

Background

- Protein and energy underfeeding is common in critically ill children and exacerbated in patients with acute kidney injury (AKI).¹
- Conservative management of oligoanuric AKI requiring fluid restrictions, often limits optimal delivery of nutrition.
- In our institution, the ability to provide adequate nutrition is a frequent indication for starting continuous renal replacement therapy (CRRT) in our pediatric intensive care unit (PICU).
- Habitual practices of restricting protein provision in AKI and slow advancement of caloric intake, even with parenteral nutrition remain very common.
- Protein requirements are significantly increased in patients receiving CRRT due to losses through the dialyzer membrane.²⁻⁴

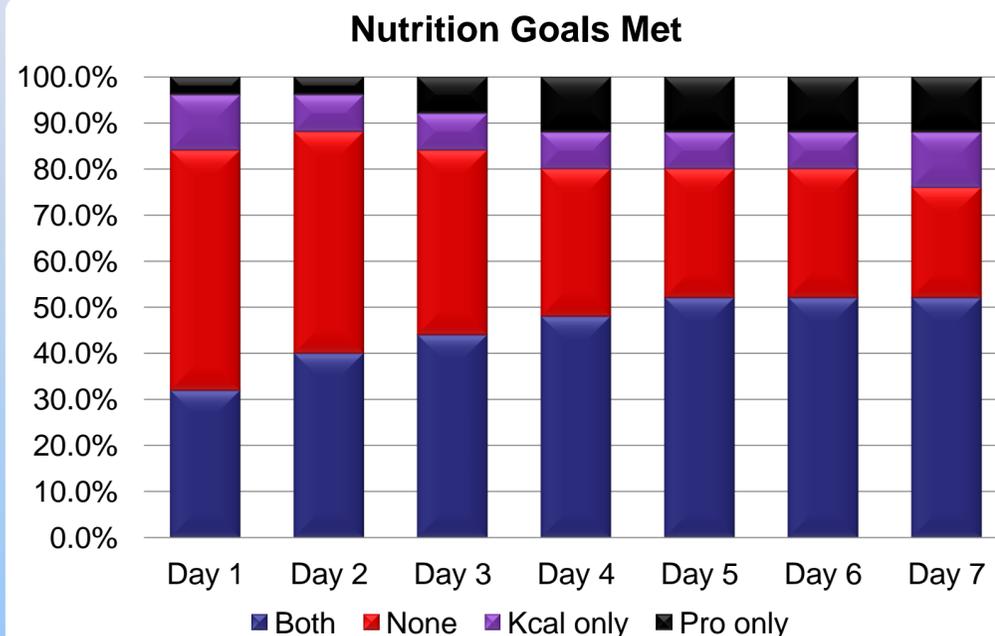
Objectives

- We hypothesized that despite recent PICU-wide education incentives aiming to optimize nutrition intake, patients on CRRT are still underfed.

Methods

- Retrospective review of the electronic medical record of patients receiving CRRT in our PICU over the last 6 months.
- Indications for treatment were clearance and fluid removal.
- Patients with inborn errors of metabolism who have altered nutritional requirements were excluded.
- Patients' energy and protein intake (enteral and parenteral combined) within 48 hours of starting CRRT were reviewed for 7 consecutive days and compared to institutional recommendations.
- All received CRRT via dedicated stand-alone machines in the continuous venovenous hemodiafiltration mode (CVVHDF) except 2 patients who received modified CRRT through an extracorporeal circuit.
- N=25; Mean age: 6.2 years ± 6.5 (range:newborn-18 years); 16 female, 9 male

Results



| Primary Admit Diagnosis | Total | Goal @ Day 2 |
|------------------------------|-------|--------------|
| Liver | 9 | 3 |
| Renal | 6 | 4 |
| Hem/Onc/Stem cell transplant | 3 | 1 |
| Cardiac | 2 | 1 |
| Infectious | 2 | 1 |
| Other | 3 | 0 |

- 40% met both calorie and protein goals within 48 hours of initiation.
- 45.5% received adequate energy intake within 48 hours of initiation.
 - 64% met goal energy intake by 7 days of CRRT initiation with a range of 1-7 days.
- 45.5% received adequate protein intake within 48 hours of initiation.
 - 64% met goal protein intake by 7 days of CRRT initiation with a range of 1-5 days.
- 48% of patients never met both calorie and protein goals by day 7.
 - 1 patient was never fed.
- 92% were fed parenterally; of those, 13% (3 patients) were also fed enterally. 8% (2 patients) were fed orally.
- 5 patients were malnourished by anthropometric criteria at the start of CRRT; adjusted for fluid overload.
- 17 patients had >10% fluid overload at initiation of CRRT.
- CRRT was stopped within 7 days for 8 patients. 2 of which expired and 1 withdraw of support.

Conclusions

- Preliminary data indicate that critically ill pediatric patients receiving CRRT are at high risk of underfeeding.
- Further studies investigating how nutritional practices evolve over time and identification of barriers to adequate prescription are needed.

References

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