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17.15 Implementation of a Bedside ICU Visual Clinical Decision Support Tool Reduces Acute Kidney Injury

Posted on **JANUARY 31, 2019**

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Introduction:

Acute kidney injury (AKI) is a secondary insult in critical illness commonly associated with an increase in morbidity and mortality. Analyzing and determining the onset and extent of AKI remains challenging. We hypothesized that the use of a visual clinical decision support tool with validated staging and recognition for AKI may be helpful in identifying patients transitioning into different stages of injury severity.

Methods:

A commercially available bedside clinical surveillance and decision support dashboard system was implemented in 12 of the 34 beds in a surgical intensive care unit (SICU) at an academic level I trauma center. An automated AKI bundle based on the Kidney Disease: Improve Global Outcomes (KDIGO) criteria stages was utilized to aid in identification of patients in various AKI stages. A pre-and-post analysis was performed on patients in SICU beds with (WDB) and without the dashboard (WODB) to assess the impact of the bundle in identification of patients with AKI and minimization of ongoing renal dysfunction. Data five months prior to and fourteen months after implementation were compared. Patients with known chronic or end-stage renal disease were excluded.

Results:

A total of 2813 patients were included: 988 WDB patients and 1825 WODB patients.

Age and gender were similar in each group both before and after implementation. Overall AKI incidence was reduced in the WDB group after implementation (28.8% vs. 22.4%, pre vs. post; $p=0.04$). Individual KDIGO stages of AKI were reduced in WDB post-implementation, but none were statistically significant. By contrast, in the WODB group there were no differences in overall AKI incidence or individual KDIGO stages when comparing before and after implementation. ICU and hospital lengths of stay (LOS) were similar in all patients and on subgroup analysis between individual KDIGO stages. No difference in mortality was demonstrated between WDB and WODB cohorts.

Conclusion:

Implementation of a bedside visual clinical decision support tool was associated with a statistically significant decrease in overall AKI incidence in patients with the bedside dashboard. We did not find a difference in LOS or mortality, but this initial retrospective study may be underpowered to detect these changes. Nevertheless, integration of an AKI bundle within this tool in SICU patients may increase clinician's identification of AKI in real time and facilitate implementation of therapies to improve quality of care.