

## A paediatric AKI service: Improving recognition and reducing incidence

Miss Alecia Gillett<sup>1</sup>, Dr Grace McCall<sup>1</sup>, Mr Deryn Waring<sup>1</sup>, Mr Prasanna Hanumapura<sup>1</sup>, Dr Christopher Chaloner<sup>1</sup>, Dr Lesley Tetlow<sup>1</sup>, Dr Amrit Kaur<sup>1</sup>, Dr Dean Wallace<sup>1</sup>, Dr Nicholas Plant<sup>1</sup>, Dr Mohan Shenoy<sup>1</sup>, Professor Rachel Lennon<sup>1</sup>

<sup>1</sup>Manchester Foundation Trust, Manchester, United Kingdom

### Introduction:

Paediatric acute kidney injury (AKI) is common, harmful but mostly treatable.<sup>1</sup> Early recognition and management have reduced morbidity and length of hospital stay. AKI is associated with the development of CKD and early intervention is important in order to prevent irreversible loss of renal function.<sup>2 3</sup> Whilst adult AKI networks are well established within the UK, paediatric AKI services are behind. We aimed to improve recognition and reduce the incidence of AKI by creating an AKI service.

### Methods:

We appointed an AKI nurse specialist in paediatrics in order to enable an AKI intervention service and this went live in June 2018. The pre-service incidence of AKI was obtained via retrospective analysis of clinical notes and AKI e-alerts over a 6-month period (July-December 17). This was compared with prospective monthly AKI data (July-December 18), to determine the true incidence of AKI. An AKI survey was distributed to medical, nursing and pharmacy staff in order to ascertain knowledge of AKI. The service was introduced to ward-based specialties with regular teaching sessions. Paediatric AKI guidelines were updated, approved and disseminated across the hospital. All patients identified with AKI on our e-alert system received specialist nurse input focusing specifically on AKI detection, fluid assessment, medication review and adherence to AKI priority care. We created an AKI algorithm, iNFORM (identify, nephrotoxics, fluids, output, refer, measurement) and a paediatric priority care checklist (PCC) was developed. Visual aids were implemented including the use of iNFORM templates for clinical notes and the recording of an AKI VLOG.

### Results

Total elective and emergency admissions were as follows; July-Dec 17 (n=10,877) and July-Dec 18 (n=11,069). The monthly mean incidence of AKI fell from 4.3% to 3.3%. When comparing retrospective baseline data (n=462) with prospective data (n=362) there was a relative 22% overall reduction. Of those identified with AKI, the median length of hospital stay fell by 50%. Total number of AKI hospital days and hospital acquired AKI cases fell by 48% and 34% respectively. Mean AKI stages fell from baseline as follows; stage 1, -22%, stage 2, -20%, stage 3 -20%. Pre AKI nurse review, stage 1 AKI was least well recognized, however may be partly accounted for by low serum creatinine values and changes. Prospectively, 50% of patients had a documented AKI medication review with 70% of patients having documented adherence to the nine step PCC. Initial staff knowledge of AKI was limited with 50% correctly defining AKI as per KDIGO. Of those surveyed (n=111), 12% reported confidence in managing AKI whilst 95% failed to correctly identify commonly prescribed nephrotoxic agents and medications requiring renal dose adjustment.

### Discussion

We identified incomplete recognition and treatment of paediatric AKI in paediatric inpatients. Following the implementation of a dedicated AKI service we found a reduction in incidence of AKI, length of hospital stay and number of AKI days. Nephrotoxic medication review and education needs to be prioritised to further reduce AKI incidence. Future plans include creating an allied work stream with our pharmacists and developing AKI link nurses and AKI champions.