

Acute kidney injury identification: use of electronic AKI alerts versus electronic health records in Hospital Episode Statistics

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Background and Aims: Acute kidney injury (AKI) refers to an abrupt decline in the glomerular filtration rate (GFR) which may be associated with significant morbidity and mortality. Since April 2015, an automated real-time electronic alert system for AKI has been introduced and progressively implemented in England, with alert data being sent to the UK Renal Registry (UKRR) for collection into a master patient index (MPI). Historically, the only way to routinely measure AKI incidence in hospital was to analyse the Hospital Episode Statistics (HES). The introduction of the MPI allows for the first time a comparison between warning-test score defined AKI and clinical coding. This project aims to determine whether episodes of AKI identified in the UKRR MPI correspond to coded diagnoses on the discharge record held in HES.

Method: The UKRR MPI of all AKI electronic alerts (AKI stages 1, 2 and 3) in patients ≥ 18 years of age, between 01/01/2017 and 31/12/2017 were linked to HES data to identify a hospitalised AKI population. Descriptive analyses were conducted to describe the demographics and to investigate whether those with electronic AKI alert also had an International Classification of Diseases (ICD)-10 code for AKI (N17) in HES.

Results: From 01/01/2017 to 31/12/2017, 301,504 hospitalised adults received an AKI electronic alert. AKI severity was positively associated with the percentage of AKI alerts which were coded in HES. There was also a significant variation in HES coding between hospitals, but generally, variation was most pronounced for AKI stage 1, with a mean of 48.2% [SD 14], versus AKI stage 3, with a mean of 83.3% [SD 7.3] (figure 1). There was an inverse trend with age in that younger adults AKI staging warning scores were less often coded in HES and this was true for all the three AKI stages (33% of AKI episodes coded in HES for people aged 18-29 versus 64% for people ≥ 85 years old) (Table 1).

Conclusion: In 2017, earlier stages AKI warning scores were poorly coded in HES. There was also high degree of inter-hospital variability, particularly for AKI warning score 1, reflecting potentially poor clinical recognition and documentation in medical records and subsequent clinical coding. AKI warning scores were poorly captured in HES for younger adults in comparison to those of older age; reasons for which need to be identified. Use of HES to identify cases of AKI is likely to underestimate the incidence of AKI, especially for AKI stage 1, though a high proportion of the most severe cases will be captured.