

Key statistics from the Case Mix Programme

— adult, general critical care units

1 April 2021 to 31 March 2022

Critical care units in the Case Mix Programme

Between 1 April 2021 and 31 March 2022, there were a total of 264 NHS adult critical care units in England, Wales and Northern Ireland participating in the Case Mix Programme.

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

NHS units	Number of adult critical care units	Number of admissions available for reporting
Adult general ICUs and ICU/HDUs*	192	129,594
Combined general/neurosciences critical care units*	18	20,145
Level 3 surge areas*†	4	380
Specialist neurosciences critical care units	9	7,205
Specialist cardiothoracic critical care units	27	29,883
Specialist liver critical care units	1	1,072
Standalone high dependency units	20	13,577

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

† Temporary critical care areas providing level 3 care outside of permanent critical care units to support pandemic-related increases in demand for critical care beds, where the area submitted data independently. For some surge areas, data were combined with a local participating unit and cannot be distinguished. Coverage of surge areas remains uncertain.

The remainder of this report includes only admissions to NHS adult, general critical care units (as defined above).

Case mix (i)

Age (years), mean (SD)	59.2 (17.3)
Male, n (%)	85,796 (57.2)
Severe conditions in the past medical history, n (%)	
Severe liver disease	4,216 (2.8)
Severe respiratory disease or home ventilation	2,941 (2.0)
Haematological malignancy	3,352 (2.2)
Metastatic disease	5,387 (3.6)
Immunocompromise*	11,611 (7.8)
Prior dependency, n (%)	
Able to live without assistance with daily activities	118,020 (79.0)
Some (minor/major) assistance with daily activities	29,483 (19.7)
Total assistance with all daily activities	1,921 (1.3)
CPR within 24 hours prior to admission, n (%)	
Community CPR	5,454 (3.6)
In-hospital CPR	4,205 (2.8)

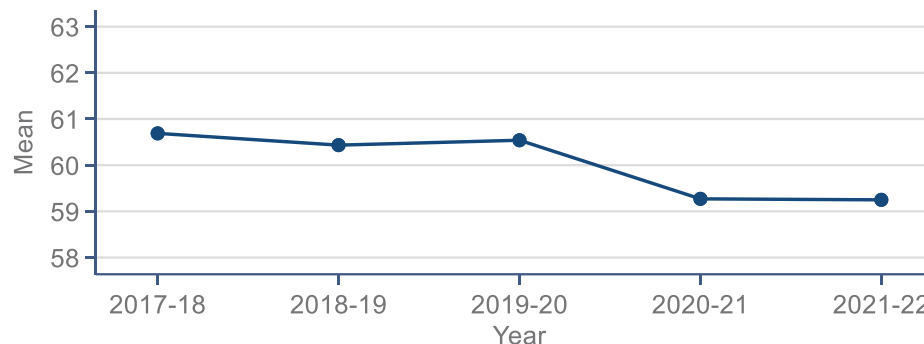
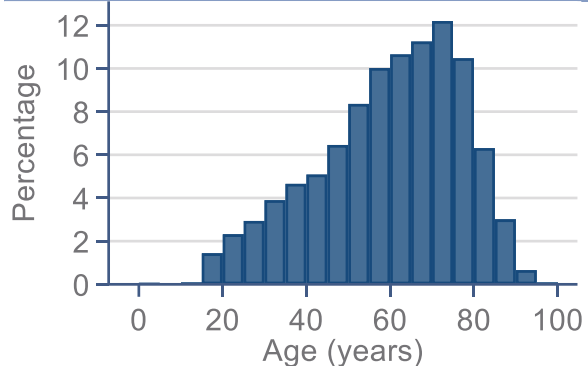
*Daily high-dose steroid treatment, chemotherapy, radiotherapy, congenital immunohumoral or cellular immune deficiency state or AIDS

Case mix (ii)

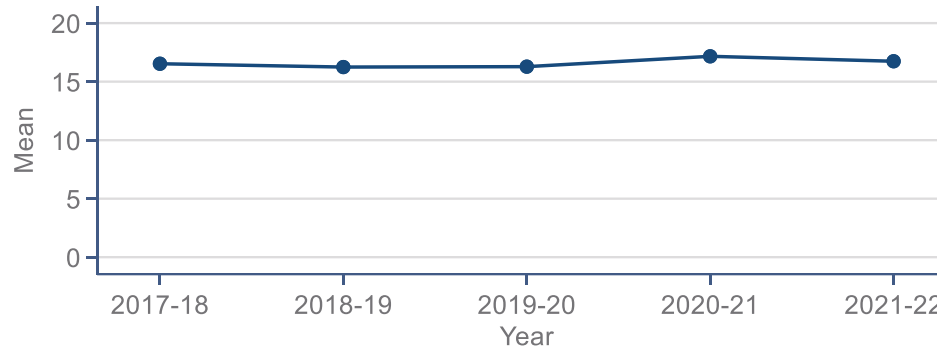
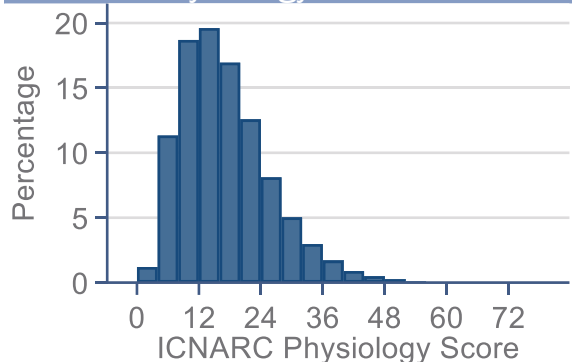
Source of admission, n (%)	
Emergency department or not in hospital – unplanned admission	43,873 (29.2)
Emergency department or not in hospital – planned admission	756 (0.5)
Theatre – planned admission following elective/scheduled surgery	23,438 (15.6)
Theatre – unplanned admission following elective/scheduled surgery	4,177 (2.8)
Theatre – admission following emergency/urgent surgery	27,932 (18.6)
Ward or intermediate care area	41,717 (27.8)
Other critical care unit – repatriation	1,128 (0.8)
Other critical care unit – planned or unplanned transfer	5,748 (3.8)
Other acute hospital (not critical care)	1,350 (0.9)
Severity scores, mean (SD)	
ICNARC Physiology Score	16.7 (8.7)
APACHE II Acute Physiology Score	11.0 (5.6)
APACHE II Score	15.0 (6.5)
ICNARC _{H-2023} model predicted risk of acute hospital mortality (%), median (IQR)	9.4 (2.1, 32.8)

Case mix – distributions and trends

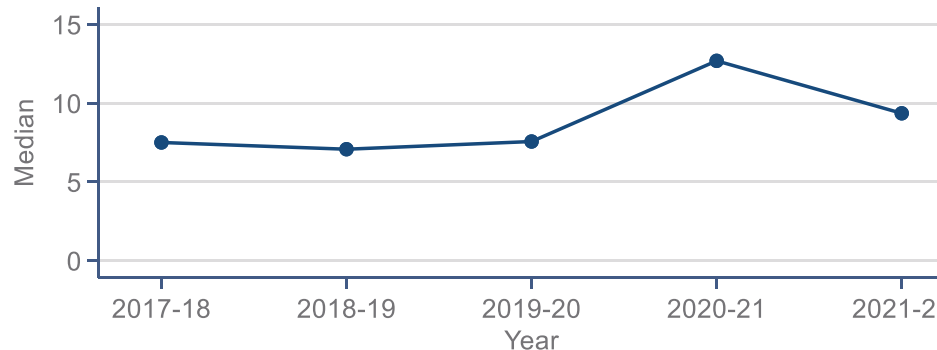
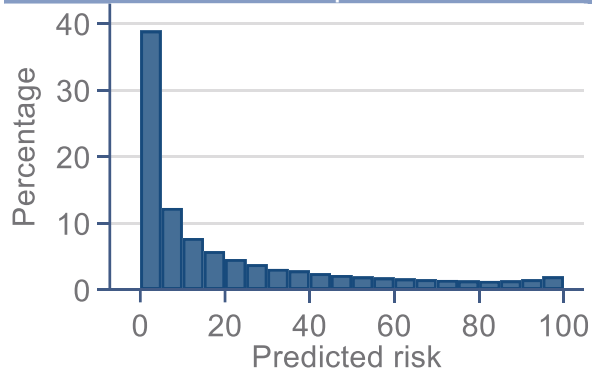
Age (years)



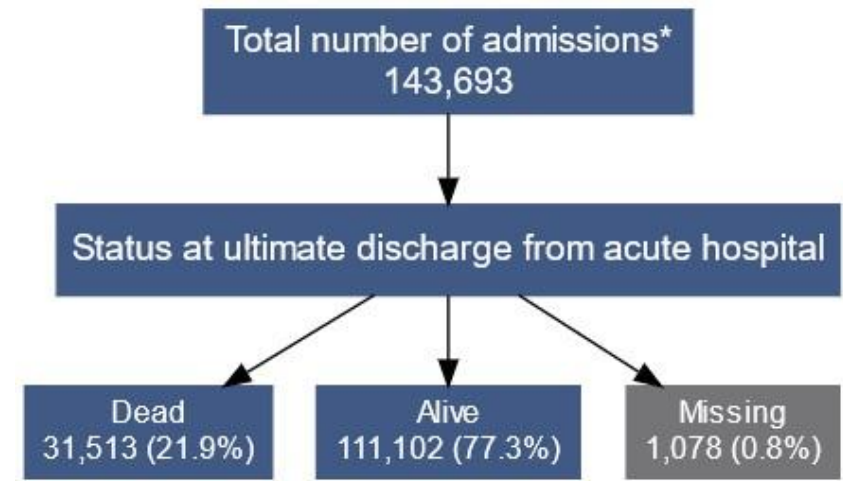
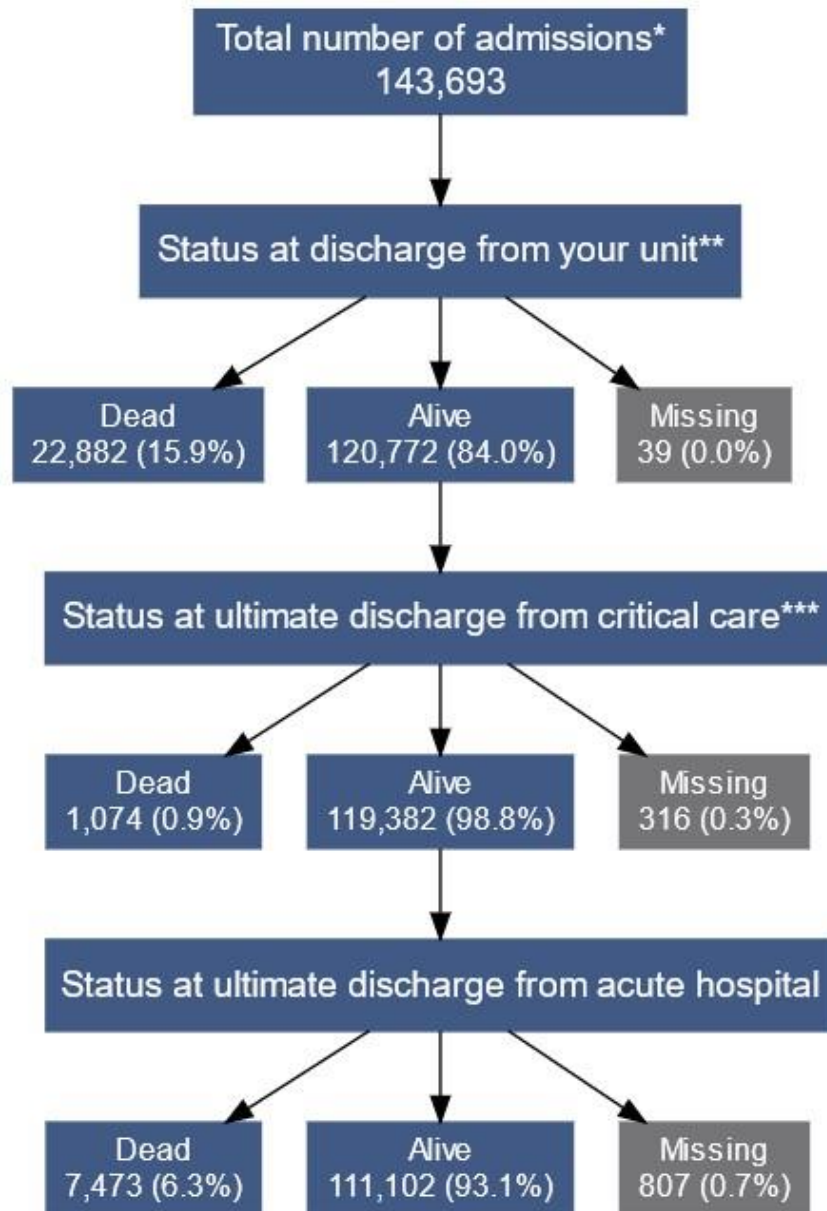
ICNARC Physiology Score



ICNARC_{H-2023} model predicted risk of acute hospital mortality (%)



Unadjusted outcomes – flows



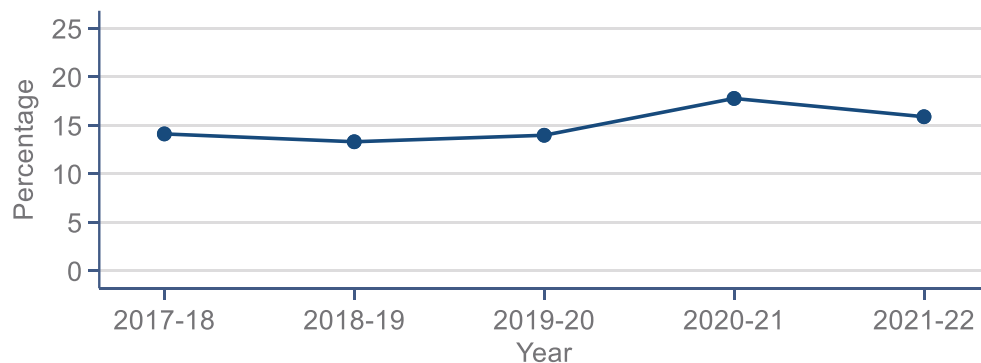
- * Excluding readmissions to the same critical care unit of the same patient within the same acute hospital stay
- ** Where a patient was admitted to the same critical care unit more than once during the same acute hospital stay, the first admission is used
- *** For all patients discharged alive from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

Explanation

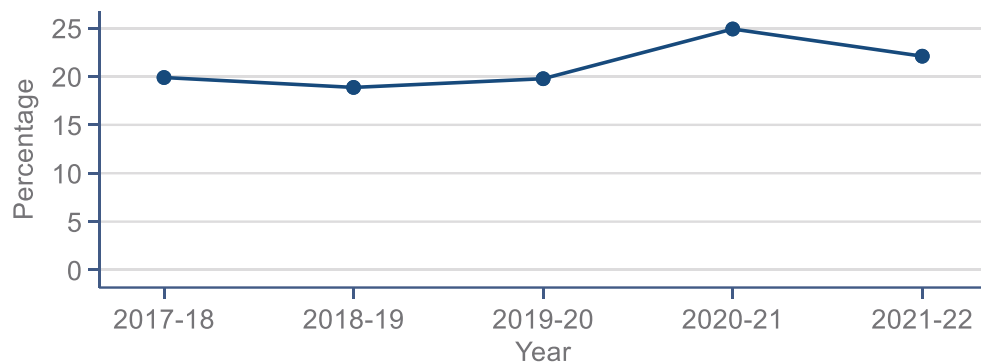
- In the staged outcome flow (left), the numbers of admissions at each stage are reported as percentages of those alive at the previous stage
- In the overall outcome flow (above), the status at ultimate discharge from acute hospital is presented as the percentage of all acute hospital admissions (i.e.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

Unadjusted outcomes – trends and survival

Critical care unit mortality*

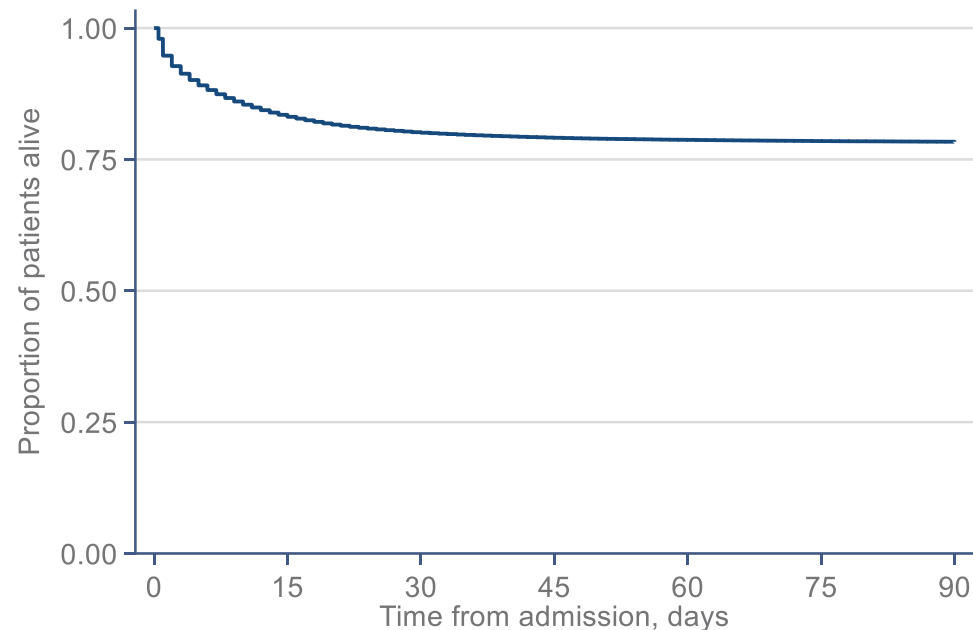


Acute hospital mortality*



*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	4,216 (2.8)	1,712/3,941 (43.4)
Haematological malignancy	3,352 (2.2)	1,363/3,140 (43.4)
Metastatic disease	5,387 (3.6)	1,123/5,158 (21.8)
Elective/scheduled surgery	27,615 (18.4)	701/27,255 (2.6)
Emergency/urgent surgery	27,899 (18.6)	3,987/26,677 (15.0)
Non-surgical	94,605 (63.0)	26,825/88,683 (30.3)
Trauma‡	10,523 (7.0)	1,877/10,095 (18.6)
Pneumonia‡	11,161 (7.4)	3,559/10,048 (35.4)
COVID-19‡	17,681 (11.8)	5,705/16,789 (34.0)
Mechanically ventilated§	55,378 (36.9)	18,261/52,367 (34.9)
Sepsis (Sepsis-3)§	52,402 (34.9)	14,873/48,938 (30.4)
Sepsis (0 organ dysfunctions)	3,595 (2.4)	259/3,373 (7.7)
Sepsis (1 organ dysfunction)	22,484 (15.0)	4,119/21,053 (19.6)
Sepsis (2 organ dysfunctions)	15,357 (10.2)	4,958/14,243 (34.8)
Sepsis (3 organ dysfunctions)	7,563 (5.0)	3,439/7,034 (48.9)
Sepsis (4 or more organ dysfunctions)	3,403 (2.3)	2,098/3,235 (64.9)
Septic Shock	7,234 (4.8)	3,917/6,852 (57.2)
Acute kidney injury (all)§	87,328 (58.2)	23,282/83,087 (28.0)
Acute kidney injury (KDIGO stage I)	26,134 (17.4)	5,298/24,884 (21.3)
Acute kidney injury (KDIGO stage II)	40,719 (27.1)	10,065/38,930 (25.9)
Acute kidney injury (KDIGO stage III)	20,475 (13.6)	7,919/19,273 (41.1)

*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	149,803
MRSA present, n (%)	
Admission MRSA	1,108 (0.7)
Unit-acquired MRSA	247 (0.2)
No MRSA	142,007 (94.8)
No samples taken	6,410 (4.3)
Clostridium difficile present, n (%)	
Admission C. difficile	554 (0.4)
Unit-acquired C. difficile	314 (0.2)
No C. difficile	30,298 (20.3)
No samples taken	118,607 (79.2)
VRE present, n (%)	
Admission VRE	1,229 (0.8)
Unit-acquired VRE	610 (0.4)
No VRE	56,576 (37.8)
No samples taken	91,357 (61.0)
Number of admissions staying at least 48 hours	91,610
Total patient days for admissions staying at least 48 hours	909,591
Unit-acquired infections, n (rate per 1,000 patient days)	
Unit-acquired MRSA	246 (0.3)
Unit-acquired C. difficile	314 (0.3)
Unit-acquired VRE	610 (0.7)
Unit-acquired infection in blood [number of patients]	2435 [2139] (2.4)

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)*	143,693	0 (0, 2)	2.8 (18.6)
Length of stay in the critical care unit (days)			
All admissions†	150,073	2.9 (1.2, 6.3)	5.9 (10.0)
Unit survivors	126,237	2.8 (1.3, 6.0)	5.7 (9.8)
Unit non-survivors	23,836	3.3 (1.1, 8.9)	7.0 (10.9)
Duration from reported time fully ready for discharge to time of discharge‡, n (%)			
≤ 4 hours	100,732	37,064 (36.8)	
> 4 hours and ≤ 24 hours	100,732	44,670 (44.4)	
> 24 hours	100,732	18,998 (18.9)	
Length of stay in acute hospital following discharge from the critical care unit (days)*§			
All unit survivors	112,053	8 (4, 18)	16.6 (26.0)
Acute hospital survivors	103,434	8 (4, 18)	16.3 (25.6)
Acute hospital non-survivors	8,619	9 (3, 23)	19.3 (30.6)
Total length of stay in acute hospital (days)*			
All patients	142,567	12 (6, 25)	21.4 (34.2)
Acute hospital survivors	111,071	13 (7, 26)	22.9 (34.2)
Acute hospital non-survivors	31,496	9 (3, 19)	16.2 (33.6)

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

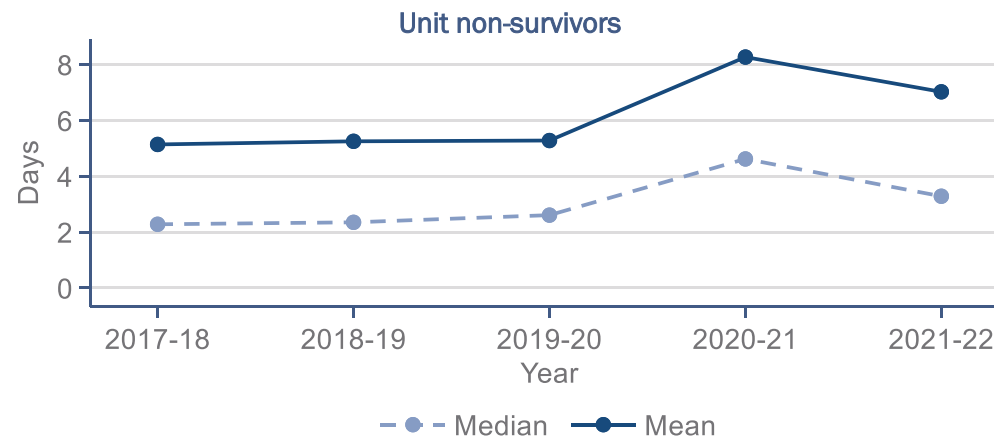
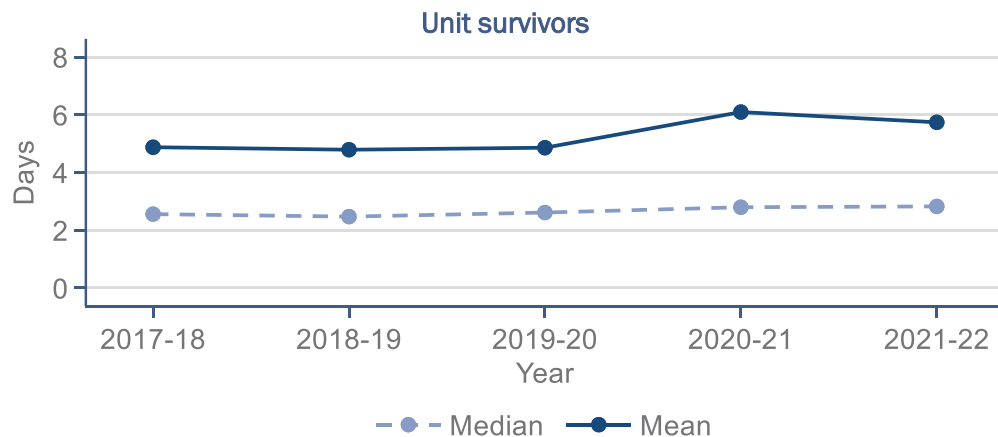
† Excluding admissions still in the critical care unit at the time this report was run

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

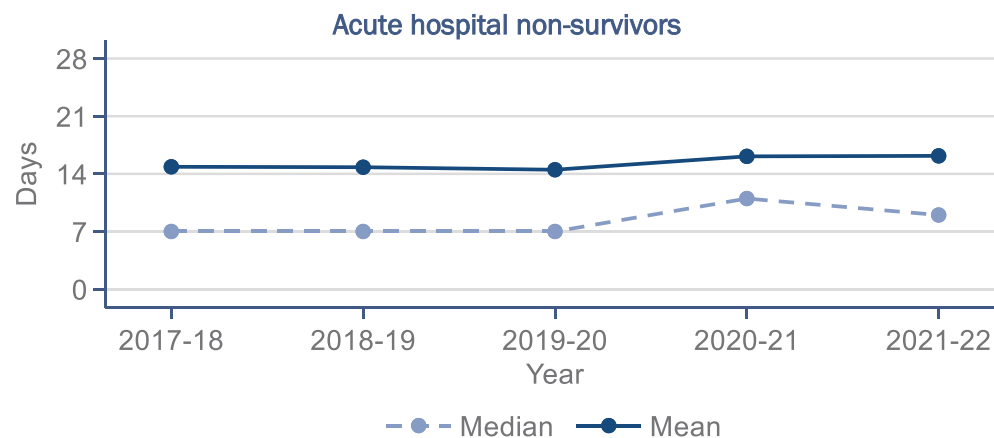
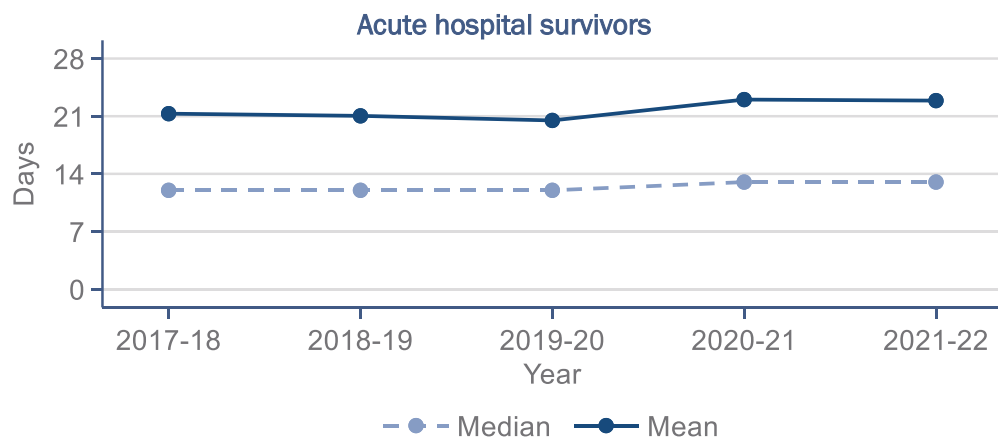
§ Reported for unit survivors only, excluding those discharged direct to a non-acute hospital or non-hospital location

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	76,130 (50.7)	265,842 (25.8)
Advanced respiratory support	63,218 (42.1)	478,305 (46.4)
Basic cardiovascular support	136,372 (90.9)	809,392 (78.5)
Advanced cardiovascular support	26,881 (17.9)	81,813 (7.9)
Renal support	18,261 (12.2)	113,070 (11.0)
Neurological support	15,254 (10.2)	75,395 (7.3)
Gastrointestinal support	58,328 (38.9)	566,778 (55.0)
Dermatological support	4,066 (2.7)	24,588 (2.4)
Liver support	2,442 (1.6)	8,954 (0.9)
Healthcare Resource Group [HRG code]		
6 organs supported [XC01Z]	212 (0.1)	8,078 (0.7)
5 organs supported [XC02Z]	1,323 (0.9)	33,396 (2.7)
4 organs supported [XC03Z]	6,750 (4.5)	121,650 (9.8)
3 organs supported [XC04Z]	22,912 (15.3)	247,306 (19.9)
2 organs supported [XC05Z]	43,367 (28.9)	301,953 (24.3)
1 organ supported [XC06Z]	72,763 (48.5)	262,535 (21.2)
0 organs supported [XC07Z]	1,941 (1.3)	4,066 (0.4)
No Level 2 or 3 care received [UZ01Z]	846 (0.6)	N/A

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

End-of-life care

Unit non-survivors, n (%)	23,836 (15.9)
Length of stay in the critical care unit for unit non-survivors (hours), median (IQR)	79 (25, 215)
Treatment withheld/withdrawn, n (% of unit non-survivors)	
Treatment withheld	1,257 (5.3)
Treatment withdrawn	11,487 (48.2)
Treatment withheld then withdrawn	2,471 (10.4)
Time from admission to treatment withdrawal (hours), median (IQR)	90 (29, 223)
Time from treatment withdrawal to death (hours), median (IQR)	2 (1, 4)
Brainstem death declared, n (% of unit non-survivors)	1,290 (5.4)
Solid organ donation, n (% of brainstem/cardiac deaths)	
Donation following brainstem death (DBD)	599 (46.4)
Donation following cardiac death (DCD)	434 (1.9)
Time from death to removal of body (hours), median (IQR)	2 (2, 3)