RISK FACTORS OF ACUTE KIDNEY INJURY IN CRITICALLY ILL CHILDREN
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Introduction: Acute kidney injury (AKI) is a common adverse event in hospitalized patients and is associated with increased mortality, morbidity and resource use. AKI may be promoted by critical illness, pre-existing medical conditions and treatments received both before and during intensive care unit (ICU) admission. Previous studies evaluating risk factors for AKI in children have been limited by a focus on specific patient populations and by small sample sizes.

Objectives: We aimed to estimate the incidence of paediatric AKI occurring during ICU treatment and to determine what factors were associated with the development of AKI occurring during ICU admission.

Methods: We performed an analysis of electronic health data of a cohort of critically ill children. Eligible ICU admissions were the first ICU admission at The Hospital for Sick Children (HSC) between January 2006 and June 2009. Patients were excluded if they met any of the following criteria: less than two weeks of age; admitted with known primary renal failure, post-renal transplant, chronic renal failure, drug overdose, tumor lysis syndrome, haemolytic uraemic syndrome, or metabolic conditions treated with dialysis (e.g. methylmalonic acidemia, urea cycle defect); or an ICU stay less than six hours. We also excluded patients with no creatinine or urine output measurements during their ICU admission and all subsequent ICU admissions. Patients were classified as having AKI according to the RIFLE criteria and possible risk factors of AKI were assessed until the development of AKI or death or discharge from the ICU. The association between risk factors and AKI was assessed through bivariate and multivariable logistic regression.

Results: 3 865 paediatric patients met inclusion criteria; 915 (23.7%) developed AKI during their ICU stay. Patients at high risk for development of AKI included those urgently admitted to the ICU, those who developed respiratory dysfunction and those treated with extracorporeal membrane oxygenation (ECMO). Administration of radiologic contrast was associated with lower rates of AKI. The single greatest risk factor for AKI was the administration of nephrotoxic medications during ICU admission.

References: Not applicable.