

# Key statistics from the Case Mix Programme

## — adult, general critical care units

1 April 2016 to 31 March 2017

Note: The Case Mix Programme Annual Quality Report 2016/17 for adult critical care is available online at <https://onlinereports.icnarc.org>

## Critical care units in the Case Mix Programme

Between 1 April 2016 and 31 March 2017, there were a total of 255 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*	202	146,882
Combined general/neurosciences critical care units*	14	22,116
Specialist neurosciences critical care units	8	7,269
Specialist cardiothoracic critical care units	11	16,844
Specialist liver critical care units	1	1,038
Standalone high dependency units	19	13,874

\*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.

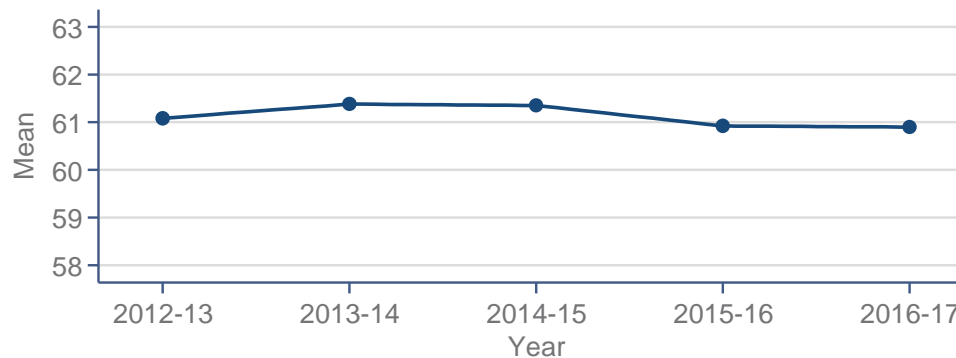
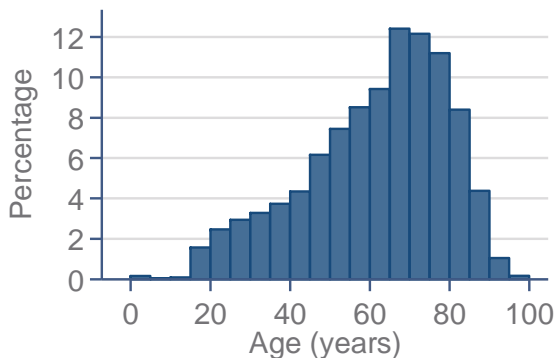
Based on 98% coverage for 2016-17, the total number of admissions to adult, general critical care units in England, Wales and Northern Ireland is extrapolated to be **173,000**.

## Case mix

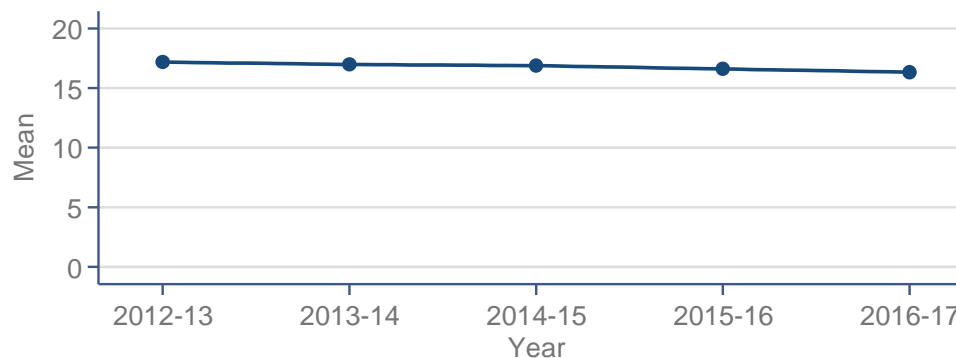
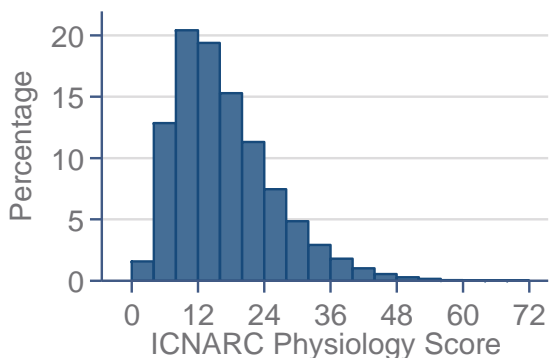
Age (years), mean (SD)	60.9 (17.9)
Male, n (%)	93,307 (55.2)
Severe conditions in the past medical history, n (%)	
Severe liver disease	4,680 (2.8)
Haematological malignancy	3,430 (2.0)
Metastatic disease	6,027 (3.6)
Prior dependency, n (%)	
Able to live without assistance with daily activities	127,463 (75.8)
Some (minor/major) assistance with daily activities	38,810 (23.1)
Total assistance with all daily activities	1,969 (1.2)
CPR within 24 hours prior to admission, n (%)	
Community CPR	5,321 (3.1)
In-hospital CPR	4,728 (2.8)
Source of admission, n (%)	
Emergency department or not in hospital – unplanned admission	44,886 (26.6)
Emergency department or not in hospital – planned admission	802 (0.5)
Theatre – planned admission following elective/scheduled surgery	34,220 (20.2)
Theatre – unplanned admission following elective/scheduled surgery	6,279 (3.7)
Theatre – admission following emergency/urgent surgery	31,229 (18.5)
Ward or intermediate care area	43,758 (25.9)
Other critical care unit – repatriation	1,167 (0.7)
Other critical care unit – planned or unplanned transfer	5,304 (3.1)
Other acute hospital (not critical care)	1,353 (0.8)
Severity scores, mean (SD)	
ICNARC Physiology Score	16.3 (9.0)
APACHE II Acute Physiology Score	11.1 (5.8)
APACHE II Score	15.3 (6.8)
ICNARC <sub>H-2015</sub> model predicted risk of acute hospital mortality (%), median (IQR)	7.3 (1.8, 26.7)

## Case mix – distributions and trends

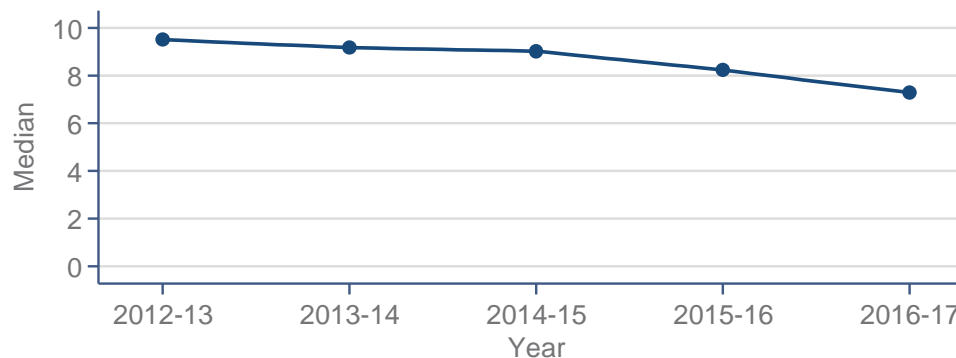
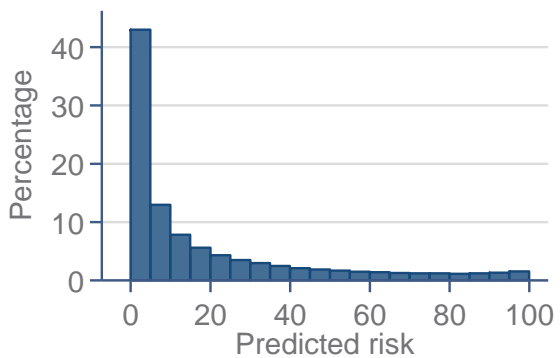
Age (years)



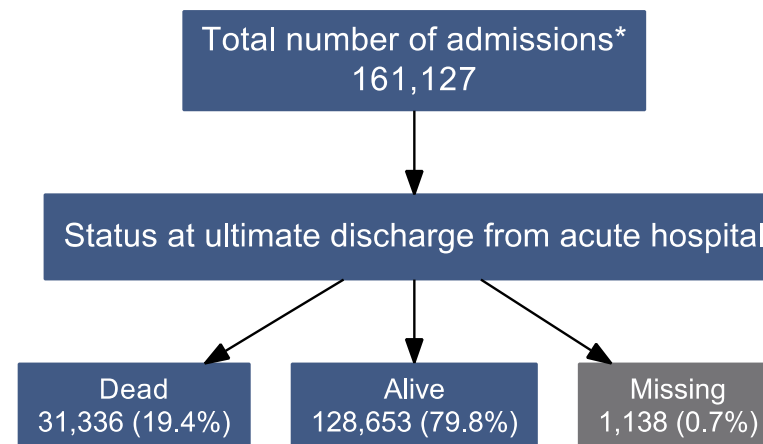
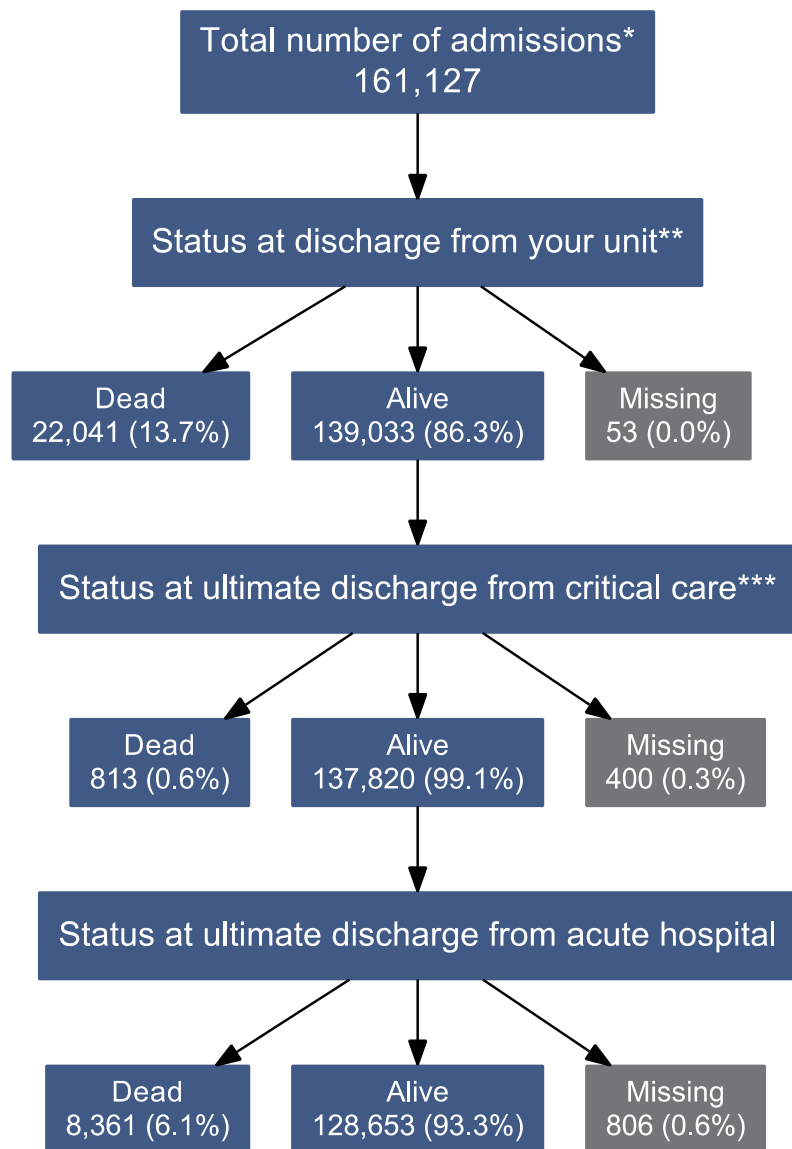
ICNARC Physiology Score



ICNARC<sub>H-2015</sub> model predicted risk of acute hospital mortality (%)



## Unadjusted outcomes – flows



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

\*\* Where a patient was admitted to the critical care unit more than once during the same acute hospital stay, the first admission is used

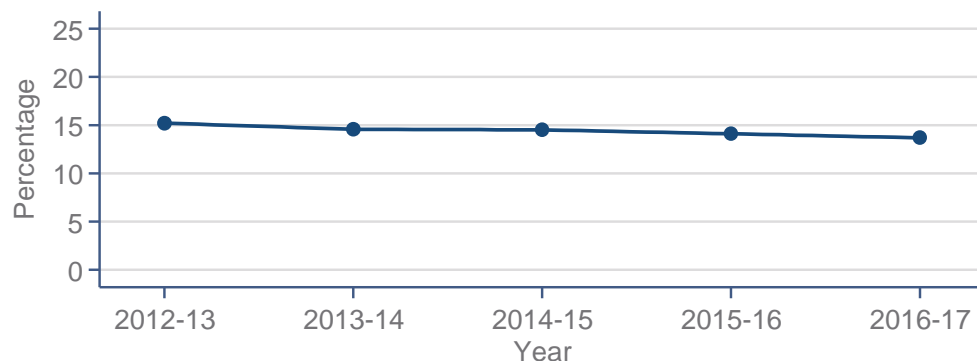
\*\*\* For all patients discharged alive from the critical care unit, including those not transferred to another critical care unit

### Explanation

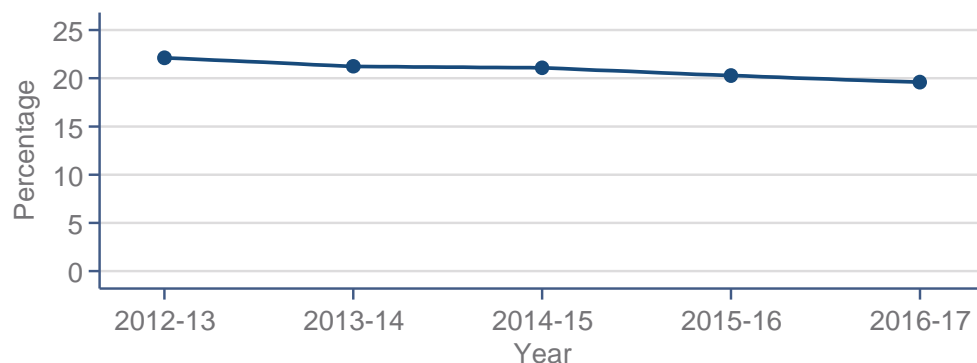
- In the staged outcome flow (left), the numbers of admissions at each stage are reported as percentages of those alive at the previous stage
- In the overall outcome flow (above), the status at ultimate discharge from acute hospital is presented as the percentage of all acute hospital admissions (i.e.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

## Unadjusted outcomes – trends and survival

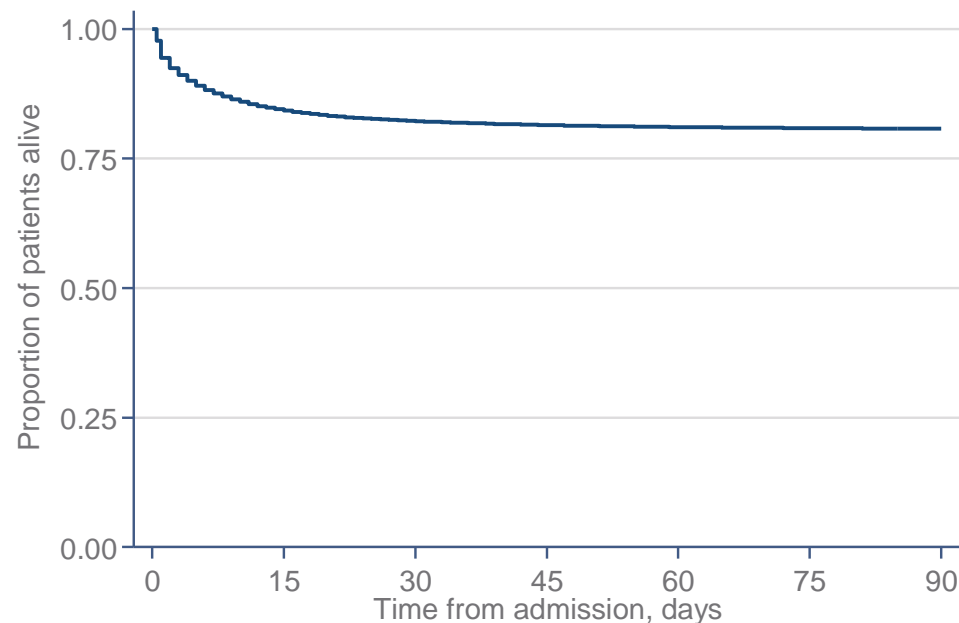
Critical care unit mortality\*



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 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	4,680 (2.8)	1,766/4,319 (40.9)
Haematological malignancy	3,430 (2.0)	1,345/3,168 (42.5)
Metastatic disease	6,027 (3.6)	1,238/5,722 (21.6)
Elective/scheduled surgery	40,499 (24.0)	1,093/39,710 (2.8)
Emergency/urgent surgery	31,229 (18.5)	4,361/29,517 (14.8)
Non-surgical	97,270 (57.6)	25,882/90,762 (28.5)
Trauma‡	13,502 (8.0)	2,095/12,785 (16.4)
Pneumonia‡	20,019 (11.8)	6,385/18,311 (34.9)
Mechanically ventilated§	60,780 (36.0)	18,949/57,234 (33.1)
Sepsis (Sepsis-2)§	50,819 (30.1)	13,099/46,858 (28.0)
Sepsis (0 organ dysfunctions)	4,780 (2.8)	384/4,289 (2.8)
Sepsis (1 organ dysfunction)	13,108 (7.8)	1,661/11,889 (14.0)
Sepsis (2 organ dysfunctions)	17,587 (10.4)	3,916/16,166 (24.2)
Sepsis (3 organ dysfunctions)	10,051 (5.9)	3,768/9,472 (39.8)
Sepsis (4 or more organ dysfunctions)	5,293 (3.1)	3,370/5,042 (66.8)
Acute kidney injury (all)§	97,370 (57.6)	23,998/92,359 (26.0)
Acute kidney injury (KDIGO stage I)	30,131 (17.8)	5,170/28,630 (18.1)
Acute kidney injury (KDIGO stage II)	44,573 (26.4)	9,926/42,317 (23.5)
Acute kidney injury (KDIGO stage III)	22,666 (13.4)	8,902/21,412 (41.6)

\* Excluding readmissions to the 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

## 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)*	161,127	0 (0, 2)	3 (10)
Length of stay in the critical care unit (days)			
All admissions	168,940	2.4 (1.0, 5.1)	4.8 (8.0)
Unit survivors	145,800	2.4 (1.1, 5.1)	4.8 (7.9)
Unit non-survivors	23,140	2.3 (0.8, 6.0)	5.1 (8.8)
Duration from reported time fully ready for discharge to time of discharge†, n (%)			
≤ 4 hours	126,227	44,354 (35.1)	
> 4 hours and ≤ 24 hours	126,227	54,711 (43.3)	
> 24 hours	126,227	27,162 (21.5)	
Length of stay in acute hospital following discharge from the critical care unit (days)*‡			
All unit survivors	128,109	8 (4, 17)	16 (23)
Acute hospital survivors	118,852	8 (4, 17)	15 (22)
Acute hospital non-survivors	9,257	9 (3, 22)	18 (27)
Total length of stay in acute hospital (days)*			
All patients	159,589	11 (5, 23)	20 (27)
Acute hospital survivors	128,321	12 (6, 24)	21 (28)
Acute hospital non-survivors	31,268	7 (2, 17)	15 (24)

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

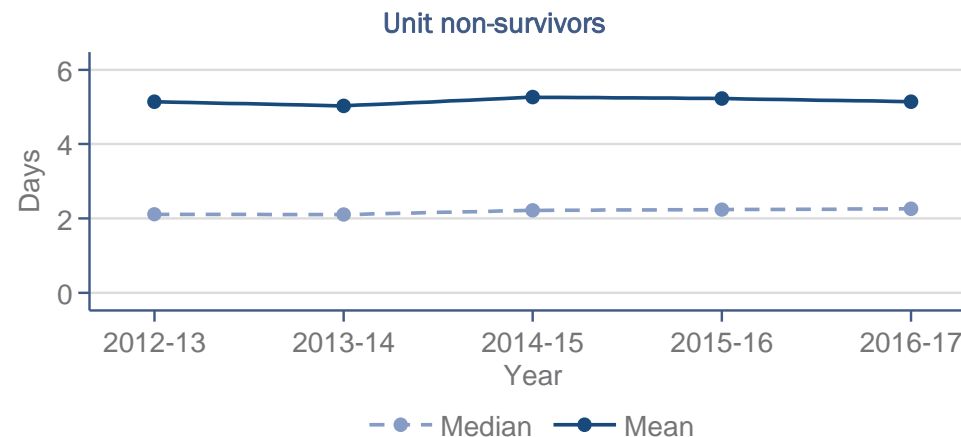
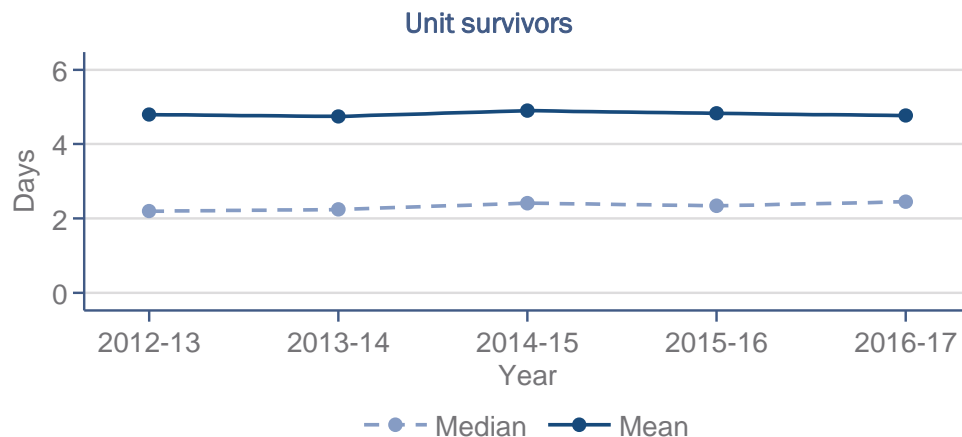
† Reported for unit survivors discharged to a ward in the same hospital (or direct to home)

‡ Reported for unit survivors only

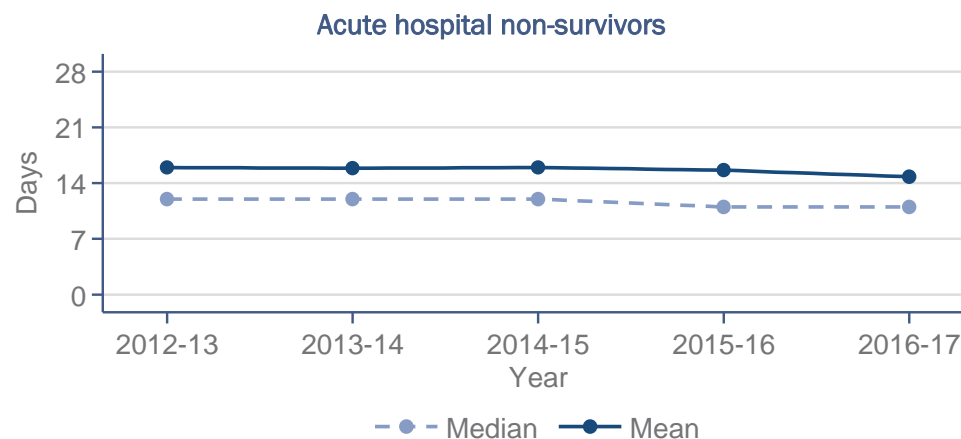
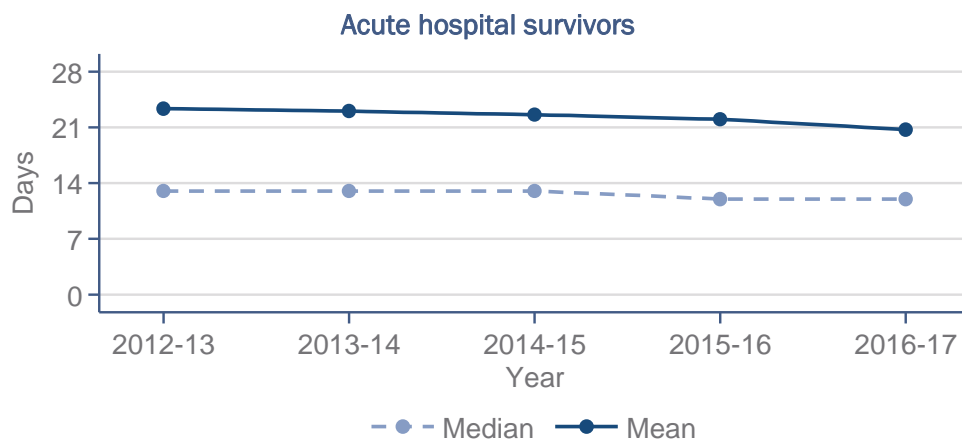


## Length of stay – trends

### Length of stay in the critical care unit (days)



### Total length of stay in acute hospital (days)\*



\*Excluding readmissions to the 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	84,175 (49.8)	252,655 (25.9)
Advanced respiratory support	66,816 (39.5)	387,230 (39.7)
Basic cardiovascular support	149,621 (88.5)	715,430 (73.3)
Advanced cardiovascular support	30,656 (18.1)	85,941 (8.8)
Renal support	17,463 (10.3)	95,114 (9.7)
Neurological support	14,667 (8.7)	59,095 (6.1)
Gastrointestinal support	55,629 (32.9)	464,242 (47.6)
Dermatological support	4,148 (2.5)	28,178 (2.9)
Liver support	1,922 (1.1)	7,617 (0.8)
Healthcare Resource Group [HRG code]		
6 organs supported [XC01Z]	160 (0.1)	5,103 (0.5)
5 organs supported [XC02Z]	1,223 (0.7)	28,731 (2.6)
4 organs supported [XC03Z]	6,628 (3.9)	103,544 (9.5)
3 organs supported [XC04Z]	22,776 (13.5)	210,990 (19.4)
2 organs supported [XC05Z]	48,103 (28.5)	277,456 (25.5)
1 organ supported [XC06Z]	85,085 (50.4)	275,665 (25.3)
0 organs supported [XC07Z]	3,384 (2.0)	6,968 (0.6)
No Level 2 or 3 care received [UZ01Z]	1,624 (1.0)	N/A

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

## End-of-life care

Unit non-survivors, n (%)	23,142 (13.7)
Length of stay in the critical care unit for unit non-survivors (hours), median (IQR)	54 (19, 145)
Treatment withheld/withdrawn, n (% of unit non-survivors)	
Treatment withheld	1,564 (6.8)
Treatment withdrawn	10,399 (44.9)
Treatment withheld then withdrawn	2,704 (11.7)
Time from admission to treatment withdrawal (hours), median (IQR)	65 (22, 156)
Time from treatment withdrawal to death (hours), median (IQR)	2 (1, 4)
Brainstem death declared, n (% of unit non-survivors)	1,126 (4.9)
Solid organ donation, n (% of brainstem/cardiac deaths)	
Donation following brainstem death (DBD)	612 (54.4)
Donation following cardiac death (DCD)	389 (1.8)
Time from death to removal of body (hours), median (IQR)	2 (2, 3)