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P060-Impact of acute kidney injury electronic alerts and use of ‘sick day rules’ on patient outcomes: an observational cohort study.

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Introduction:

Electronic alerts (e-alerts) for AKI have been implemented throughout the United Kingdom with the aim of facilitating earlier detection, but their effect on patient outcomes is uncertain. ‘Sick day rules’ have also been implemented in some areas with the theory that they may reduce AKI rates but there are concerns that discontinuation of these medicines may in fact lead to adverse outcomes by increasing the risk of decompensated heart failure. The aim of this study was to assess the impact of AKI e-alerts and the use of ‘sick day rules’ on patient outcomes by examining whether their introduction affected rates and severity of AKI, mortality, length of hospital stay and the rate of admissions with heart failure as an unintended consequence.

Methods:

The National Health Service (NHS) AKI e-alert algorithm and use of ‘sick day rules’ were introduced in April 2015 in NHS Tayside for all patients in primary and secondary care with an accompanying hospital wide education programme. All adults aged over 18 years who had a blood test or were admitted to hospital in NHS Tayside between 1st April 2013 and 31st March 2017 were included in this study. Data were linked between the following datasets: Scottish Morbidity Record of hospital admissions (SMR01); laboratory results and the Scottish Renal Registry (SRR). AKI was defined using the Kidney Disease Improving Global Outcomes criteria. Study design was an interrupted time series with segmented regression analysis using 25 monthly time points before and 23 monthly time points after the interventions.

Results:

There were 32,320 separate episodes of AKI during the observation period. Of these, 21,712 (67.2%) were stage 1 AKI; 4880 (15.1%) were stage 2 AKI and 5728 (17.7%) were stage 3 AKI. The mean number of AKI episodes per month was 673 + 41. Implementation of e-alerts and the use ‘sick day rules’ had no effect on the rate of AKI (incidence rate ratio [IRR] 1.0, 95% CI 0.99 to 1.0, p=0.09, figure 1). There was no change in the severity of AKI (IRR for stage 2 and 3 AKI; 0.99, 95% CI 0.99 to 1.0, p=0.06) and no improvement in 90-day mortality following AKI (IRR 1.0, 95% CI 0.99 to 1.01, p=0.81). There was a reduction in bed days per patient per month for patients with AKI following the implementation of e-alerts (β-coefficient -0.06, 95% CI -0.09 to -0.02). There was no increase in the number of admissions with heart failure (IRR 1.0, 95% CI 0.99-1.01, p=0.64).

Conclusions:

Introduction of automated AKI e-alerts and the use of ‘sick day rules’ with an accompanying education programme had no impact of the rate and severity of AKI or on the mortality associated with AKI but there was a slight reduction in hospital length of stay. The use of ‘sick day rules’ was not associated with an

increase in the number of admissions with heart failure. Further work evaluating the effect of e-alerts with defined interventions is required before widespread implementation is recommended.