and compared with those admitted up to 31 August 2020.

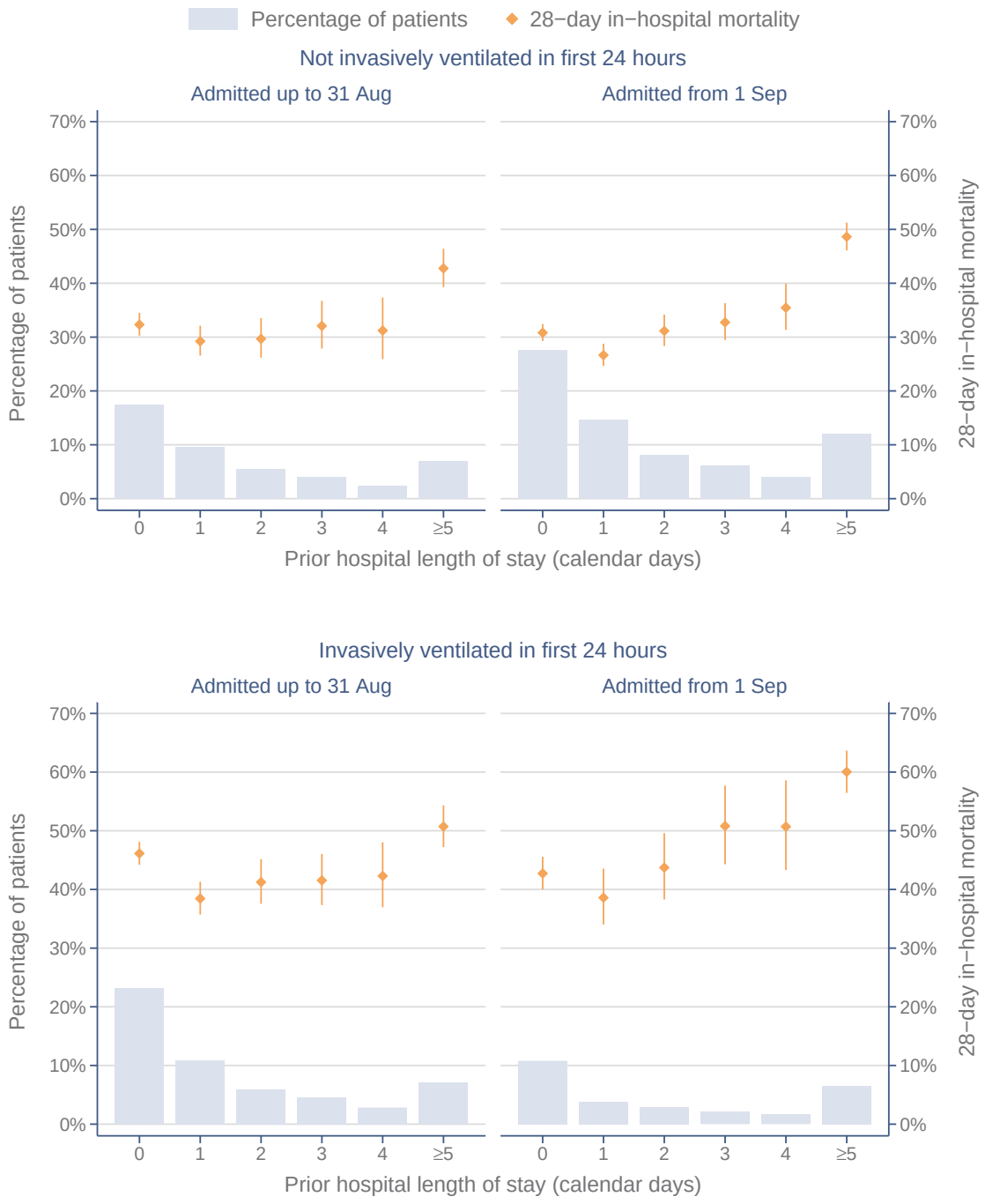
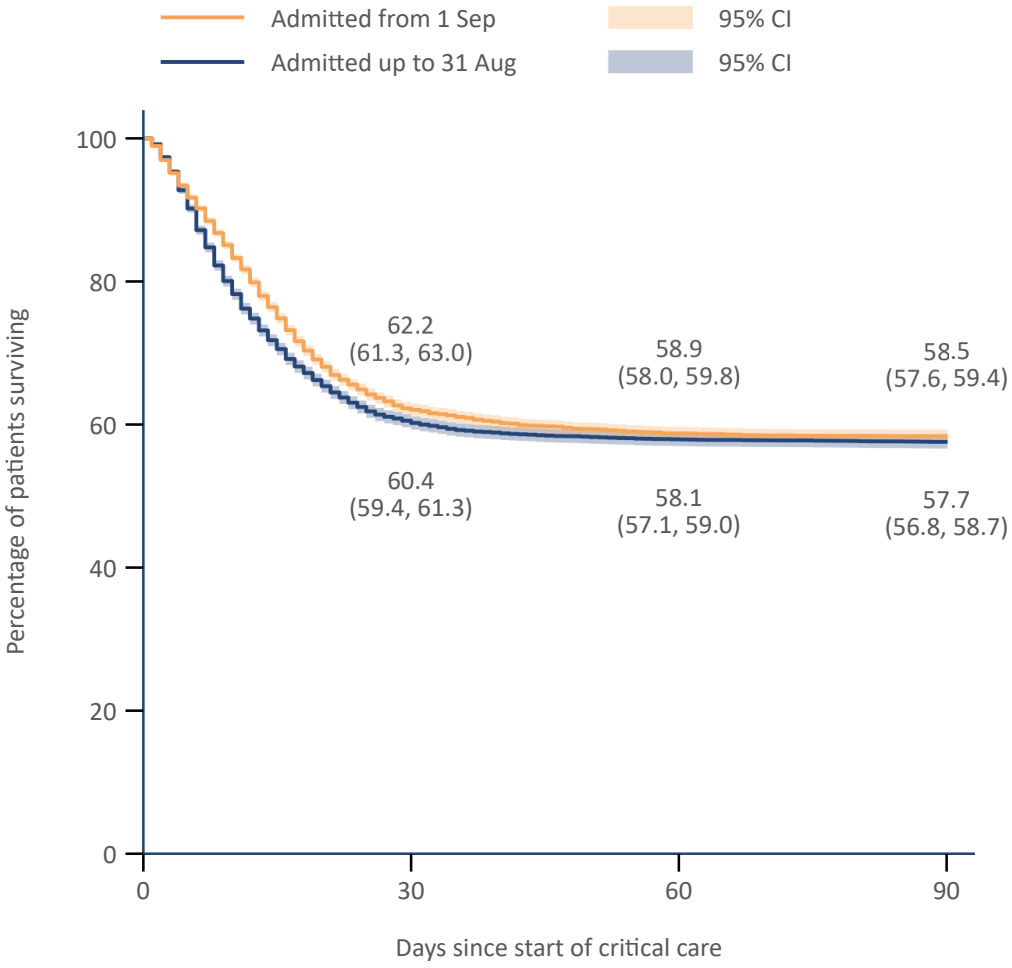





**Figure 45. Percentage of patients and 28-day in-hospital mortality by invasive ventilation and prior hospital length of stay**

Percentages of patients are reported as a percentage of all patients admitted within the time period. Estimates of 28-day in-hospital mortality based on Kaplan-Meier survival analysis. Patients last reported to be still receiving critical care censored on the most recent date of data submission by the treating unit. Patients discharged from acute hospital within 28 days assumed to survive to 28 days. Please note that these estimates are not adjusted for differences in other patient characteristics (see Tables 1-3).

A Kaplan-Meier plot of in-hospital survival to 90 days following admission to critical care for patients critically ill with confirmed COVID-19 admitted from 1 September 2020 to date is shown in Figure 46 and compared with those admitted up to 31 August 2020.




| | | | | |
|---|---|---|---|---|
| **Admitted from 1 Sep** | | | | |
| At risk | 15860 | 5451 | 3384 | 1301 |
| Died (in hospital) | 0 | 4999 | 5248 | 5266 |
| Censored | 0 | 5410 | 7228 | 9293 |
| **Admitted up to 31 Aug** | | | | |
| At risk | 10938 | 6601 | 6327 | 6286 |
| Died (in hospital) | 0 | 4336 | 4587 | 4623 |
| Censored | 0 | 1 | 24 | 29 |

## Figure 46. In-hospital survival to 90 days following admission to critical care

Kaplan-Meier survival analysis. Patients last reported to be still receiving critical care censored on the most recent date of data submission by the treating unit. Patients discharged from acute hospital within 90 days assumed to survive to 90 days. Please note that these survival curves are not adjusted for differences in patient characteristics (see Tables 1-3).

Monthly trends in characteristics for patients critically ill with confirmed COVID-19 are shown for key summary statistics in Figures 47-49 and as full distributions in Figures 50-52.

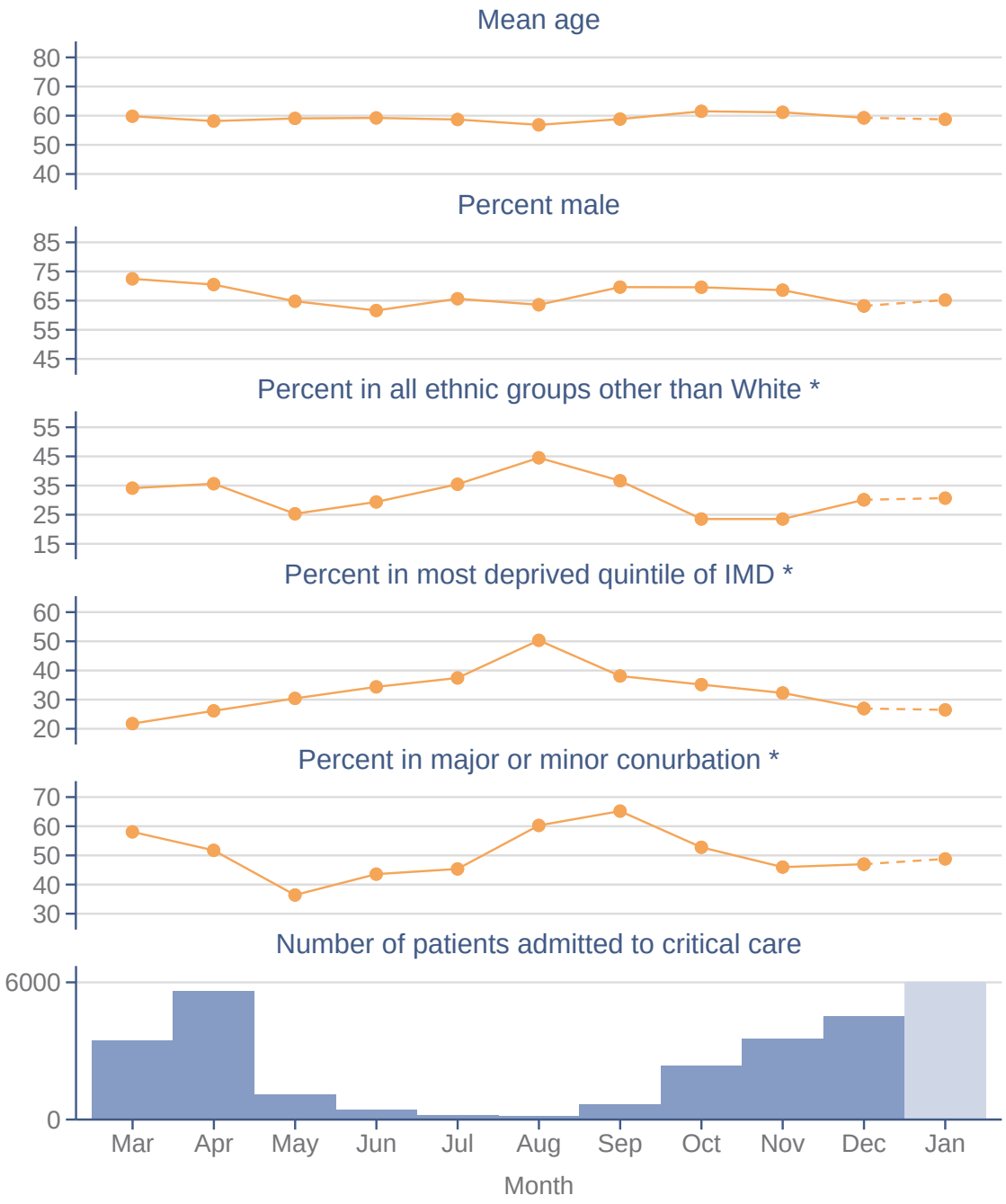





**Figure 47. Monthly trend in patient characteristics (demographics)**

* Please see Definitions on page 99. Dashed line and shading indicates incomplete month.

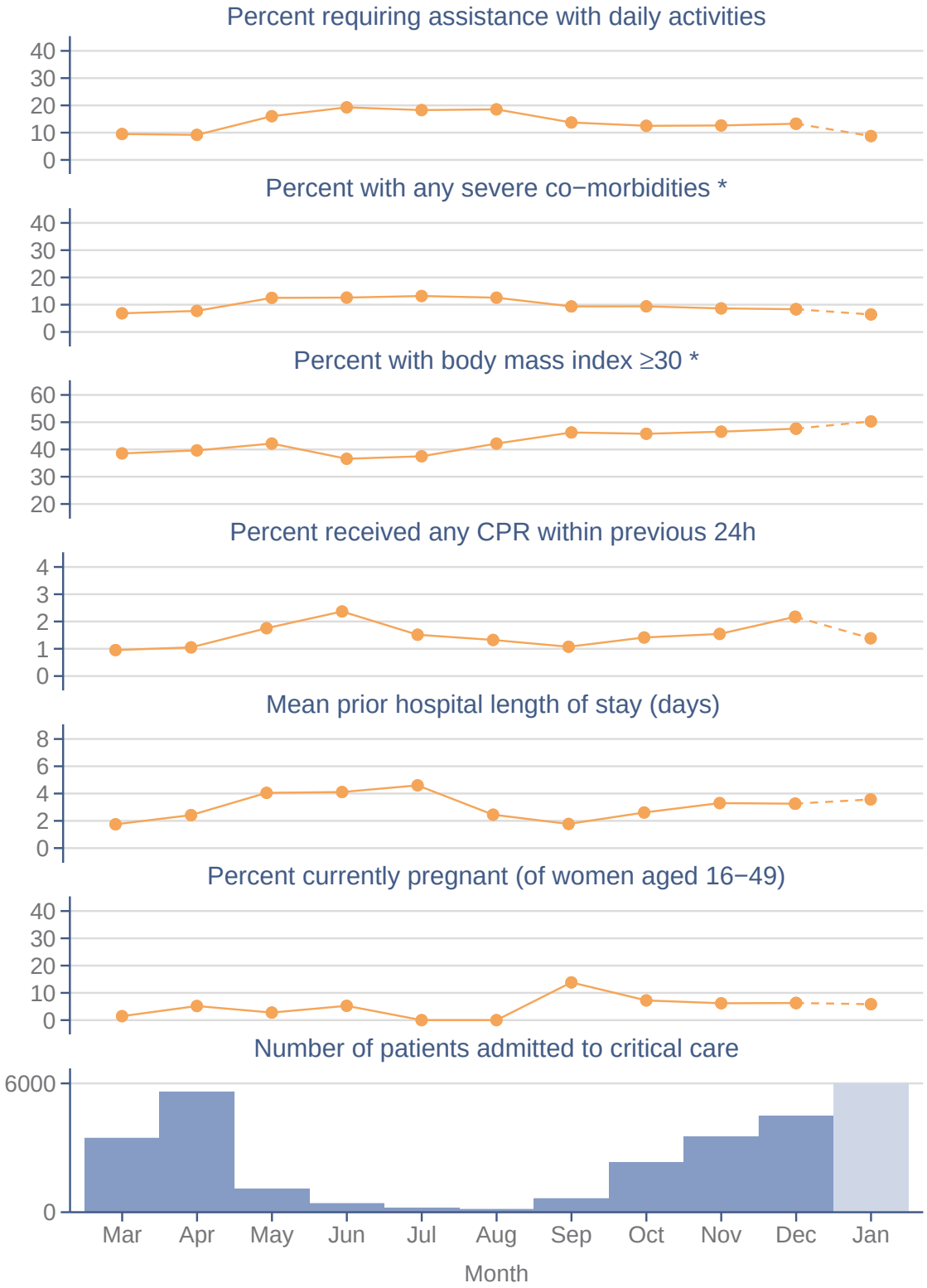





**Figure 48. Monthly trend in patient characteristics (medical history)**

* Please see Definitions on page 99. Dashed line and shading indicates incomplete month.

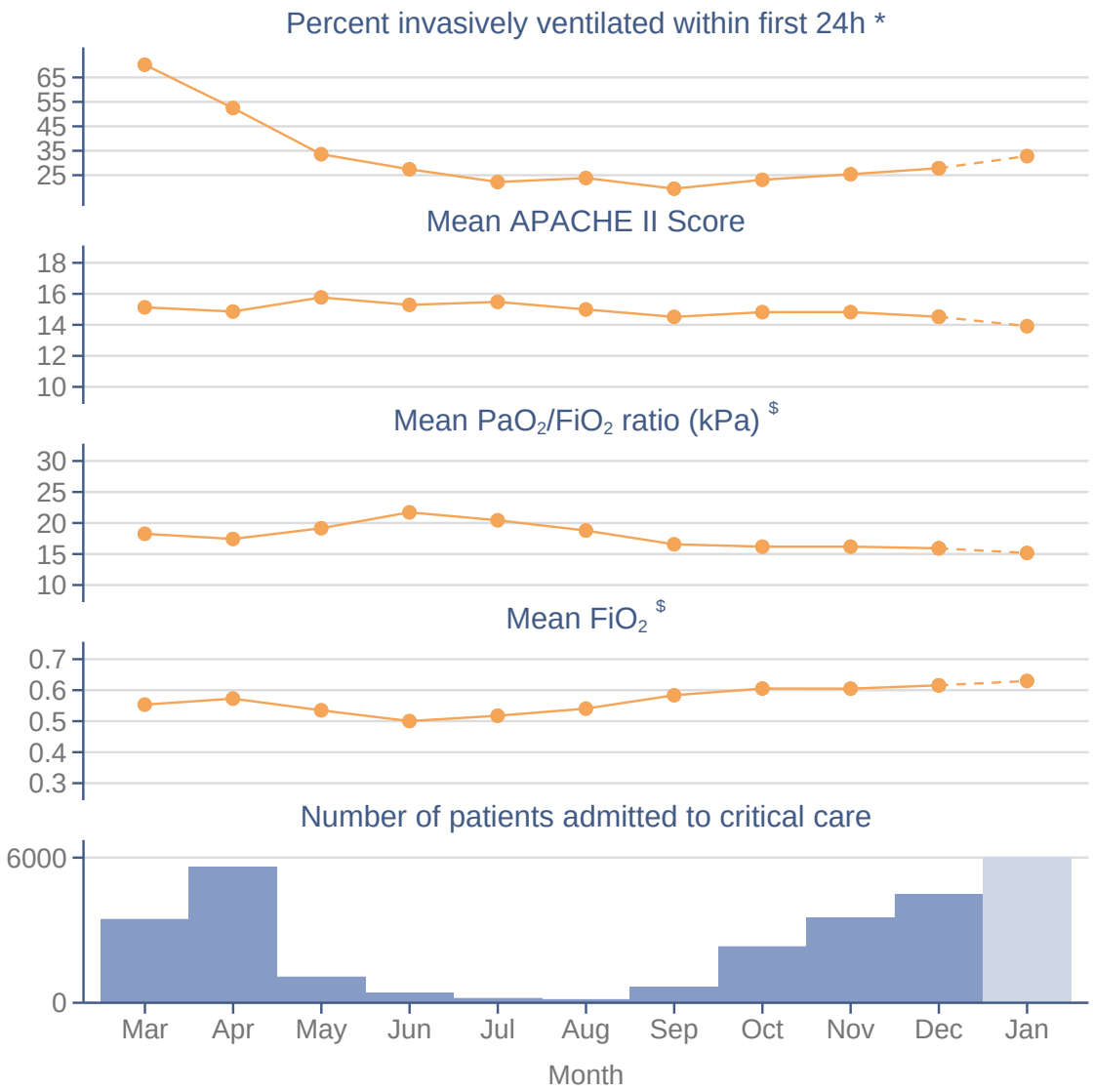





**Figure 49. Monthly trend in patient characteristics (indicators of acute severity)**

* Please see Definitions on page 99. Dashed line and shading indicates incomplete month.

$ Derived from the arterial blood gas with the lowest $PaO_2$ during the first 24 hours of critical care.

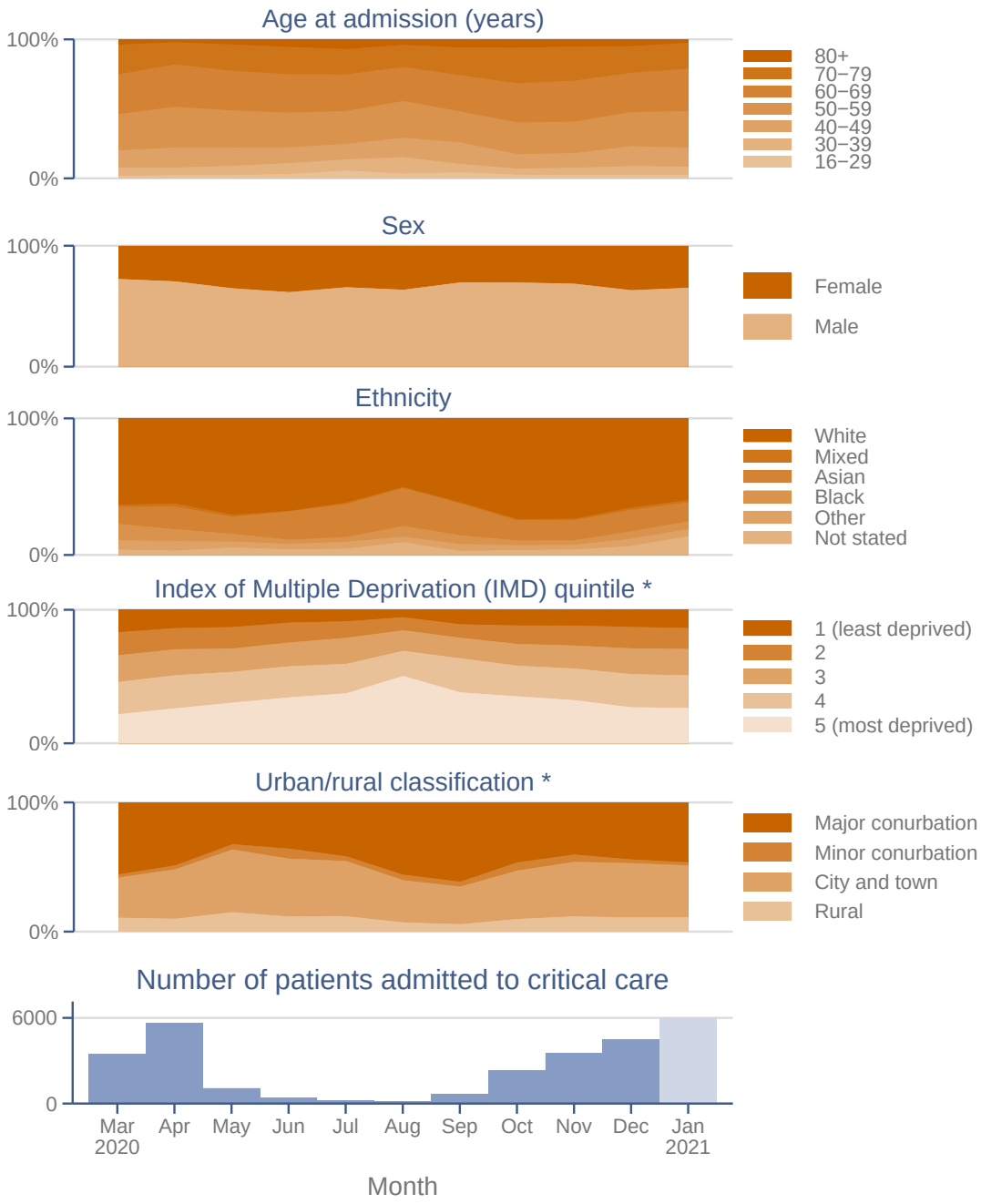





**Figure 50. Monthly trend in patient characteristics (demographics) – distributions**

* Please see Definitions on page 99. Shading indicates incomplete month.

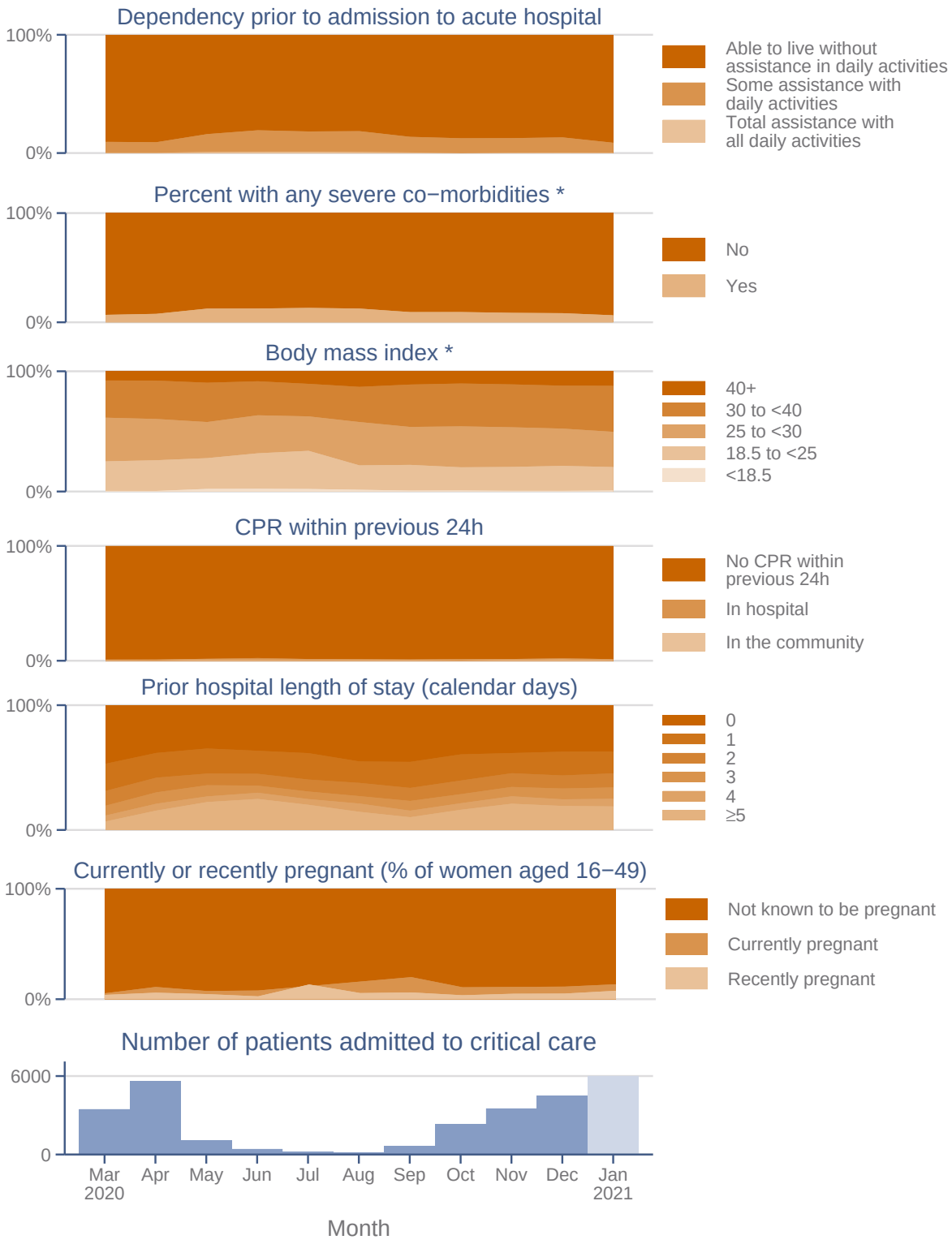





**Figure 51. Monthly trend in patient characteristics (medical history) – distributions**

* Please see Definitions on page 99. Shading indicates incomplete month.

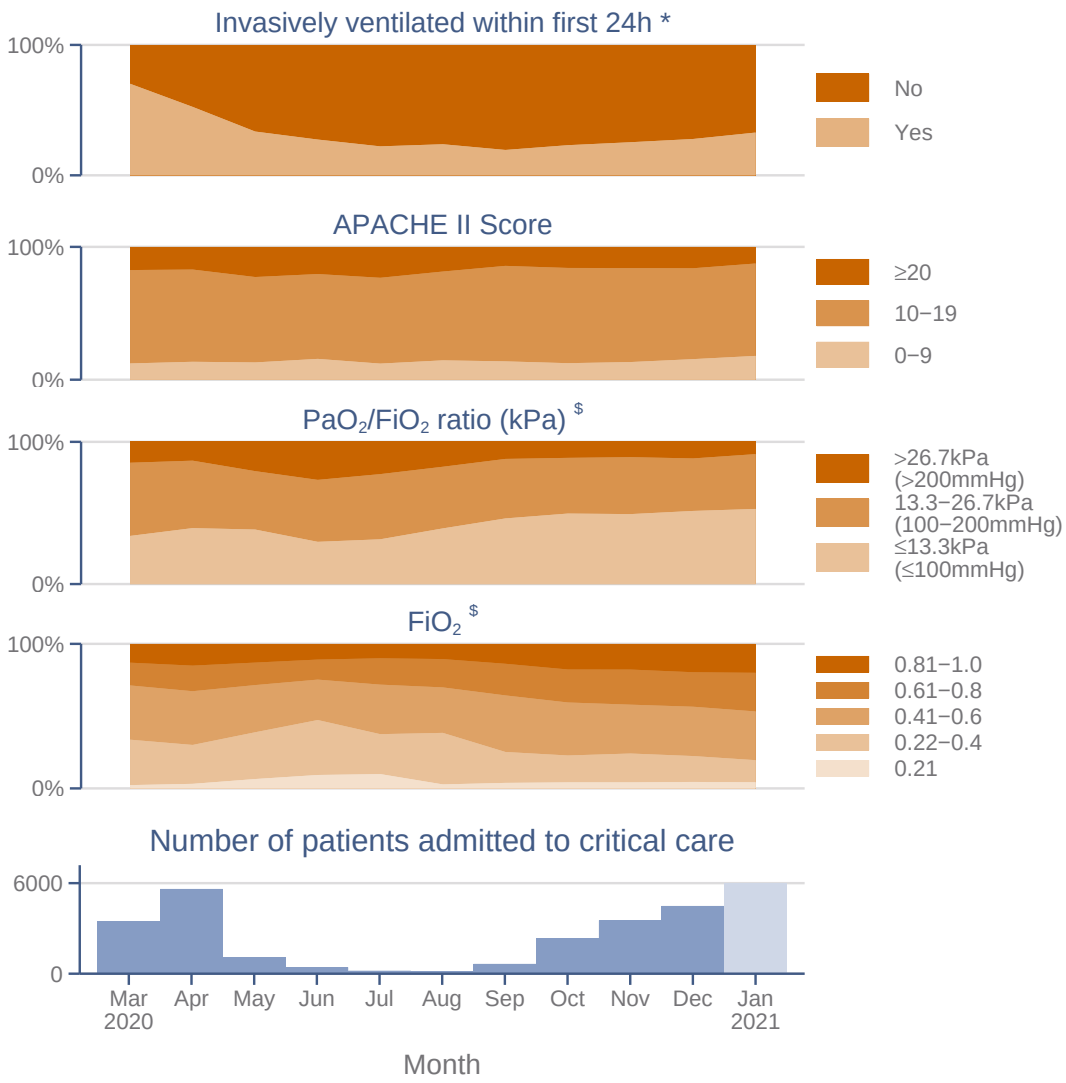





**Figure 52. Monthly trend in patient characteristics (indicators of acute severity) – distributions**

* Please see Definitions on page 99. Shading indicates incomplete month.

$ Derived from the arterial blood gas with the lowest $PaO_2$ during the first 24 hours of critical care.

Figure 53 shows the monthly number of new patients critically ill with confirmed COVID-19 from March 2020 until the last complete month and the corresponding 28-day in-hospital mortality, indicating the month on which information became available identifying steroids (Dexamethasone) as an effective treatment for critically ill patients. Figures 54-56 show monthly variation in patient characteristics relating to ventilation and timing of critical care compared with the change in mortality.

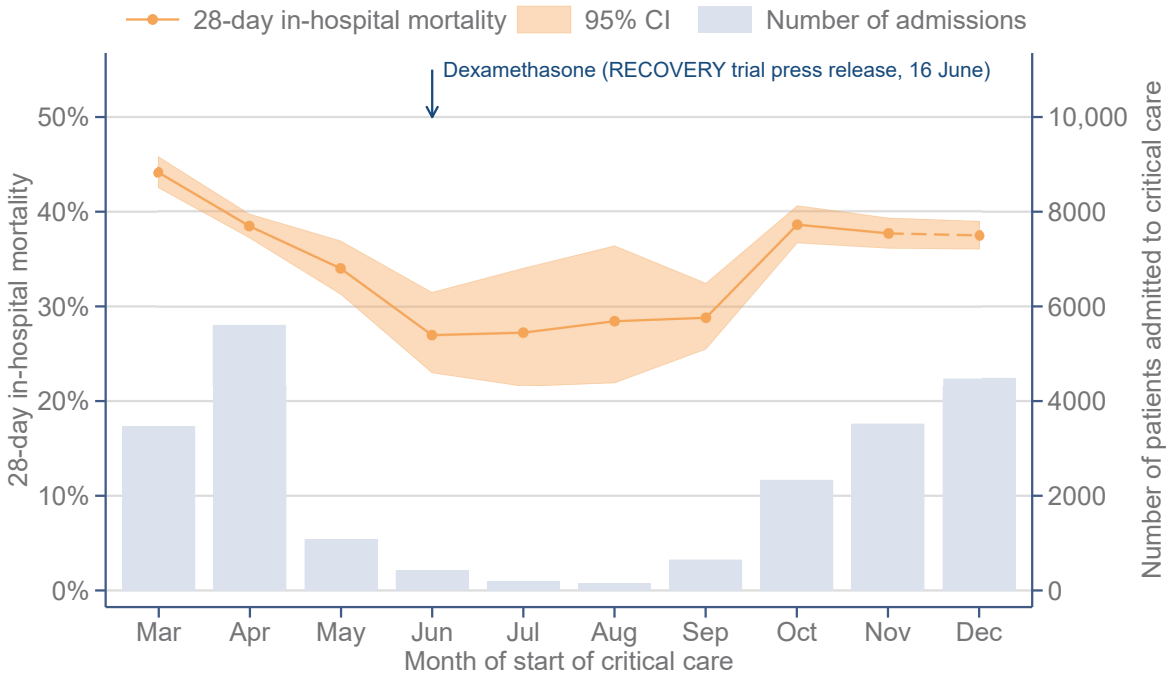
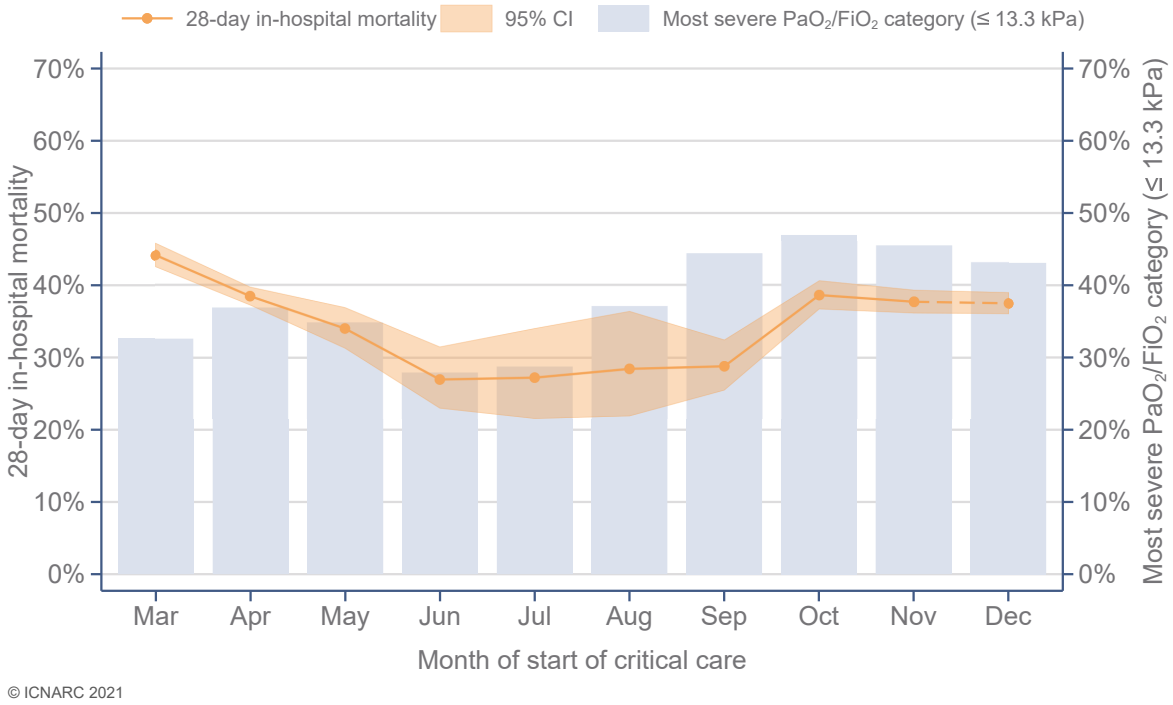



**Figure 53. Number of admissions and 28-day in-hospital mortality by month**

Number of admissions and 28-day in-hospital mortality for patients critically ill with confirmed COVID-19 by month of start of critical care.

Estimates of 28-day in-hospital mortality based on Kaplan-Meier survival analysis. Patients last reported to be still receiving critical care censored on the most recent date of data submission by the treating unit. Patients discharged from acute hospital within 28 days assumed to survive to 28 days. Please note that these estimates are not adjusted for changes in patient characteristics (see Tables 1-3).




## Figure 54. $PaO_2/FiO_2$ and 28-day in-hospital mortality by month

Percentage of patients in most severe $PaO_2/FiO_2$ category ($\leq$ 13.3 kPa) and 28-day in-hospital mortality for patients critically ill with confirmed COVID-19 by month of start of critical care.

Estimates of 28-day in-hospital mortality based on Kaplan-Meier survival analysis. Patients last reported to be still receiving critical care censored on the most recent date of data submission by the treating unit. Patients discharged from acute hospital within 28 days assumed to survive to 28 days. Please note that these estimates are not adjusted for changes in patient characteristics (see Tables 1-3).

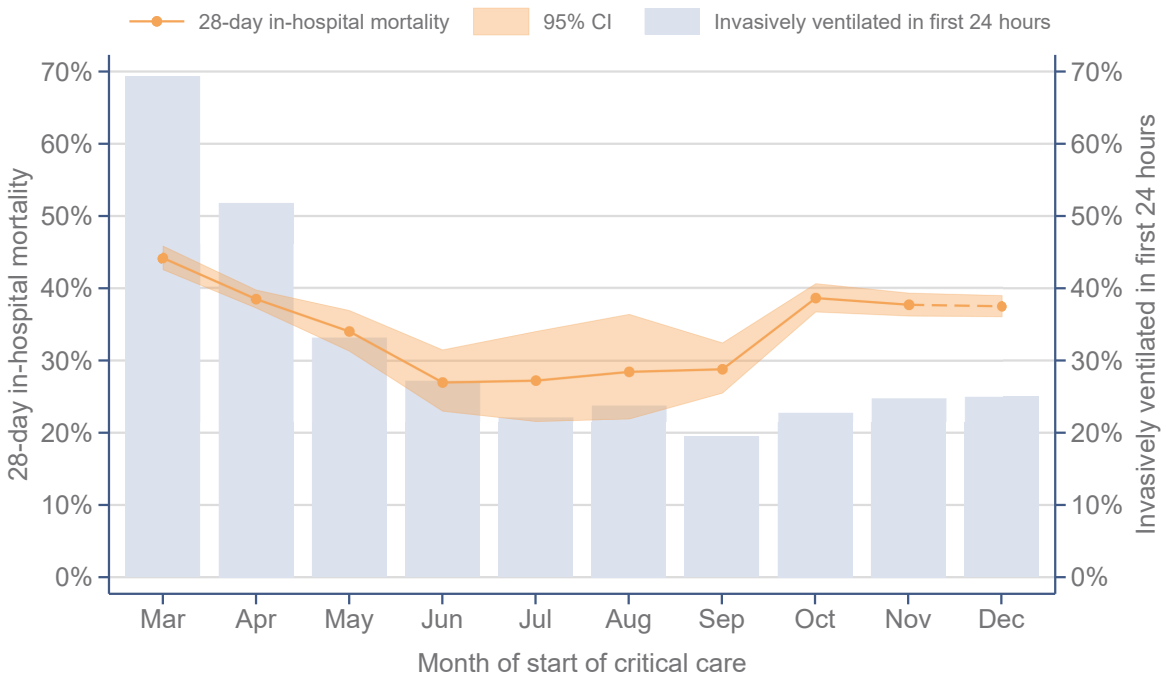



**Figure 55. Invasive ventilation first 24 hours and 28-day in-hospital mortality by month**

Percentage of patients receiving invasive ventilation during the first 24 hours in critical care and 28-day in-hospital mortality for patients critically ill with confirmed COVID-19 by month of start of critical care.

Estimates of 28-day in-hospital mortality based on Kaplan-Meier survival analysis. Patients last reported to be still receiving critical care censored on the most recent date of data submission by the treating unit. Patients discharged from acute hospital within 28 days assumed to survive to 28 days. Please note that these estimates are not adjusted for changes in patient characteristics (see Tables 1-3).

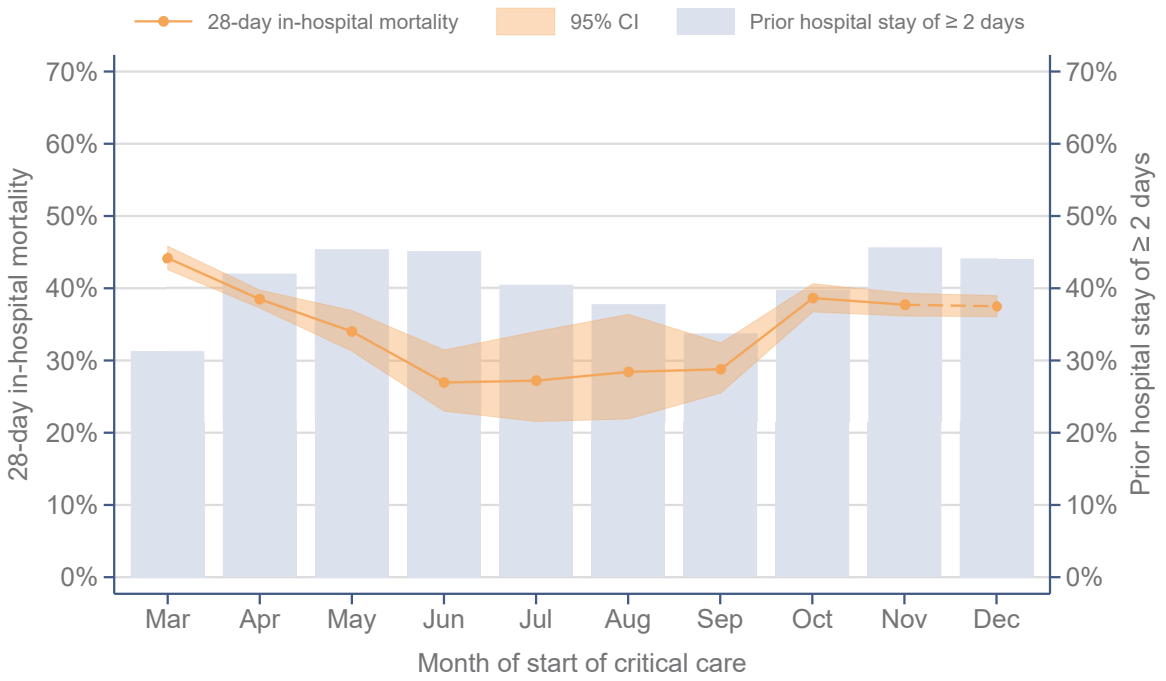



**Figure 56. Prior hospital length of stay and 28-day in-hospital mortality by month**

Percentage of patients with a hospital stay of 2 or more days before admission to critical care and 28-day in-hospital mortality for patients critically ill with confirmed COVID-19 by month of start of critical care.

Estimates of 28-day in-hospital mortality based on Kaplan-Meier survival analysis. Patients last reported to be still receiving critical care censored on the most recent date of data submission by the treating unit. Patients discharged from acute hospital within 28 days assumed to survive to 28 days. Please note that these estimates are not adjusted for changes in patient characteristics (see Tables 1-3).

Updated outcomes up to discharge from acute hospital for patients critically ill with confirmed COVID-19 admitted up to 31 August 2020 are shown in Figure 57.

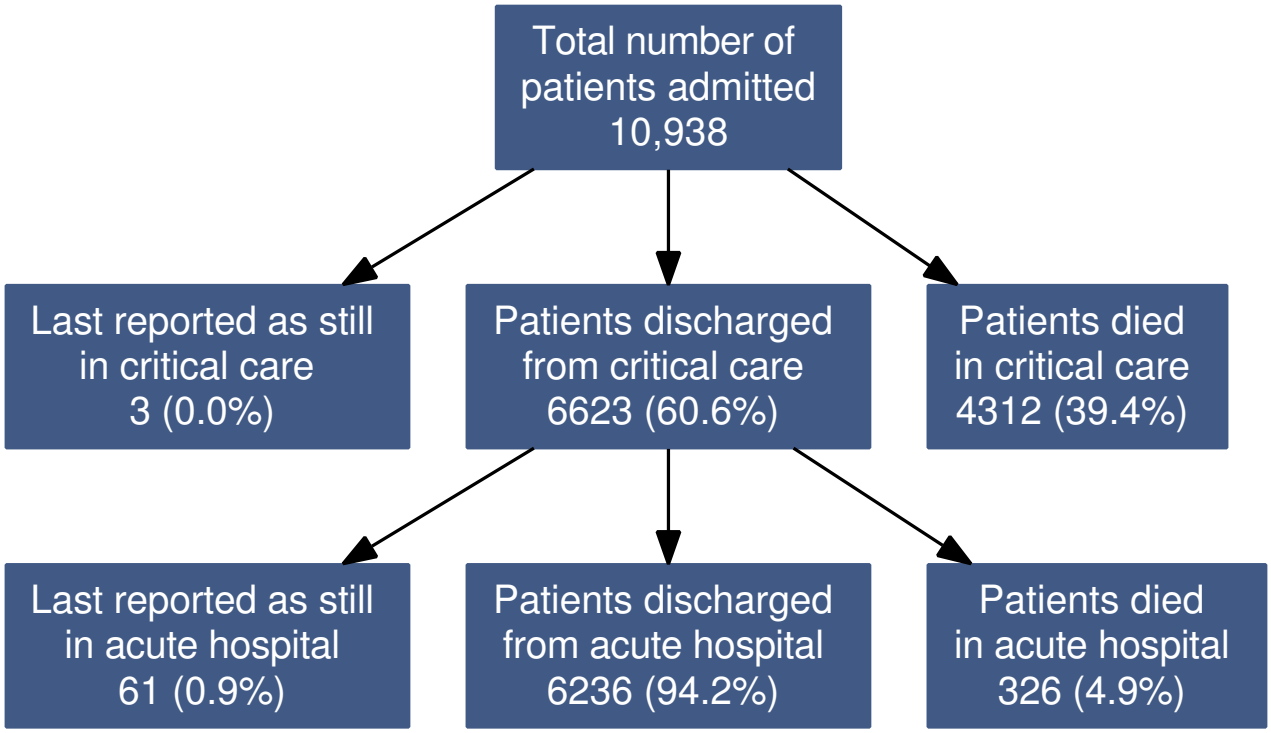



**Figure 57. Critical care and acute hospital outcomes for patients admitted up to 31 August 2020**

Of 10,167 patients admitted up to 31 May 2020, 5726 have been discharged alive from acute hospital and, of these, 117 have subsequently been readmitted to critical care.

**Reason for transfer** between critical care units is categorised as:

- Comparable critical care: transfer for similar care as provided in the transferring critical care unit
- Repatriation: returning a patient to their original unit, hospital or area
- More-specialist critical care: transfer for specialist critical care not available in the transferring critical care unit

**Critical care transfer groups** are groups of local critical care units developed to reduce the number of long distance transfers that take place and to ensure that transfers are contained within the critical care network or, by special agreement, between hospitals at the borders of adjacent networks.

**Ethnicity** is recorded using the ethnic category codes from the 2001 census and grouped as:

- White: White – British; White – Irish; White – any other
- Mixed: Mixed – white and black Caribbean; Mixed – white and black African; Mixed – white and Asian; Mixed – any other
- Asian: Asian or Asian British – Indian; Asian or Asian British – Pakistani; Asian or Asian British – Bangladeshi; Asian or Asian British – any other
- Black: Black or black British – Caribbean; Black or black British – African; Black or black British – any other
- Other: Other ethnic group – Chinese; Any other ethnic group
- Not stated or not recorded

**Index of Multiple Deprivation (IMD)** is based on the patient's usual residential postcode (assigned at the level of Lower Layer Super Output Area) according to:

- English Index of Multiple Deprivation 2019 for postcodes in England
- Welsh Index of Multiple Deprivation 2019 for postcodes in Wales
- Northern Ireland Multiple Deprivation Measure 2017 for postcodes in Northern Ireland

**Urban/rural classification** is based on the patient's usual residential postcode (assigned at the level of Output Area) and categorised according to 2011 census categories as:

- Urban: the majority of the population lives within settlements with a population of more than 10,000 people, subcategorised according to dwelling densities for every 100m x 100m square and the density in squares at varying distances around each square as either Major conurbation, Minor conurbation, or City or town
- Rural: the majority of the population lives within settlements with a population of less than 10,000 people (combining the categories Town and fringe, Village, and Hamlet or isolated dwellings)

**Body mass index** is calculated as the weight in kilograms divided by the height in metres squared. Weight and height values may have been measured or estimated.

**Dependency prior to admission to acute hospital** is assessed as the best description for the dependency of the patient in the two weeks prior to admission to acute hospital and prior to the onset of the acute illness, i.e. "usual" dependency. It is assessed according to the amount of personal assistance they receive with daily activities (bathing, dressing, going to the toilet, moving in/out of bed/chair, continence and eating).

**Very severe comorbidities** must have been evident within the six months prior to critical care and documented at or prior to critical care:

- Cardiovascular: symptoms at rest
- Respiratory: shortness of breath with light activity or home ventilation
- Renal: renal replacement therapy for end-stage renal disease
- Liver: biopsy-proven cirrhosis, portal hypertension or hepatic encephalopathy
- Metastatic disease: distant metastases
- Haematological malignancy: acute or chronic leukaemia, multiple myeloma or lymphoma
- Immunocompromise: chemotherapy, radiotherapy or daily high dose steroid treatment in previous six months, HIV/AIDS or congenital immune deficiency

**Invasive ventilation** during the first 24 hours was defined as mechanical ventilation (identified by the recording of a ventilated respiratory rate, indicating that all or some of the breaths or a portion of the breaths were delivered by a mechanical device) and sedation (receiving continuous or intermittent doses of agents to produce and maintain a continuous decreased level of consciousness with or without paralysing agents) at any time during the first 24 hours and not reported as having zero days of advanced respiratory support.

**Organ support** is recorded as the number of calendar days (00:00-23:59) on which the support was received at any time, defined as:

- Advanced respiratory: invasive ventilation, BPAP via trans-laryngeal tube or tracheostomy, CPAP via trans-laryngeal tube, extracorporeal respiratory support
- Basic respiratory: >50% oxygen by face mask, close observation due to potential for acute deterioration, physiotherapy/suction to clear secretions at least two-hourly, recently extubated after a period of mechanical ventilation, mask/hood CPAP/BPAP, non-invasive ventilation, CPAP via a tracheostomy, intubated to protect airway
- Advanced cardiovascular: multiple IV/rhythm controlling drugs (at least one vasoactive), continuous observation of cardiac output, intra-aortic balloon pump, temporary cardiac pacemaker
- Basic cardiovascular: central venous catheter, arterial line, single IV vasoactive/ rhythm controlling drug
- Renal: acute renal replacement therapy, renal replacement therapy for chronic renal failure where other organ support is received
- Liver: management of coagulopathy and/or portal hypertension for acute on chronic hepatocellular failure or primary acute hepatocellular failure
- Neurological: central nervous system depression sufficient to prejudice airway, invasive neurological monitoring, continuous IV medication to control seizures, therapeutic hypothermia

## Publications

The following publications, based on Case Mix Programme data for patients critically ill with confirmed COVID-19, are published, in press or in preprint:

- Richards-Belle A, Orzechowska I, Doidge J, Thomas K, Harrison DA, Koelewyn A, Christian MD, Shankar-Hari M, Rowan KM, Gould DW. Critical care outcomes, for the first 200 patients with confirmed COVID-19, in England, Wales and Northern Ireland: a report from the ICNARC Case Mix Programme. *J Intensive Care Soc* 2020; doi:10.1177/1751143720961672
- Richards-Belle A, Orzechowska I, Gould DW, Thomas K, Doidge JC, Mouncey PR, Christian MD, Shankar-Hari M, Harrison DA, Rowan KM. COVID-19 in critical care: epidemiology of the first epidemic wave across England, Wales and Northern Ireland. *Intensive Care Med* 2020; doi:10.1007/s00134-020-06267-0
- Ferrando-Vivas P, Doidge J, Thomas K, Gould DW, Mouncey P, Shankar-Hari M, Young JD, Rowan KM, Harrison DA. Prognostic Factors for 30-day Mortality in Critically Ill Patients with Coronavirus Disease 2019: An Observational Cohort Study. *Crit Care Med* 2020; doi:10.1097/CCM.0000000000004740
- Doidge JC, Gould DW, Ferrando-Vivas P, Mouncey PR, Thomas K, Shankar-Hari M, Harrison DA, Rowan KM. Trends in intensive care for patients with COVID-19 in England, Wales and Northern Ireland. *Am J Respir Crit Care Med* 2020; doi:10.1164/rccm.202008-321OC

The following publications, based on external data sources linked with Case Mix Programme data for patients critically ill with confirmed COVID-19, are published, in press or in preprint:

- Hippisley-Cox J, Young D, Coupland C, Channon KM, Tan PS, Harrison DA, Rowan K, Aveyard P, Pavord ID, Watkinson PJ. Risk of severe COVID-19 disease with ACE inhibitors and angiotensin receptor blockers: cohort study including 8.3 million people. *Heart* 2020; doi:10.1136/heartjnl-2020-317393
- Mathur R, Rentsch CT, Morton C, Hulme WJ, Schultze A, MacKenna B, Eggo RM, Bhaskaran K, Wong AYS, Williamson EJ, Forbes H, Wing K, McDonald HI, Bates C, Bacon S, Walker AJ, Evans D, Inglesby P, Mehrkar A, Curtis HJ, DeVito NJ, Croker R, Drysdale H, Cockburn J, Parry J, Hester F, Harper S, Douglas IJ, Tomlinson L, Evans S, Grieve R, Harrison D, Rowan K, Khunti K, Chaturvedi N, Smeeth L, Goldacre B. Ethnic differences in COVID-19 infection, hospitalisation, and mortality: an OpenSAFELY analysis of 17 million adults in England. *medRxiv* 2020; doi:10.1101/2020.09.22.20198754

## Acknowledgement

Please acknowledge the source of these data in all future presentations (oral and/or written) as follows:

"These data derive from the ICNARC Case Mix Programme Database. The Case Mix Programme is the national clinical audit of patient outcomes from adult critical care coordinated by the Intensive Care National Audit Research Centre (ICNARC). For more information on the representativeness and quality of these data, please contact ICNARC."