

University of New Mexico

UNM Digital Repository

2020 Pediatric Research Forum Poster Session

Annual Pediatric Research Forum Poster Sessions

9-17-2020

Screening for and Diagnosing Malnutrition in Hospitalized Pediatric Patients

Samuel Thompson

University of New Mexico Health Sciences Center

Erin Lamers-Johnson

Academy of Nutrition and Dietetics

Kathryn Kelley

Academy of Nutrition and Dietetics

Lindsay Woodcock

Academy of Nutrition and Dietetics

Julie Long

Academy of Nutrition and Dietetics

See next page for additional authors

Follow this and additional works at: https://digitalrepository.unm.edu/hsc_2020_pediatric_research



Part of the [Pediatrics Commons](#)

Recommended Citation

Thompson, Samuel; Erin Lamers-Johnson; Kathryn Kelley; Lindsay Woodcock; Julie Long; Courtney Bliss; Jenica K. Abram; Alison Steiber; and Elizabeth Yakes Jimenez. "Screening for and Diagnosing Malnutrition in Hospitalized Pediatric Patients." (2020). https://digitalrepository.unm.edu/hsc_2020_pediatric_research/10

This Poster is brought to you for free and open access by the Annual Pediatric Research Forum Poster Sessions at UNM Digital Repository. It has been accepted for inclusion in 2020 Pediatric Research Forum Poster Session by an authorized administrator of UNM Digital Repository. For more information, please contact amywinter@unm.edu, lsloane@salud.unm.edu, sarahrk@unm.edu.

Authors

Samuel Thompson, Erin Lamers-Johnson, Kathryn Kelley, Lindsay Woodcock, Julie Long, Courtney Bliss, Jenica K. Abram, Alison Steiber, and Elizabeth Yakes Jimenez

Background

- Malnutrition is often underdiagnosed and undertreated in hospitalized U.S. pediatric patients and contributes to longer hospital stays, higher rates of readmission, greater mortality, and higher hospital costs.
- Despite the importance of recognizing and treating malnutrition, there is no gold standard for diagnosis.
- A recent consensus-based process involving the Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition recommended a standard set of diagnostic indicators for pediatric malnutrition in hospitalized patients (Table 1).

Table 1. Pediatric Malnutrition Clinical Characteristics

Indicator	Usage
Z-scores for weight for height/length	Used when a single data point available
Body mass index-for-age	
Length/height for age	
Mid-upper arm circumference	Used when ≥2 data points available
Weight-gain velocity (<2 years of age)	
Weight loss (2 to 20 years of age)	
Deceleration in weight for length/height z-score	
Inadequate nutrient intake	

- There is a need to validate the malnutrition clinical characteristics (MCC) against patient medical outcomes.

Primary Study Objective

- To assess the predictive criterion validity of the MCC in hospitalized patients from 1 month to 17 years old.

Methods

- Site enrollment and data collection are currently in progress.
- 60 pediatric hospitals will/are collecting patient medical history, patient STRONGkids malnutrition screening score, and nutrition intervention data.
- 600 pediatric patients will/are be/being randomly selected from the full cohort (approximately 1:1 based on screening risk) to be assessed for the MCC and the Nutrition Focused Physical Exam (NFPE). Malnutrition and medical outcomes will be collected from all patients for a three-month period after enrollment.
- This poster presents select baseline data from a small initial group of patients enrolled in the study.

Participants

- As of March 2020 (prospective data collection paused due to COVID-19 pandemic), 113 pediatric patients were enrolled in the study, with 50 children ages 1-24 months (26 with MCC/NFPE) and 63 children/adolescents age 2-17 (31 with MCC/NFPE).

Table 2. Reported Underlying Chronic Conditions (n = 113)

Condition	Age 1-24 months (n=50 patients) 33 conditions indicated*		Age 2-17 years (n=63 patients) 65 conditions indicated*	
	n	%	n	%
Prematurity	16	32%	1	2%
Congenital heart disease	5	10%	5	8%
Chronic kidney disease	2	4%	4	6%
Epilepsy	2	4%	12	19%
Down syndrome	2	4%	1	2%
Other genetic disorder	2	4%	3	5%
Cerebral palsy	1	2%	4	6%
Cancer	0	-	11	17%
Autism	0	-	5	8%
Other condition**	3	6%	19	30%
None of the above	26	52%	19	30%

*Percentages add up to >100% because children may have more than one condition.

** Including, but not limited to, food allergy & chronic liver disease (1-24 months); and depression & other psych diagnoses, pneumonia, and type 1 diabetes (2-17 years).

Results

- 32% of hospitalized infants/toddlers and 59% of hospitalized children/teens screened at high risk for malnutrition.
- Of the 26 children 1-24 months that were assessed with the MCC (Table 3), 46% were diagnosed with malnutrition (n=12) [severe n=2; moderate n=3; mild n=7]. Of the 31 children 2-17 years who were assessed with the MCC (Table 3), 52% were diagnosed with malnutrition (n=16) [severe n=6; moderate n=7; mild n=3].

Figure 1. STRONGkids Malnutrition Screening Results (n = 113)

Score	Risk Level	1-24 months (n=50)		2-17 years (n=63)	
		n	%	n	%
0	Low risk	22	44%	9	14%
1	Medium risk	7	14%	4	6%
2	High risk	5	10%	13	21%
3-5	High risk	16	32%	37	59%

Disclosure: Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities.

Source of Funding: This study is funded by the Academy of Nutrition and Dietetics Foundation, the Clinical Nutrition Management Dietetics Practice Group (DPG), the Commission on Dietetic Registration, the Pediatric Nutrition Practice Group, and the Renal Dietitians DPG. **Direct questions to:** ejjimenez@salud.unm.edu

Results

Table 3. MCC Indicators Supporting Malnutrition Diagnosis

Indicator	1-24 months (n = 12)		2-17 years (n = 16)	
	n	%*	n	%*
Weight-for-length z-score	6	50%	0	0
Length-for-age z-score	1	8%	2	13%
MUAC**-for-age z-score	5	42%	9	56%
Weight gain velocity	4	33%	7	44%
Deceleration in weight-for-length z-score	2	17%	2	13%
Inadequate nutrient intake	9	75%	5	31%
BMI-for-age z-score	N/A	N/A	8	50%

*Percentages add up to greater than 100% because participants may have more than one indicator (or no indicators). **Mid-upper arm circumference

NFPE Indicators Further Supporting Malnutrition Diagnosis

- For children diagnosed with malnutrition in the 1-24 mo age group (n=12), 50% (n=6) had evidence of subcutaneous fat loss, 50% (n=6) had evidence of muscle wasting, 17% (n=2) had evidence on the micronutrient exam and 8% (n=1) had evidence of nutrition-related fluid accumulation.
- For children diagnosed with malnutrition in the 2-17 years age group (n=16), 44% (n=7) had evidence of subcutaneous fat loss, 63% (n=10) had evidence of muscle wasting, 6% (n=1) had evidence on the micronutrient exam, none had evidence of nutrition-related fluid accumulation, and 13% (n=2) had reduced hand grip strength.

Conclusion

- In this small sample, hospitalized children and teens ages 2-17 years had higher screening risk of malnutrition, and higher prevalence of diagnosed moderate/severe malnutrition, likely in part based on the distribution of underlying chronic conditions and potentially on lack of routine identification and timely treatment.
- For all children, MUAC, which may be infrequently done in U.S. hospital settings, was an important indicator of malnutrition.
- Continued data collection is in progress and is anticipated through the end of 2021.