

Inpatient Electronic AKI Reports: Do they improve clinical outcomes?

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Introduction: Electronic Acute Kidney Injury (AKI) reports within patient's electronic patient record (EPR) have been developed in recent years following the 2009 NCEPOD report of patients dying with a primary diagnosis of AKI.

At the time of this report, AKI Stage 2 and 3 mortality rates were reported to be higher than 30%. One third of AKI cases occurred after admission (Hospital Acquired AKI) and over 20% of these were thought to be preventable. The introduction of an algorithm generated, electronic AKI report that alerted clinicians to the diagnosis and subsequent treatment measures, was designed to improve clinical outcomes in these patients.

We investigated the clinical outcomes of patients in which the algorithm generated an AKI report for AKI stages 2 and 3 in a London NHS Trust that serves a population of approximately 500,000.

Methods: Inpatient AKI reports from 1st January to 31st December 2018 formed the dataset for this study. If a patient had several admissions with AKI, only the most severe was included in the analysis. The EPR was used to determine admission and discharge dates and date of death. Renal specific software was used to determine whether the patient received Acute Haemodialysis (Acute HD). CVVHF in ITU was not considered. Mortality was defined as death within 90 days of AKI episode. Hospital Acquired AKI was defined as the development of AKI Stage 2 or 3 occurring more than 48hrs after admission. Length of stay was determined using the date of AKI episode and the date of discharge or death.

Results: Over the 12-month period investigated, 968 Inpatients were identified as having AKI Stage 2 or 3. The median age 77 was and 50.4% were male.

Overall, 43.1% of patients died within 90 days of the AKI episode. 12.1% of patients had Acute HD.

Interestingly, mortality of those who did have Acute HD was similar to those who did not (44.4% compared to 45.2% respectively).

As expected, more cases were 'Community Acquired' (70.8%) compared with those defined as 'Hospital Acquired' (29.2%).

However, mortality was higher in patients with Hospital Acquired AKI (56.9% compared to 37.4%, $P < 0.001$). Similar numbers of patients with Hospital and Community Acquired AKI had Acute HD (11% and 12.6% respectively).

The overall mean length of stay was 13 days. However, the length of stay for patients with Hospital Acquired AKI was longer at 17.5 days compared with 10.5 days for those with Community Acquired AKI ($P < 0.0005$).

Discussion: Despite the introduction of electronic AKI reports, patients with severe AKI continue to have a high mortality. This is especially true in patients with Hospital Acquired AKI, the patient group in which it was hoped would get the most benefit.

Although AKI reporting may increase awareness of the condition, it does not seem to have improved clinical outcomes compared to those reported in the UK before AKI reporting was introduced.

It may be that to truly improve outcomes in AKI, investment is required to adequately respond to these alerts, potentially via a designated 'AKI Team'.