Abstract Submission No. : 9157
May 28(Sat), 10:40-12:40 Future Medicine

Building Risk Prediction Models in Acute Kidney Injury

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Acute kidney injury is a common complication that affects up to 5-7.5% of total admitted patients and 20% of patients in the intensive care unit (ICU). These numbers increase especially after surgery, and post-operative AKI affects up to 40% of admitted patients. Patients with AKI are known to have increased morbidity & in-hospital mortality and increased mortality risk of approximately 15-fold, therefore making AKI a major medical burden. Artificial intelligence (AI) in medicine is the use of computer software and machine algorithms to mimic human cognition in the processing of vast amounts of data. AI has been used to predict AKI in various risk prediction models. Previously using baseline data to predict AKI risk, with recent models that predict AKI in real-time using data during hospital admission, therefore improving the performance of models. There are many artificial models that predict AKI in various settings such as post-operation (cardiovascular and non-cardiovascular), intensive care unit, post-contrast dye exposure, and post-chemotherapy. Also, recent models have been incorporated into alert systems and decision support tools, making them easier for clinical use. These tools have improved patient outcomes and are constantly evolving. This lecture will describe developed tools and discuss their limitations and expectations.