



Validation of Pediatric Micronutrient Supplementation Regimen at Harborview Medical Center

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INTRODUCTION

Severe pediatric burn injuries result in a hypermetabolic, hypercatabolic state that increases micronutrient requirements and impacts wound healing. Harborview Medical Center utilizes a pediatric burn micronutrient protocol that is established based on existing literature and has not been formally evaluated or validated.



OBJECTIVES

1. Validate the existing pediatric burn micronutrient supplementation protocol through retrospective chart review.
2. Compare micronutrient supplementation practices with current evidence and expert recommendations.
3. Determine whether protocol modifications are warranted based on study findings.

METHODS

- Retrospective chart review of pediatric burn patients (≤ 6 years old, $\geq 20\%$ TBSA burns, on enteral or parenteral nutrition support) admitted over past 3 years.
- Average daily micronutrient intake was calculated from enteral nutrition (n=5) or total parenteral nutrition (n=1) provisions, including any additional supplementation documented in the medical record.
- Micronutrient intake was compared with ASPEN pediatric burn recommendations or age-appropriate RDA/AI values.

RESULTS

Of the six patients included in the analysis, **one** patient met or exceeded ALL the ASPEN recommendations for micronutrient supplementation for pediatric burned patients, while **five** had at least one micronutrient they did not meet the recommended intake for.

Trace elements **copper and selenium recommendations were consistently not met**. The only patient who met the recommendations for those micronutrients was placed on a semi-elemental enteral formula.

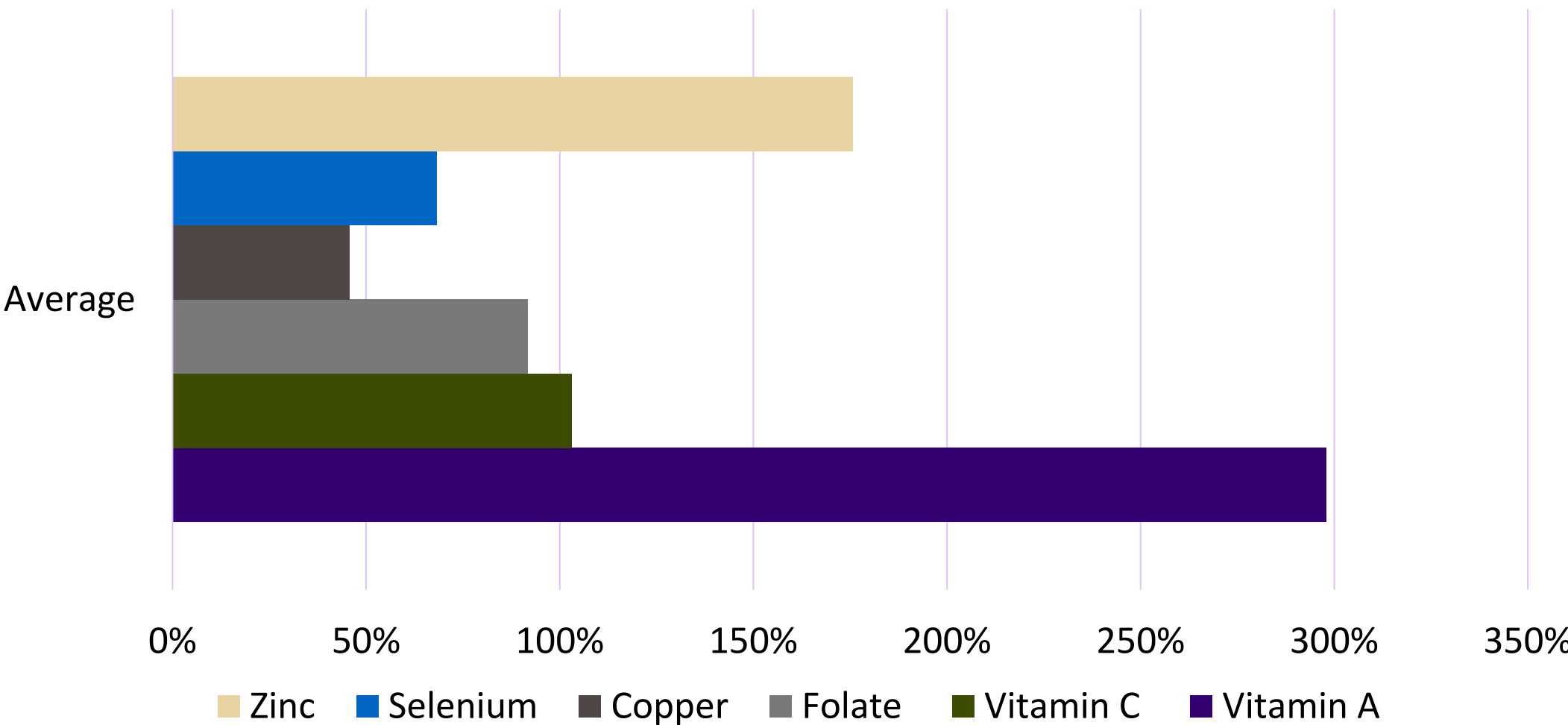
The patient receiving **total parenteral nutrition** had **consistently lower levels of micronutrients supplemented** compared to other patients.

For micronutrients with no ASPEN recommendation for pediatric burn patients (**vitamins D, E, K, and iron**), **all patients met or exceeded the RDA/AI** recommendations for those nutrients.

Micronutrient Supplementation Protocol

Burn Area	Supplementation
<30% TBSA	Age-based multivitamin
	Vitamin C 125-250 mg/day
$\geq 30\%$ TBSA or 20–29% TBSA + inhalation injury	Age-based multivitamin
	Weight-based vitamin C
	Weight-based zinc
	Vitamin D 800 IU/day if $>40\%$ TBSA

Average Micronutrient Intake (% of RDA or AI)



CONCLUSIONS

- **The existing pediatric burn micronutrient protocol generally achieved recommended vitamin targets but identified opportunities to optimize trace element provision, particularly copper and selenium.**
- Selenium and copper supplementation rarely met the ASPEN recommendations for this population, and trace elements should be monitored for any potential deficiencies.
- Nutrition support modality and formula selection influenced micronutrient delivery.

RECOMMENDATIONS

1. Continue utilizing the current pediatric burn micronutrient supplementation protocol without substantive changes.
2. Assess for trace element deficiencies more often OR consider incorporating a pediatric multivitamin with trace elements in the compound.
3. Periodically re-evaluate the protocol as additional pediatric burn nutrition evidence becomes available.

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