**BACKGROUND**

- Fluid overload (FO) is common among critically ill children and associated with prolonged mechanical ventilation (MV), longer ICU stays, need for continuous renal replacement therapy (CRRT), and higher risk of mortality.
- Optimal management of FO remains unclear.
- Current literature is lacking in recommended diuretic administration (agent, dose, route, frequency) to critically ill children with FO.
- The relationship between diuretic exposure and progression to CRRT is not well documented in this patient population.
- This is the largest study to date with individual level data regarding diuretic exposure in critically ill children with FO that progress to CRRT.

**OBJECTIVE**

To describe and characterize diuretic exposure in children with FO who progress to CRRT.

**METHODS**

- **Design:** Single center retrospective cohort study of patients admitted to a general pediatric ICU in a large academic children’s hospital.
- **Inclusion criteria:** Patients who received CRRT for a primary indication of FO as determined by comparison to admission weight, MV dependence, oliguria and/or clinical exam.
- **Exclusion criteria:** Patients on chronic dialysis at baseline.
- **Data collection:** Charts were manually reviewed for all variables.
- **Exposure:** Diuretic exposure was calculated as mg/kg/day for each class.
- **Outcomes:** Time to CRRT, percent FO at CRRT initiation, hospital length of stay, and mortality.
- **Data analysis:** Clinical outcomes were compared between groups of patients above and below the median loop diuretic dose, as modeled in furosemide equivalents, using Wilcoxon rank sum or Pearson’s chi-squared tests as appropriate.

**RESULTS**

- Patients with ≤2 mg/kg/day of loop diuretic exposure during ICU stay had significantly fewer days to initiation of CRRT than those with >2 mg/kg/day loop diuretic exposure (median 2 vs 5 days, p=0.006).
- There was no difference between loop diuretic exposure across groups in terms of percent FO at CRRT initiation, hospital length of stay, or mortality.

**CONCLUSION**

This the largest descriptive analysis of diuretic use in pediatric patients requiring CRRT to date.

- Diuretic exposure is variable in critically ill children, and more diuretic use may be associated with delayed initiation of CRRT.
- Multicenter, prospective studies are necessary to determine optimal timing and dosing of diuretic therapy to mitigate adverse outcomes associated with fluid overload.