UK Kidney Association
UK Renal Registry

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# Acute kidney injury (AKI) in England

A report on the nationwide collection of AKI warning test scores from 2024

AKI rate and mortality by Integrated Care Board

AKI metrics by clinical setting

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# Foreword

*Professor James Medcalf*
*Medical director, The UK Kidney Association*

This is the fourth Acute Kidney Injury report following the publications in 2020, 2022 and 2023. In this now yearly report, we are presenting data on people who had an AKI warning test score in England during 2024 and are publishing the report at the end of 2025. Hospital Episode Statistics (HES) are finalised in September each year for the preceding financial year which therefore dictates the timing of this report. More up-to-date (non-HES linked) data is available in the UKKA data portal, and SUS linked data in the NCDR data portal managed by NHS England.

Thank you all for all the support we get from the biochemistry laboratories in England as this report is not possible without it.

AKI continues to be a major health concern, and the reported rates continue to rise (13,000 per million population, figure 1.4). The highest mortality remains in those who develop AKI during a hospital admission – with 43% of people with AKI stage 3 dying by day 30 (table 2.5). This group also has the longest stay in hospital – with a median stay of 17 days in hospital, and a quarter of people spending more than 31 days as inpatients (table 2.3).

The most up-to-date information on AKI rate is always available on the UK Kidney Association(UKKA) website and these are regularly refreshed. Improving the prevention, detection, treatment, and follow-up of AKI remains a national priority with updated AKI resources available on UKKA website and NICE guidance.

# Executive summary

## AKI – impact, detection and reporting

Acute kidney injury (AKI) is a sudden deterioration of kidney function, caused by, for example, dehydration, sepsis or heart attack and is associated with about 80,000 deaths every year in hospital in the UK. In 2014, NHS England mandated all blood testing laboratories in England to incorporate AKI warning test scores (AKI alerts) into their laboratory testing systems to improve early detection and outcomes of AKI. An AKI alert is triggered if there is a change in serum creatinine level over a short time. The alert ranges from the least severe AKI stage 1 to the most severe AKI stage 3. Hospital clinicians can see the AKI warnings alongside the creatinine results, alerting them to a potential AKI that needs further clinical assessment and action. Laboratories were also mandated to submit their AKI alerts, with accompanying demographic information about each person (age, sex, postcode), to the UK Renal Registry (UKRR) to enable nationwide analyses of the data. This is the fourth national AKI report for England and is primarily about people who had an AKI episode in 2024.

## Key findings

- 187/192 (97%) of laboratories submitted 2024 data that could be included in the analyses, increasing from 95% in 2023.
- There were 710,532 AKI episodes from 612,254 patients in 2024.
- In 2024, 87% of patients had one AKI episode, 10% had two episodes and 3% had more than two episodes, same as 2023.
- Only 3% of AKI episodes occurred in children, while 65% were in adults aged over 65 years.
- The rate of AKI episodes in England in 2024 was 13,345 per million population compared to 12,795 in 2023.
- The age-sex adjusted AKI rate ranged between 8,591 to 15,291 per million population across different ICBs.
- Nearly 80% of AKI alerts at the start of an episode and 71% at the peak of an episode were AKI stage 1, similar to previous years.
- 16.6% of people with an AKI episode died within 30 days of the first alert compared to 17.6 in 2023, and 18.8% in 2022. The mortality reduced to 7.9% in those who were not hospitalised.
- Mortality within 30 days increased with peak AKI stage – 11.5% for AKI stage 1, 26.3% for AKI stage 2 and 33.2% for AKI stage 3 compared to 12.3%, 27.6% and 34.3% respectively in 2023.
- Mortality in the first 30 days also increased with age, from 2.3% in children to 24.2% in adults aged 75 years and over.
- Mortality within 30 days was higher for people from deprived areas after accounting for their lower median age.
- More deaths occurred in winter – 18.7% of people with an AKI episode between January and March died within 30 days, compared to 15.0% of those with an AKI between July and September.
- Of the 710,532 AKI episodes in 2024, 32.9% occurred in people not hospitalised at time of AKI. Of the hospitalized AKI episodes, more than half (55.1%) occurred in people hospitalised following a community acquired AKI and 44.9% in people that were already in hospital when the AKI occurred, similar to previous year.
- Mortality within 30 days was much higher in emergency admissions compared to elective (22.0% compared to 7.3%, adjusted for age and sex). People with hospital acquired AKI had consistently higher mortality compared to community acquired AKI who were subsequently hospitalised.
- 30-day mortality for emergency admissions varied across hospitals from 15.9% to 27.4%.

- Median length of stay in hospital with an AKI episode was 11 days, same as the previous year.
- Median length of stay was more than double in hospital acquired AKI than in community acquired, subsequently hospitalised AKI, for both elective and emergency admissions.
- Of the hospitalisations with peak AKI stage 2 or 3, 8.6% required dialysis, around half of which was on Intensive Treatment Unit (ITU).
- ITU admission was needed in 16.0% of hospitalisations, and 17.7% of ITU care days required dialysis.
- HES coding of AKI was better as the stage of the AKI alert increased, and there was no clear difference between HES coding for renal and acute non-renal hospitals. Generally, HES coding for AKI was poor in paediatric hospitals.

# Contents

# Introduction

## Acute kidney injury – definition and burden

Acute kidney injury (AKI) is a sudden drop in kidney function over a few hours to a few days. It commonly occurs with an episode of acute illness and is more likely if the illness is severe, or if an individual is at greater risk of an AKI. Examples of risk factors include older age and pre-existing conditions, such as chronic kidney disease (CKD), diabetes and heart failure.[1]

AKI represents a significant cause of mortality and morbidity, both in and out of hospital, and incurs significant healthcare costs.[2] Care between hospitals is known to vary[3] and there is evidence that AKI is not well treated in up to one third of cases.[4] It has been shown that relatively simple care bundles can improve outcomes, at least in hospitals.[5,6]

## Algorithm to standardise detection of AKI in England

To improve the recognition and treatment of AKI, NHS England (NHSE) established a partnership with the UK Kidney Association (UKKA) known as 'Think Kidneys' (thinkkidneys.nhs.uk).

Guided by Think Kidneys, NHSE issued a level 3 patient safety alert in June 2014 to standardise the early identification of AKI.[7] The alert mandated NHS trusts within England, from March 2015, to implement a standardised biochemical classification of AKI by installing an algorithm in their laboratory information management system.[8] The algorithm compares a person's serum creatinine to their historical blood tests (if there are any) to determine whether they may have an AKI and, if so, the severity of the AKI.

The AKI algorithm has five possible outputs, three of which constitute AKI warning test scores or alerts (from the least severe stage 1 through to the most severe stage 3 AKI). These outputs are in accordance with the Kidney Disease: Improving Global Outcomes (KDIGO) AKI staging system:[9]

1. Null (no evidence of AKI).
2. Stage 1 AKI.
3. Stage 2 AKI.
4. Stage 3 AKI.

   } AKI warning test scores or alerts

5. Not applicable (insufficient creatinine values, but flagged abnormal if outside reference range).

The patient safety alert also mandated laboratories to send AKI alerts and basic demographic information on all people detected by the AKI algorithm to the UK Renal Registry (UKRR), for comparison and audit. The algorithm has been externally validated with a high degree of sensitivity and specificity in different hospital settings.[10] However, the high level of sensitivity can result in false positives, whereby some patients with CKD are detected. In clinical practice, the addition of an AKI alert or abnormal flag to a creatinine result highlights the possibility of an AKI and can prompt a bundle of care. This has the potential to improve patient outcomes.[11]

## AKI Master Patient Index

The UKRR collates the AKI alerts (stages 1, 2 and 3) into a single Master Patient Index (MPI), which records each adult or child in England who has had an AKI alert.

Laboratories are requested to provide separate creatinine timeline files for all patients with an AKI alert. These files should contain creatinine values for the 15 months both pre and post the AKI alert. These timelines will be used to help validate the algorithm and identify people with CKD, either before or after the AKI alert.

This report is based on analyses of the 2024 MPI dataset and analyses included both adults and children. Where Hospital Episode Statistics (HES) data were included in analyses, the 2024 MPI dataset was linked to HES data up to and including financial year 2024-25. Patients were excluded from the whole report (except the national longitudinal AKI rate in figure 1.4) if they did not match to HES. They accounted for 4.8% of AKI episodes and were primarily those who opted out of their data being used for research and planning. The 'Getting It Right First Time' (GIRFT) report recommended excluding neonates under 28 days old as the AKI algorithm was not intented to be used for this group. Data were unavailable to enable exclusion of this group from the denominator (ICB and hospital populations), therefore we have chosen to keep them in the numerator for consistency. This only accounted for 0.2% of AKI episodes included in this report.

## Importance of clinical setting

The demographics and outcomes of people who had an AKI episode are presented in different ways in this report to illustrate the impact of AKI on the whole population, or on selected groups. The three key groups of people are those with: a community acquired, never hospitalised (CA) AKI; a community acquired, subsequently hospitalised (CAH) AKI; and a hospital acquired (HA) AKI. For further information on these groups, see chapter 2.

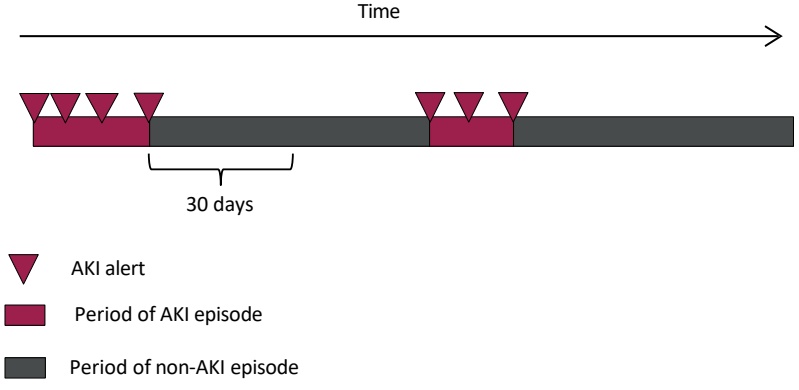
The CA AKI group, who were never admitted to hospital, represent a significant proportion of patients in the whole population, especially those with the less severe AKI stage 1. For readers accustomed to data only on hospitalised patients with AKI, it is important to bear this in mind when interpreting analyses that include the whole AKI population. Some analysis of the CA population is included in chapter 1, and the hospitalised groups (CAH and HA) are discussed in more detail in chapter 2.

## Definition of an AKI episode

The date of a first AKI episode is defined as the date of the first AKI alert received by the UKRR from any laboratory. It is possible that a person had an earlier episode prior to the laboratory sending files, but the significance of this decreases with time as more files are received.

Subsequent alerts are only considered to be a further episode of AKI if at least 30 days have passed since the last alert (figure A). If an episode appears to last more than 90 days, duration of the episode is truncated to day 90 to align with the KDIGO definition of chronicity after 90 days of an AKI episode.[9] There is now evidence that duration of an AKI episode influences long term outcome,[12] but this is not considered in this report.

**Figure A** Definition of an AKI episode – an example of a person with seven AKI alerts, which equate to two episodes



## Data Completeness and AKI episodes by Laboratory

Of the 192 laboratories in England, only 5 (2.6%) are not included in this report (shown as red laboratory dots in figure B). Four of these (Colchester Hospital, Hemel Hempstead Hospital, Tameside General Hospital and West Hertfordshire Hospitals laboratories) have contributed AKI data to the UKRR in the past but submitted insufficient or no data in 2024, and one laboratory has never submitted data to the AKI-MPI, which the UKRR is working to resolve.

155/192 (80.7%) laboratories provided a full twelve months submission in 2024 and further 16/192 (8.3%) provided data for eleven months and were included in the report (green laboratory dot in figure B). 16/192 (8.3%) submitted 6-10 months of AKI data (amber laboratory dot in figure B).

The distribution of laboratories in England and their red/amber/green data submission status for 2024, along with the population coverage by Integrated Care Board (ICB), can be seen in figure B. The population coverage is the estimated percentage of the ICB population covered by the submitting laboratories serving that population. Variation in number of AKI episodes and proportion of people with each AKI stage by laboratory for adults and children can also be found on our data portal.

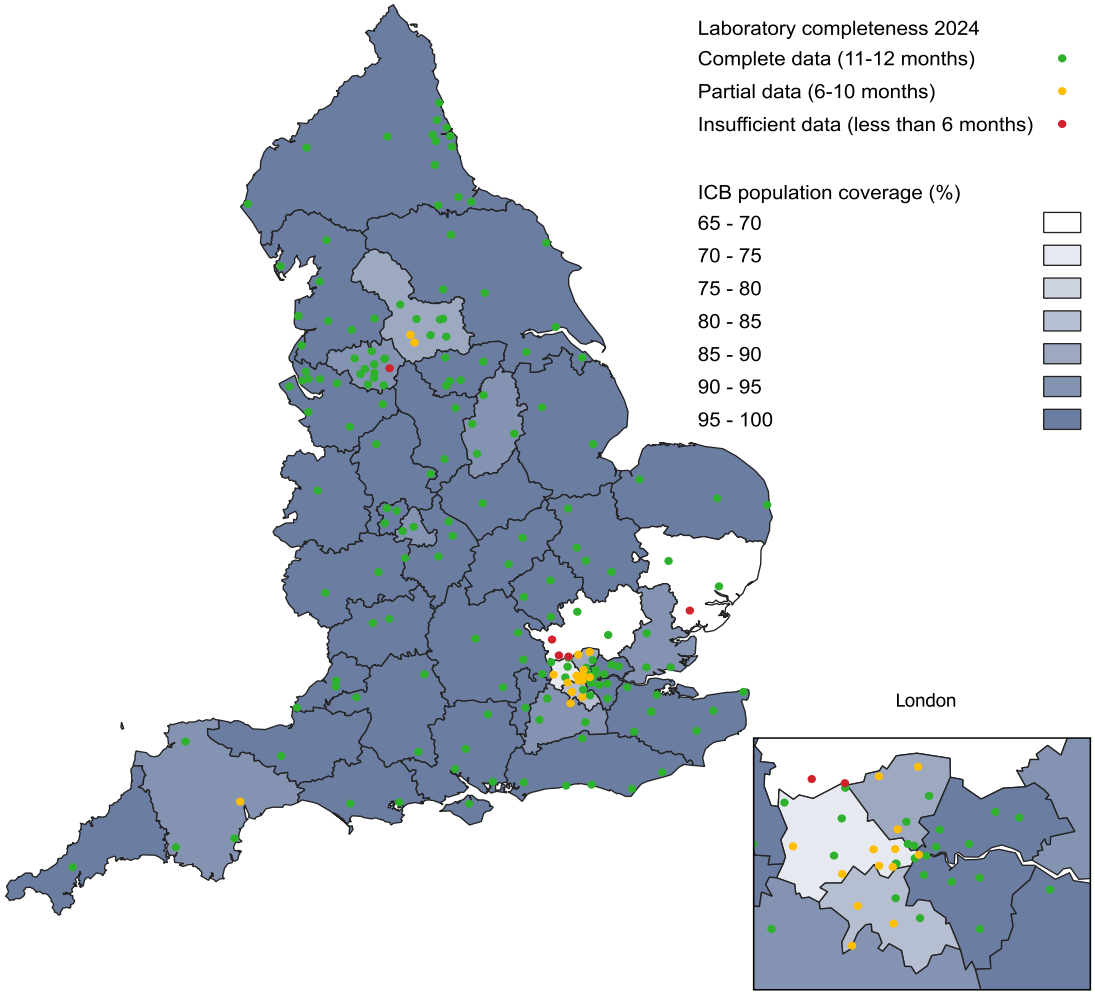



**Figure B** The distribution of laboratories in England, including their red/amber/green (RAG) rating and Integrated Care Board population coverage for 2024

## Objectives of the report

1. To demonstrate the impact of AKI on the English population, through analysis of the AKI rate and outcomes at the level of Integrated Care Boards (ICBs).
2. To show the different demographics and outcomes of various groups of people with AKI, but in particular, people who are entirely cared for in the community versus those who are admitted to hospital with their AKI, or develop it during their stay.
3. To assess the requirement for acute dialysis and Intensive Therapy Unit (ITU) admission in patients with AKI stages 2 and 3.

Please note, this is an audit report, the primary aim of which is to describe, benchmark and compare AKI alerts and episodes in England, without interpreting the results.

## Structure of the report

Chapter 1 describes the demographics of people with AKI episodes. It also presents the population rates of AKI in England by ICB and patient outcomes.

Chapter 2 describes AKI in people admitted in English hospitals as part of their AKI episode. These data are presented by the provider trust of that hospital care. Some of these measures were co-produced by the UKRR and the 'Getting It Right First Time' (GIRFT) initiative.

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*Chapter 1*

# AKI rate and mortality by Integrated Care Board

## Introduction

This chapter describes the demographics of the entire population of people in England who had an episode of AKI in 2024, as determined from their laboratory AKI warning test scores (alerts). As noted in the introduction to the report, it is important to remember that this includes patients with AKI in all clinical settings (community and hospital) and that if considered separately, these groups have different demographics and outcomes. For some analyses in this chapter, community acquired, never hospitalised (CA) AKI is shown separately. Further analysis by clinical setting, including trust-level analysis of admitted patients, is presented in chapter 2.

The chapter also includes rates of laboratory derived AKI episodes by ICB in England. Rates by ICB pose challenges. Laboratories and ICBs have very few shared boundaries. We have used historic data to assign laboratories to ICBs to determine ICB population coverage. Population coverage has improved and was over 90% in this report for all ICBs except six, and all those were over 65%. Coverage is shown in Fig B in the introductory chapter.

## Demographics of people with AKI episodes

The 2024 MPI included 710,532 AKI episodes from 612,254 patients (87% of patients had one AKI episode, 10% had two episodes and 3% had more than two episodes during 2024). This includes all the data sent by laboratories regardless of patient residence. For analysis of AKI rates, and analyses by ICB, we only included the 707,479 episodes where the patient was resident in England.

Figure 1.1 illustrates the distribution of the AKI stage at the start of the AKI episode, separated by adults and children, while figure 1.2 shows the age distribution by first stage of AKI episode. 18,037 (3%) of AKI episodes were in children while 461,188 (65%) were in the over 65s.

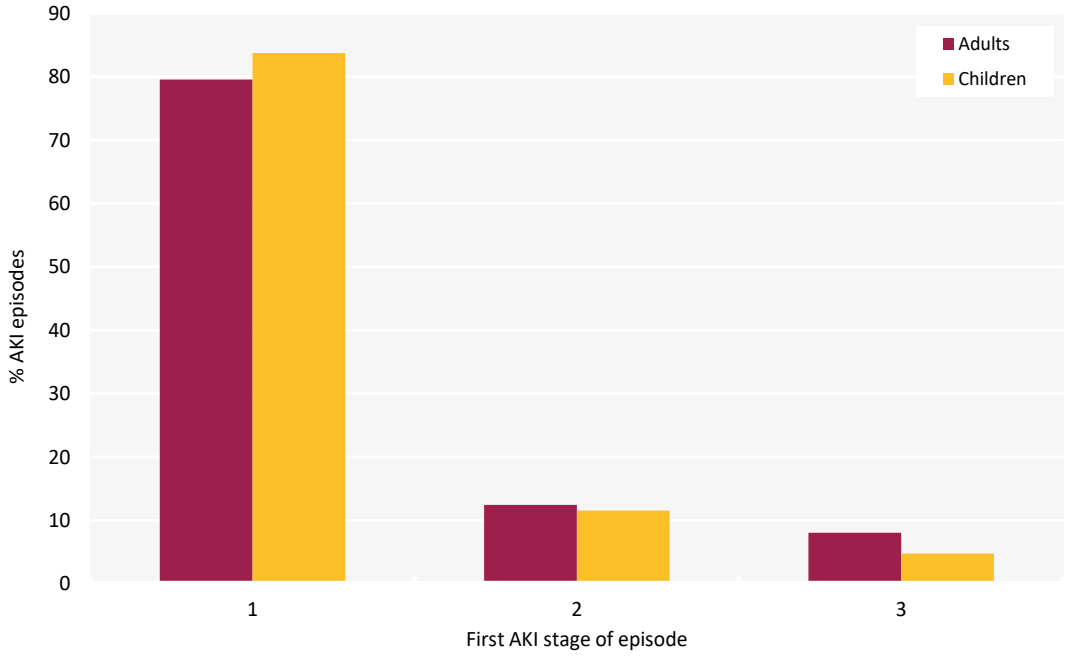


**Figure 1.1** The proportion of adults (≥18 years) and children (<18 years) by first stage of AKI episode in 2024

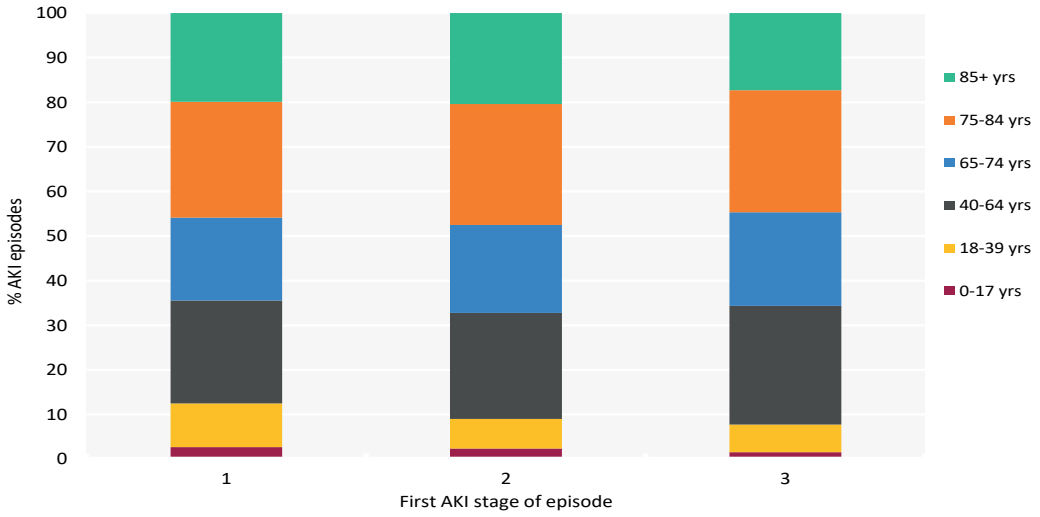


**Figure 1.2** Age distribution by first stage of AKI episode in 2024

## Mortality following an AKI episode

These analyses include the outcomes of all patients with laboratory derived AKI episodes. For people with multiple AKI episodes in 2024, one random episode was selected for inclusion in the mortality analysis to avoid underestimating mortality. Note that in patients not admitted to hospital, AKI stage 1 is more common and overall mortality for this group is lower (see table 1.1).

Table 1.1 shows 30-day unadjusted and age-sex adjusted mortality from start of episode by peak and first stage of AKI. Table 1.2 shows 30-day unadjusted mortality stratified by age, sex, quintile of Index of deprivation (IMD) and quarter of the year. The IMD is a composite measure of how deprived a small geographic (neighbourhood) area is in relation to other areas and is based on income, employment, education, health, crime, housing and living environment.[13] Mortality from AKI in 2024 was highest with AKI stage 3, in older ages and in the quarter January–March.

**Table 1.1** 30-day mortality by peak and first stage of AKI for patients with an AKI episode in 2024, unadjusted and adjusted, all AKI and community acquired, never hospitalised (CA)

| | All AKI | | | CA AKI | | |
|---|---|---|---|---|---|---|
| | | Mortality (%) | | | Mortality (%) | |
| AKI stage | N AKI episodes | Unadjusted | Adjusted | N AKI episodes | Unadjusted | Adjusted |
| Peak | | | | | | |
| 1 | 436,336 | 11.5 | 11.8 | 170,541 | 5.2 | 5.3 |
| 2 | 100,722 | 26.3 | 25.3 | 19,152 | 20.6 | 18.8 |
| 3 | 75,196 | 33.2 | 31.4 | 10,378 | 30.0 | 25.9 |
| First | | | | | | |
| 1 | 490,686 | 14.3 | 14.4 | 173,183 | 5.4 | 5.5 |
| 2 | 76,467 | 25.5 | 24.7 | 17,552 | 21.1 | 19.2 |
| 3 | 45,101 | 27.2 | 25.7 | 9,336 | 29.4 | 25.3 |

Age-sex adjusted mortality from start of episode by peak and first stage of AKI

**Table 1.2** 30-day mortality by peak stage of AKI and demographics for patients with an AKI episode in 2024

| | All AKI episodes | | Peak stage of AKI | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1 | | 2 | | 3 | |
| Variable | N | Unadj. mortality (%) | N | Unadj. mortality (%) | N | Unadj. mortality (%) | N | Unadj. mortality (%) |
| All | 612,254 | 16.6 | 436,336 | 11.5 | 100,722 | 26.3 | 75,196 | 33.2 |
| **Age group (years)** | | | | | | | | |
| <18 | 15,239 | 2.3 | 11,612 | 1.3 | 2,415 | 4.2 | 1,212 | 7.9 |
| 18-39 | 57,945 | 2.1 | 47,520 | 1.0 | 6,524 | 4.8 | 3,901 | 11.0 |
| 40-64 | 139,984 | 9.7 | 99,081 | 5.4 | 22,181 | 16.7 | 18,722 | 24.2 |
| 65-74 | 113,800 | 15.4 | 78,169 | 10.1 | 19,763 | 24.0 | 15,868 | 30.6 |
| ≥75 | 285,286 | 24.2 | 199,954 | 18.2 | 49,839 | 35.5 | 35,493 | 42.4 |
| **Sex** | | | | | | | | |
| Male | 292,138 | 18.7 | 199,559 | 13.5 | 48,253 | 27.5 | 44,326 | 32.2 |
| Female | 320,116 | 14.8 | 236,777 | 9.9 | 52,469 | 25.3 | 30,870 | 34.6 |
| **Deprivation quintile** | | | | | | | | |
| 1 - most deprived | 143,550 | 15.8 | 101,289 | 10.8 | 23,859 | 24.5 | 18,402 | 32.1 |
| 2 | 128,086 | 16.1 | 91,067 | 10.9 | 20,965 | 25.8 | 16,054 | 33.1 |
| 3 | 120,993 | 16.7 | 86,358 | 11.7 | 19,918 | 26.6 | 14,717 | 32.8 |
| 4 | 115,378 | 17.4 | 82,379 | 12.2 | 19,055 | 27.4 | 13,944 | 34.4 |
| 5 - least deprived | 102,172 | 17.4 | 73,678 | 12.4 | 16,599 | 28.0 | 11,895 | 34.1 |
| **Month of AKI alert** | | | | | | | | |
| Jan-Mar | 160,586 | 18.7 | 113,709 | 13.0 | 27,124 | 29.2 | 19,753 | 36.8 |
| Apr-Jun | 157,372 | 15.9 | 113,622 | 10.8 | 25,152 | 26.1 | 18,598 | 33.1 |
| Jul-Sep | 145,575 | 15.0 | 104,579 | 10.4 | 23,383 | 23.9 | 17,613 | 30.5 |
| Oct-Dec | 148,721 | 16.8 | 104,426 | 11.8 | 25,063 | 25.7 | 19,232 | 32.1 |

Patients from more deprived areas were of lower average age – the reduction in mortality with increasing deprivation was not seen when stratified by age group (table 1.3).

**Table 1.3** 30-day mortality by age and deprivation quintile for patients with an AKI episode in 2024

| | | Age group (years) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | <18 | | 18-39 | | 40-64 | | 65-74 | | ≥75 | |
| Deprivation quintile* | Median age (years) | N | Unadj. mortality (%) | N | Unadj. mortality (%) | N | Unadj. mortality (%) | N | Unadj. mortality (%) | N | Unadj. mortality (%) |
| 1 | 67.6 | 4,508 | 2.8 | 17,575 | 2.4 | 42,409 | 10.4 | 28,438 | 16.6 | 50,620 | 25.7 |
| 2 | 71.3 | 3,339 | 2.5 | 13,711 | 2.1 | 32,386 | 9.6 | 24,613 | 15.6 | 54,037 | 24.7 |
| 3 | 74.6 | 2,708 | 1.9 | 10,664 | 1.9 | 25,646 | 9.4 | 22,353 | 14.8 | 59,622 | 23.9 |
| 4 | 76.3 | 2,441 | 1.9 | 8,772 | 1.9 | 21,688 | 9.3 | 20,701 | 14.9 | 61,776 | 23.9 |
| 5 | 77.4 | 2,130 | 1.6 | 6,924 | 1.9 | 17,287 | 9.3 | 17,334 | 14.0 | 58,497 | 23.3 |

*1 – most deprived to 5 – least deprived

## AKI rates by ICB

Figure 1.3 shows the rate of AKI episodes per million population (pmp) for the 42 ICBs, standardised to the population age-sex distribution for England in 2024. Table 1.4 shows both unadjusted and adjusted rates alongside the percentage of the ICB population covered by the laboratories submitting data. Rates are shown for all AKI, and for community acquired patients who were never hospitalized. AKI rates for hospitalised patients are shown in chapter 2. AKI rates stratified by age, sex and Index of Multiple Deprivation can be found on the online data portals. Figure 1.4 shows the longitudinal national AKI rate. For consistency with previous years, we included data from patients who did not match to HES, unlike in the rest of the report. This gave an overall 2024 population rate of AKI in England of 13,345 pmp. This is higher than the average rate of 12,712 pmp shown in figures 1.5 and 1.6 because these analyses exclude AKI episodes who did not match to HES, but population denominators are the same, so the rate is underestimated.

The unadjusted AKI rates by ICB are the number of AKI episodes in patients residing in the ICB divided by the population of ICB, adjusted for the coverage of the laboratory data. The adjusted AKI rate is calculated using direct standardisation, and is the AKI rate we would expect to see in the ICB if its population had the same age-sex structure as England. The coverage is calculated based on the completeness of historical data submissions of laboratories serving the ICB and is shown in Fig B in the introductory chapter. When calculating rates, the population denominators for each ICB are adjusted to reflect the coverage.

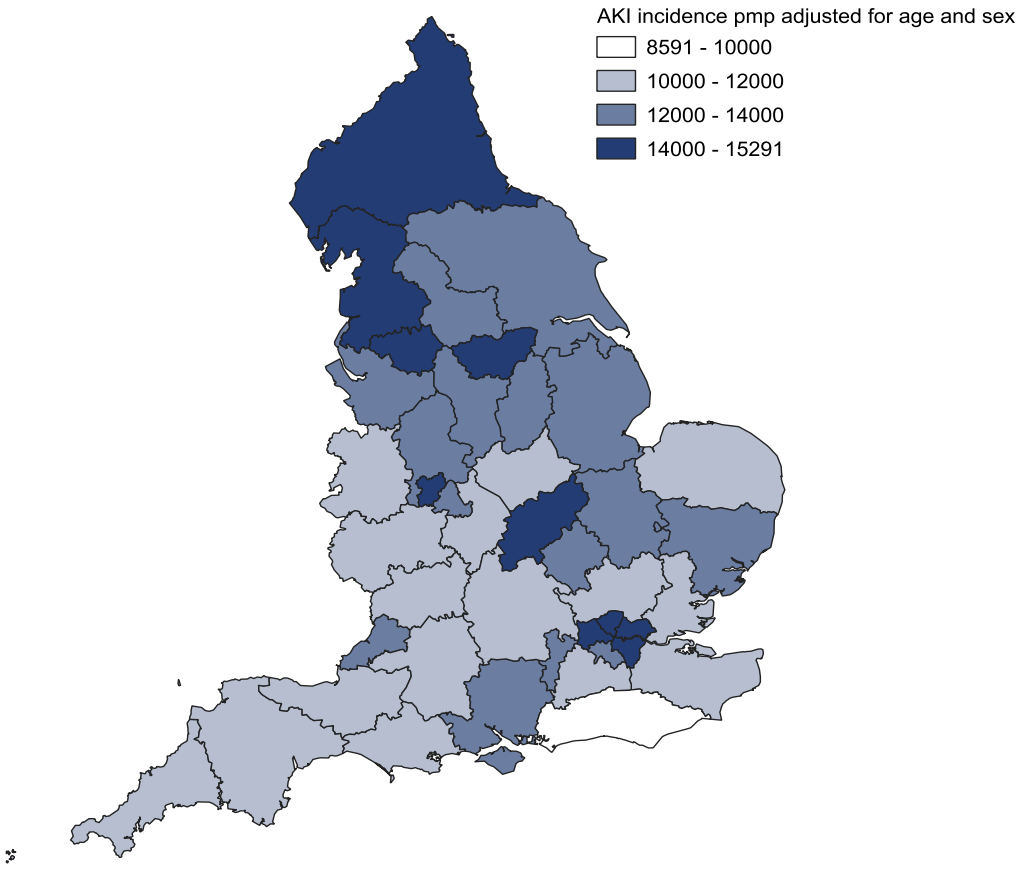


**Figure1.3** Map of AKI rates by ICB in 2024

**Table 1.4** Unadjusted and adjusted (directly standardised to the national age-sex distribution) AKI rates per million population (pmp) for ICBs in 2024, for all AKI and community acquired, never hospitalized patients (CA).

| | All AKI | | CA AKI | |
|---|---|---|---|---|
| ICB | Unadjusted AKI rate (pmp) | Adjusted AKI rate (pmp) | Unadjusted AKI rate (pmp) | Adjusted AKI rate (pmp) |
| Bath and North East Somerset, Swindon and Wiltshire | 11,133 | 10,386 | 3,022 | 2,852 |
| Bedfordshire, Luton and Milton Keynes | 11,017 | 12,722 | 3,218 | 3,606 |
| Birmingham and Solihull | 11,105 | 13,476 | 3,326 | 3,943 |
| Black Country | 13,130 | 14,076 | 3,840 | 4,087 |
| Bristol, North Somerset and South Gloucestershire | 11,467 | 12,209 | 3,556 | 3,767 |
| Buckinghamshire, Oxfordshire and Berkshire West | 11,030 | 11,145 | 3,891 | 3,936 |
| Cambridgeshire and Peterborough | 12,094 | 12,431 | 4,148 | 4,257 |
| Cheshire and Merseyside | 13,756 | 13,111 | 4,801 | 4,591 |
| Cornwall and the Isles of Scilly | 13,124 | 10,556 | 4,740 | 3,900 |
| Coventry and Warwickshire | 11,701 | 11,901 | 3,881 | 3,951 |
| Derby and Derbyshire | 13,500 | 12,515 | 4,358 | 4,094 |
| Devon | 13,021 | 10,748 | 4,057 | 3,467 |
| Dorset | 13,881 | 10,961 | 3,726 | 3,069 |
| Frimley | 11,903 | 12,871 | 4,049 | 4,311 |
| Gloucestershire | 12,627 | 11,238 | 4,568 | 4,144 |
| Greater Manchester | 12,668 | 14,418 | 4,390 | 4,868 |
| Hampshire and Isle of Wight | 13,987 | 12,667 | 4,038 | 3,732 |
| Herefordshire and Worcestershire | 12,713 | 10,543 | 4,848 | 4,127 |
| Hertfordshire and West Essex | 11,614 | 11,829 | 3,398 | 3,455 |
| Humber and North Yorkshire | 14,265 | 12,462 | 5,132 | 4,580 |
| Kent and Medway | 12,274 | 11,814 | 4,412 | 4,274 |
| Lancashire and South Cumbria | 15,008 | 14,059 | 5,592 | 5,309 |
| Leicester, Leicestershire and Rutland | 11,203 | 11,531 | 3,950 | 4,060 |
| Lincolnshire | 15,582 | 13,213 | 5,476 | 4,773 |
| Mid and South Essex | 11,821 | 11,426 | 4,024 | 3,908 |
| Norfolk and Waveney | 13,302 | 10,780 | 4,051 | 3,417 |
| North Central London | 11,314 | 14,205 | 4,607 | 5,521 |
| North East London | 9,946 | 15,291 | 3,935 | 5,628 |
| North East and North Cumbria | 16,229 | 15,199 | 4,974 | 4,708 |
| North West London | 11,501 | 14,789 | 3,798 | 4,652 |
| Northamptonshire | 14,469 | 15,027 | 6,110 | 6,300 |
| Nottingham and Nottinghamshire | 13,440 | 13,455 | 3,985 | 3,988 |
| Shropshire, Telford and Wrekin | 13,457 | 11,613 | 4,379 | 3,850 |
| Somerset | 14,558 | 11,925 | 4,052 | 3,488 |
| South East London | 11,026 | 14,346 | 3,648 | 4,487 |
| South West London | 10,595 | 12,958 | 3,115 | 3,616 |
| South Yorkshire | 14,482 | 14,726 | 4,161 | 4,216 |
| Staffordshire and Stoke-on-Trent | 14,798 | 13,526 | 4,209 | 3,918 |
| Suffolk and North East Essex | 15,424 | 13,177 | 5,244 | 4,578 |
| Surrey Heartlands | 11,368 | 10,862 | 3,456 | 3,343 |
| Sussex | 10,047 | 8,591 | 2,797 | 2,435 |
| West Yorkshire | 12,422 | 13,335 | 4,193 | 4,451 |

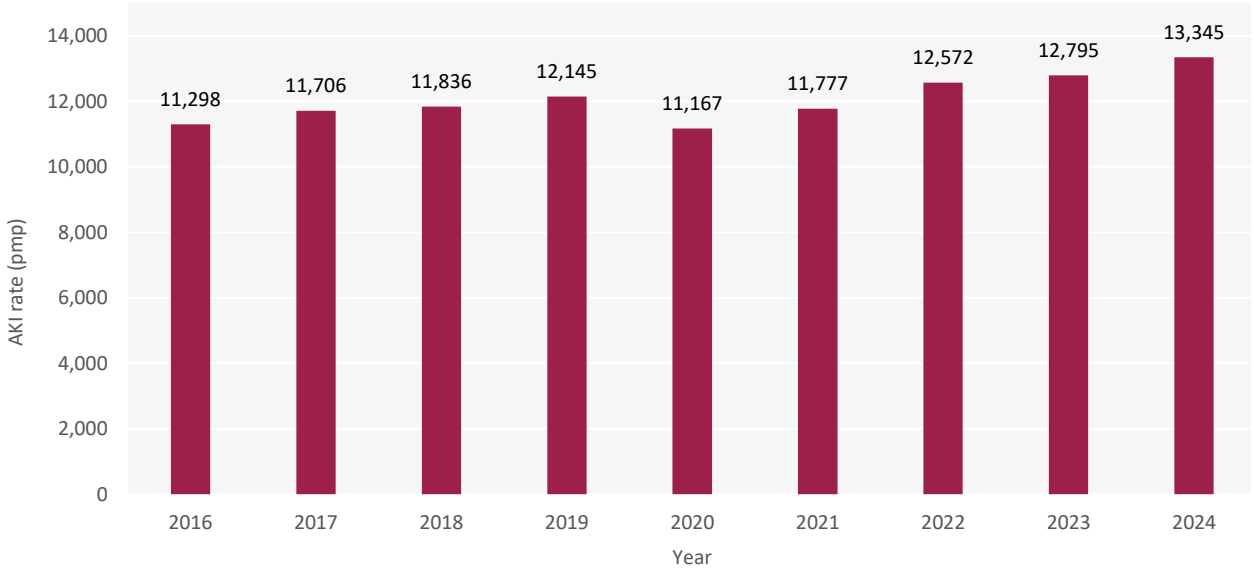


**Figure 1.4** Unadjusted AKI rates per million population (pmp) in England by year. Patients who did not match to HES are included in this analysis unlike the rest of the report.

The unadjusted and adjusted rates of AKI for each ICB are shown in figures 1.5 and 1.6, respectively.

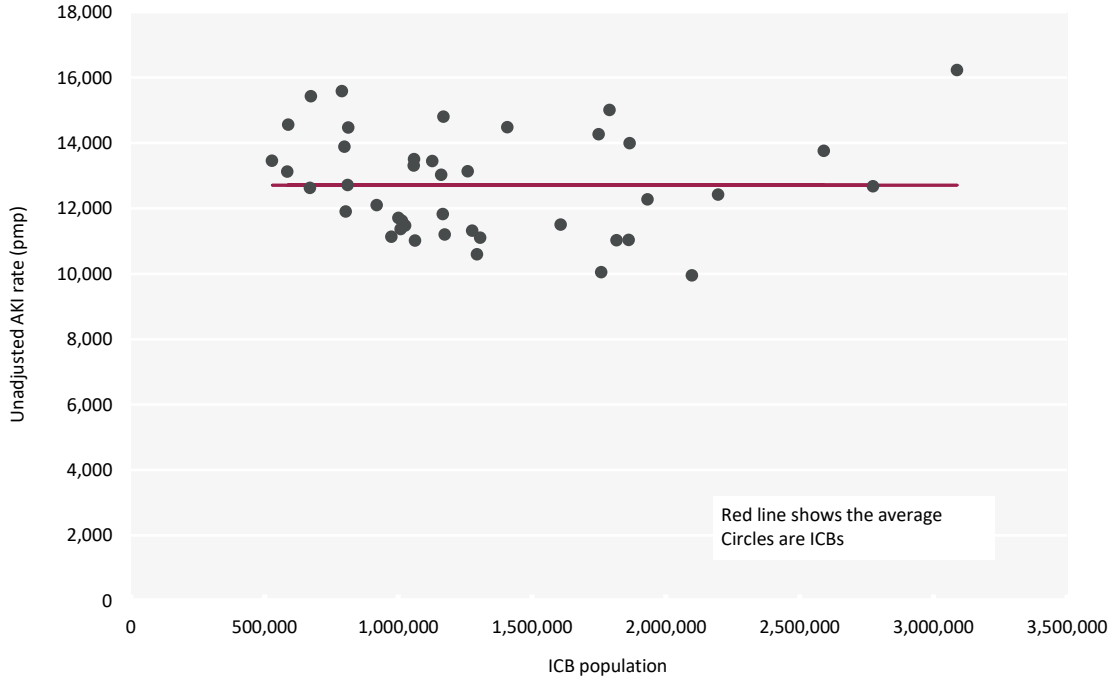


**Figure 1.5** Scatterplot of unadjusted AKI rate per million population (pmp) for ICBs in 2024

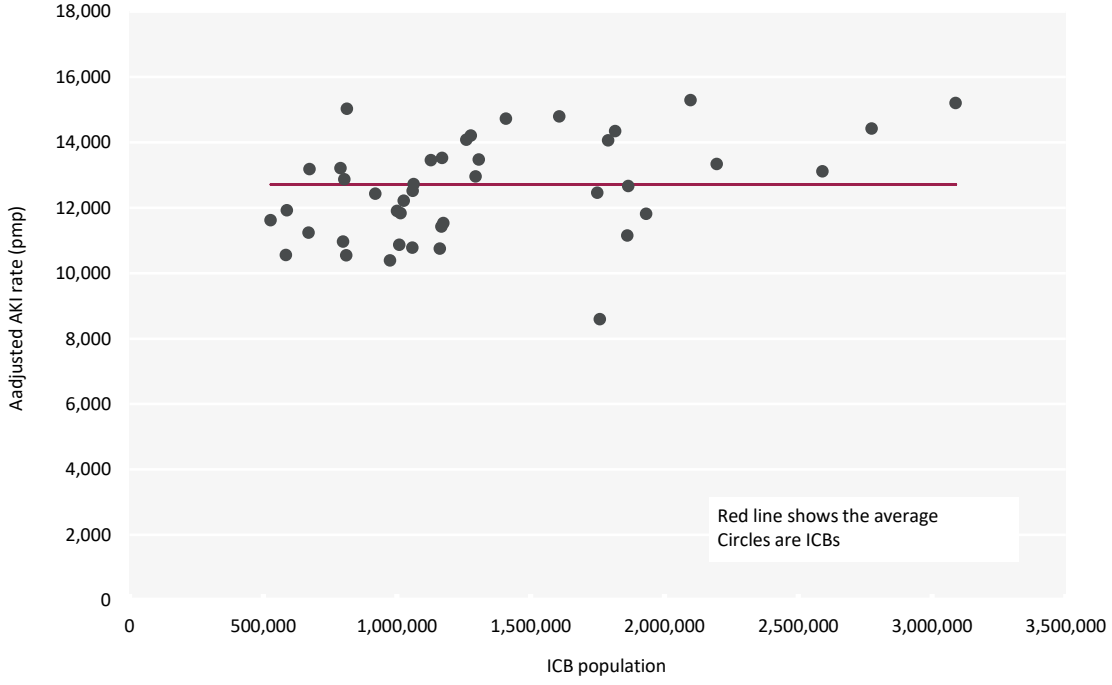


**Figure 1.6** Scatterplot of adjusted (directly standardised to the population age-sex distribution) AKI rate per million population (pmp) for ICBs in 2024

Figures 1.7 and 1.8 show AKI for each ICB by age and index of multiple deprivation respectively.

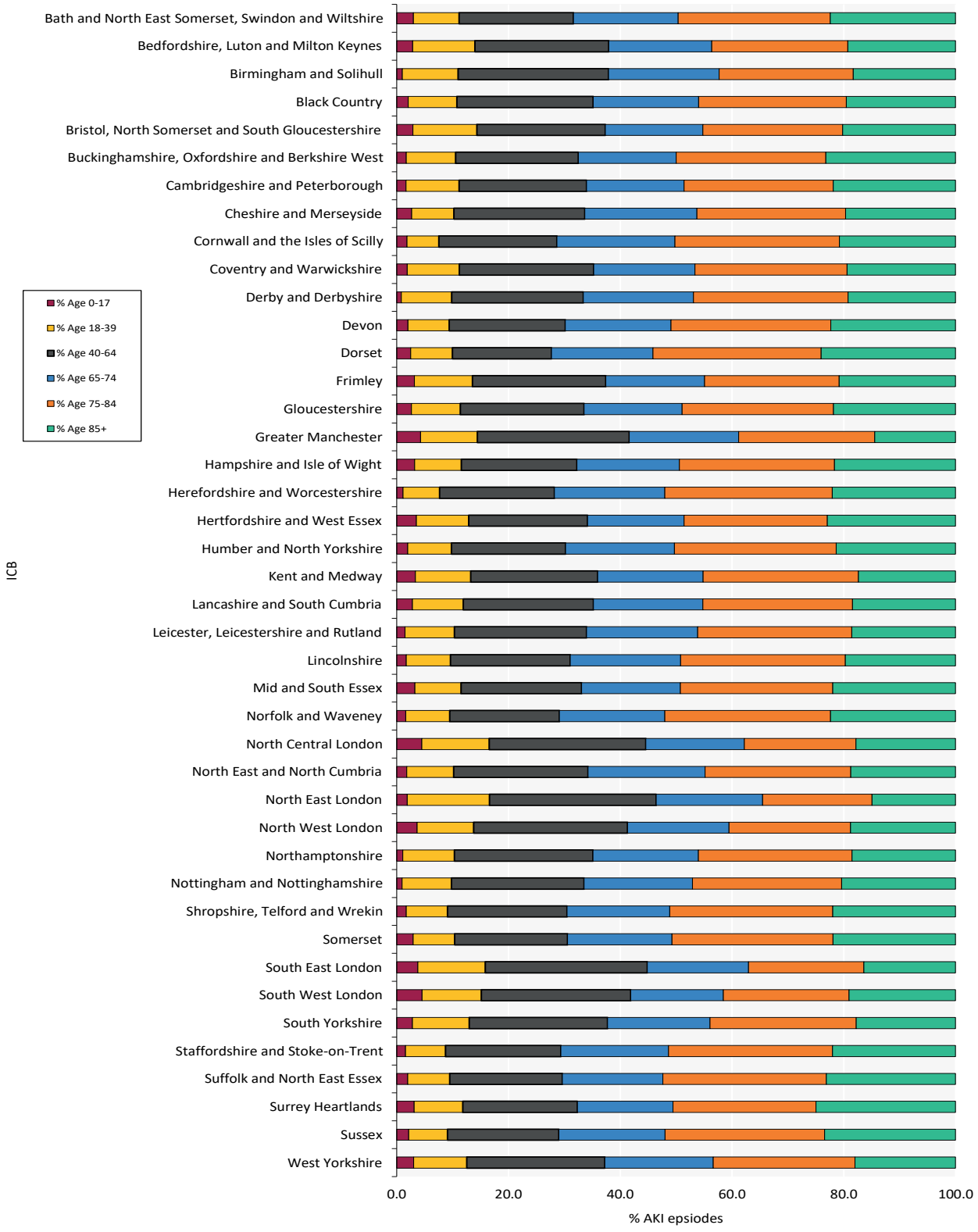


**Figure 1.7** Distribution of AKI episodes in 2024 across age groups for ICBs

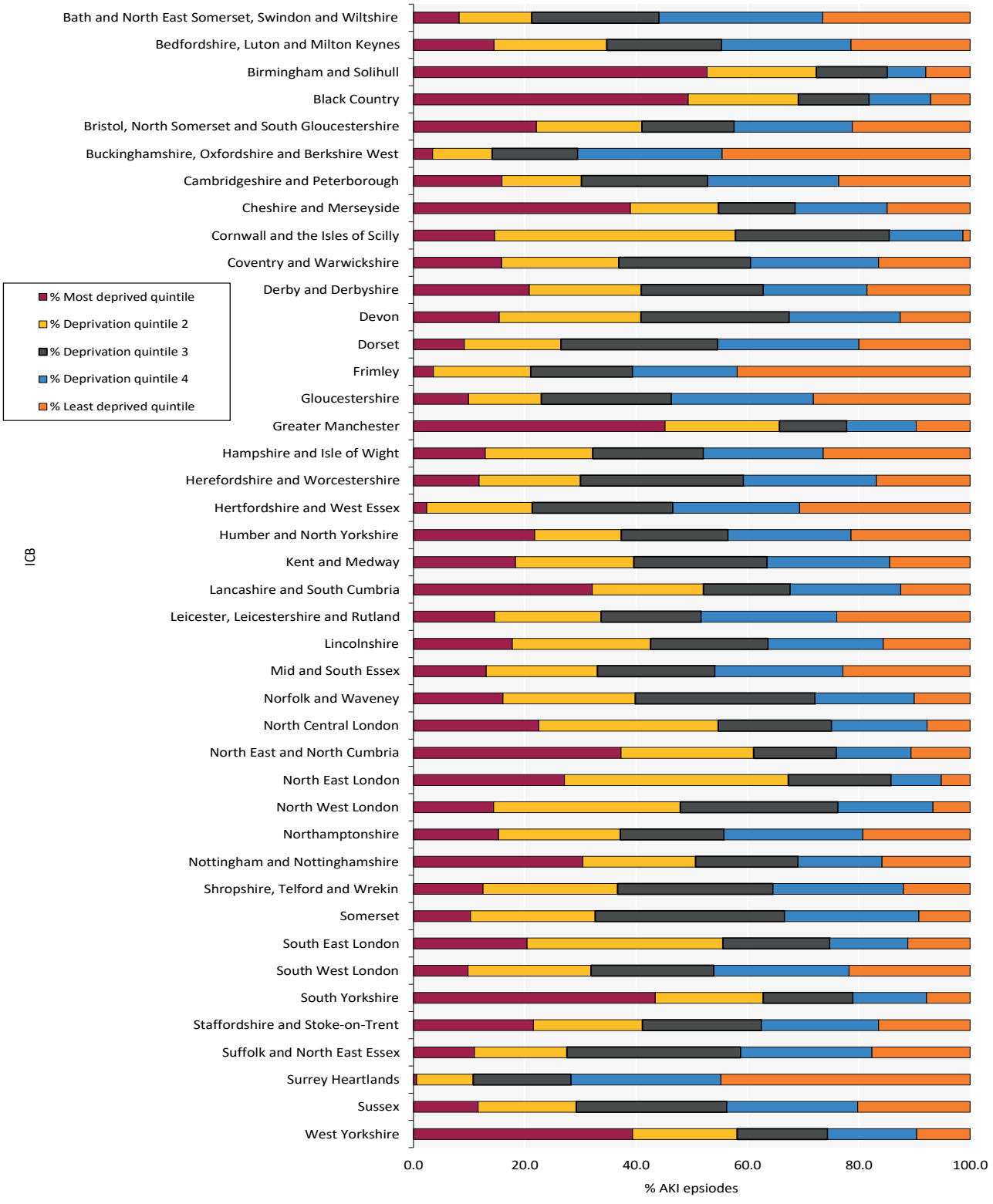


**Figure 1.8** Distribution of AKI episodes in 2024 across Index of Multiple Deprivation quintiles for ICBs

## Mortality following an AKI episode by ICB

The following analyses describe mortality in the 30 days following the start of and AKI episode by ICB. Results for community acquired and never hospitalized (CA) patients are shown separately in table 1.5. Adjustment for age and sex was done using indirect standardization, which reflects whether the mortality was higher or lower than expected nationally, given the age and sex of the ICB population. Adjusted rates close to the national rate of 16.6% (7.9% for CA-AKI) indicate that the observed mortality was similar to expected. Funnel plots illustrating the variation in mortality rates across ICBs are shown in figures 1.9 and 1.10.

**Table 1.5** Unadjusted and age-sex adjusted 30-day mortality by ICB, for all AKI and community acquired, never hospitalised (CA) AKI, in 2024.

| | All AKI | | | CA AKI | | |
|---|---|---|---|---|---|---|
| ICB | N | Unadj. mortality (%) | Adj. mortality (%) | N | Unadj. mortality (%) | Adj. mortality (%) |
| Bath and North East Somerset | 9,455 | 17.0 | 16.5 | 2,557 | 7.5 | 6.9 |
| Bedfordshire | 10,066 | 17.0 | 17.6 | 2,903 | 6.5 | 7.2 |
| Birmingham and Solihull | 12,652 | 17.4 | 17.8 | 3,754 | 9.2 | 9.8 |
| Black Country | 14,358 | 19.3 | 19.2 | 4,139 | 9.8 | 10.0 |
| Bristol | 10,206 | 15.7 | 16.1 | 3,132 | 8.9 | 9.0 |
| Buckinghamshire | 17,290 | 16.4 | 15.9 | 5,939 | 7.2 | 6.5 |
| Cambridgeshire and Peterborough | 9,509 | 16.0 | 15.7 | 3,261 | 7.1 | 6.9 |
| Cheshire and Merseyside | 30,461 | 17.7 | 17.4 | 10,552 | 11.5 | 10.8 |
| Cornwall and the Isles of Scilly | 6,737 | 17.4 | 16.2 | 2,414 | 11.1 | 9.6 |
| Coventry and Warwickshire | 10,145 | 18.5 | 18.4 | 3,316 | 9.2 | 9.3 |
| Derby and Derbyshire | 12,427 | 17.2 | 16.9 | 3,999 | 7.8 | 7.8 |
| Devon | 13,300 | 16.1 | 15.3 | 4,076 | 8.7 | 8.1 |
| Dorset | 9,679 | 16.4 | 15.2 | 2,592 | 6.9 | 6.1 |
| Frimley | 8,187 | 14.4 | 14.7 | 2,827 | 5.8 | 6.7 |
| Gloucestershire | 7,462 | 17.2 | 16.8 | 2,675 | 10.8 | 10.0 |
| Greater Manchester | 29,921 | 16.6 | 17.9 | 10,465 | 8.3 | 9.5 |
| Hampshire and Isle of Wight | 22,288 | 15.1 | 14.7 | 6,313 | 6.4 | 6.2 |
| Herefordshire and Worcestershire | 9,003 | 18.8 | 17.5 | 3,420 | 10.3 | 8.8 |
| Hertfordshire and West Essex | 10,220 | 17.2 | 17.0 | 2,914 | 7.9 | 7.6 |
| Humber and North Yorkshire | 21,723 | 17.7 | 16.9 | 7,861 | 8.2 | 7.5 |
| Kent and Medway | 20,397 | 16.8 | 17.1 | 7,295 | 9.6 | 9.2 |
| Lancashire and South Cumbria | 23,230 | 16.5 | 16.7 | 8,617 | 8.8 | 8.7 |
| Leicester | 11,187 | 17.0 | 16.7 | 3,898 | 8.5 | 8.1 |
| Lincolnshire | 10,659 | 18.2 | 17.6 | 3,713 | 8.1 | 7.4 |
| Mid and South Essex | 11,890 | 18.6 | 18.1 | 3,979 | 9.3 | 8.9 |
| Norfolk and Waveney | 12,265 | 18.7 | 17.5 | 3,665 | 8.1 | 7.4 |
| North Central London | 12,364 | 12.5 | 13.9 | 5,056 | 4.3 | 5.1 |
| North East and North Cumbria | 43,085 | 17.0 | 17.0 | 13,296 | 6.1 | 6.4 |
| North East London | 17,532 | 13.2 | 15.2 | 6,924 | 6.4 | 7.9 |
| North West London | 15,920 | 13.6 | 14.5 | 5,264 | 4.4 | 4.9 |
| Northamptonshire | 10,017 | 16.1 | 16.1 | 4,252 | 7.0 | 7.0 |
| Nottingham and Nottinghamshire | 13,060 | 17.6 | 17.3 | 3,796 | 7.8 | 7.9 |
| Shropshire | 6,177 | 18.5 | 17.6 | 1,997 | 12.2 | 10.6 |
| Somerset | 7,511 | 16.5 | 15.7 | 2,071 | 8.2 | 7.8 |
| South East London | 16,782 | 13.2 | 14.9 | 5,542 | 4.7 | 5.6 |
| South West London | 11,691 | 14.1 | 15.1 | 3,395 | 6.3 | 7.4 |
| South Yorkshire | 17,685 | 17.6 | 18.1 | 5,080 | 6.7 | 7.4 |
| Staffordshire and Stoke-on-Trent | 14,901 | 18.5 | 17.5 | 4,203 | 9.7 | 9.2 |
| Suffolk and North East Essex | 9,060 | 15.4 | 14.5 | 3,081 | 6.7 | 6.0 |
| Surrey Heartlands | 9,968 | 16.3 | 15.7 | 2,986 | 6.3 | 6.0 |
| Sussex | 15,457 | 18.5 | 17.3 | 4,199 | 12.0 | 10.4 |
| West Yorkshire | 23,641 | 16.6 | 17.1 | 7,934 | 6.7 | 7.0 |

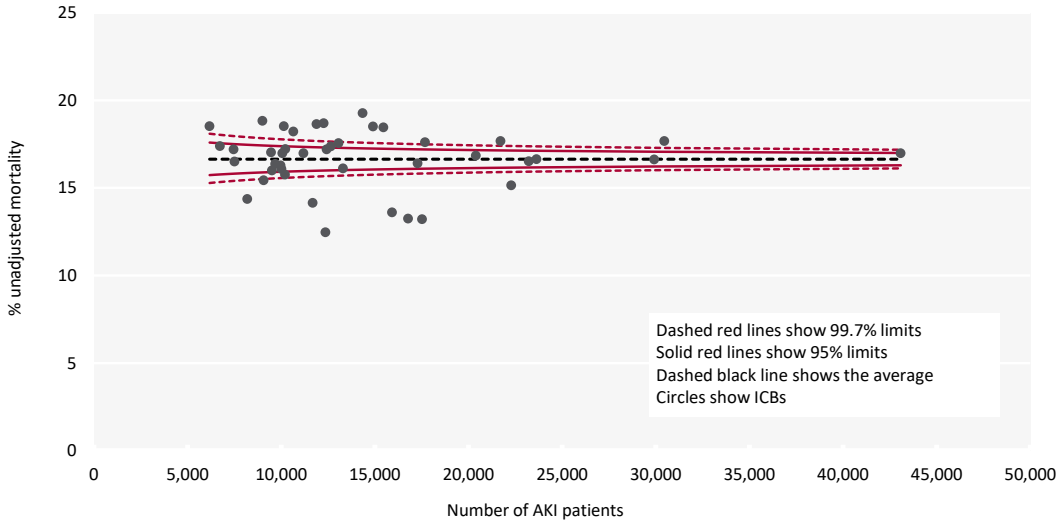


**Figure 1.9** Unadjusted 30-day mortality of patients with an AKI episode for ICBs in 2024

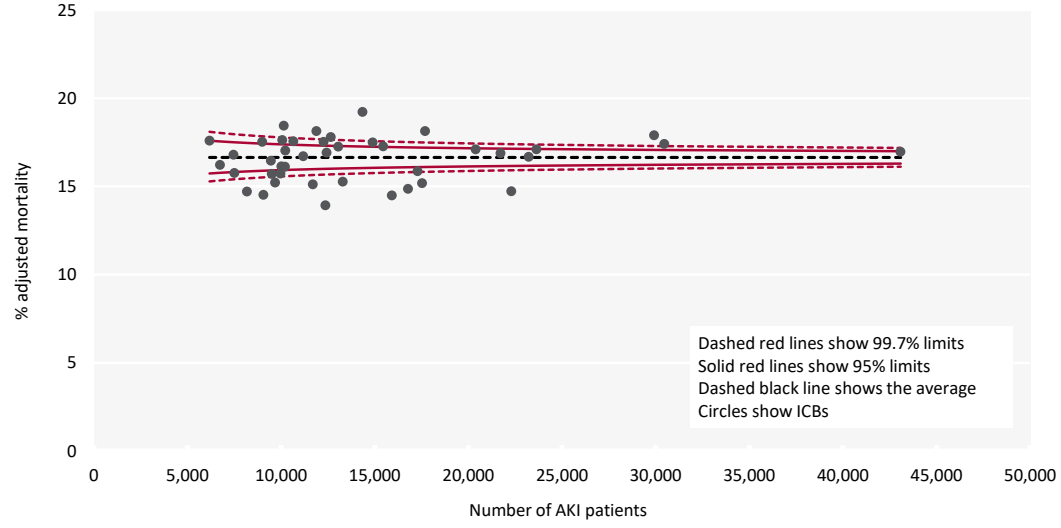


**Figure 1.10** Adjusted 30-day mortality of patients with an AKI episode for ICBs in 2024

UK Kidney Association
UK Renal Registry

*Chapter 2*

# AKI metrics by clinical setting

## Introduction

This chapter differentiates the clinical setting in which a patient's AKI episode(s) was identified, and was made possible by linking the UKRR MPI with HES. Where possible the chapter presents conformance to the UK Kidney Association's AKI guideline audit measures.[14]

Some of the measures of AKI outcomes in hospital have been developed with the assistance of the GIRFT team of NHS Improvement. In 2019, the GIRFT team visited all renal centres in England and discussed with them, individually, their conformance to a wide range of measures, including some of admitted AKI patient care.

Of the original cohort of 710,532 AKI episodes available for 2024, 476,838 (67.1%) were hospitalised at some point during the duration of the AKI episode. Data on hospitalised AKI were excluded from private or community hospitals, and if hospitals were deemed to be too small (annual general admission number under 10,000). The following specialty hospitals with a low AKI rate (<10 AKI episodes per thousand admissions) were also excluded (Birmingham Women's and Children, Liverpool Heart and Chest Hospital, Liverpool Women's, Moorfields Eye Hospital, Queen Victoria Hospital, Royal Orthopaedic Hospital, Royal National Orthopaedic Hospital, Robert Jones and Agnes Hunt Orthopaedic Hospital, Walton Centre). Tameside and Glossop, and West Hertfordshire were excluded because the hospital was known not to be covered by their main laboratory. East Suffolk and North Essex trust includes Colchester hospital which does not submit AKI data, therefore metrics for this trust do not include Colchester. After these exclusions there were 474,875 (99.6%) episodes in 424,962 people included in the analyses and the demographics of the cohort remained very similar. Data were included from 125 hospitals (47 renal centres, 75 without renal centres and three paediatric centres).

When determining if a person was hospitalised during their AKI episode, only ordinary in-patient admissions were considered. Admissions were divided in three groups based on method of admission; elective, emergency and other (which includes maternity and birth admissions), based on the HES categorization.

## Definition of clinical settings

Patients with laboratory derived AKI episodes in 2024 were divided into three groups:

- Community acquired, never hospitalised (CA) AKI – there was no inpatient (IP) admission during the AKI episode.
- Community acquired, subsequently hospitalised (CAH) AKI – if the AKI episode had started before an IP admission or in the first two days of an IP admission.
- Hospital acquired (HA) AKI – if the AKI episode had started from the third day of an IP admission onwards.

Note that while most of the AKI episodes were associated only with one IP hospitalisation, in 7.2% of AKI episodes with an IP stay, multiple hospitalisations occurred during the episode. In those cases, the type of AKI (CAH or HA) was defined by the timing of the first IP hospitalisation associated with the AKI episode. The third day of hospitalisation was used to define the AKI as HA because, while date and time were available for the start of an AKI episode, only a date was recorded for an IP admission. Therefore, the conservative definition of third day rather than 48 hours was preferred.

For the analyses of length of stay, acute dialysis requirement and admission to ITU, we considered these in terms of hospitalisations rather than AKI episodes. Long hospitalisations could include more than one AKI episode (only 0.8% of hospitalisations). For such cases, we considered the clinical setting to be that of the first AKI episode in the hospitalisation. Type of admission (elective, emergency or other) and hospital of admission were based on the start of the hospitalisation.

For people with multiple AKI episodes, a single episode was randomly chosen for inclusion in the analysis of mortality.

## The UK Kidney Association AKI guideline audit measures

The UKKA's Clinical Practice Guideline – Acute Kidney Injury (AKI)[14] contains a range of audit measures. The analyses here cover the incidence of AKI by setting and AKI outcomes.

## Demographics of patients by clinical setting

The characteristics of patients in the three clinical setting groups are shown in table 2.1. The CA group in 2024 was younger, with lower peak AKI and included more females than expected. The CAH group was associated with higher AKI stage, both at start and at the peak.

**Table 2.1** Demographics of patients with community acquired, never hospitalised (CA), community acquired, subsequently hospitalised (CAH) and hospital acquired (HA) AKI in 2024

| | | Clinical setting of AKI episode | | |
|---|---|---|---|---|
| Variable | All AKI episodes | CA | CAH | HA |
| **Number** | 708,569 | 233,694 | 261,629 | 213,246 |
| % | | 33.0 | 36.9 | 30.1 |
| **Age group (years)** | | | | |
| Median | 73.1 | 68.4 | 73.8 | 76.3 |
| % <18 | 2.5 | 2.8 | 2.2 | 2.6 |
| % 18 - 39 | 9.1 | 13.5 | 7.8 | 5.9 |
| % 40 - 64 | 23.5 | 27.7 | 23.0 | 19.5 |
| % 65 - 74 | 18.9 | 18.3 | 19.9 | 18.4 |
| % 75 - 84 | 26.2 | 22.5 | 27.3 | 28.9 |
| % ≥85 | 19.7 | 15.1 | 19.8 | 24.7 |
| **Sex** (%) | | | | |
| Male | 48.2 | 42.4 | 52.1 | 49.7 |
| **First AKI stage** (%) | | | | |
| 1 | 79.6 | 85.6 | 68.6 | 86.6 |
| 2 | 12.4 | 8.8 | 17.8 | 9.8 |
| 3 | 8.0 | 5.6 | 13.6 | 3.6 |
| **Peak AKI stage** (%) | | | | |
| 1 | 70.6 | 84.2 | 56.2 | 73.5 |
| 2 | 16.4 | 9.6 | 22.7 | 16.2 |
| 3 | 12.9 | 6.2 | 21.1 | 10.3 |
| **Deprivation quintile** (%) | | | | |
| 1 - most deprived | 23.4 | 23.9 | 24.0 | 22.0 |
| 2 | 21.2 | 21.4 | 21.2 | 20.9 |
| 3 | 19.9 | 19.7 | 19.8 | 20.2 |
| 4 | 18.9 | 18.6 | 18.7 | 19.5 |
| 5 | 16.7 | 16.3 | 16.4 | 17.4 |

## AKI rates by clinical setting

The following analyses include AKI rates by hospital for elective and emergency admissions, by clinical setting. Each AKI episode was assigned to the hospital where the first IP admission during the AKI episode occurred. Most people had only one hospitalisation during the AKI episode and most of those with multiple hospitalisations were always admitted to the same hospital.

Rates shown in table 2.2 were calculated as the number of AKI episodes related to IP admissions (numerator) per 1,000 total admissions (denominator) in each hospital. The denominator for the following analyses was the annual numbers (April 2024-March 2025) of elective and emergency admissions by hospital that were available online (digital.nhs.uk/data-and-information/publications/statistical/hospital-admitted-patient-care-activity/2024-25).

The published data combined all three categories of patient admission (ordinary, day case and maternity), whilst the numerator only included ordinary admissions. These factors likely result in a systematic underestimation of the AKI rate. In addition, for the 7.2% of AKI episodes where more than one hospitalisation occurred during the episode, the number of AKI hospitalisations was also slightly underestimated. This outweighs the overestimation related to the 0.8% of hospitalisations associated with more than one AKI episode. For these reasons, the results are shown as scatterplots rather than funnel plots, with no attempt to identify outliers. No adjustment for age was made, because although HES summary data provide total admissions by age group for each hospital, the data were not categorised by type of admission (elective and emergency). The rates of AKI associated with elective and emergency admissions are shown in figures 2.1 and 2.2, respectively.

**Table 2.2** Rates of AKI per 1,000 admissions by admission type and clinical setting in 2024

| | Elective admissions | | | Emergency admissions | | |
|---|---|---|---|---|---|---|
| Hospital | N | CAH-AKI per 1,000 | HA-AKI per 1,000 | N | CAH-AKI per 1,000 | HA-AKI per 1,000 |
| Airedale | 43,130 | 0.8 | 0.9 | 24,910 | 43.2 | 26.5 |
| Alder Hey | 32,130 | 2.9 | 4.4 | 14,145 | 10.8 | 17.0 |
| Ashford and St Peter's | 59,210 | 1.6 | 1.2 | 40,370 | 35.8 | 23.7 |
| Barking, Havering and Redbridge Univ. | 71,625 | 1.2 | 2.1 | 104,985 | 23.3 | 17.5 |
| Barnsley | 33,275 | 0.6 | 0.8 | 41,245 | 35.0 | 22.4 |
| Barts | 116,545 | 2.0 | 5.8 | 72,115 | 42.5 | 39.4 |
| Bedfordshire | 89,595 | 1.3 | 1.4 | 83,225 | 35.3 | 28.0 |
| Blackpool | 66,075 | 1.6 | 3.6 | 45,975 | 38.1 | 32.8 |
| Bolton | 30,700 | 2.9 | 1.9 | 38,615 | 32.9 | 22.1 |
| Bradford | 54,995 | 1.7 | 1.4 | 47,685 | 33.3 | 22.4 |
| Buckinghamshire | 53,955 | 2.4 | 2.1 | 60,625 | 26.6 | 20.2 |
| Calderdale and Huddersfield | 55,125 | 0.8 | 0.7 | 39,425 | 39.3 | 22.3 |
| Cambridge Univ. | 108,150 | 2.7 | 3.3 | 38,130 | 44.6 | 50.5 |
| Chelsea and Westminster | 83,160 | 0.9 | 1.0 | 62,260 | 29.0 | 21.9 |
| Chesterfield Royal | 33,985 | 1.4 | 1.4 | 48,435 | 34.2 | 17.8 |
| Countess Of Chester | 40,470 | 0.9 | 1.3 | 33,870 | 45.0 | 34.2 |
| County Durham and Darlington | 61,945 | 0.5 | 1.1 | 55,825 | 61.3 | 40.1 |
| Croydon | 34,725 | 0.5 | 0.9 | 19,880 | 62.0 | 51.7 |
| Dartford and Gravesham | 45,550 | 1.3 | 1.5 | 42,310 | 30.3 | 27.3 |
| Doncaster and Bassetlaw | 56,175 | 2.3 | 1.5 | 62,255 | 39.9 | 22.6 |
| Dorset County | 31,690 | 1.2 | 1.3 | 27,895 | 34.7 | 24.8 |
| Dudley | 65,105 | 2.3 | 2.4 | 61,690 | 39.3 | 23.8 |
| East and North Hertfordshire | 98,990 | 0.8 | 0.9 | 41,120 | 34.5 | 30.7 |
| East Cheshire | 12,860 | 1.9 | 1.8 | 12,635 | 50.3 | 37.8 |

| Hospital | Elective admissions | | | Emergency admissions | | |
|---|---|---|---|---|---|---|
| | N | CAH-AKI per 1,000 | HA-AKI per 1,000 | N | CAH-AKI per 1,000 | HA-AKI per 1,000 |
| East Kent Hospitals Univ. | 79,925 | 1.6 | 1.3 | 51,850 | 55.3 | 36.2 |
| East Lancashire | 63,590 | 1.8 | 1.8 | 38,360 | 57.8 | 48.7 |
| East Suffolk and North Essex | 60,175 | 1.2 | 1.5 | 40,215 | 45.6 | 35.7 |
| East Sussex | 64,480 | 1.5 | 1.1 | 47,175 | 43.6 | 30.5 |
| Epsom and St Helier Univ. | 46,635 | 1.2 | 1.0 | 24,380 | 45.4 | 36.9 |
| Frimley | 88,490 | 1.9 | 2.2 | 52,445 | 63.1 | 59.3 |
| Gateshead | 37,975 | 0.9 | 1.5 | 20,950 | 63.1 | 57.5 |
| George Eliot | 22,990 | 2.5 | 2.8 | 28,955 | 31.8 | 24.3 |
| Gloucestershire | 85,225 | 1.7 | 1.8 | 72,680 | 36.9 | 23.6 |
| Great Ormond Street | 46,395 | 3.3 | 5.8 | 2,015 | 21.8 | 112.7 |
| Great Western | 50,390 | 1.8 | 1.6 | 45,275 | 37.2 | 26.5 |
| Guy's and St.Thomas's | 150,390 | 4.7 | 12.0 | 32,460 | 45.3 | 47.9 |
| Hampshire | 57,405 | 1.2 | 2.7 | 64,280 | 32.7 | 29.4 |
| Hampshire and Isle of Wight | 3,720 | 0.3 | 2.7 | 3,265 | 35.5 | 24.5 |
| Harrogate | 45,175 | 0.6 | 0.8 | 19,660 | 40.9 | 27.0 |
| Hillingdon | 39,325 | 0.5 | 0.8 | 28,560 | 22.4 | 17.0 |
| Homerton | 30,060 | 0.8 | 0.8 | 23,230 | 31.0 | 17.1 |
| Hull Univ. | 99,155 | 2.4 | 3.5 | 65,375 | 38.2 | 26.7 |
| Imperial College | 145,010 | 1.9 | 3.1 | 60,330 | 38.6 | 34.4 |
| Isle Of Wight | 27,595 | 0.9 | 0.8 | 16,575 | 51.8 | 35.0 |
| James Paget Univ. | 42,430 | 1.6 | 1.3 | 24,960 | 37.7 | 33.0 |
| Kettering | 49,930 | 1.7 | 1.3 | 41,770 | 45.9 | 29.9 |
| King's | 117,475 | 2.6 | 5.4 | 49,100 | 54.4 | 47.3 |
| Kingston | 32,170 | 1.2 | 1.2 | 32,620 | 33.2 | 29.1 |
| Lancashire | 68,695 | 3.2 | 3.1 | 53,595 | 38.0 | 27.8 |
| Leeds Teaching Hospitals | 111,390 | 3.9 | 4.9 | 57,455 | 55.3 | 39.8 |
| Lewisham and Greenwich | 55,745 | 0.6 | 1.2 | 67,750 | 28.9 | 32.7 |
| Liverpool Univ. | 101,505 | 2.4 | 3.2 | 76,135 | 43.4 | 33.1 |
| London North West Univ. | 106,530 | 0.9 | 2.2 | 79,095 | 33.3 | 28.0 |
| Maidstone and Tunbridge Wells | 72,480 | 1.1 | 1.4 | 78,490 | 25.8 | 14.7 |
| Manchester Univ. | 197,080 | 2.9 | 4.8 | 84,800 | 49.2 | 42.5 |
| Medway | 34,725 | 2.8 | 2.3 | 28,510 | 57.1 | 41.4 |
| Mersey and West Lancashire | 88,565 | 1.0 | 1.4 | 96,345 | 28.1 | 20.2 |
| Mid and South Essex | 143,820 | 1.9 | 2.6 | 126,010 | 35.4 | 25.3 |
| Mid Cheshire | 36,875 | 0.5 | 1.3 | 40,810 | 34.6 | 20.8 |
| Mid Yorkshire | 70,230 | 1.1 | 1.4 | 53,525 | 55.9 | 41.6 |
| Midlands Partnership Univ. | 6,290 | 0.3 | 2.5 | 8,915 | 12.0 | 8.2 |
| Milton Keynes Univ. | 36,020 | 1.7 | 1.3 | 27,445 | 41.6 | 30.4 |
| Newcastle Upon Tyne | 155,570 | 3.5 | 4.4 | 75,440 | 33.2 | 31.2 |
| Norfolk and Norwich Univ. | 90,625 | 1.8 | 2.3 | 50,410 | 57.1 | 39.7 |
| North Bristol | 78,700 | 2.9 | 2.5 | 63,935 | 34.0 | 28.5 |
| North Cumbria | 33,200 | 1.3 | 1.4 | 37,740 | 47.4 | 32.5 |
| North Middlesex Univ. | 25,790 | 0.8 | 1.7 | 13,870 | 49.5 | 62.9 |
| North Tees and Hartlepool | 43,360 | 1.3 | 0.9 | 47,860 | 38.7 | 26.2 |
| North West Anglia | 68,755 | 0.9 | 0.9 | 67,400 | 35.7 | 24.5 |
| Northampton General | 58,875 | 1.5 | 1.7 | 48,290 | 26.8 | 25.3 |
| Northern Care Alliance | 123,230 | 1.4 | 1.9 | 112,660 | 32.3 | 22.3 |
| Northern Lincolnshire and Goole | 62,220 | 1.2 | 1.2 | 68,015 | 35.1 | 17.9 |
| Northumbria | 64,080 | 0.7 | 0.7 | 58,820 | 45.0 | 23.3 |
| Nottingham Univ. | 152,740 | 2.0 | 2.7 | 101,070 | 33.6 | 26.3 |
| Oxford Univ. | 99,720 | 1.6 | 4.1 | 99,835 | 25.9 | 22.0 |
| Portsmouth Univ. | 75,225 | 3.0 | 2.6 | 71,395 | 40.3 | 30.5 |
| Princess Alexandra | 29,585 | 1.9 | 1.3 | 27,455 | 45.6 | 35.5 |

| Hospital | Elective admissions | | | Emergency admissions | | |
|---|---|---|---|---|---|---|
| | N | CAH-AKI per 1,000 | HA-AKI per 1,000 | N | CAH-AKI per 1,000 | HA-AKI per 1,000 |
| Queen Elizabeth King's Lynn | 38,120 | 1.1 | 0.9 | 29,380 | 37.7 | 33.4 |
| Rotherham | 31,700 | 1.6 | 1.3 | 32,795 | 41.4 | 22.0 |
| Royal Berkshire | 56,325 | 1.7 | 1.9 | 36,865 | 55.6 | 32.0 |
| Royal Cornwall | 81,235 | 1.8 | 1.5 | 44,200 | 41.7 | 27.1 |
| Royal Devon Univ. | 136,985 | 1.1 | 1.1 | 76,400 | 39.9 | 25.4 |
| Royal Free | 99,855 | 2.8 | 2.6 | 56,805 | 47.2 | 45.5 |
| Royal Marsden | 27,150 | 10.0 | 17.4 | 3,285 | 41.4 | 44.4 |
| Royal Papworth | 20,665 | 4.1 | 16.4 | 1,630 | 50.9 | 102.5 |
| Royal Surrey County | 43,615 | 1.8 | 2.0 | 42,570 | 26.5 | 17.0 |
| Royal United Bath | 43,250 | 1.0 | 1.4 | 49,875 | 35.5 | 22.7 |
| Royal Wolverhampton | 78,785 | 1.5 | 4.4 | 80,320 | 29.1 | 22.7 |
| Salisbury | 32,740 | 2.0 | 2.4 | 27,375 | 32.1 | 30.9 |
| Sandwell and West Birmingham | 46,185 | 1.2 | 1.7 | 39,250 | 43.7 | 30.4 |
| Sheffield | 165,310 | 2.5 | 3.7 | 79,485 | 42.4 | 30.6 |
| Sheffield Children's | 19,085 | 2.9 | 1.9 | 5,110 | 23.9 | 15.5 |
| Sherwood Forest | 49,640 | 0.6 | 0.7 | 45,245 | 45.2 | 30.2 |
| Shrewsbury and Telford | 76,345 | 1.3 | 1.3 | 64,215 | 39.0 | 26.7 |
| Somerset | 81,240 | 1.4 | 1.2 | 60,620 | 49.4 | 35.6 |
| South Tees | 94,680 | 1.6 | 2.8 | 59,145 | 45.7 | 28.5 |
| South Tyneside and Sunderland | 90,420 | 1.9 | 1.9 | 53,360 | 55.8 | 36.3 |
| South Warwickshire Univ. | 42,275 | 0.7 | 1.3 | 35,470 | 28.6 | 22.2 |
| St George's Univ. | 69,635 | 2.2 | 4.8 | 37,865 | 39.0 | 43.4 |
| Stockport | 38,540 | 2.2 | 1.9 | 42,305 | 33.1 | 25.7 |
| Surrey and Sussex | 43,975 | 1.3 | 2.0 | 49,345 | 33.6 | 28.5 |
| The Christie | 20,710 | 7.0 | 10.5 | 8,915 | 49.6 | 38.3 |
| Torbay and South Devon | 43,825 | 0.9 | 1.2 | 39,770 | 35.7 | 22.0 |
| United Lincolnshire | 75,655 | 1.5 | 1.8 | 66,135 | 48.9 | 35.2 |
| Univ. College London | 155,610 | 1.7 | 4.0 | 22,525 | 36.2 | 41.9 |
| Univ. Hospitals Birmingham | 167,000 | 1.9 | 4.1 | 205,860 | 23.5 | 22.8 |
| Univ. Hospitals Bristol and Weston | 97,575 | 1.4 | 4.3 | 80,140 | 27.3 | 21.1 |
| Univ. Hospitals Coventry and Warwickshire | 87,055 | 1.7 | 2.6 | 62,280 | 34.1 | 27.6 |
| Univ. Hospitals Derby and Burton | 141,405 | 1.3 | 1.5 | 91,835 | 41.7 | 30.8 |
| Univ. Hospitals Dorset | 101,715 | 1.1 | 1.6 | 78,335 | 37.0 | 30.8 |
| Univ. Hospitals Leicester | 143,140 | 1.6 | 3.3 | 116,905 | 35.2 | 20.5 |
| Univ. Hospitals Morecambe Bay | 58,185 | 1.1 | 0.8 | 49,035 | 36.2 | 19.2 |
| Univ. Hospitals North Midlands | 123,170 | 1.5 | 2.7 | 104,345 | 38.5 | 28.6 |
| Univ. Hospitals Plymouth | 77,455 | 2.9 | 3.3 | 65,255 | 35.2 | 25.7 |
| Univ. Hospitals Southampton | 105,585 | 3.6 | 6.7 | 69,595 | 41.1 | 37.6 |
| Univ. Hospitals Sussex | 152,755 | 1.9 | 2.0 | 117,500 | 25.8 | 20.1 |
| Walsall | 41,805 | 0.7 | 0.8 | 54,395 | 26.3 | 19.1 |
| Warrington and Halton | 32,990 | 0.9 | 1.4 | 23,065 | 45.8 | 44.0 |
| West Suffolk | 33,335 | 0.7 | 1.2 | 34,060 | 42.7 | 37.2 |
| Whittington | 28,605 | 0.5 | 0.7 | 14,410 | 39.8 | 38.5 |
| Wirral Univ. | 58,570 | 1.4 | 1.3 | 45,700 | 34.2 | 28.3 |
| Worcestershire | 94,590 | 1.4 | 1.2 | 50,000 | 46.7 | 32.1 |
| Wrightington, Wigan and Leigh | 49,455 | 1.3 | 1.6 | 35,850 | 39.2 | 23.0 |
| Wye Valley | 38,475 | 1.0 | 1.1 | 18,110 | 47.7 | 41.8 |
| York and Scarborough | 101,995 | 1.5 | 1.4 | 73,500 | 36.9 | 23.8 |

Due to incomplete 2024 submission to the AKI MPI from some laboratories, the AKI rates in 8 hospitals (Calderale and Huddersfield, Chelsea and Westminster, East Suffolk and North Essex, Epsom and St.Helier, Kingston, Imperial College, Royal Devon, Royal Free), were adjusted accordingly.

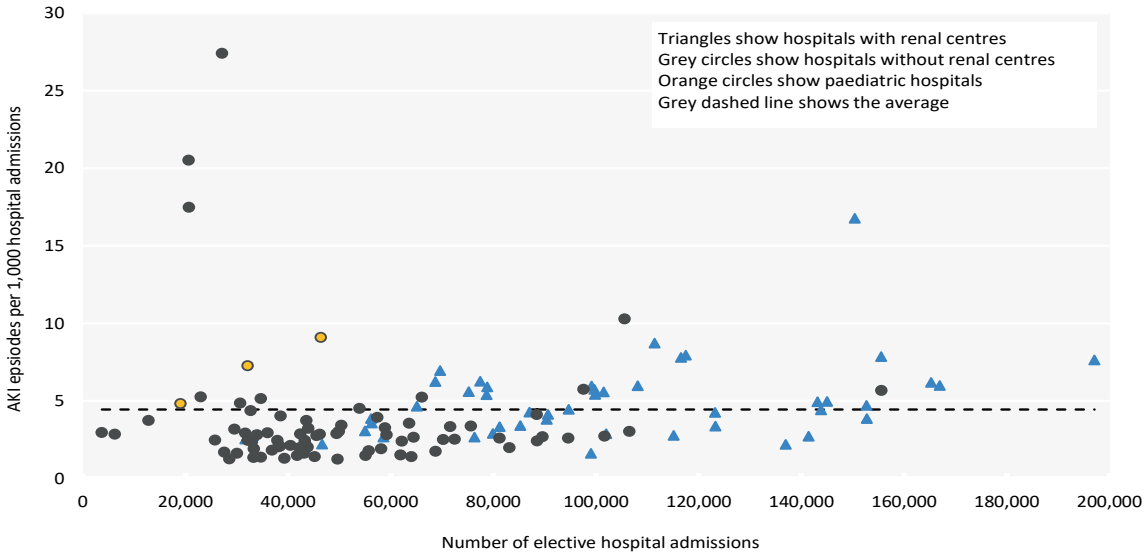


**Figure 2.1** Rate of AKI (community acquired, subsequently hospitalised and hospital acquired) per 1,000 elective hospital admissions in 2024 by hospital

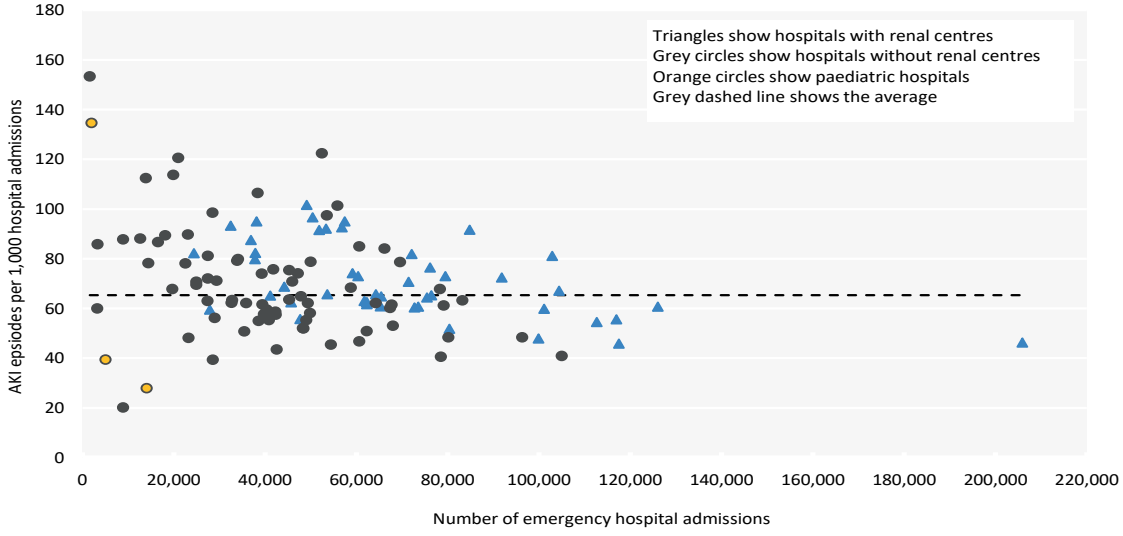


**Figure 2.2** Rate of AKI (community acquired, subsequently hospitalised and hospital acquired) per 1,000 emergency hospital admissions in 2024 by hospital

## Length of hospital stay associated with an AKI episode

For each hospitalisation associated with an AKI episode (CAH and HA), a length of stay (LOS) in hospital was calculated. If a person had more than one hospital stay during a single AKI episode (35,595, 7.5% of AKI episodes), each hospitalisation was counted separately. The clinical setting (CAH or HA) was determined by the start of the AKI episode and remained the same for all hospitalisations associated with that AKI episode. Conversely, long hospitalisations could include more than one AKI episode (4,120, 0.8% of hospitalisations). For such cases, we considered the clinical setting to be that of the first AKI episode in the hospitalisation. Type of admission (elective, emergency or other) was based on the start of the hospitalisation.

Median LOS across all 125 hospitals by elective, emergency and other type of admissions is presented in table 2.3. This includes a sub-analysis that excluded patients who died during the hospitalisation, to investigate whether those with an early poor outcome of AKI artificially improved the overall LOS. The data suggest that this was not the case.

Table 2.4 shows the LOS for each hospitalisation type by trust. The UKRR does not have access to LOS data on patients who had a hospital admission without an AKI and hence it was not possible to include a comparator group. Figure 2.3 shows the overall median and range LOS by admission type. For Table 2.4 and Figure 2.3, 641 (0.1%) hospitalisations were excluded because they occurred at locations not included in our analysis (see introduction to this chapter).

**Table 2.3** Length of stay in hospital associated with AKI by elective, emergency and other type of hospitalisations and community acquired, subsequently hospitalised (CAH) versus hospital acquired (HA) AKI for hospitals in 2024

| | Time in hospital (days) | | |
|---|---|---|---|
| Type of AKI hospitalisations | Total | Median | IQR |
| ALL HOSPITALISATIONS | | | |
| All | 515,638 | 11 | 5-22 |
| Elective | 42,676 | 9 | 5-19 |
| Elective CAH | 17,815 | 5 | 3-10 |
| Elective HA | 24,861 | 13 | 7-25 |
| Emergency | 455,071 | 11 | 5-22 |
| Emergency CAH | 265,304 | 8 | 4-15 |
| Emergency HA | 189,767 | 17 | 10-31 |
| Other | 17,891 | 7 | 4-17 |
| Other CAH | 7,839 | 4 | 3-7 |
| Other HA | 10,052 | 11 | 6-28 |
| ALIVE AT DISCHARGE | | | |
| All | 411,524 | 11 | 5-21 |
| Elective | 39,229 | 9 | 5-18 |
| Elective CAH | 16,591 | 5 | 3-10 |
| Elective HA | 22,638 | 13 | 7-24 |
| Emergency | 355,477 | 11 | 5-22 |
| Emergency CAH | 213,129 | 8 | 4-15 |
| Emergency HA | 142,348 | 18 | 10-31 |
| Other | 16,818 | 7 | 4-15 |
| Other CAH | 7,604 | 4 | 3-7 |
| Other HA | 9,214 | 10 | 6-27 |

CAH – community acquired, subsequently hospitalised; HA – hospital acquired; IQR – interquartile range

**Table 2.4** Length of stay by hospital for elective, emergency and other type hospitalisations associated with AKI (community acquired, subsequently hospitalised and hospital acquired) in 2024

| | Length of hospital stay (days) | | | | | |
|---|---|---|---|---|---|---|
| | Elective | | Emergency | | Other | |
| Hospital | Number | Median | Number | Median | Number | Median |
| Airedale | 77 | 7 | 1,852 | 10 | 51 | 8 |
| Alder Hey | 249 | 10 | 454 | 9 | 27 | 26 |
| Ashford and St Peter's | 192 | 7 | 2,606 | 10 | 199 | 6 |
| Barking, Havering and Redbridge Univ. | 283 | 10 | 4,672 | 11 | 268 | 6 |
| Barnsley | 52 | 10 | 2,576 | 10 | 56 | 6 |
| Barts | 968 | 11 | 6,468 | 13 | 522 | 7 |
| Bedfordshire | 271 | 7 | 5,659 | 11 | 129 | 7 |
| Blackpool | 376 | 10 | 3,450 | 13 | 105 | 11 |
| Bolton | 159 | 7 | 2,245 | 12 | 162 | 7 |
| Bradford | 186 | 7 | 2,907 | 10 | 220 | 6 |
| Buckinghamshire | 282 | 6 | 3,298 | 10 | 287 | 6 |
| Calderdale and Huddersfield | 47 | 6 | 1,286 | 10 | 20 | 13 |
| Cambridge Univ. | 696 | 9 | 3,952 | 13 | 165 | 9 |
| Chelsea and Westminster | 123 | 7 | 2,038 | 11 | 143 | 9 |
| Chesterfield Royal | 110 | 7 | 2,792 | 8 | 56 | 5 |
| Countess Of Chester | 90 | 9 | 2,867 | 12 | 83 | 6 |
| County Durham and Darlington | 115 | 9 | 6,120 | 10 | 112 | 6 |
| Croydon | 50 | 8 | 2,373 | 12 | 117 | 8 |
| Dartford and Gravesham | 146 | 9 | 2,566 | 14 | 81 | 7 |
| Doncaster and Bassetlaw | 245 | 7 | 4,176 | 10 | 87 | 4 |
| Dorset County | 101 | 7 | 1,855 | 10 | 55 | 5 |
| Dudley | 337 | 8 | 4,309 | 10 | 105 | 6 |
| East and North Hertfordshire | 181 | 7 | 2,954 | 11 | 234 | 6 |
| East Cheshire | 51 | 9 | 1,148 | 13 | 21 | 6 |
| East Kent Hospitals Univ. | 259 | 8 | 5,004 | 12 | 174 | 6 |
| East Lancashire | 243 | 7 | 4,329 | 13 | 229 | 6 |
| East Suffolk and North Essex | 180 | 7 | 3,498 | 11 | 121 | 5 |
| East Sussex | 199 | 6 | 3,682 | 11 | 69 | 5 |
| Epsom and St Helier Univ. | 98 | 8 | 1,636 | 13 | 48 | 7 |
| Frimley | 398 | 7 | 6,765 | 13 | 31 | 37 |
| Gateshead | 102 | 8 | 2,661 | 12 | 78 | 7 |
| George Eliot | 151 | 8 | 1,761 | 11 | 44 | 5 |
| Gloucestershire | 348 | 8 | 4,741 | 10 | 186 | 6 |
| Great Ormond Street | 495 | 10 | 348 | 19 | 36 | 21 |
| Great Western | 205 | 7 | 3,126 | 10 | 233 | 7 |
| Guy's and St.Thomas's | 2,613 | 12 | 3,689 | 13 | 489 | 12 |
| Hampshire | 244 | 12 | 4,224 | 11 | 105 | 6 |
| Hampshire and Isle of Wight | 16 | 35 | 255 | 14 | 81 | 26 |
| Harrogate | 77 | 8 | 1,427 | 10 | 44 | 5 |
| Hillingdon | 63 | 8 | 1,225 | 11 | 54 | 9 |
| Homerton | 54 | 9 | 1,210 | 11 | 73 | 5 |
| Hull Univ. | 634 | 10 | 4,645 | 12 | 89 | 6 |
| Imperial College | 465 | 9 | 2,921 | 12 | 146 | 10 |
| Isle Of Wight | 56 | 6 | 1,540 | 10 | 31 | 4 |
| James Paget Univ. | 134 | 8 | 1,881 | 12 | 41 | 6 |
| Kettering | 171 | 8 | 3,407 | 10 | 63 | 4 |
| King's | 1,022 | 12 | 5,465 | 14 | 330 | 8 |
| Kingston | 88 | 8 | 1,829 | 12 | 190 | 6 |
| Lancashire | 486 | 8 | 3,960 | 11 | 148 | 12 |
| Leeds Teaching Hospitals | 1,059 | 10 | 5,888 | 13 | 284 | 8 |
| Lewisham and Greenwich | 134 | 7 | 4,430 | 13 | 512 | 6 |

| Hospital | Length of hospital stay (days) | | | | | |
|---|---|---|---|---|---|---|
| | Elective | | Emergency | | Other | |
| | Number | Median | Number | Median | Number | Median |
| Liverpool Univ. | 605 | 9 | 6,273 | 12 | 54 | 29 |
| London North West Univ. | 361 | 10 | 5,216 | 12 | 187 | 8 |
| Maidstone and Tunbridge Wells | 217 | 9 | 3,475 | 10 | 150 | 6 |
| Manchester Univ. | 1,634 | 11 | 8,445 | 13 | 72 | 26 |
| Medway | 196 | 6 | 2,979 | 12 | 173 | 6 |
| Mersey and West Lancashire | 233 | 8 | 4,914 | 12 | 166 | 5 |
| Mid and South Essex | 706 | 8 | 8,253 | 11 | 329 | 7 |
| Mid Cheshire | 73 | 9 | 2,383 | 11 | 79 | 7 |
| Mid Yorkshire | 192 | 9 | 5,530 | 12 | 145 | 6 |
| Midlands Partnership Univ. | 22 | 61 | 293 | 6 | 58 | 34 |
| Milton Keynes Univ. | 115 | 8 | 2,124 | 11 | 91 | 6 |
| Newcastle Upon Tyne | 1,311 | 9 | 5,386 | 12 | 418 | 16 |
| Norfolk and Norwich Univ. | 398 | 8 | 5,237 | 10 | 231 | 5 |
| North Bristol | 456 | 6 | 4,500 | 11 | 221 | 5 |
| North Cumbria | 108 | 6 | 3,195 | 11 | 53 | 5 |
| North Middlesex Univ. | 80 | 7 | 1,627 | 14 | 110 | 8 |
| North Tees and Hartlepool | 108 | 7 | 3,304 | 10 | 43 | 4 |
| North West Anglia | 149 | 9 | 4,420 | 11 | 154 | 7 |
| Northampton General | 228 | 8 | 2,775 | 12 | 66 | 6 |
| Northern Care Alliance | 452 | 10 | 6,682 | 10 | 89 | 11 |
| Northern Lincolnshire and Goole | 159 | 6 | 3,918 | 9 | 93 | 5 |
| Northumbria | 114 | 8 | 4,388 | 8 | 155 | 6 |
| Nottingham Univ. | 812 | 10 | 6,633 | 12 | 391 | 10 |
| Oxford Univ. | 603 | 8 | 5,156 | 9 | 138 | 14 |
| Portsmouth Univ. | 469 | 6 | 5,536 | 11 | 176 | 8 |
| Princess Alexandra | 119 | 6 | 2,372 | 11 | 86 | 5 |
| Queen Elizabeth King's Lynn | 86 | 8 | 2,216 | 12 | 64 | 6 |
| Rotherham | 142 | 5 | 2,224 | 10 | 53 | 6 |
| Royal Berkshire | 226 | 6 | 3,568 | 9 | 215 | 6 |
| Royal Cornwall | 294 | 7 | 3,263 | 10 | 21 | 12 |
| Royal Devon Univ. | 299 | 8 | 4,501 | 10 | 94 | 6 |
| Royal Free | 446 | 7 | 4,325 | 12 | 381 | 7 |
| Royal Marsden | 847 | 13 | 410 | 12 | 12 | 10 |
| Royal Papworth | 440 | 12 | 402 | 12 | 238 | 18 |
| Royal Surrey County | 179 | 8 | 2,026 | 10 | 74 | 10 |
| Royal United Bath | 137 | 7 | 3,247 | 9 | 147 | 7 |
| Royal Wolverhampton | 490 | 8 | 4,670 | 10 | 160 | 9 |
| Salisbury | 150 | 9 | 1,852 | 12 | 50 | 7 |
| Sandwell and West Birmingham | 139 | 9 | 3,082 | 10 | 99 | 7 |
| Sheffield | 1,124 | 10 | 6,295 | 13 | 301 | 5 |
| Sheffield Children's | 108 | 7 | 250 | 6 | 36 | 16 |
| Sherwood Forest | 72 | 7 | 3,658 | 10 | 91 | 5 |
| Shrewsbury and Telford | 230 | 8 | 4,568 | 10 | 130 | 6 |
| Somerset | 266 | 7 | 5,583 | 11 | 176 | 7 |
| South Tees | 453 | 9 | 4,820 | 10 | 145 | 4 |
| South Tyneside and Sunderland | 376 | 7 | 5,269 | 11 | 125 | 6 |
| South Warwickshire Univ. | 94 | 8 | 1,925 | 10 | 87 | 7 |
| St George's Univ. | 527 | 9 | 3,426 | 12 | 366 | 11 |
| Stockport | 170 | 7 | 2,601 | 12 | 116 | 7 |
| Surrey and Sussex | 165 | 8 | 3,270 | 11 | 101 | 7 |
| The Christie | 457 | 11 | 927 | 9 | 4 | - |
| Torbay and South Devon | 99 | 7 | 2,450 | 10 | 7 | - |
| United Lincolnshire | 287 | 8 | 5,967 | 11 | 162 | 5 |

| Hospital | Length of hospital stay (days) | | | | | |
|---|---|---|---|---|---|---|
| | Elective | | Emergency | | Other | |
| | Number | Median | Number | Median | Number | Median |
| Univ. College London | 965 | 13 | 1,915 | 14 | 155 | 6 |
| Univ. Hospitals Birmingham | 1,061 | 11 | 10,181 | 13 | 271 | 11 |
| Univ. Hospitals Bristol and Weston | 656 | 10 | 4,307 | 11 | 334 | 9 |
| Univ. Hospitals Coventry and Warwickshire | 409 | 9 | 4,172 | 12 | 246 | 7 |
| Univ. Hospitals Derby and Burton | 435 | 8 | 7,203 | 11 | 180 | 6 |
| Univ. Hospitals Dorset | 326 | 8 | 5,763 | 10 | 173 | 5 |
| Univ. Hospitals Leicester | 791 | 10 | 7,108 | 11 | 180 | 10 |
| Univ. Hospitals Morecambe Bay | 141 | 8 | 2,933 | 9 | 62 | 6 |
| Univ. Hospitals North Midlands | 576 | 10 | 7,743 | 11 | 279 | 9 |
| Univ. Hospitals Plymouth | 541 | 9 | 4,300 | 13 | 195 | 10 |
| Univ. Hospitals Southampton | 1,209 | 12 | 6,011 | 12 | 410 | 13 |
| Univ. Hospitals Sussex | 641 | 7 | 5,714 | 12 | 210 | 5 |
| Walsall | 70 | 8 | 2,639 | 11 | 32 | 6 |
| Warrington and Halton | 80 | 8 | 2,163 | 14 | 48 | 8 |
| West Suffolk | 74 | 8 | 2,990 | 10 | 81 | 6 |
| Whittington | 46 | 7 | 1,177 | 13 | 101 | 5 |
| Wirral Univ. | 168 | 7 | 3,006 | 13 | 39 | 6 |
| Worcestershire | 256 | 7 | 4,203 | 11 | 82 | 6 |
| Wrightington, Wigan and Leigh | 153 | 7 | 2,427 | 10 | 45 | 6 |
| Wye Valley | 105 | 6 | 1,727 | 11 | 45 | 6 |
| York and Scarborough | 342 | 6 | 4,815 | 11 | 87 | 5 |

Median not shown where n<10

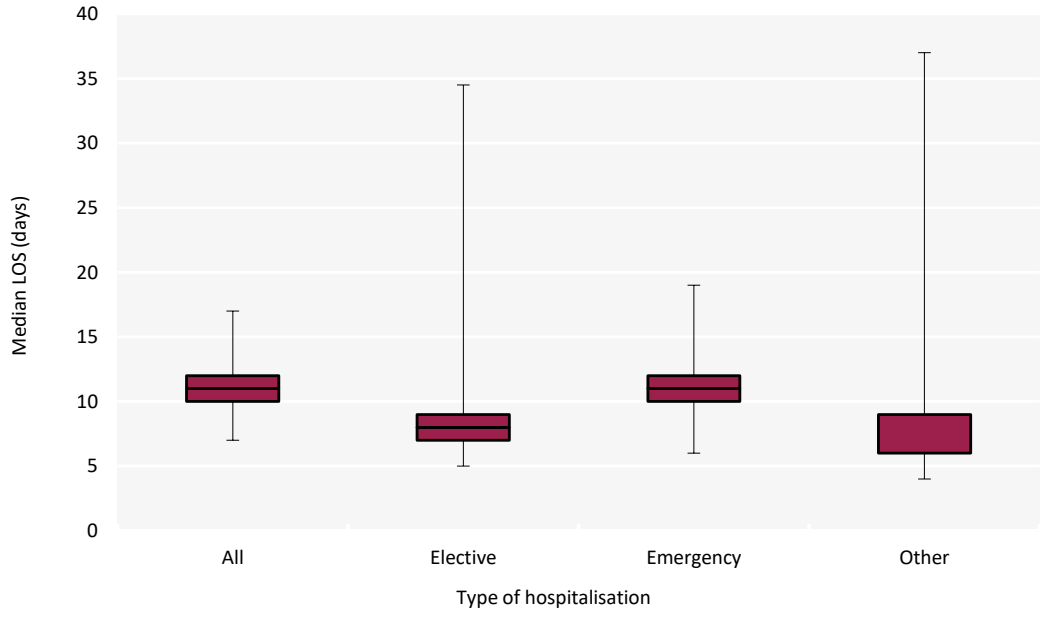


**Figure 2.3** Boxplot of hospital length of stay (LOS) by admission type, for hospitalisations associated with AKI (community acquired, subsequently hospitalised and hospital acquired) in 2024

The box shows the median and interquartile range (IQR) and the whiskers are the minimum and maximum values.
A single outlier (with median LOS=61 days) was excluded from the group 'Elective'.
2 centres with n<10 were excluded from the group 'Other'.

## Mortality following an AKI episode

For people with multiple AKI episodes, a single episode was randomly chosen for inclusion in the analysis of mortality. In hospital mortality along with 30-day mortality are presented. For 30-day mortality, day 0 was defined as the latest between date of hospital admission and date of start of the AKI episode. This avoids survival bias as the CAH group would need to survive long enough to be admitted to hospital after developing AKI.

Table 2.5 shows the national level mortality, adjusted for age and sex, by clinical setting (CAH and HA). All admission types are included whereas for subsequent analysis by trust only emergency admissions were considered due to small numbers of elective and other admissions. All stages of AKI were included.

**Table 2.5** Mortality following an AKI episode by admission type (elective, emergency, other), clinical setting (community acquired, subsequently hospitalised, hospital acquired) and peak AKI stage in 2024

| | All hospitalised | Setting of AKI episode | |
|---|---|---|---|
| | | CAH | HA |
| Number | 410,459 | 225,625 | 184,834 |
| % | | 55.0 | 45.0 |
| unadjusted in hospital mortality (%) | 19.5 | 17.7 | 21.6 |
| unadjusted 30-day mortality (%) | 20.8 | 19.0 | 23.0 |
| Elective (N) | 33,079 | 13,275 | 19,804 |
| adj. in hospital mortality (%) | 7.4 | 5.6 | 8.5 |
| adj. 30-day mortality (%) | 7.3 | 5.8 | 8.4 |
| Emergency (N) | 361,672 | 205,374 | 156,298 |
| adj. in hospital mortality (%) | 20.5 | 18.4 | 23.2 |
| adj. 30-day mortality (%) | 22.0 | 19.8 | 24.8 |
| Other (N) | 15,708 | 6,976 | 8,732 |
| adj. in hospital mortality (%) | 13.5 | 10.0 | 14.9 |
| adj. 30-day mortality (%) | 13.7 | 11.1 | 14.8 |
| ADJUSTED IN HOSPITAL MORTALITY (%) BY PEAK AKI STAGE | | | |
| 1 | 14.0 | 12.0 | 15.9 |
| 2 | 26.4 | 22.0 | 33.8 |
| 3 | 32.5 | 28.0 | 43.2 |
| ADJUSTED 30-DAY MORTALITY (%) BY PEAK AKI STAGE | | | |
| 1 | 15.7 | 13.5 | 17.7 |
| 2 | 27.4 | 23.3 | 34.3 |
| 3 | 33.3 | 29.0 | 43.0 |

CA – community acquired; CAH – community acquired, subsequently hospitalised; HA – hospital acquired

Adjusted analysis of in hospital and 30-day mortality following an AKI episode in emergency hospitalisations was performed to estimate variability between trusts. Analysis was performed by using a simplified version of the logistic model previously developed,[15] with the addition of adjustment for clinical setting. Figure 2.4 and figure 2.5 show funnel plots for the adjusted in hospital and 30-day mortality spread by trust. Results by trust are shown in Table 2.6 for the total emergency hospitalisations but also separately by clinical setting.

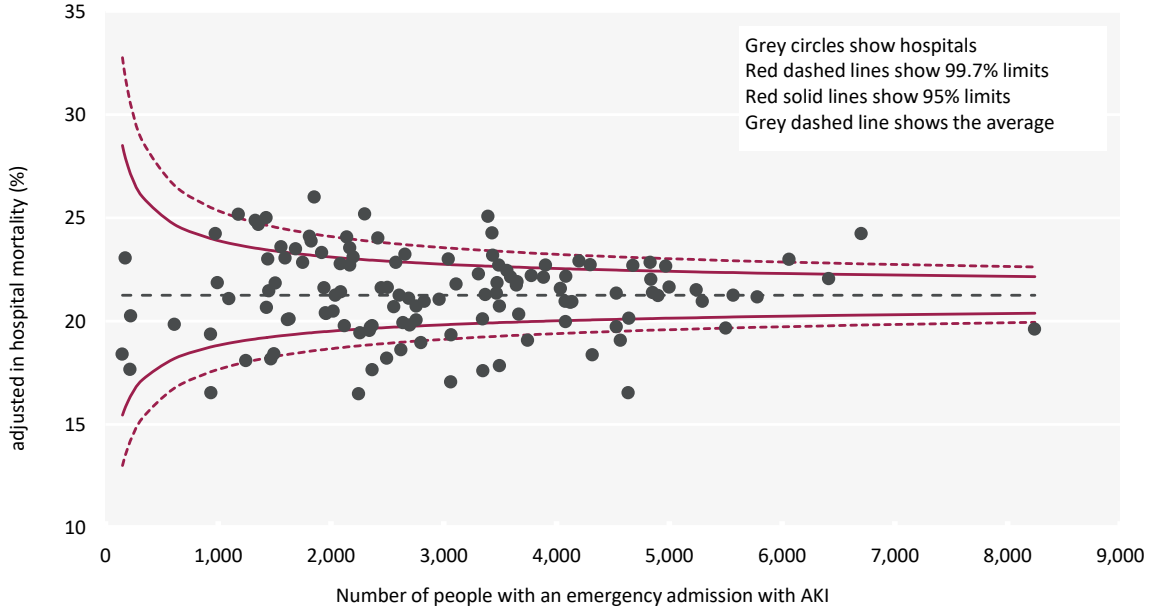


**Figure 2.4** Funnel plot for the adjusted in hospital mortality in emergency hospitalisations, by trust in 2024

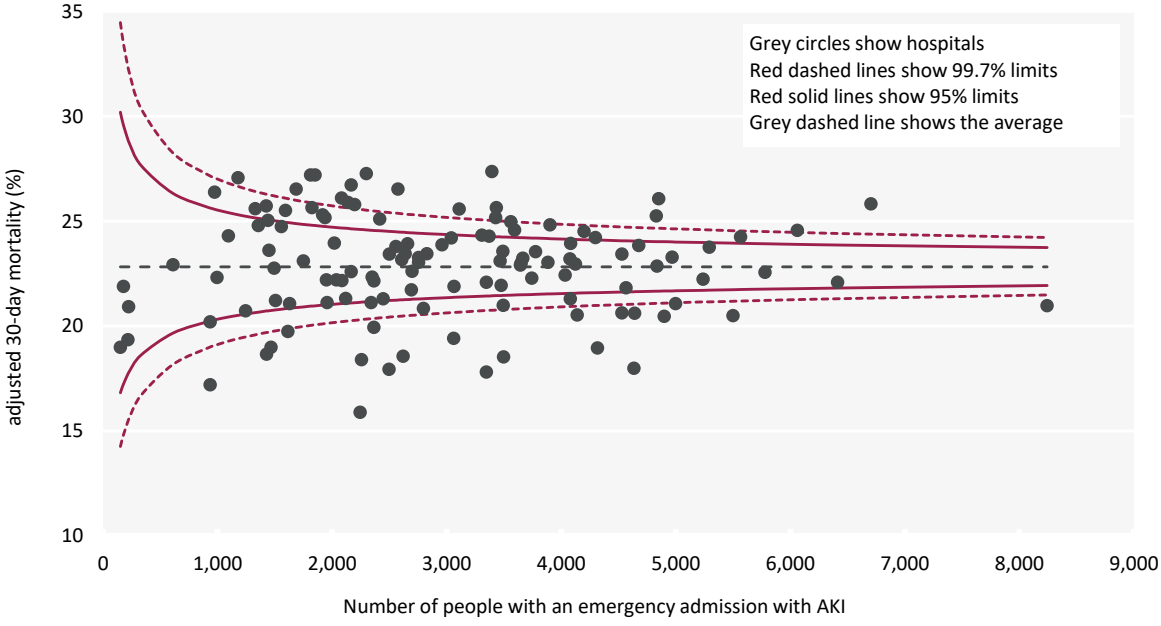


**Figure 2.5** Funnel plot for the adjusted 30-day mortality in emergency hospitalisations, by trust in 2024

**Table 2.6** Adjusted analysis of in hospital and 30-day mortality following an episode of hospital acquired AKI in emergency hospitalisations, by hospital in 2024

| | N of people with emergency hospitalisations with AKI | | adj in hospital mortality (%) | | | adj 30-day mortality (%) | | |
|---|---|---|---|---|---|---|---|---|
| Hospital | CAH | HA | Total | CAH | HA | Total | CAH | HA |
| Airedale | 936 | 559 | 18.4 | 17.3 | 20.1 | 22.8 | 21.2 | 25.1 |
| Alder Hey | 134 | 196 | 2.4* | 1.5* | 3.1* | 1.8* | 1.5* | 2.0* |
| Ashford and St Peter's | 1,247 | 841 | 21.4 | 22.5 | 20.2 | 22.2 | 23.6 | 20.5 |
| Barking, Havering and Redbridge Univ. | 2,074 | 1,573 | 21.8 | 19.9 | 23.5 | 22.9 | 20.6 | 25.1 |
| Barnsley | 1,278 | 806 | 22.8 | 23.1 | 22.4 | 26.1 | 26.2 | 25.9 |
| Barts | 2,497 | 2,405 | 21.2 | 21.8 | 20.8 | 20.5 | 20.6 | 20.3 |
| Bedfordshire | 2,543 | 2,024 | 19.1 | 19.9 | 18.2 | 21.8 | 22.9 | 20.7 |
| Blackpool | 1,493 | 1,307 | 19.0 | 20.0 | 18.0 | 20.8 | 21.2 | 20.5 |
| Bolton | 1,104 | 748 | 26.0 | 23.9 | 28.4 | 27.2 | 25.6 | 29.0 |
| Bradford | 1,369 | 930 | 25.2 | 23.5 | 27.2 | 27.3 | 25.7 | 29.1 |
| Buckinghamshire | 1,311 | 1,031 | 19.6 | 22.3 | 17.0 | 21.1 | 24.1 | 18.2 |
| Calderdale and Huddersfield | 706 | 389 | 21.1 | 18.1 | 25.4 | 24.3 | 21.5 | 28.3 |
| Cambridge Univ. | 1,420 | 1,642 | 17.1 | 19.0 | 15.5 | 19.4 | 21.4 | 17.9 |
| Chelsea and Westminster | 931 | 683 | 20.1 | 19.1 | 21.0 | 19.7 | 19.1 | 20.4 |
| Chesterfield Royal | 1,434 | 764 | 23.1 | 21.1 | 26.0 | 25.8 | 23.9 | 28.6 |
| Countess Of Chester | 1,286 | 972 | 19.4 | 19.0 | 20.0 | 18.4 | 17.8 | 19.1 |
| County Durham and Darlington | 2,923 | 1,929 | 21.4 | 23.2 | 19.2 | 26.1 | 27.6 | 24.1 |
| Croydon | 1,076 | 882 | 20.4 | 20.6 | 20.1 | 21.1 | 21.7 | 20.6 |
| Dartford and Gravesham | 1,069 | 971 | 21.3 | 20.3 | 22.0 | 22.2 | 21.0 | 23.2 |
| Doncaster and Bassetlaw | 2,161 | 1,234 | 25.1 | 24.5 | 25.8 | 27.4 | 27.2 | 27.6 |
| Dorset County | 851 | 599 | 21.5 | 21.7 | 21.2 | 23.6 | 23.6 | 23.6 |
| Dudley | 2,113 | 1,258 | 21.3 | 20.9 | 21.8 | 24.3 | 23.8 | 24.8 |
| East and North Hertfordshire | 1,228 | 1,122 | 19.7 | 20.5 | 19.0 | 22.3 | 23.6 | 21.2 |
| East Cheshire | 551 | 424 | 24.2 | 24.0 | 24.5 | 26.4 | 27.0 | 25.7 |
| East Kent Hospitals Univ. | 2,469 | 1,656 | 20.9 | 21.9 | 19.8 | 23.0 | 22.9 | 23.0 |
| East Lancashire | 1,947 | 1,614 | 22.5 | 21.5 | 23.4 | 25.0 | 24.2 | 25.7 |
| East Suffolk and North Essex | 1,592 | 1,237 | 21.0 | 21.3 | 20.6 | 23.4 | 23.5 | 23.4 |
| East Sussex | 1,772 | 1,271 | 23.0 | 21.8 | 24.4 | 24.2 | 22.6 | 25.9 |
| Epsom and St Helier Univ. | 740 | 589 | 24.9 | 22.4 | 27.3 | 25.6 | 23.2 | 28.0 |
| Frimley | 2,833 | 2,670 | 19.7 | 20.4 | 19.0 | 20.5 | 21.0 | 20.1 |
| Gateshead | 1,135 | 1,032 | 22.7 | 23.2 | 22.3 | 22.6 | 23.4 | 21.9 |
| George Eliot | 801 | 625 | 25.0 | 24.1 | 25.9 | 25.7 | 24.0 | 27.4 |
| Gloucestershire | 2,383 | 1,522 | 22.7 | 23.1 | 22.2 | 24.8 | 24.9 | 24.7 |
| Great Ormond Street | 37 | 183 | 10.9* | 13.5* | 10.4* | 8.6* | 13.5* | 7.7* |
| Great Western | 1,453 | 1,049 | 21.6 | 23.1 | 20.2 | 23.4 | 24.6 | 22.2 |
| Guy's and St.Thomas's | 1,204 | 1,293 | 18.2 | 19.1 | 17.5 | 17.9 | 18.5 | 17.5 |
| Hampshire | 1,844 | 1,653 | 17.9 | 18.9 | 17.0 | 18.5 | 19.4 | 17.7 |
| Hampshire and Isle of Wight | 106 | 72 | 23.1 | 23.6 | 22.3 | 21.9 | 22.5 | 21.0 |
| Harrogate | 722 | 458 | 25.2 | 25.7 | 24.6 | 27.1 | 27.4 | 26.7 |
| Hillingdon | 565 | 430 | 21.9 | 21.1 | 22.6 | 22.3 | 21.5 | 23.1 |
| Homerton | 606 | 329 | 19.4 | 18.9 | 20.1 | 20.2 | 18.4 | 22.6 |
| Hull Univ. | 2,142 | 1,511 | 21.9 | 21.4 | 22.6 | 23.0 | 22.6 | 23.5 |
| Imperial College | 1,183 | 1,064 | 16.5 | 17.9 | 15.4 | 15.9 | 16.6 | 15.3 |
| Isle Of Wight | 737 | 508 | 18.1 | 18.6 | 17.5 | 20.7 | 20.4 | 21.1 |
| James Paget Univ. | 820 | 738 | 23.6 | 22.5 | 24.7 | 24.7 | 24.7 | 24.8 |
| Kettering | 1,599 | 1,060 | 23.2 | 21.0 | 25.9 | 23.9 | 21.7 | 26.6 |
| King's | 2,230 | 1,910 | 20.9 | 21.4 | 20.5 | 20.5 | 21.2 | 19.8 |
| Kingston | 791 | 676 | 18.2 | 16.9 | 19.3 | 19.0 | 18.0 | 19.9 |
| Lancashire | 1,763 | 1,304 | 19.3 | 19.0 | 19.7 | 21.9 | 21.6 | 22.2 |
| Leeds Teaching Hospitals | 2,710 | 1,968 | 22.7 | 22.2 | 23.3 | 23.8 | 23.5 | 24.2 |
| Lewisham and Greenwich | 1,607 | 1,889 | 20.7 | 19.0 | 22.0 | 21.0 | 19.4 | 22.1 |
| Liverpool Univ. | 2,825 | 2,176 | 21.6 | 19.6 | 23.7 | 21.1 | 19.8 | 22.3 |

| Hospital | N of people with emergency hospitalisations with AKI | | adj in hospital mortality (%) | | | adj 30-day mortality (%) | | |
|---|---|---|---|---|---|---|---|---|
| | CAH | HA | Total | CAH | HA | Total | CAH | HA |
| London North West Univ. | 2,176 | 1,859 | 21.6 | 21.3 | 21.8 | 22.4 | 22.5 | 22.4 |
| Maidstone and Tunbridge Wells | 1,744 | 1,014 | 20.1 | 18.5 | 22.1 | 23.3 | 21.4 | 25.8 |
| Manchester Univ. | 3,406 | 3,010 | 22.1 | 21.9 | 22.2 | 22.1 | 22.4 | 21.8 |
| Medway | 1,394 | 1,024 | 24.0 | 24.8 | 23.2 | 25.1 | 25.1 | 25.1 |
| Mersey and West Lancashire | 2,374 | 1,709 | 22.2 | 21.6 | 22.8 | 23.9 | 23.1 | 24.9 |
| Mid and South Essex | 3,881 | 2,824 | 24.2 | 24.2 | 24.3 | 25.8 | 26.0 | 25.6 |
| Mid Cheshire | 1,210 | 741 | 20.4 | 19.8 | 21.2 | 22.2 | 21.7 | 22.9 |
| Mid Yorkshire | 2,585 | 1,946 | 21.4 | 21.5 | 21.2 | 23.4 | 24.2 | 22.7 |
| Midlands Partnership Univ. | 87 | 64 | 18.4 | 25.7 | 7.6 | 19.0 | 21.3 | 15.4 |
| Milton Keynes Univ. | 960 | 726 | 23.5 | 21.7 | 25.4 | 26.5 | 24.9 | 28.2 |
| Newcastle Upon Tyne | 2,108 | 1,973 | 20.0 | 22.6 | 17.8 | 21.3 | 24.1 | 19.0 |
| Norfolk and Norwich Univ. | 2,545 | 1,756 | 22.7 | 23.7 | 21.5 | 24.2 | 25.3 | 22.9 |
| North Bristol | 1,885 | 1,591 | 21.9 | 22.5 | 21.3 | 21.9 | 23.0 | 21.0 |
| North Cumbria | 1,555 | 1,053 | 21.3 | 21.5 | 21.0 | 23.2 | 24.2 | 21.9 |
| North Middlesex Univ. | 588 | 770 | 24.7 | 23.2 | 25.7 | 24.8 | 23.5 | 25.6 |
| North Tees and Hartlepool | 1,577 | 1,063 | 19.9 | 20.7 | 19.1 | 23.4 | 23.8 | 23.0 |
| North West Anglia | 2,017 | 1,413 | 24.3 | 23.6 | 25.0 | 25.2 | 24.0 | 26.4 |
| Northampton General | 1,094 | 1,048 | 24.1 | 24.0 | 24.2 | 25.9 | 26.0 | 25.8 |
| Northern Care Alliance | 3,129 | 2,165 | 21.0 | 20.6 | 21.4 | 23.8 | 24.1 | 23.3 |
| Northern Lincolnshire and Goole | 2,047 | 1,064 | 21.8 | 21.9 | 21.6 | 25.6 | 25.4 | 25.8 |
| Northumbria | 2,291 | 1,200 | 22.7 | 22.7 | 22.8 | 23.6 | 23.5 | 23.6 |
| Nottingham Univ. | 2,955 | 2,285 | 21.5 | 22.8 | 20.1 | 22.2 | 23.2 | 21.1 |
| Oxford Univ. | 2,197 | 1,881 | 21.0 | 20.4 | 21.4 | 23.2 | 22.9 | 23.4 |
| Portsmouth Univ. | 2,415 | 1,904 | 18.4 | 17.9 | 18.8 | 19.0 | 18.4 | 19.5 |
| Princess Alexandra | 1,072 | 868 | 21.6 | 20.5 | 22.7 | 25.2 | 23.6 | 26.7 |
| Queen Elizabeth King's Lynn | 964 | 861 | 23.9 | 24.1 | 23.7 | 25.6 | 27.0 | 24.5 |
| Rotherham | 1,183 | 629 | 24.1 | 23.9 | 24.4 | 27.2 | 26.5 | 28.2 |
| Royal Berkshire | 1,737 | 1,019 | 20.7 | 21.0 | 20.4 | 23.0 | 22.5 | 23.8 |
| Royal Cornwall | 1,613 | 1,086 | 19.8 | 20.1 | 19.4 | 22.6 | 22.3 | 23.0 |
| Royal Devon Univ. | 2,272 | 1,473 | 19.1 | 20.1 | 17.9 | 22.3 | 23.1 | 21.2 |
| Royal Free | 1,717 | 1,631 | 17.6 | 18.4 | 17.0 | 17.8 | 18.5 | 17.3 |
| Royal Marsden | 112 | 106 | 17.7 | 17.2 | 18.1 | 19.3 | 17.3 | 21.1 |
| Royal Papworth | 77 | 148 | 20.3 | 29.9 | 15.8 | 20.9 | 31.6 | 16.0 |
| Royal Surrey County | 982 | 649 | 20.1 | 18.4 | 22.0 | 21.1 | 19.1 | 23.2 |
| Royal United Bath | 1,550 | 1,008 | 20.7 | 20.5 | 21.0 | 23.8 | 24.0 | 23.6 |
| Royal Wolverhampton | 2,018 | 1,578 | 22.1 | 23.1 | 21.2 | 24.6 | 25.0 | 24.1 |
| Salisbury | 768 | 740 | 21.9 | 22.3 | 21.5 | 21.2 | 22.8 | 20.0 |
| Sandwell and West Birmingham | 1,525 | 1,052 | 22.8 | 23.3 | 22.3 | 26.5 | 27.5 | 25.4 |
| Sheffield | 2,884 | 2,086 | 22.7 | 23.5 | 21.8 | 23.3 | 24.0 | 22.5 |
| Sheffield Children's | 93 | 62 | 2.6* | 0.0* | 6.5* | 1.9* | 0.0* | 4.8* |
| Sherwood Forest | 1,769 | 1,191 | 21.1 | 20.6 | 21.6 | 23.9 | 23.5 | 24.3 |
| Shrewsbury and Telford | 2,195 | 1,471 | 20.3 | 19.5 | 21.3 | 23.2 | 22.1 | 24.5 |
| Somerset | 2,627 | 1,906 | 19.7 | 20.4 | 19.0 | 20.6 | 21.3 | 19.9 |
| South Tees | 2,342 | 1,436 | 22.2 | 22.5 | 21.8 | 23.5 | 23.8 | 23.2 |
| South Tyneside and Sunderland | 2,553 | 1,649 | 22.9 | 23.0 | 22.8 | 24.5 | 24.8 | 24.1 |
| South Warwickshire Univ. | 902 | 693 | 23.1 | 25.0 | 21.1 | 25.5 | 26.1 | 24.9 |
| St George's Univ. | 1,236 | 1,386 | 18.6 | 19.1 | 18.3 | 18.6 | 19.2 | 18.0 |
| Stockport | 1,198 | 922 | 19.8 | 19.1 | 20.4 | 21.3 | 21.2 | 21.4 |
| Surrey and Sussex | 1,458 | 1,234 | 21.1 | 19.7 | 22.4 | 21.7 | 19.7 | 23.5 |
| The Christie | 338 | 275 | 19.8 | 16.2 | 22.9 | 22.9 | 18.7 | 26.4 |
| Torbay and South Devon | 1,248 | 773 | 20.5 | 20.0 | 21.1 | 24.0 | 24.0 | 23.9 |
| United Lincolnshire | 2,794 | 2,038 | 22.8 | 23.2 | 22.4 | 25.2 | 25.4 | 25.1 |
| Univ. College London | 673 | 755 | 20.7 | 18.8 | 21.9 | 18.7 | 17.1 | 19.7 |
| Univ. Hospitals Birmingham | 4,195 | 4,048 | 19.6 | 20.4 | 19.0 | 21.0 | 21.3 | 20.8 |

| Hospital | N of people with emergency hospitalisations with AKI | | adj in hospital mortality (%) | | | adj 30-day mortality (%) | | |
|---|---|---|---|---|---|---|---|---|
| | CAH | HA | Total | CAH | HA | Total | CAH | HA |
| Univ. Hospitals Bristol and Weston | 1,867 | 1,480 | 20.1 | 21.1 | 19.1 | 22.1 | 22.3 | 21.9 |
| Univ. Hospitals Coventry and Warwickshire | 1,802 | 1,507 | 22.3 | 22.6 | 22.0 | 24.3 | 25.0 | 23.7 |
| Univ. Hospitals Derby and Burton | 3,307 | 2,475 | 21.2 | 20.6 | 21.8 | 22.6 | 21.8 | 23.5 |
| Univ. Hospitals Dorset | 2,542 | 2,102 | 20.1 | 21.0 | 19.4 | 20.6 | 21.0 | 20.3 |
| Univ. Hospitals Leicester | 3,506 | 2,061 | 21.3 | 19.2 | 23.8 | 24.3 | 22.0 | 27.1 |
| Univ. Hospitals Morecambe Bay | 1,535 | 832 | 19.8 | 19.5 | 20.1 | 22.1 | 22.1 | 22.2 |
| Univ. Hospitals North Midlands | 3,476 | 2,589 | 23.0 | 23.2 | 22.8 | 24.6 | 24.1 | 25.0 |
| Univ. Hospitals Plymouth | 2,003 | 1,466 | 21.4 | 20.8 | 21.9 | 23.1 | 22.0 | 24.4 |
| Univ. Hospitals Southampton | 2,411 | 2,227 | 16.5 | 16.8 | 16.3 | 18.0 | 18.4 | 17.6 |
| Univ. Hospitals Sussex | 2,703 | 2,136 | 22.0 | 20.3 | 23.7 | 22.9 | 21.3 | 24.3 |
| Walsall | 1,256 | 912 | 23.6 | 21.5 | 25.8 | 26.7 | 25.7 | 27.9 |
| Warrington and Halton | 886 | 865 | 22.8 | 21.4 | 24.1 | 23.1 | 21.2 | 24.8 |
| West Suffolk | 1,254 | 1,112 | 17.6 | 19.1 | 16.5 | 19.9 | 21.4 | 18.7 |
| Whittington | 475 | 462 | 16.5 | 16.6 | 16.5 | 17.2 | 17.5 | 17.0 |
| Wirral Univ. | 1,352 | 1,095 | 21.6 | 19.5 | 23.5 | 21.3 | 20.1 | 22.4 |
| Worcestershire | 2,020 | 1,415 | 23.2 | 22.5 | 23.9 | 25.6 | 25.2 | 26.1 |
| Wrightington, Wigan and Leigh | 1,202 | 716 | 23.3 | 22.1 | 24.9 | 25.3 | 23.8 | 27.2 |
| Wye Valley | 759 | 681 | 23.0 | 23.1 | 22.9 | 25.0 | 24.9 | 25.2 |
| York and Scarborough | 2,352 | 1,533 | 22.1 | 23.3 | 20.8 | 23.0 | 23.3 | 22.7 |

*For paediatric hospitals the unadjusted mortality is presented due to poor prediction in this population by the adjustment model

## Need for dialysis and intensive care

Hospitalised patients with AKI peak stage 2 or 3 were analyzed to calculate the proportion of patients requiring acute dialysis and ITU admission. We also present data on the length of ITU stay and the duration of dialysis in ITU.

Table 2.7 shows the number of inpatients requiring dialysis and ITU admission. This includes sub-analyses highlighting the percentage of patients in whom dialysis was initiated in the ITU, and the number of days in ITU with renal support (Dialysis). Detailed analysis of dialysis in ITU, such as incidence of patients admitted to ITU for dialysis due to lack of renal resources, number of patients in ITU on single organ support (dialysis) awaiting a renal bed could not be measured with the limited critical care data.

Of the 197,338 hospitalisations with AKI peak stage 2 or 3, 8.6% (16,923) required dialysis, 54% (9,178) of which took place on ITU. There were 31,595 (16.0%) of hospitalisations requiring ITU admission with a total of 365,940 days on ITU, 17.7% (64,833) of which involved dialysis.

**Table 2.7** Need for dialysis and ITU admission amongst hospitalisations with AKI peak stage 2 or 3 by hospital in 2024

| | | Dialysis | | ITU admission | | |
|---|---|---|---|---|---|---|
| Hospital | N hospitalisations with AKI peak stage 2 or 3 | N (% of total) | N (%) of dialysis taking place on ITU | N (% of total) | Total ITU days | % of total ITU days with dialysis |
| Airedale | 684 | 28 (4.1) | 19( 67.9) | 95 (13.9) | 714 | 8.3 |
| Alder Hey | 218 | 13 (6) | 0( 0) | 61 (28) | 563 | * |
| Ashford and St Peter's | 1,139 | 81 (7.1) | 66( 81.5) | 160 (14) | 2,043 | 19.6 |
| Barking, Havering and Redbridge Univ. | 1,951 | 139 (7.1) | 98( 70.5) | 428 (21.9) | 5,594 | 13.9 |
| Barnsley | 947 | 50 (5.3) | 44( 88) | 115 (12.1) | 1,258 | 18.0 |
| Barts | 3,117 | 539 (17.3) | 330( 61.2) | 965 (31) | 11,919 | 23.6 |
| Bedfordshire | 2,202 | 125 (5.7) | 102( 81.6) | 316 (14.4) | 2,295 | 23.1 |
| Blackpool | 1,556 | 90 (5.8) | 67( 74.4) | 273 (17.5) | 2,411 | 12.7 |
| Bolton | 1,129 | 59 (5.2) | 44( 74.6) | 162 (14.3) | 1,681 | 12.9 |
| Bradford | 1,306 | 161 (12.3) | 27( 16.8) | 148 (11.3) | 1,906 | 6.0 |
| Buckinghamshire | 1,151 | 74 (6.4) | 57( 77) | 169 (14.7) | 1,787 | 16.4 |
| Calderdale and Huddersfield | 506 | 24 (4.7) | 20( 83.3) | 39 (7.7) | 339 | 26.0 |
| Cambridge Univ. | 1,767 | 183 (10.4) | 103( 56.3) | 317 (17.9) | 4,027 | 21.4 |
| Chelsea and Westminster | 890 | 62 (7) | 49( 79) | 132 (14.8) | 2,494 | 12.1 |
| Chesterfield Royal | 1,162 | 42 (3.6) | 31( 73.8) | 137 (11.8) | 1,113 | 17.9 |
| Countess Of Chester | 1,101 | 48 (4.4) | 44( 91.7) | 163 (14.8) | 1,696 | 15.0 |
| County Durham and Darlington | 2,404 | 57 (2.4) | 52( 91.2) | 271 (11.3) | 1,798 | 14.9 |
| Croydon | 981 | 74 (7.5) | 50( 67.6) | 136 (13.9) | 1,738 | 20.1 |
| Dartford and Gravesham | 1,125 | 93 (8.3) | 61( 65.6) | 179 (15.9) | 1,648 | 20.8 |
| Doncaster and Bassetlaw | 1,925 | 130 (6.8) | 63( 48.5) | 191 (9.9) | 1,619 | 23.0 |
| Dorset County | 798 | 116 (14.5) | 43( 37.1) | 148 (18.5) | 1,070 | 23.0 |
| Dudley | 1,979 | 129 (6.5) | 50( 38.8) | 316 (16) | 2,707 | 7.9 |
| East and North Hertfordshire | 1,232 | 187 (15.2) | 29( 15.5) | 67 (5.4) | 547 | 22.5 |
| East Cheshire | 495 | 21 (4.2) | 8( 38.1) | 43 (8.7) | 234 | 16.2 |
| East Kent Hospitals Univ. | 2,269 | 179 (7.9) | 104( 58.1) | 302 (13.3) | 2,477 | 26.0 |
| East Lancashire | 2,006 | 69 (3.4) | 0( 0) | 0 (0) | - | - |
| East Suffolk and North Essex | 1,421 | 107 (7.5) | 50( 46.7) | 146 (10.3) | 1,050 | 16.7 |
| East Sussex | 1,572 | 64 (4.1) | 51( 79.7) | 167 (10.6) | 1,500 | 13.7 |
| Epsom and St Helier Univ. | 762 | 97 (12.7) | 39( 40.2) | 132 (17.3) | 1,222 | 14.6 |
| Frimley | 2,545 | 161 (6.3) | 122( 75.8) | 327 (12.8) | 3,289 | 28.3 |

| Hospital | N hospitalisations with AKI peak stage 2 or 3 | Dialysis | | ITU admission | | |
|---|---|---|---|---|---|---|
| | | N (% of total) | N (%) of dialysis taking place on ITU | N (% of total) | Total ITU days | % of total ITU days with dialysis |
| Gateshead | 1,046 | 40 (3.8) | 35( 87.5) | 165 (15.8) | 1,238 | 11.6 |
| George Eliot | 820 | 48 (5.9) | 27( 56.3) | 86 (10.5) | 699 | 17.5 |
| Gloucestershire | 2,078 | 179 (8.6) | 69( 38.6) | 212 (10.2) | 1,815 | 29.9 |
| Great Ormond Street | 339 | 23 (6.8) | 0( 0) | 169 (49.9) | 3,178 | * |
| Great Western | 1,321 | 63 (4.8) | 53( 84.1) | 157 (11.9) | 1,281 | 17.3 |
| Guy's and St.Thomas's | 2,433 | 633 (26) | 384( 60.7) | 1077 (44.3) | 23,124 | 18.9 |
| Hampshire | 1,551 | 71 (4.6) | 61( 85.9) | 238 (15.3) | 2,208 | 20.2 |
| Hampshire and Isle of Wight | 122 | 0 (0) | - | 0 (0) | - | - |
| Harrogate | 587 | 25 (4.3) | 20( 80) | 93 (15.8) | 856 | 8.6 |
| Hillingdon | 542 | 46 (8.5) | 42( 91.3) | 130 (24) | 1,412 | 15.3 |
| Homerton | 553 | 40 (7.2) | 24( 60) | 57 (10.3) | 463 | 24.0 |
| Hull Univ. | 2,332 | 107 (4.6) | 79( 73.8) | 261 (11.2) | 1,936 | 20.2 |
| Imperial College | 1,316 | 241 (18.3) | 110( 45.6) | 288 (21.9) | 4,456 | 28.2 |
| Isle Of Wight | 662 | 67 (10.1) | 53( 79.1) | 116 (17.5) | 777 | 25.4 |
| James Paget Univ. | 823 | 54 (6.6) | 28( 51.9) | 140 (17) | 1,169 | 11.3 |
| Kettering | 1,350 | 64 (4.7) | 48( 75) | 177 (13.1) | 1,473 | 22.9 |
| King's | 2,655 | 545 (20.5) | 327( 60) | 841 (31.7) | 17,066 | 23.0 |
| Kingston | 750 | 56 (7.5) | 39( 69.6) | 108 (14.4) | 1,035 | 17.6 |
| Lancashire | 1,898 | 232 (12.2) | 73( 31.5) | 293 (15.4) | 2,927 | 9.7 |
| Leeds Teaching Hospitals | 3,049 | 383 (12.6) | 206( 53.8) | 770 (25.3) | 7,695 | 16.8 |
| Lewisham and Greenwich | 1,809 | 106 (5.9) | 15( 14.2) | 295 (16.3) | 3,438 | 0.8 |
| Liverpool Univ. | 2,648 | 401 (15.1) | 253( 63.1) | 578 (21.8) | 6,299 | 27.5 |
| London North West Univ. | 2,164 | 230 (10.6) | 173( 75.2) | 436 (20.1) | 4,812 | 23.7 |
| Maidstone and Tunbridge Wells | 1,452 | 99 (6.8) | 77( 77.8) | 216 (14.9) | 2,649 | 18.7 |
| Manchester Univ. | 4,152 | 791 (19.1) | 358( 45.3) | 893 (21.5) | 16,336 | 25.8 |
| Medway | 1,339 | 68 (5.1) | 65( 95.6) | 271 (20.2) | 3,006 | 12.1 |
| Mersey and West Lancashire | 2,082 | 47 (2.3) | 39( 83) | 223 (10.7) | 2,219 | 8.2 |
| Mid and South Essex | 3,816 | 358 (9.4) | 228( 63.7) | 788 (20.6) | 7,671 | 13.7 |
| Mid Cheshire | 1,014 | 31 (3.1) | 19( 61.3) | 108 (10.7) | 716 | 14.5 |
| Mid Yorkshire | 2,291 | 70 (3.1) | 59( 84.3) | 227 (9.9) | 1,741 | 17.1 |
| Milton Keynes Univ. | 952 | 32 (3.4) | 12( 37.5) | 82 (8.6) | 798 | 1.5 |
| Newcastle Upon Tyne | 2,385 | 348 (14.6) | 170( 48.9) | 500 (21) | 6,685 | 22.5 |
| Norfolk and Norwich Univ. | 2,288 | 192 (8.4) | 62( 32.3) | 253 (11.1) | 2,546 | 10.5 |
| North Bristol | 1,919 | 201 (10.5) | 71( 35.3) | 391 (20.4) | 3,308 | 14.7 |
| North Cumbria | 1,286 | 90 (7) | 52( 57.8) | 116 (9) | 859 | 28.3 |
| North Middlesex Univ. | 695 | 63 (9.1) | 38( 60.3) | 134 (19.3) | 1,408 | 23.8 |
| North Tees and Hartlepool | 1,205 | 66 (5.5) | 51( 77.3) | 191 (15.9) | 1,413 | 20.1 |
| North West Anglia | 1,899 | 160 (8.4) | 0( 0) | 0 (0) | - | - |
| Northampton General | 1,056 | 96 (9.1) | 16( 16.7) | 120 (11.4) | 1,160 | 1.4 |
| Northern Care Alliance | 3,022 | 207 (6.9) | 112( 54.1) | 480 (15.9) | 5,974 | 10.7 |
| Northern Lincolnshire and Goole | 1,681 | 95 (5.7) | 80( 84.2) | 265 (15.8) | 2,495 | 18.7 |
| Northumbria | 1,839 | 86 (4.7) | 67( 77.9) | 226 (12.3) | 1,470 | 24.1 |
| Nottingham Univ. | 2,979 | 233 (7.8) | 105( 45.1) | 535 (18) | 5,911 | 9.1 |
| Oxford Univ. | 2,057 | 184 (9) | 81( 44) | 336 (16.3) | 3,382 | 15.7 |
| Portsmouth Univ. | 2,345 | 311 (13.3) | 98( 31.5) | 301 (12.8) | 3,245 | 18.2 |
| Princess Alexandra | 1,000 | 49 (4.9) | 35( 71.4) | 112 (11.2) | 886 | 17.5 |
| Queen Elizabeth King's Lynn | 892 | 53 (5.9) | 43( 81.1) | 133 (14.9) | 1,320 | 21.8 |
| Rotherham | 880 | 28 (3.2) | 18( 64.3) | 87 (9.9) | 731 | 14.8 |
| Royal Berkshire | 1,656 | 245 (14.8) | 82( 33.5) | 251 (15.2) | 2,583 | 3.3 |
| Royal Cornwall | 1,531 | 105 (6.9) | 63( 60) | 183 (12) | 1,524 | 26.4 |
| Royal Devon Univ. | 1,790 | 132 (7.4) | 45( 34.1) | 161 (9) | 1,165 | 20.2 |

| Hospital | N hospitalisations with AKI peak stage 2 or 3 | Dialysis | | ITU admission | | |
|---|---|---|---|---|---|---|
| | | N (% of total) | N (%) of dialysis taking place on ITU | N (% of total) | Total ITU days | % of total ITU days with dialysis |
| Royal Free | 1,884 | 309 (16.4) | 165( 53.4) | 457 (24.3) | 6,548 | 27.0 |
| Royal Marsden | 403 | 23 (5.7) | 20( 87) | 91 (22.6) | * | * |
| Royal Papworth | 385 | 120 (31.2) | 86( 71.7) | 187 (48.6) | 2,924 | 39.5 |
| Royal Surrey County | 807 | 52 (6.4) | 47( 90.4) | 141 (17.5) | 1,322 | 25.9 |
| Royal United Bath | 1,369 | 69 (5) | 57( 82.6) | 170 (12.4) | 1,261 | 16.5 |
| Royal Wolverhampton | 2,226 | 249 (11.2) | 95( 38.2) | 372 (16.7) | 3,680 | 16.6 |
| Salisbury | 762 | 25 (3.3) | 18( 72) | 75 (9.8) | 612 | 16.5 |
| Sandwell and West Birmingham | 1,352 | 137 (10.1) | 117( 85.4) | 293 (21.7) | 2,593 | 24.9 |
| Sheffield | 2,635 | 184 (7) | 94( 51.1) | 485 (18.4) | 4,745 | 17.3 |
| Sheffield Children's | 103 | 4 (3.9) | 0( 0) | 43 (41.7) | 1,516 | * |
| Sherwood Forest | 1,428 | 42 (2.9) | 6( 14.3) | 25 (1.8) | 177 | 9.6 |
| Shrewsbury and Telford | 2,041 | 149 (7.3) | 73( 49) | 244 (12) | 2,386 | 15.4 |
| Somerset | 2,331 | 79 (3.4) | 40( 50.6) | 186 (8) | 1,319 | 13.4 |
| South Tees | 2,349 | 201 (8.6) | 91( 45.3) | 414 (17.6) | 6,782 | 12.4 |
| South Tyneside and Sunderland | 2,153 | 135 (6.3) | 38( 28.2) | 254 (11.8) | 1,839 | 2.2 |
| South Warwickshire Univ. | 799 | 37 (4.6) | 34( 91.9) | 97 (12.1) | 720 | 22.8 |
| St George's Univ. | 1,517 | 225 (14.8) | 118( 52.4) | 460 (30.3) | 7,165 | 12.7 |
| Stockport | 1,014 | 40 (3.9) | 24( 60) | 147 (14.5) | 1,494 | 10.6 |
| Surrey and Sussex | 1,278 | 72 (5.6) | 0( 0) | 0 (0) | - | - |
| The Christie | 522 | 5 (1) | 0( 0) | 6 (1.1) | 36 | 0.0 |
| Torbay and South Devon | 982 | 42 (4.3) | 0( 0) | 0 (0) | - | - |
| United Lincolnshire | 2,458 | 138 (5.6) | 79( 57.3) | 261 (10.6) | 2,830 | 18.3 |
| Univ. College London | 935 | 75 (8) | 72( 96) | 287 (30.7) | 3,584 | 13.3 |
| Univ. Hospitals Birmingham | 4,413 | 567 (12.9) | 324( 57.1) | 835 (18.9) | 10,936 | 27.4 |
| Univ. Hospitals Bristol and Weston | 1,966 | 223 (11.3) | 145( 65) | 492 (25) | 7,964 | 16.5 |
| Univ. Hospitals Coventry and Warwickshire | 1,949 | 205 (10.5) | 51( 24.9) | 192 (9.9) | 2,109 | 14.7 |
| Univ. Hospitals Derby and Burton | 2,803 | 123 (4.4) | 106( 86.2) | 491 (17.5) | 4,202 | 10.2 |
| Univ. Hospitals Dorset | 2,250 | 77 (3.4) | 48( 62.3) | 233 (10.4) | 1,935 | 15.3 |
| Univ. Hospitals Leicester | 3,451 | 450 (13) | 217( 48.2) | 754 (21.8) | 7,803 | 15.3 |
| Univ. Hospitals Morecambe Bay | 1,374 | 67 (4.9) | 54( 80.6) | 184 (13.4) | 1,267 | 18.5 |
| Univ. Hospitals North Midlands | 3,446 | 206 (6) | 100( 48.5) | 519 (15.1) | 7,471 | 10.4 |
| Univ. Hospitals Plymouth | 1,946 | 207 (10.6) | 114( 55.1) | 290 (14.9) | 3,567 | 26.3 |
| Univ. Hospitals Southampton | 2,808 | 203 (7.2) | 157( 77.3) | 884 (31.5) | 14,105 | 8.3 |
| Univ. Hospitals Sussex | 2,187 | 308 (14.1) | 137( 44.5) | 415 (19) | 4,046 | 23.2 |
| Walsall | 1,168 | 58 (5) | 53( 91.4) | 157 (13.4) | 1,290 | 24.0 |
| Warrington and Halton | 862 | 51 (5.9) | 42( 82.4) | 156 (18.1) | 2,115 | 11.3 |
| West Suffolk | 1,103 | 63 (5.7) | 39( 61.9) | 101 (9.2) | 866 | 20.8 |
| Whittington | 466 | 29 (6.2) | 26( 89.7) | 87 (18.7) | 1,147 | 15.8 |
| Wirral Univ. | 1,052 | 43 (4.1) | 11( 25.6) | 71 (6.7) | 825 | 8.5 |
| Worcestershire | 1,893 | 111 (5.9) | 94( 84.7) | 203 (10.7) | 1,859 | 30.0 |
| Wrightington, Wigan and Leigh | 1,090 | 38 (3.5) | 31( 81.6) | 107 (9.8) | 770 | 13.1 |
| Wye Valley | 631 | 49 (7.8) | 38( 77.6) | 92 (14.6) | 765 | 17.6 |
| York and Scarborough | 2,056 | 137 (6.7) | 49( 35.8) | 262 (12.7) | 2,068 | 10.1 |

* Alder Hey, Great Ormond Street and Sheffield Children's show no dialysis on ITU as organ support on ITU is not recorded at paediatric trusts. Royal Marsden shows no ITU days due to discrepancies between organ support days and length of critical care stay.

## Accuracy of coding of hospital AKI episodes

For all 2024 AKI episodes in the MPI that were associated with hospitalisations (both CAH and HA, in emergency, elective or other admissions), the percentage of those that were coded in HES using the International Classification of Diseases diagnostic code for AKI (N17) was calculated for each hospital. Coding of peak AKI stages 1, 2 and 3 are presented in figures 2.6, 2.7 and 2.8, respectively.

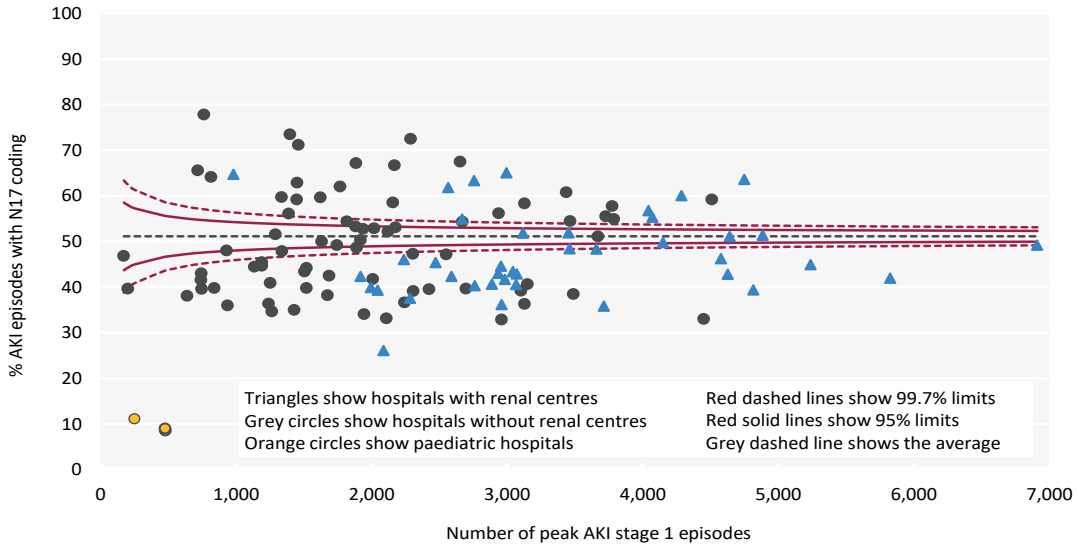


**Figure 2.6** Percentage of peak AKI stage 1 episodes in the Master Patient Index that were coded in Hospital Episode Statistics using N17 by hospital in 2024

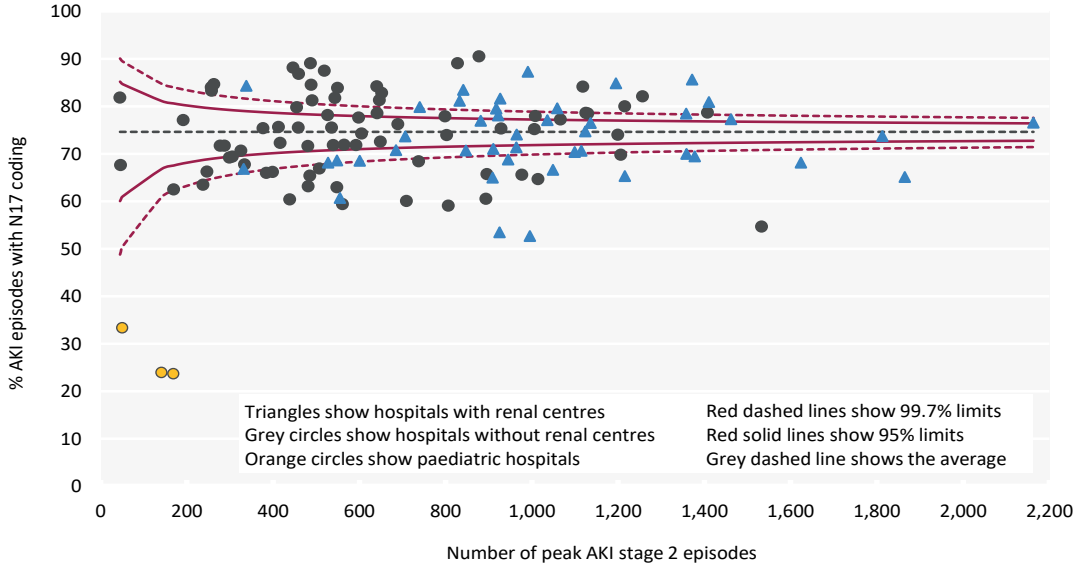


**Figure 2.7** Percentage of peak AKI stage 2 episodes in the Master Patient Index that were coded in Hospital Episode Statistics using N17 by hospital in 2024

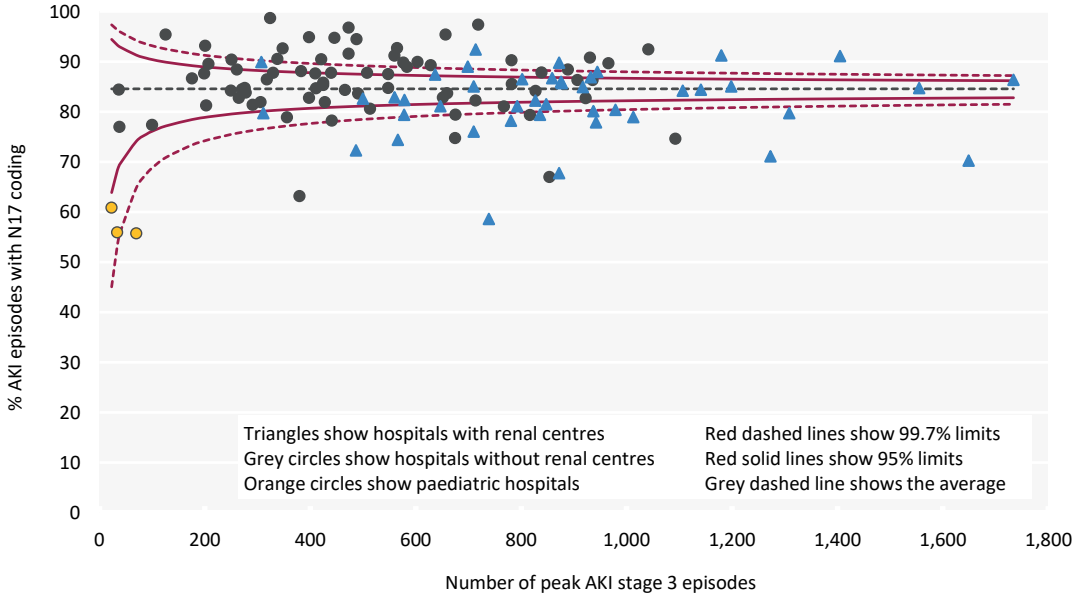


**Figure 2.8** Percentage of peak AKI stage 3 episodes in the Master Patient Index that were coded in Hospital Episode Statistics using N17 by hospital in 2024

HES coding was better the higher the stage of AKI and there was no clear difference between HES coding for renal and acute non-renal hospitals. Generally, HES coding for AKI was poor in paediatric hospitals. More information about coding accuracy by hospital is presented in table 2.8.

**Table 2.8** Correlation of AKI coding between UKRR and Hospital Episode Statistics (HES) – the percentage of peak AKI stage 1, 2 and 3 episodes in the Master Patient Index that were coded in HES using N17 by hospital in 2024

| | % coded by peak AKI stage | | |
|---|---|---|---|
| Hospital | AKI stage 1 | AKI stage 2 | AKI stage 3 |
| Airedale | 34.7 | 66.2 | 84.4 |
| Alder Hey | 9.0 | 23.9 | 55.9 |
| Ashford and St Peter's | 59.2 | 81.8 | 87.5 |
| Barking, Havering and Redbridge Univ. | 34.0 | 59.1 | 78.9 |
| Barnsley | 58.3 | 83.8 | 90.8 |
| Barts | 43.4 | 69.4 | 79.8 |
| Bedfordshire | 48.7 | 75.5 | 87.7 |
| Blackpool | 36.6 | 66.3 | 82.7 |
| Bolton | 54.4 | 79.8 | 92.4 |
| Bradford | 42.9 | 68.6 | 74.4 |
| Buckinghamshire | 38.2 | 60.4 | 80.6 |
| Calderdale and Huddersfield | 59.8 | 82.1 | 91.5 |
| Cambridge Univ. | 46.1 | 81.2 | 87.4 |
| Chelsea and Westminster | 45.4 | 71.7 | 86.7 |
| Chesterfield Royal | 36.3 | 60.0 | 74.6 |
| Countess Of Chester | 62.9 | 78.6 | 94.7 |
| County Durham and Darlington | 54.3 | 71.9 | 81.4 |
| Croydon | 41.8 | 69.2 | 84.5 |
| Dartford and Gravesham | 47.9 | 71.7 | 83.7 |
| Doncaster and Bassetlaw | 48.4 | 78.1 | 86.5 |
| Dorset County | 36.2 | 66.9 | 79.7 |
| Dudley | 43.0 | 71.0 | 81.1 |
| East and North Hertfordshire | 40.3 | 68.2 | 82.6 |
| East Cheshire | 60.8 | 84.0 | 86.4 |
| East Kent Hospitals Univ. | 44.6 | 74.7 | 87.9 |
| East Lancashire | 39.2 | 62.5 | 77.0 |
| East Suffolk and North Essex | 39.9 | 70.8 | 82.4 |
| East Sussex | 44.7 | 71.9 | 88.1 |
| Epsom and St Helier Univ. | 66.7 | 84.3 | 89.9 |
| Frimley | 57.8 | 81.2 | 90.5 |
| Gateshead | 47.3 | 74.3 | 84.2 |
| George Eliot | 95.4 | 97.3 | 98.7 |
| Gloucestershire | 45.4 | 71.4 | 81.5 |
| Great Ormond Street | 8.6 | 23.7 | 55.7 |
| Great Western | 50.0 | 70.7 | 86.3 |
| Guy's and St.Thomas's | 26.1 | 52.7 | 67.8 |
| Hampshire | 54.5 | 76.2 | 87.8 |
| Hampshire and Isle of Wight | 39.1 | 66.0 | 63.2 |
| Harrogate | 46.8 | 67.6 | 79.3 |
| Hillingdon | 67.5 | 81.8 | 88.4 |
| Homerton | 39.8 | 65.6 | 83.6 |
| Hull Univ. | 42.4 | 70.7 | 85.0 |
| Imperial College | 37.5 | 60.7 | 72.3 |
| Isle Of Wight | 33.2 | 68.4 | 89.6 |
| James Paget Univ. | 43.4 | 75.3 | 85.5 |
| Kettering | 62.1 | 77.9 | 91.2 |
| King's | 35.8 | 65.3 | 79.0 |
| Kingston | 49.2 | 74.0 | 87.7 |
| Lancashire | 64.7 | 89.5 | 92.4 |
| Leeds Teaching Hospitals | 63.4 | 77.3 | 85.1 |
| Lewisham and Greenwich | 39.7 | 63.5 | 81.2 |
| Liverpool Univ. | 51.8 | 84.9 | 84.2 |

| Hospital | % coded by peak AKI stage | | |
|---|---|---|---|
| | AKI stage 1 | AKI stage 2 | AKI stage 3 |
| London North West Univ. | 59.2 | 77.1 | 85.3 |
| Maidstone and Tunbridge Wells | 35.0 | 75.4 | 88.9 |
| Manchester Univ. | 42.8 | 65.1 | 70.2 |
| Medway | 50.3 | 81.3 | 90.4 |
| Mersey and West Lancashire | 55.5 | 82.8 | 89.5 |
| Mid and South Essex | 46.2 | 73.7 | 84.8 |
| Mid Cheshire | 65.6 | 89.1 | 95.4 |
| Mid Yorkshire | 53.1 | 78.0 | 90.2 |
| Midlands Partnership Univ. | 44.2 | 80.0 | 83.8 |
| Milton Keynes Univ. | 58.6 | 78.5 | 87.7 |
| Newcastle Upon Tyne | 49.2 | 70.4 | 79.4 |
| Norfolk and Norwich Univ. | 51.1 | 76.5 | 86.0 |
| North Bristol | 42.0 | 70.7 | 76.1 |
| North Cumbria | 40.7 | 68.6 | 82.9 |
| North Middlesex Univ. | 42.5 | 66.9 | 79.4 |
| North Tees and Hartlepool | 51.6 | 75.6 | 90.5 |
| North West Anglia | 52.8 | 72.6 | 82.2 |
| Northampton General | 47.1 | 75.2 | 84.7 |
| Northern Care Alliance | 61.8 | 80.9 | 91.3 |
| Northern Lincolnshire and Goole | 72.5 | 84.7 | 93.2 |
| Northumbria | 64.1 | 87.5 | 94.9 |
| Nottingham Univ. | 51.9 | 78.5 | 84.4 |
| Oxford Univ. | 39.3 | 68.8 | 82.2 |
| Portsmouth Univ. | 49.8 | 77.1 | 80.1 |
| Princess Alexandra | 39.5 | 63.0 | 81.9 |
| Queen Elizabeth King's Lynn | 33.0 | 54.7 | 74.7 |
| Rotherham | 56.1 | 84.6 | 95.4 |
| Royal Berkshire | 48.4 | 79.9 | 81.1 |
| Royal Cornwall | 93.4 | 97.6 | 98.7 |
| Royal Devon Univ. | 75.7 | 83.5 | 89.0 |
| Royal Free | 55.3 | 77.0 | 85.1 |
| Royal Marsden | 38.5 | 75.5 | 98.9 |
| Royal Papworth | 36.0 | 59.4 | 67.0 |
| Royal Surrey County | 67.2 | 90.5 | 97.4 |
| Royal United Bath | 51.1 | 72.3 | 78.2 |
| Royal Wolverhampton | 44.9 | 74.1 | 85.7 |
| Salisbury | 39.7 | 64.7 | 82.7 |
| Sandwell and West Birmingham | 52.2 | 78.7 | 89.2 |
| Sheffield | 40.6 | 70.0 | 86.9 |
| Sheffield Children's | 11.1 | 33.3 | 60.9 |
| Sherwood Forest | 66.7 | 89.0 | 96.8 |
| Shrewsbury and Telford | 65.1 | 79.5 | 89.8 |
| Somerset | 36.4 | 67.8 | 82.9 |
| South Tees | 39.4 | 66.6 | 77.9 |
| South Tyneside and Sunderland | 56.7 | 79.6 | 86.7 |
| South Warwickshire Univ. | 32.9 | 65.4 | 81.0 |
| St George's Univ. | 60.1 | 73.7 | 79.4 |
| Stockport | 52.9 | 77.2 | 86.3 |
| Surrey and Sussex | 56.1 | 83.3 | 87.6 |
| The Christie | 40.9 | 69.4 | 94.4 |
| Torbay and South Devon | 71.2 | 86.9 | 92.7 |
| United Lincolnshire | 53.3 | 78.5 | 88.4 |
| Univ. College London | 39.8 | 65.7 | 84.1 |

| Hospital | % coded by peak AKI stage | | |
|---|---|---|---|
| | AKI stage 1 | AKI stage 2 | AKI stage 3 |
| Univ. Hospitals Birmingham | 51.4 | 76.6 | 86.4 |
| Univ. Hospitals Bristol and Weston | 38.1 | 63.2 | 77.4 |
| Univ. Hospitals Coventry and Warwickshire | 41.7 | 65.0 | 78.2 |
| Univ. Hospitals Derby and Burton | 65.6 | 85.6 | 95.1 |
| Univ. Hospitals Dorset | 54.9 | 77.6 | 87.6 |
| Univ. Hospitals Leicester | 82.5 | 87.9 | 91.1 |
| Univ. Hospitals Morecambe Bay | 40.6 | 71.8 | 84.3 |
| Univ. Hospitals North Midlands | 55.0 | 68.2 | 71.1 |
| Univ. Hospitals Plymouth | 42.4 | 53.5 | 58.6 |
| Univ. Hospitals Southampton | 77.9 | 78.1 | 84.7 |
| Univ. Hospitals Sussex | 63.6 | 81.7 | 80.4 |
| Walsall | 41.6 | 71.7 | 82.7 |
| Warrington and Halton | 73.5 | 84.1 | 89.9 |
| West Suffolk | 48.0 | 88.1 | 89.8 |
| Whittington | 39.6 | 60.5 | 85.8 |
| Wirral Univ. | 85.1 | 91.8 | 93.4 |
| Worcestershire | 44.4 | 74.0 | 84.7 |
| Wrightington, Wigan and Leigh | 59.6 | 84.2 | 92.6 |
| Wye Valley | 43.0 | 69.8 | 81.9 |
| York and Scarborough | 75.3 | 87.3 | 93.8 |

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# Abbreviations

| | |
|---|---|
| AKI | Acute Kidney Injury |
| CA | Community acquired, never hospitalised |
| CAH | Community acquired, subsequently hospitalised |
| CKD | Chronic kidney disease |
| GIRFT | Getting It Right First Time |
| HA | Hospital acquired |
| HES | Hospital Episode Statistics |
| ICB | Integrated Care Board |
| IMD | Index of Multiple Deprivation |
| IQR | Interquartile range |
| ITU | Intensive Treatment Unit |
| KDIGO | Kidney Disease: Improving Global Outcomes |
| LOS | length of stay |
| MPI | Master Patient Index |
| NHSE | NHS England |
| pmp | per million population |
| UKKA | UK Kidney Association |
| UKRR | UK Renal Registry |

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