

Key statistics from the Case Mix Programme

— adult, general critical care units

1 April 2018 to 31 March 2019

Note: The Case Mix Programme Annual Quality Report 2018/19 for adult critical care is available online at <https://onlinereports.icnarc.org>

Critical care units in the Case Mix Programme

Between 1 April 2018 and 31 March 2019, there were a total of 263 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*	200	150,670
Combined general/neurosciences critical care units*	14	20,529
Specialist neurosciences critical care units	9	7,405
Specialist cardiothoracic critical care units	19	26,469
Specialist liver critical care units	1	606
Standalone high dependency units	20	16,069

*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.

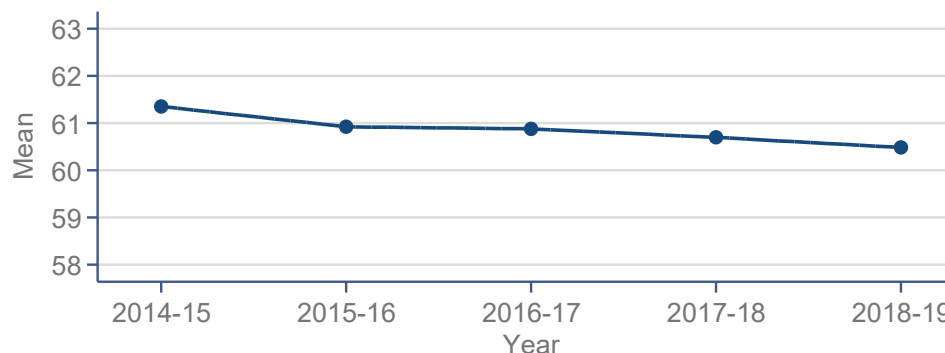
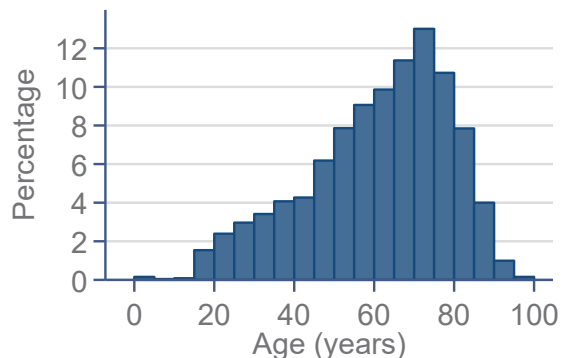
Based on 97% coverage for 2018-19, the total number of admissions to adult, general critical care units in England, Wales and Northern Ireland is extrapolated to be **175,700**.

Case mix

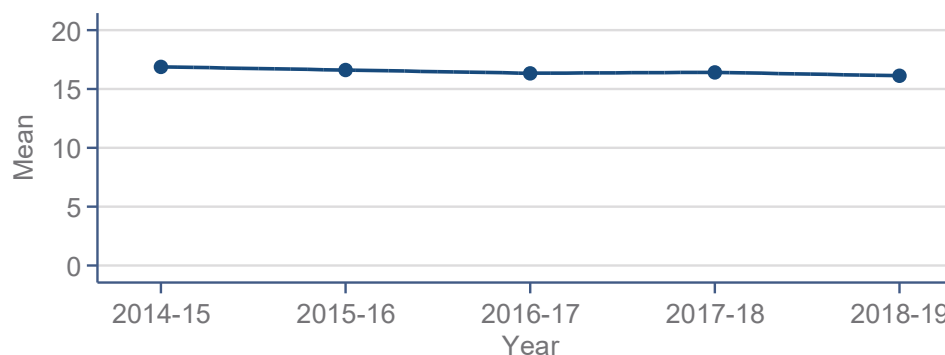
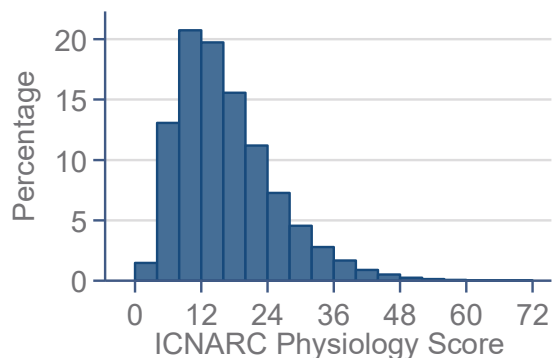
Age (years), mean (SD)	60.5 (17.8)
Male, n (%)	95,367 (55.7)
Severe conditions in the past medical history, n (%)	
Severe liver disease	4,505 (2.6)
Severe respiratory disease or home ventilation	4,600 (2.7)
Haematological malignancy	3,445 (2.0)
Metastatic disease	6,584 (3.9)
Immunocompromise	13,687 (8.0)
Prior dependency, n (%)	
Able to live without assistance with daily activities	129,414 (75.8)
Some (minor/major) assistance with daily activities	39,195 (23.0)
Total assistance with all daily activities	2,049 (1.2)
CPR within 24 hours prior to admission, n (%)	
Community CPR	5,797 (3.4)
In-hospital CPR	4,678 (2.7)
Source of admission, n (%)	
Emergency department or not in hospital – unplanned admission	47,115 (27.5)
Emergency department or not in hospital – planned admission	776 (0.5)
Theatre – planned admission following elective/scheduled surgery	34,749 (20.3)
Theatre – unplanned admission following elective/scheduled surgery	5,723 (3.3)
Theatre – admission following emergency/urgent surgery	32,513 (19.0)
Ward or intermediate care area	42,792 (25.0)
Other critical care unit – repatriation	1,240 (0.7)
Other critical care unit – planned or unplanned transfer	5,073 (3.0)
Other acute hospital (not critical care)	1,218 (0.7)
Severity scores, mean (SD)	
ICNARC Physiology Score	16.1 (8.8)
APACHE II Acute Physiology Score	10.9 (5.8)
APACHE II Score	15.2 (6.7)
ICNARC _{#2018} model predicted risk of acute hospital mortality (%), median (IQR)	6.2 (1.5, 25.4)

Case mix – distributions and trends

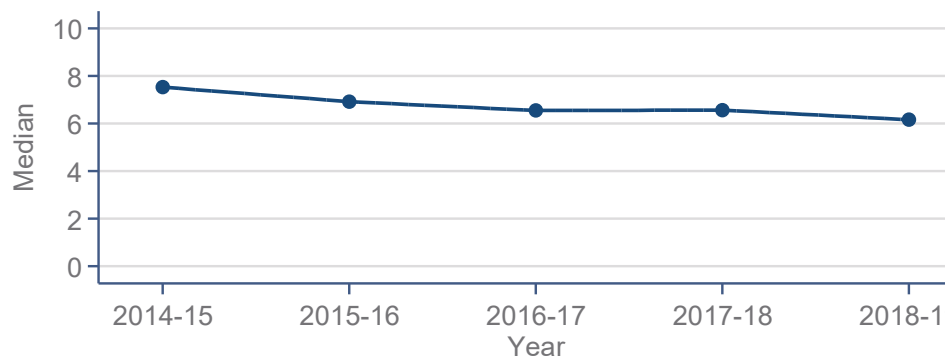
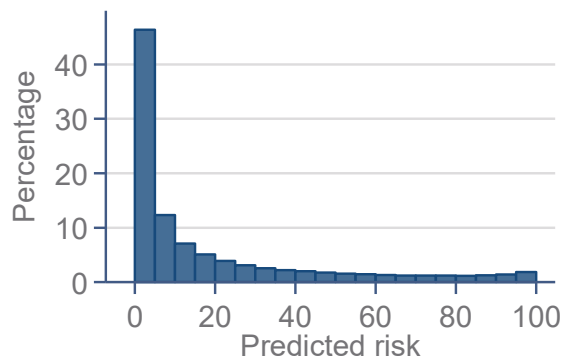
Age (years)



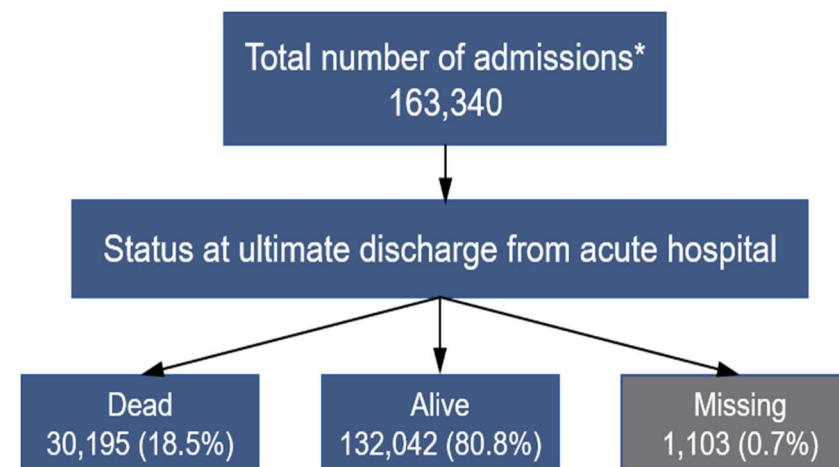
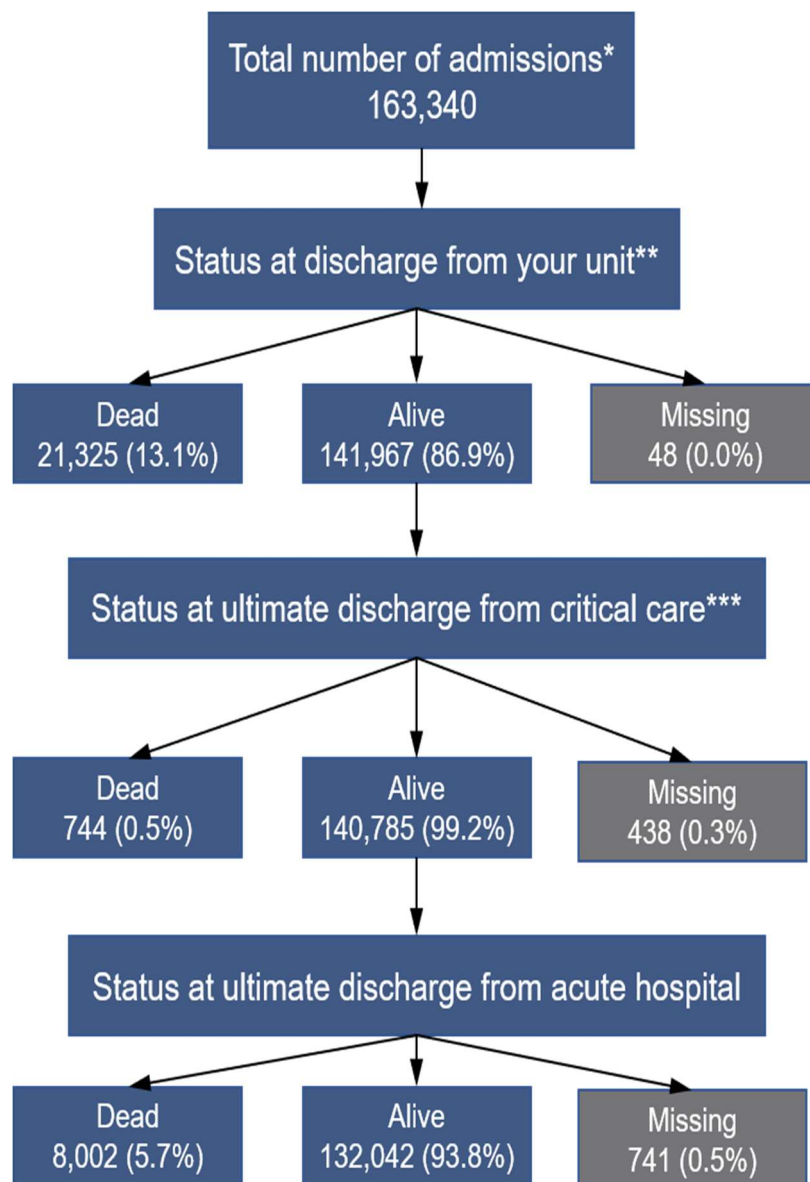
ICNARC Physiology Score



ICNARC_{H2018} 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

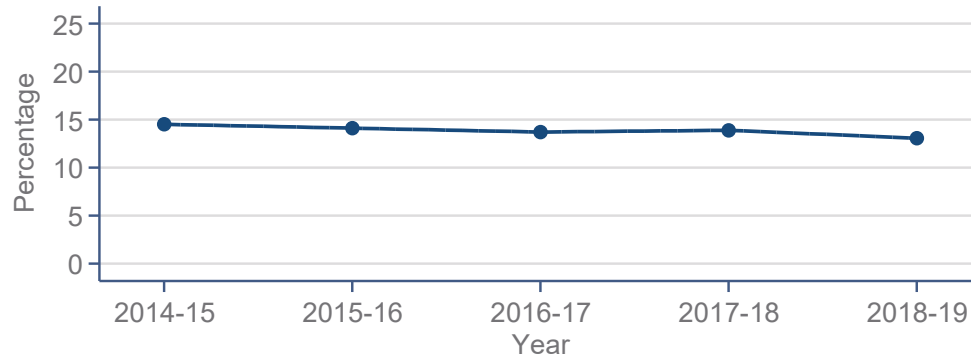
*** For all patients discharged alive from the critical care unit, including those not transferred to another critical care unit

Explanation

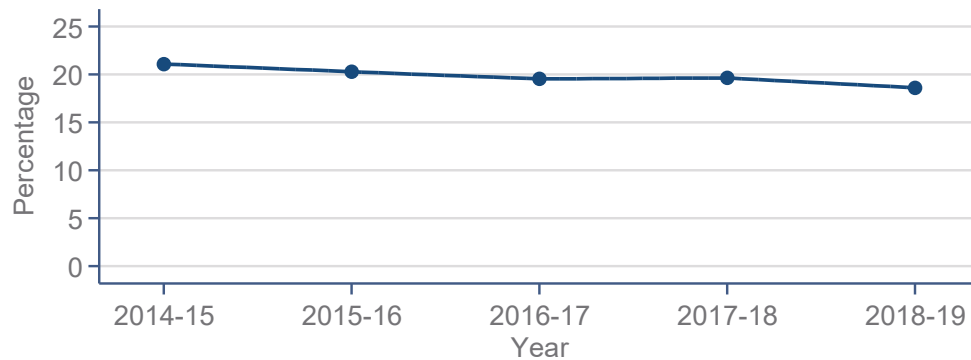
- In the staged outcome flow (left), the numbers of admissions at each stage are reported as percentages of those alive at the previous stage
- In the overall outcome flow (above), the status at ultimate discharge from acute hospital is presented as the percentage of all acute hospital admissions (i.e.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

Unadjusted outcomes – trends and survival

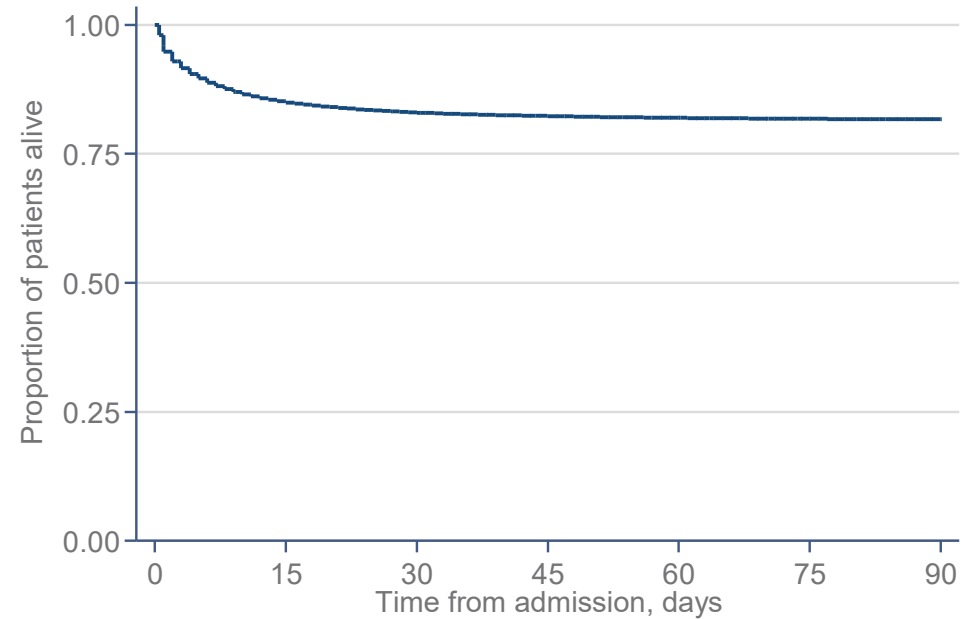
Critical care unit mortality*



Acute hospital mortality*



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

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

Admission groups

	Number of admissions (%)	Acute hospital mortality*, n/N (%)
Severe liver disease	4,505 (2.6)	1,526/4,138 (36.9)
Haematological malignancy	3,445 (2.0)	1,314/3,188 (41.2)
Metastatic disease	6,584 (3.9)	1,319/6,274 (21.0)
Elective /scheduled surgery	40,472 (23.6)	962/39,769 (2.4)
Emergency/urgent surgery	32,513 (19.0)	4,200/30,844 (13.6)
Non-surgical	98,214 (57.4)	25,033/91,624 (27.3)
Trauma‡	13,961 (8.2)	2,123/13,301 (16.0)
Pneumonia‡	20,711 (12.1)	5,949/18,835 (31.6)
Mechanically ventilated§	60,252 (35.2)	18,064/56,974 (31.7)
Sepsis (Sepsis-3)§	49,737 (29.1)	12,406/45,934 (27.0)
Sepsis (0 organ dysfunctions)	4,399 (2.6)	324/4,092 (7.9)
Sepsis (1 organ dysfunction)	19,425 (11.4)	2,664/17,884 (14.9)
Sepsis (2 organ dysfunctions)	14,105 (8.2)	3,654/12,948 (28.2)
Sepsis (3 organ dysfunctions)	7,607 (4.4)	3,279/7,063 (46.4)
Sepsis (4 or more organ dysfunctions)	4,201 (2.5)	2,485/3,947 (63.0)
Septic Shock	7,750 (4.5)	3,879/7,297 (53.2)
Acute kidney injury (all)§	98,684 (57.6)	22,821/93,544 (24.4)
Acute kidney injury (KDIGO stage I)	30,416 (17.8)	4,883/28,934 (16.9)
Acute kidney injury (KDIGO stage II)	46,121 (26.9)	9,597/43,834 (21.9)
Acute kidney injury (KDIGO stage III)	22,147 (12.9)	8,341/20,776 (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	171,199
MRSA present, n (%)	
Admission MRSA	1,671 (1.0)
Unit-acquired MRSA	259 (0.2)
No MRSA	164,398 (96.0)
No samples taken	4,827 (2.8)
Clostridium difficile present, n (%)	
Admission C. difficile	657 (0.4)
Unit-acquired C. difficile	255 (0.2)
No C. difficile	39,148 (22.9)
No samples taken	131,097 (76.6)
VRE present, n (%)	
Admission VRE	1,333 (0.8)
Unit-acquired VRE	444 (0.3)
No VRE	64,224 (37.5)
No samples taken	105,156 (61.4)
Number of admissions staying at least 48 hours	95,134
Total patient days for admissions staying at least 48 hours	813,094
Unit-acquired infections, n (rate per 1,000 patient days)	
Unit-acquired MRSA	258 (0.3)
Unit-acquired C. difficile	254 (0.3)
Unit-acquired VRE	442 (0.5)
Unit-acquired infection in blood [number of patients]	1364 [1233] (1.5)

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)*	163,340	0 (0, 1)	2.5 (12.2)
Length of stay in the critical care unit (days)			
All admissions†	171,130	2.4 (1.0, 5.1)	4.7 (8.1)
Unit survivors	148,775	2.4 (1.1, 5.0)	4.7 (7.9)
Unit non-survivors	22,355	2.3 (0.8, 6.0)	5.1 (9.3)
Duration from reported time fully ready for discharge to time of discharge‡, n (%)			
≤ 4 hours	130,652	47,415 (36.3)	
> 4 hours and ≤ 24 hours	130,652	56,964 (43.6)	
> 24 hours	130,652	26,273 (20.1)	
Length of stay in acute hospital following discharge from the critical care unit (days)*§			
All unit survivors	130,944	8 (4, 17)	15.0 (22.3)
Acute hospital survivors	122,116	8 (4, 16)	14.9 (22.1)
Acute hospital non-survivors	8,828	8 (3, 22)	17.4 (25.7)
Total length of stay in acute hospital (days)*			
All patients	161,811	11 (5, 22)	19.1 (27.4)
Acute hospital survivors	131,690	11 (6, 23)	20.2 (28.2)
Acute hospital non-survivors	30,121	7 (2, 17)	14.3 (22.9)

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

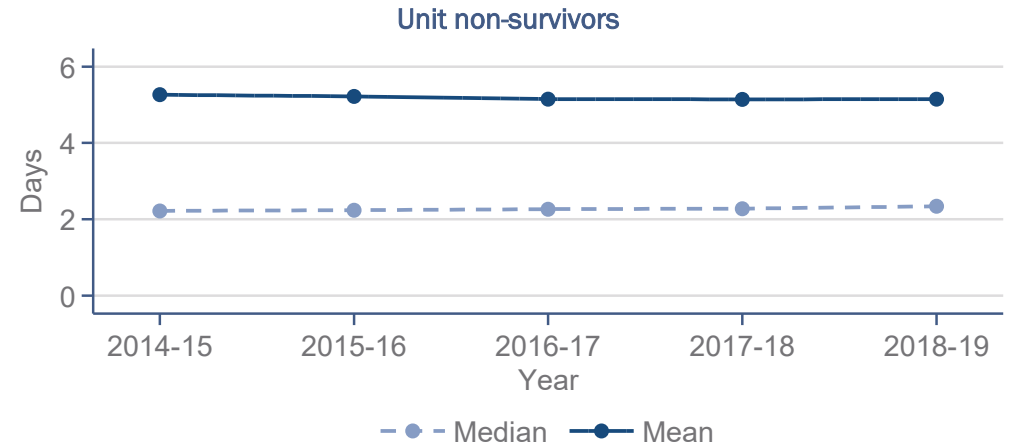
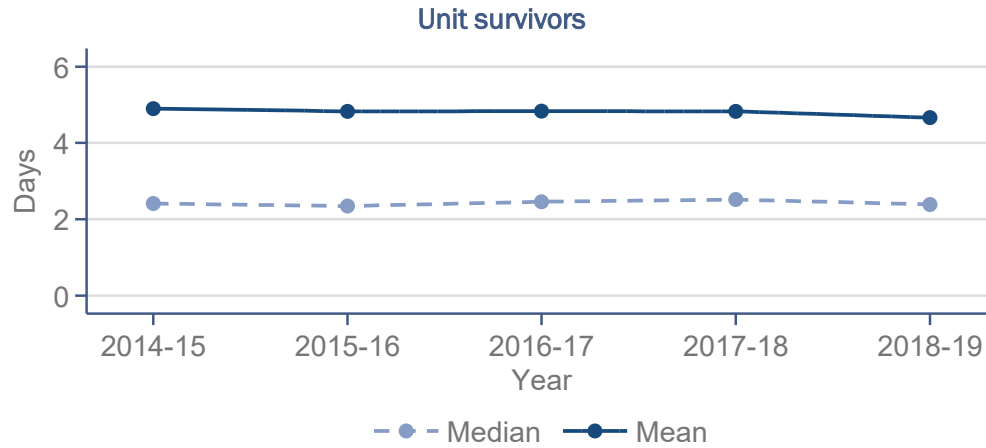
† Excluding admissions still in the critical care unit at the time this report was run

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

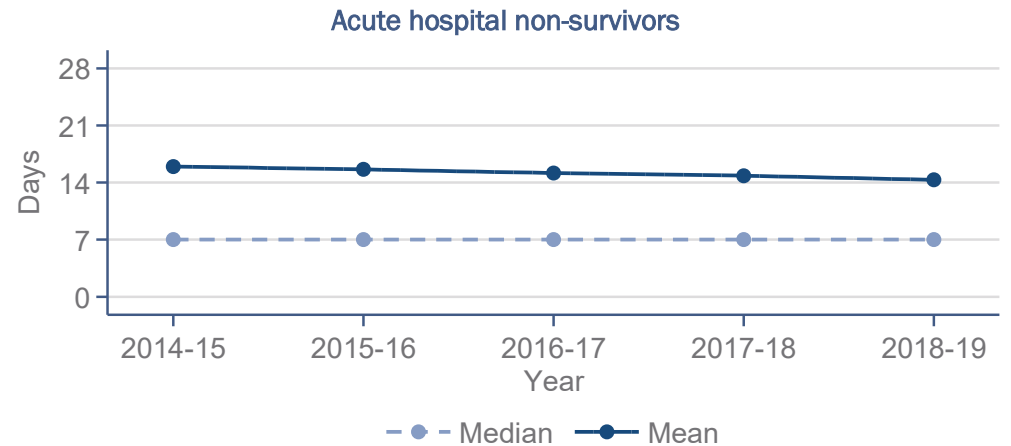
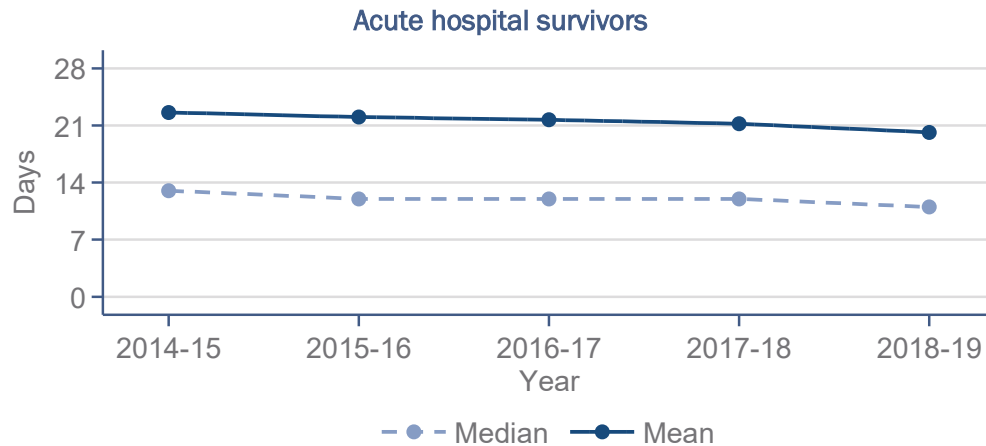
§ Reported for unit survivors only

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	83,360 (48.7)	248,461 (25.5)
Advanced respiratory support	66,194 (38.7)	381,217 (39.2)
Basic cardiovascular support	152,672 (89.2)	720,104 (74.0)
Advanced cardiovascular support	28,170 (16.5)	77,198 (7.9)
Renal support	17,679 (10.3)	94,394 (9.7)
Neurological support	16,210 (9.5)	69,295 (7.1)
Gastrointestinal support	57,570 (33.6)	467,198 (48.0)
Dermatological support	4,535 (2.7)	28,859 (3.0)
Liver support	2,118 (1.2)	7,240 (0.7)
Healthcare Resource Group [HRG code]		
6 organs supported [XC01Z]	184 (0.1)	5,757 (0.5)
5 organs supported [XC02Z]	1,213 (0.7)	27,833 (2.4)
4 organs supported [XC03Z]	6,576 (3.8)	100,747 (8.7)
3 organs supported [XC04Z]	23,504 (13.7)	213,204 (18.4)
2 organs supported [XC05Z]	46,904 (27.4)	268,903 (23.3)
1 organ supported [XC06Z]	88,353 (51.6)	284,801 (24.6)
0 organs supported [XC07Z]	3,177 (1.9)	6,512 (0.6)
No Level 2 or 3 care received [UZ01Z]	1,281 (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 (%)	22,360 (13.1)
Length of stay in the critical care unit for unit non-survivors (hours), median (IQR)	56 (20, 144)
Treatment withheld/withdrawn, n (% of unit non-survivors)	
Treatment withheld	1,394 (6.2)
Treatment withdrawn	10,488 (46.9)
Treatment withheld then withdrawn	2,691 (12.0)
Time from admission to treatment withdrawal (hours), median (IQR)	68 (24, 161)
Time from treatment withdrawal to death (hours), median (IQR)	2 (1, 4)
Brainstem death declared, n (% of unit non-survivors)	1,371 (6.1)
Solid organ donation, n (% of brainstem/cardiac deaths)	
Donation following brainstem death (DBD)	741 (54.0)
Donation following cardiac death (DCD)	437 (2.1)
Time from death to removal of body (hours), median (IQR)	2 (2, 3)