

Key statistics from the Case Mix Programme

— adult, general critical care units

1 April 2019 to 31 March 2020

Critical care units in the Case Mix Programme

Between 1 April 2019 and 31 March 2020, there were a total of 264 NHS adult critical care units in England, Wales and Northern Ireland participating in the Case Mix Programme with at least six months' validated data.

The breakdown of units and admissions by unit type is shown below:

| NHS units | Number of adult critical care units | Number of admissions |
|---|-------------------------------------|----------------------|
| Adult general ICUs and ICU/HDUs* | 194 | 146,371 |
| Combined general/neurosciences critical care units* | 14 | 22,432 |
| Specialist neurosciences critical care units | 9 | 7,596 |
| Specialist cardiothoracic critical care units | 23 | 31,980 |
| Specialist liver critical care units | 1 | 1,074 |
| Standalone high dependency units | 23 | 16,996 |

* In this report, these two categories are combined as adult, general critical care units

This report includes admissions to NHS adult, general critical care units.

Based on 98% coverage for 2019-20, the total number of admissions to adult, general critical care units in England, Wales and Northern Ireland is extrapolated to be **171,900**.

Case mix (i)

| | |
|---|----------------|
| Age (years), mean (SD) | 60.6 (17.7) |
| Male, n (%) | 94,490 (56.0) |
| Severe conditions in the past medical history, n (%) | |
| Severe liver disease | 4,434 (2.6) |
| Severe respiratory disease or home ventilation | 4,116 (2.5) |
| Haematological malignancy | 3,466 (2.1) |
| Metastatic disease | 6,220 (3.7) |
| Immunocompromise* | 13,102 (7.8) |
| Prior dependency, n (%) | |
| Able to live without assistance with daily activities | 129,102 (76.7) |
| Some (minor/major) assistance with daily activities | 37,158 (22.1) |
| Total assistance with all daily activities | 2,022 (1.2) |
| CPR within 24 hours prior to admission, n (%) | |
| Community CPR | 6,173 (3.7) |
| In-hospital CPR | 4,381 (2.6) |

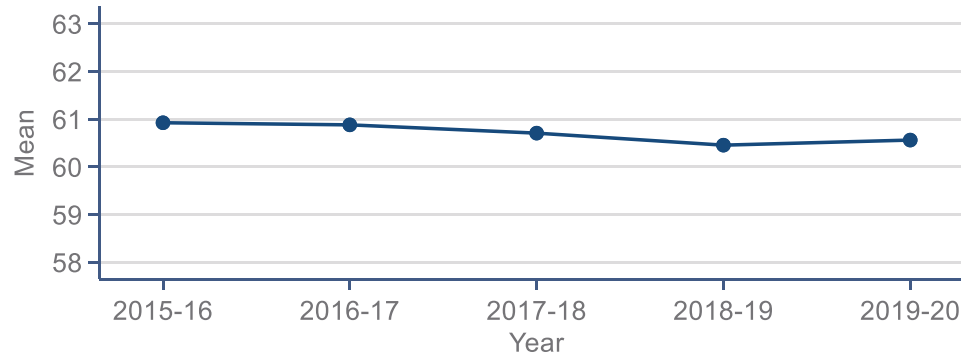
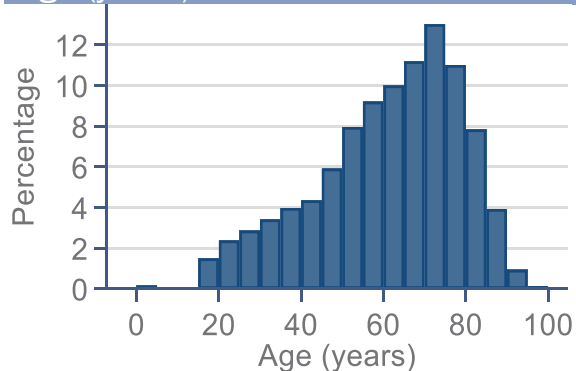
*Daily high-dose steroid treatment, chemotherapy, radiotherapy, congenital immunohumoral or cellular immune deficiency state or AIDS

Case mix (ii)

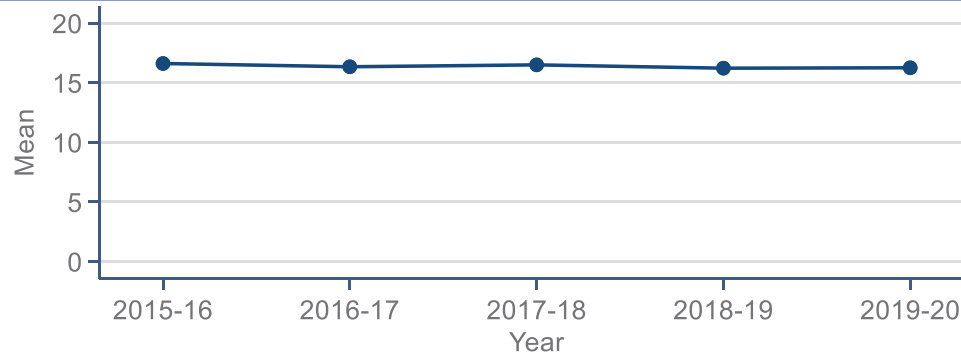
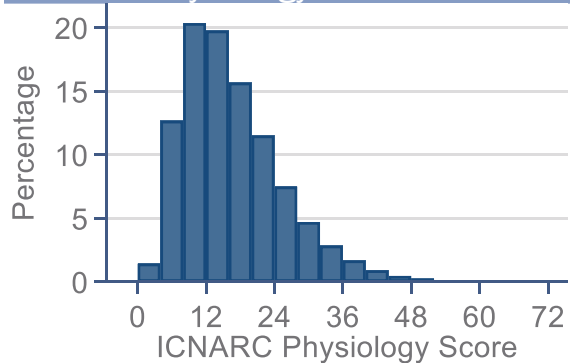
| | |
|---|-----------------|
| Source of admission, n (%) | |
| Emergency department or not in hospital – unplanned admission | 48,847 (28.9) |
| Emergency department or not in hospital – planned admission | 805 (0.5) |
| Theatre – planned admission following elective/scheduled surgery | 31,520 (18.7) |
| Theatre – unplanned admission following elective/scheduled surgery | 5,316 (3.2) |
| Theatre – admission following emergency/urgent surgery | 32,144 (19.0) |
| Ward or intermediate care area | 43,016 (25.5) |
| Other critical care unit – repatriation | 1,171 (0.7) |
| Other critical care unit – planned or unplanned transfer | 4,859 (2.9) |
| Other acute hospital (not critical care) | 1,125 (0.7) |
| Severity scores, mean (SD) | |
| ICNARC Physiology Score | 16.3 (8.8) |
| APACHE II Acute Physiology Score | 10.9 (5.7) |
| APACHE II Score | 15.2 (6.6) |
| ICNARC _{H-2018} model predicted risk of acute hospital mortality (%), median (IQR) | 6.6 (1.6, 25.9) |

Case mix – distributions and trends

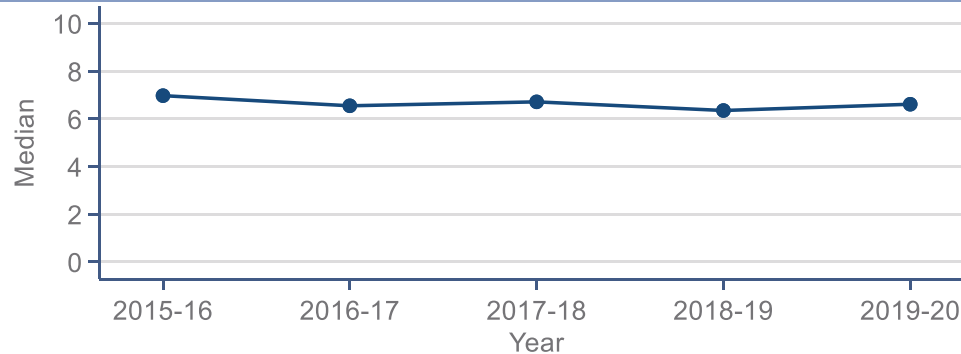
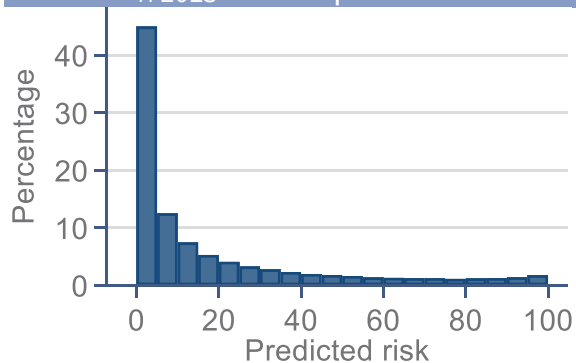
Age (years)



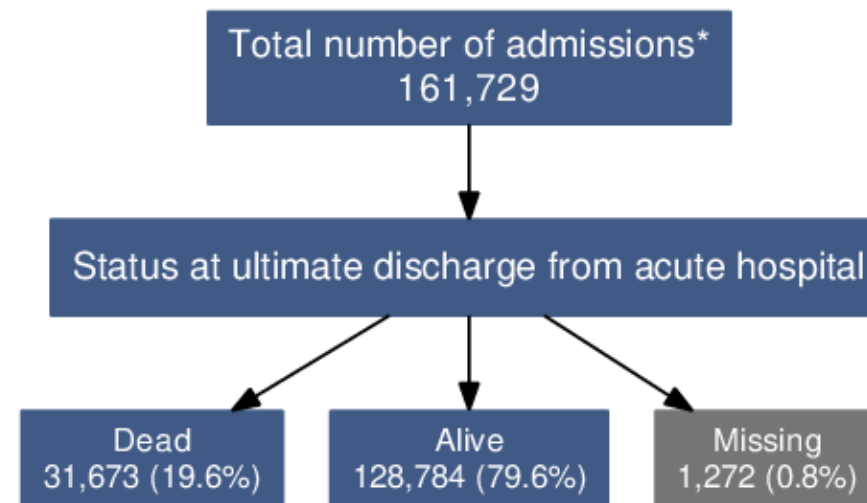
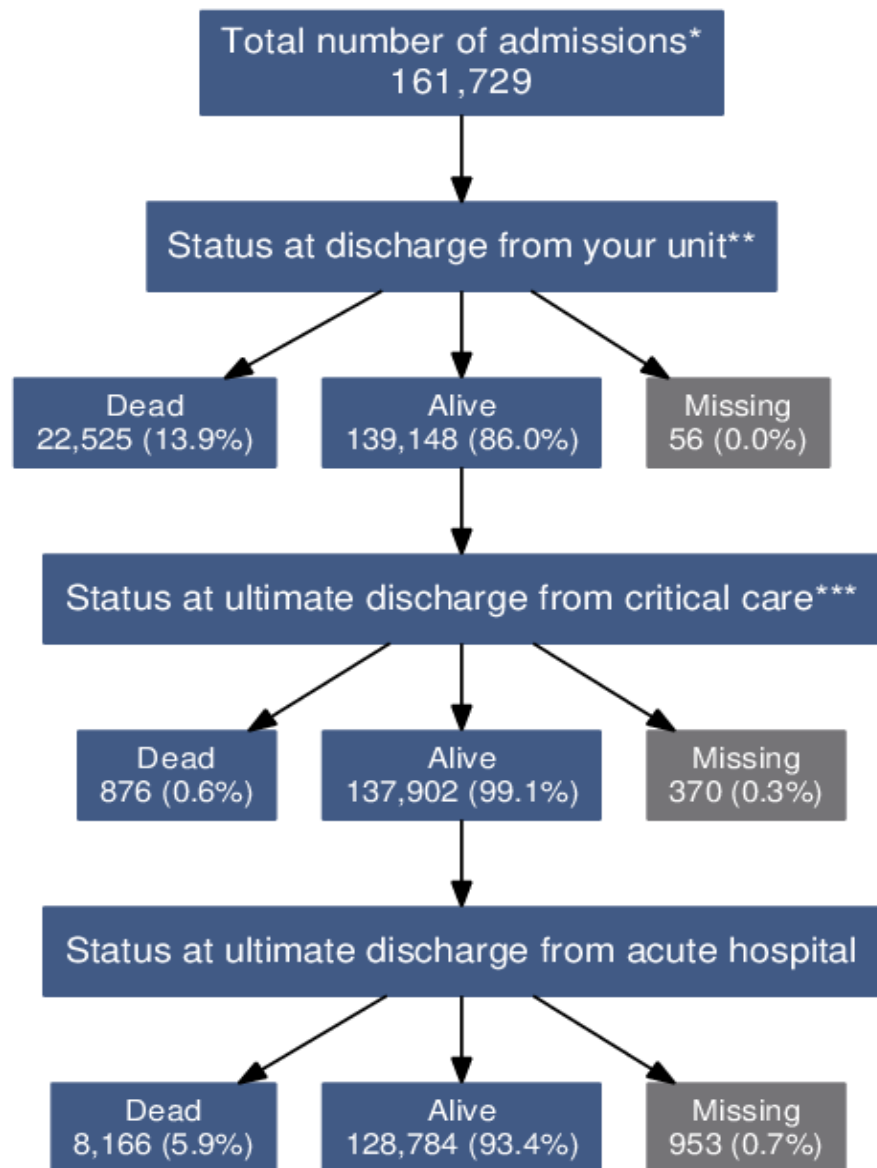
ICNARC Physiology Score



ICNARC_{H-2018} model predicted risk of acute hospital mortality (%)



Unadjusted outcomes – flows



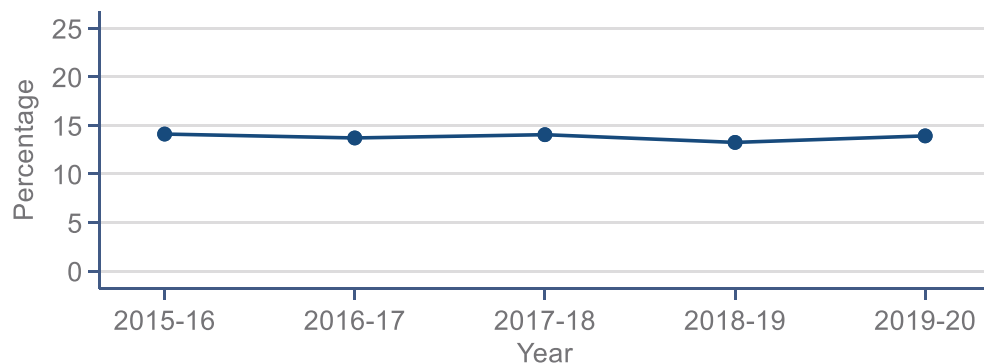
- * Excluding readmissions to the same critical care unit of the same patient within the same acute hospital stay
- ** Where a patient was admitted to the same critical care unit more than once during the same acute hospital stay, the first admission is used
- *** For all patients discharged alive from the critical care unit, including those not transferred to another critical care unit

Explanation

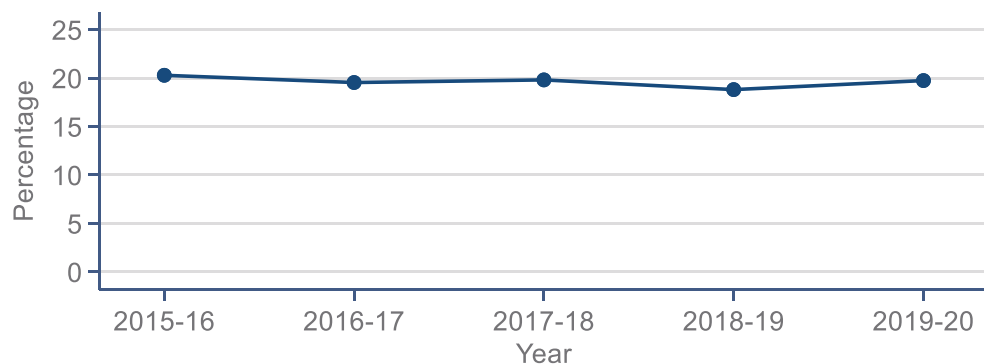
- In the staged outcome flow (left), the numbers of admissions at each stage are reported as percentages of those alive at the previous stage
- In the overall outcome flow (above), the status at ultimate discharge from acute hospital is presented as the percentage of all acute hospital admissions (i.e. excluding readmissions of the same patient in the same acute hospital stay)

Unadjusted outcomes – trends and survival

Critical care unit mortality*

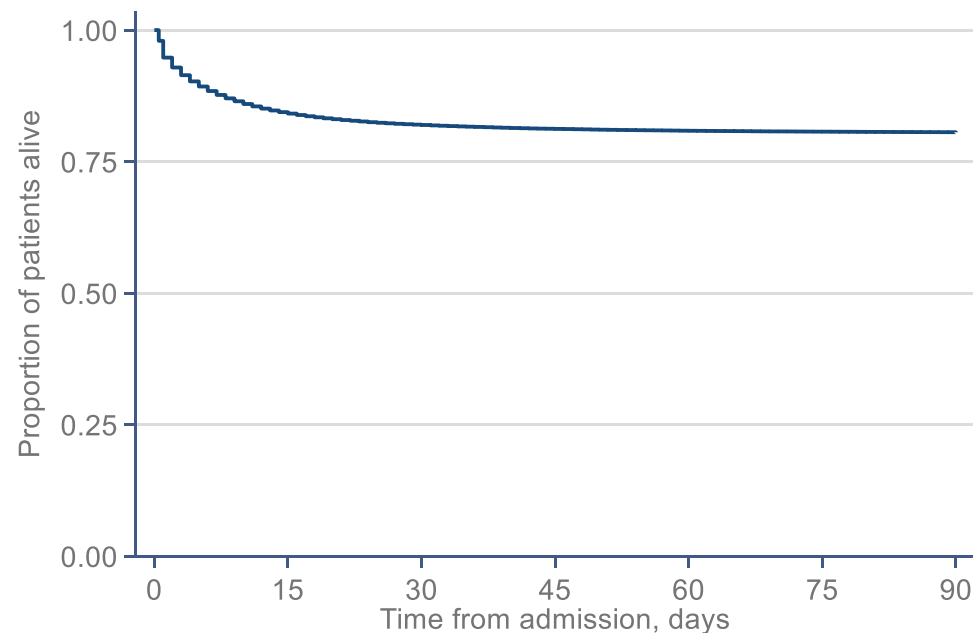


Acute hospital mortality*



*Excluding readmissions to the same critical care unit of the same patient within the same acute hospital stay

Survival (K-M plot)



Explanation

- The Kaplan-Meier (K-M) plot shows the proportion of patients that remain alive by the number of days following admission to the critical care unit
- Patients discharged from acute hospital before 90 days are assumed to have survived to 90 days

Admission groups

| | Number of admissions (%) | Acute hospital mortality*, n/N (%) |
|---------------------------------------|--------------------------|------------------------------------|
| Severe liver disease | 4,434 (2.6) | 1,553/4,113 (37.8) |
| Haematological malignancy | 3,466 (2.1) | 1,339/3,257 (41.1) |
| Metastatic disease | 6,220 (3.7) | 1,221/5,949 (20.5) |
| Elective /scheduled surgery | 36,836 (21.8) | 969/36,305 (2.7) |
| Emergency/urgent surgery | 32,144 (19.0) | 4,169/30,474 (13.7) |
| Non-surgical | 99,823 (59.1) | 26,535/93,678 (28.3) |
| Trauma‡ | 12,939 (7.7) | 2,217/12,333 (18.0) |
| Pneumonia‡ | 19,194 (11.4) | 5,602/17,678 (31.7) |
| Mechanically ventilated§ | 60,593 (35.9) | 19,057/57,468 (33.2) |
| Sepsis (Sepsis-3)§ | 53,235 (30.9) | 13,702/49,598 (28.2) |
| Sepsis (0 organ dysfunctions) | 4,329 (2.6) | 284/4,028 (7.1) |
| Sepsis (1 organ dysfunction) | 20,644 (12.2) | 2,996 /19,104 (15.7) |
| Sepsis (2 organ dysfunctions) | 15,440 (9.2) | 4,553 /14,553 (31.8) |
| Sepsis (3 organ dysfunctions) | 8,074 (4.8) | 3,558/7,584 (46.9) |
| Sepsis (4 or more organ dysfunctions) | 3,748 (2.2) | 2,311 /3,571 (64.7) |
| Septic Shock | 7,786 (4.6) | 3,990/7,320 (54.5) |
| Acute kidney injury (all)§ | 96,626 (57.2) | 23,668/91,875 (25.8) |
| Acute kidney injury (KDIGO stage I) | 29,728 (17.6) | 5,204 /28,380 (18.3) |
| Acute kidney injury (KDIGO stage II) | 44,895 (26.6) | 10,069/42,821 (23.5) |
| Acute kidney injury (KDIGO stage III) | 22,003 (13.0) | 8,395/20,674 (40.6) |

* Excluding readmissions to the same critical care unit of the same patient within the same acute hospital stay

‡ Primary or secondary reason for admission

§ During the first 24 hours following admission

KDIGO – Kidney Disease: Improving Global Outcomes

Infection

| | n (% or rate) |
|---|-------------------|
| Total number of admissions | 168,803 |
| MRSA present, n (%) | |
| Admission MRSA | 1,462 (0.9) |
| Unit-acquired MRSA | 262 (0.2) |
| No MRSA | 161,993 (96.0) |
| No samples taken | 45,047 (3.0) |
| Clostridium difficile present, n (%) | |
| Admission C. difficile | 585 (0.4) |
| Unit-acquired C. difficile | 231 (0.1) |
| No C. difficile | 35,584 (21.1) |
| No samples taken | 132,364 (78.4) |
| VRE present, n (%) | |
| Admission VRE | 1,224 (0.7) |
| Unit-acquired VRE | 356 (0.2) |
| No VRE | 62,964 (37.3) |
| No samples taken | 104,220 (61.7) |
| Number of admissions staying at least 48 hours | 97,235 |
| Total patient days for admissions staying at least 48 hours | 834,760 |
| Unit-acquired infections, n (rate per 1,000 patient days) | |
| Unit-acquired MRSA | 261 (0.3) |
| Unit-acquired C. difficile | 231 (0.3) |
| Unit-acquired VRE | 355 (0.4) |
| Unit-acquired infection in blood [number of patients] | 1482 [1324] (1.6) |

Length of stay

| | Number of admissions | Median (IQR) or n (%) | Mean (SD) |
|---|----------------------|-----------------------|-------------|
| Length of stay in acute hospital prior to admission to the critical care unit (days)* | 161,729 | 0 (0, 2) | 2.6 (9.7) |
| Length of stay in the critical care unit (days) | | | |
| All admissions† | 168,740 | 2.6 (1.1, 5.4) | 4.9 (7.7) |
| Unit survivors | 145,238 | 2.6 (1.1, 5.2) | 4.8 (7.6) |
| Unit non-survivors | 23,502 | 2.6 (0.9, 6.6) | 5.3 (7.9) |
| Duration from reported time fully ready for discharge to time of discharge‡, n (%) | | | |
| ≤ 4 hours | 127,954 | 44,255 (34.6) | |
| > 4 hours and ≤ 24 hours | 127,954 | 56,090 (43.8) | |
| > 24 hours | 127,954 | 27,609 (21.6) | |
| Length of stay in acute hospital following discharge from the critical care unit (days)*§ | | | |
| All unit survivors | 127,786 | 8 (4, 17) | 14.6 (20.7) |
| Acute hospital survivors | 118,678 | 8 (4, 16) | 14.4 (20.3) |
| Acute hospital non-survivors | 9,108 | 8 (3, 22) | 17.2 (24.9) |
| Total length of stay in acute hospital (days)* | | | |
| All patients | 160,348 | 11 (5, 22) | 18.8 (25.2) |
| Acute hospital survivors | 128,727 | 12 (6, 23) | 20.0 (25.7) |
| Acute hospital non-survivors | 31,621 | 7 (2, 17) | 14.2 (22.8) |

* Excluding readmissions to the same critical care unit of the same patient within the same acute hospital stay

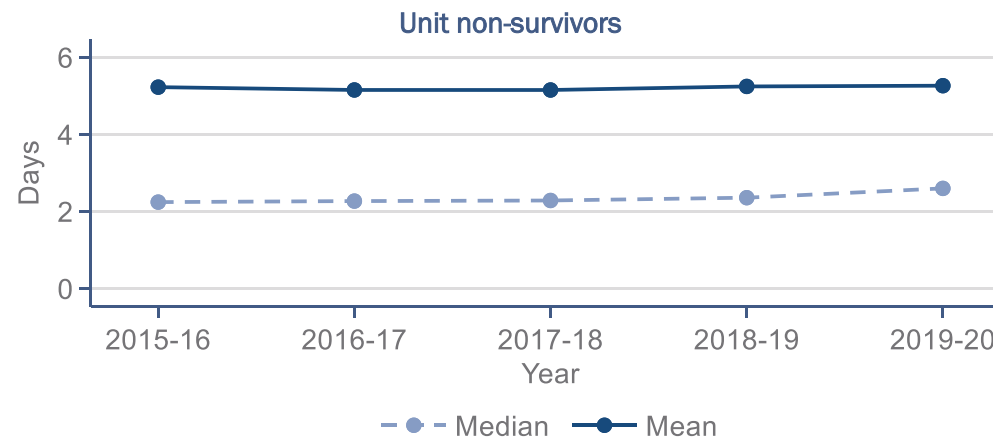
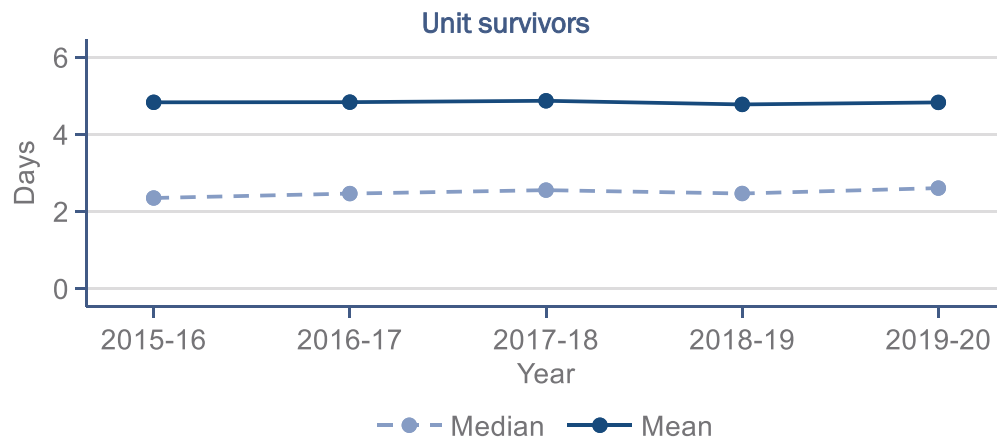
† Excluding admissions still in the critical care unit at the time this report was run

‡ Reported for unit survivors discharged to a ward in the same hospital (or direct to home)

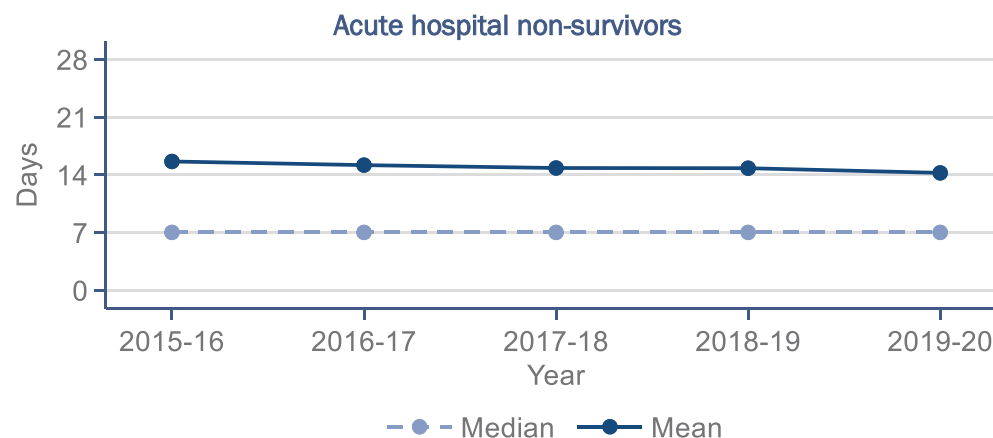
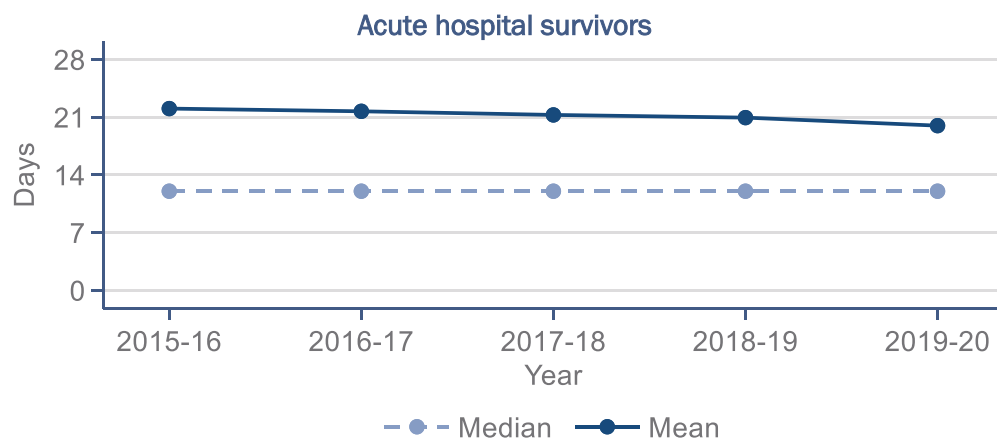
§ Reported for unit survivors only, excluding those discharged direct to a non-acute hospital or non-hospital location

Length of stay – trends

Length of stay in the critical care unit (days)



Total length of stay in acute hospital (days)*



*Excluding readmissions to the same critical care unit of the same patient within the same acute hospital stay

Organ monitoring and support

| | Number of admissions receiving support (%) | Days of support* (% of all patient days) |
|---------------------------------------|--|--|
| Basic respiratory support | 82,508 (48.9) | 245,326 (25.0) |
| Advanced respiratory support | 66,570 (39.5) | 396,010 (40.3) |
| Basic cardiovascular support | 151,569 (89.8) | 737,454 (75.0) |
| Advanced cardiovascular support | 28,314 (16.8) | 79,995 (8.1) |
| Renal support | 18,461 (10.9) | 99,893 (10.2) |
| Neurological support | 16,723 (9.9) | 75,755 (7.7) |
| Gastrointestinal support | 57,730 (34.2) | 474,742 (48.3) |
| Dermatological support | 4,414 (2.6) | 26,327 (2.7) |
| Liver support | 2,172 (1.3) | 7,855 (0.8) |
| Healthcare Resource Group [HRG code] | | |
| 6 organs supported [XC01Z] | 153 (0.1) | 4,524 (0.4) |
| 5 organs supported [XC02Z] | 1,240 (0.7) | 26,789 (2.3) |
| 4 organs supported [XC03Z] | 6,775 (4.0) | 104,027 (8.8) |
| 3 organs supported [XC04Z] | 24,059 (14.3) | 220,474 (18.6) |
| 2 organs supported [XC05Z] | 46,998 (27.8) | 272,715 (23.0) |
| 1 organ supported [XC06Z] | 85,378 (50.6) | 282,576 (23.8) |
| 0 organs supported [XC07Z] | 2,898 (1.7) | 5,900 (0.5) |
| No Level 2 or 3 care received [UZ01Z] | 1,297 (0.8) | N/A |

*For Healthcare Resource Groups, only days receiving Level 2 or 3 care are counted

End-of-life care

| | |
|---|---------------|
| Unit non-survivors, n (%) | 23,503 (13.9) |
| Length of stay in the critical care unit for unit non-survivors (hours), median (IQR) | 62 (22, 158) |
| Treatment withheld/withdrawn, n (% of unit non-survivors) | |
| Treatment withheld | 1,393 (5.9) |
| Treatment withdrawn | 11,081 (47.2) |
| Treatment withheld then withdrawn | 2,899 (12.3) |
| Time from admission to treatment withdrawal (hours), median (IQR) | 73 (25, 169) |
| Time from treatment withdrawal to death (hours), median (IQR) | 2 (1, 5) |
| Brainstem death declared, n (% of unit non-survivors) | 1,336 (5.7) |
| Solid organ donation, n (% of brainstem/cardiac deaths) | |
| Donation following brainstem death (DBD) | 704 (52.7) |
| Donation following cardiac death (DCD) | 437 (2.0) |
| Time from death to removal of body (hours), median (IQR) | 2 (2, 3) |