

The Effect of a Critical Care Outreach Service Intervention on Patient Outcomes in the Management of Acute Kidney Injury (AKI) in Hospital

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Introduction

IMPACT OF AKI

In the UK, AKI was estimated to cost the National Health Service in excess of £1 billion per year (Kerr et al. 2014)
20% of post-admission AKIs were avoidable and only 50% of AKI care was considered 'good' (NCEPOD, 2009)
Patients with co-morbidities, on nephrotoxic drugs who are older are at high risk for developing AKI
AKI is associated with increased length of hospital stay and developing permanent chronic kidney disease

AKI is defined as an increase in creatinine by 26.5 $\mu\text{mol/l}$ within 48 hours; or increase in creatinine to 1.5 times from baseline, which is known or presumed to have occurred within the previous seven days; or urine volume of less than 0.5 ml/kg/h for more than six hours (KDIGO, 2012)

Multicentre studies in the United States (US) report rates up to 7% of all hospital admissions (Nash et al. 2002; Liangos et al. 2006) and affects up to 20% of patients in intensive care units (Needham, 2005). UK studies report similar figures of approximately 20% of hospital admissions being attributed to AKI (Selby et al. 2012a; Bedford et al. 2014).

NICE (2013) report overall in-patient mortality in the UK to be 20-30 %

Aim

The aim of the project has been to try to improve recognition, care and outcomes of patients identified as having an AKI within our hospital. To date this has been a passive role. Following completion of phase three it was felt that this should be developed further to become an active role.

The objectives of the study are to determine if review by the CCOS in patients with AKI has an impact on 4 key areas:

- 1) 30 day mortality from time of alert,
- 2) Rates of Critical Care admission,
- 3) Need for RRT,
- 4) Length of hospital stay.

Method

This service evaluation aimed to evaluate the effect of an automated AKI alert system, an AKI Care Bundle sticker along with early review by the Critical Care Outreach Service on patient outcomes with AKI in hospital.

A retrospective quantitative approach was used

A note trawl was carried out for patients who had been identified as having an AKI as per

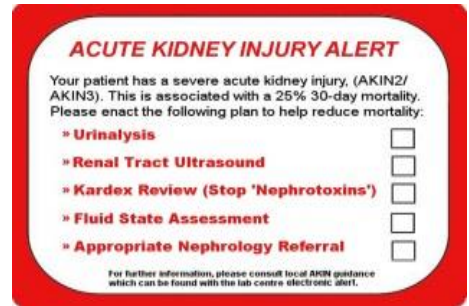
Kidney Disease Improving Global Outcomes guidelines and who subsequently were reviewed by the CCOS

The study period was from 14 January 2016 until 23 July 2016 .

35 patients with AKI 2 or 3 who were reviewed by the CCOS were included

There have been three phases to the project to date:

- **Phase 1:** This involved the addition of the AKIN E-alert to the bottom of laboratory results
- **Phase 2:** Involved the AKIN E-alert accompanied by the addition of a telephone alert by biomedical laboratory staff if the patient has an AKIN 3
- **Phase 3:** AKIN E-alert, telephone alert by biomedical laboratory staff for AKIN 3 and the implementation of the AKI care bundle sticker being placed in the patients' medical notes



Conclusions & Discussions

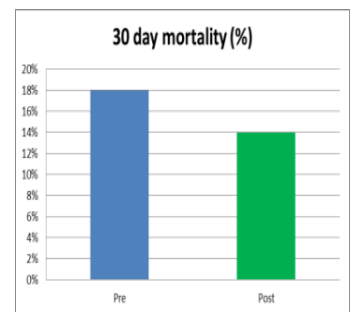
AKI management requires early identification and appropriate intervention to improve patient outcomes

NICE (2013) highlight that those with heart failure, diabetes and chronic kidney disease are at increased risk of developing AKI. This study supports this finding with cardiovascular disease being the most common pre-existing medical condition, present in 57% (n=20) of those patients who developed AKI in this study. This is followed by diabetes in 31% (n=11) of patients and Chronic Kidney Disease in 23% (n=8) of patients.

AKI E-alert along with an AKI care bundle sticker and review by CCOS have made an improvement in patient mortality

It is unclear whether the findings of this study with CCOS nurse review in addition to E-alerts and an AKI care bundle sticker have led to improved mortality. It highlights that this is an area that requires considerably more research at a much greater level of depth than this study was able to provide.

The length of time from alert to death is over double than previous to the CCOS role



Results

- Mortality at 30 days in this study was reported to be 14% at 30 days compared with 18% in the previous phases
- No Critical Care admissions or need for RRT
- Length of hospital stay increased from 19 to 20 days
- Number of days until death in those that died following AKI alert increased from 7.71 days to 16.6 days

Recommendations

include:

- Dissemination of findings
- Need for further research on the outcomes of this group of patients to determine if the reduction in mortality was statistically significant
- Improvement in the electronic alert system
- Educational needs have been identified and highlighted to the Nephrology Service
- Development of the role of CCOS in AKI management or the development of Specialist AKI nurse .

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