Evidence-Based Electronic Alert Best Practice Leads to Measurably Improved Acute Kidney Injury Care in India

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Acute kidney injury (AKI) is an episode of sudden onset kidney failure, that can be reversible, if identified and treated early. AKI is characterized by a sudden decrease in kidney function over hours or days, resulting in the accumulation of creatinine, urea, and other waste products. AKI can be a common complication for inpatients receiving critical care and left untreated, can be deadly. It is estimated that up to 50% of AKI episodes do not get diagnosed due in part to patient demographic factors and the confounding effects of physiologic changes associated with critical illnesses on the primary biomarker of AKI diagnosis: serum creatinine.

Early identification of AKI can enable treatment, thus, mitigating potential long-term health effects, mortality, and associated care costs for patients who suffer AKI. With this in mind, the Biochemistry & Immunology department at Kokilaben Dhirubhai Ambani Hospital and Medical Research (KDAH) sought to improve recognition of AKI within their institution. With key leadership within Nephrology, Laboratory Medicine, and Hospital Administration, this integrated clinical care team implemented evidence-based e-alerts for AKI. Their solution involved the creation of an automated electronic alert system using the laboratory information system (LIS) to run an evidence based (KDIGO criteria) algorithm with the results of creatinine tests. This algorithm automatically compares the current creatinine result to previous results for patient > 18 years of age with a baseline serum creatinine less than 4 ml/dL. If the change in creatinine level meets the alert threshold, as dictated by KDIGO guidelines, the algorithm generates an alert to inform physicians of the potential of AKI diagnosis for that patient.

RECOGNITION
by 3 global laboratory medicine
award programs

INCREASED IDENTIFICATION
of Acute Kidney Injury (AKI)
by 59.8% over baseline.

"Elegant example of an old laboratory test with new data analytics that **IMPROVES PATIENT CARE**."
Judge Commentary

Critical to the success of the clinical care initiative was the engagement of physicians. The program engaged clinicians early as partners and provided extensive education about the algorithm and the benefits of the alert generated when appropriate. The partnership and education increased clinician compliance with the new best practice protocol and consequently improved recognition of AKI. Within 45 days of implementation, over 4400 patients met inclusion criteria for the algorithm, with alerts generated for 214 patients with possible AKI. This represents a 59.8% increase in recognition of AKI and further enables rapid treatment and improved outcomes for patients.

Improved recognition and treatment weren't the only benefits. Dr. Santosh S Shetty, CEO & Executive Director, KDAH notes that "with early detection of AKI via the E-Alert System, we are certain that the burdening costs associated with AKI will depreciate. Our game-changing alert system's ability to detect, monitor, and prevent progression of AKI to life-threatening stages, in the early stages of the disease cycle, reliance on costly and debilitating interventions is avoided."

The AKI alert system had a profound impact on both treating physicians and the health system. Notably, the e-alert system is seen as a tool for decision related to improving patient care and subsequently improving outcomes. Dr. Kiran Shetty, Consultant Intensivist, ICU in Charge, remarks that "the AKI alert also contributes to the assessment of drug-dosage modifications, informing primary consultants on early identification of AKI, and potential necessary action." Further, the initiatives impressive outcomes and improvement received recognition by the Global Investigator Award in Laboratory Medicine Exhibition (LMCE) and at the 62nd Korean Society of Laboratory Medicine. Most recently, the AKI e-alert initiative and its innovative leaders were recently recognized through the 2021 UNIVANTS of Healthcare Excellence Award Program, recognition of Achievement.

THREE KEY TAKEAWAYS:

- Early and reliable recognition of AKI in hospitalized patients can enable treatment changes that improve patient outcomes and mitigate potential chronic renal complications.
- Creating analytic data algorithms following evidence-based guidelines to create an electronic alert can improve early recognition of acute disease incidence and decrease morbidity and mortality.
- Widespread education and early stakeholder engagement drives clinical adoption.

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