

### **Abstract Title:**

Evaluating different definitions of malnutrition in preterm infants at discharge

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### **Abstract Description:**

**BACKGROUND** – Early identification and prevention of extrauterine growth restriction in preterm infants is essential for optimal outcomes. American society for parenteral and enteral nutrition has recently released guidelines to identify grades of malnutrition based on z-score changes and growth velocities. There are different methods to categorize infants for mild, moderate, or severe malnutrition.

**OBJECTIVE** To evaluate the difference in malnutrition categorization in very preterm infants at discharge based on different methods: A) weight z-score, B) weight growth velocity (WGV) 16g/kg/day C) WGV 20g/kg/day and D) length z-score and velocity.

**DESIGN/METHODS** Preterm infants born in 2010-2018 at <33 weeks gestation or with birth weight <1500g who were discharged >2 weeks of life were included. Infants transferred out at <34 weeks PMA were excluded. Weight and length were collected at birth and discharge with z-scores based on Fenton 2013. Length was measured using a length board starting in 2015. WGV was calculated using the exponential model from birth to discharge in g/kg/day and length velocity by cm/week. The four methods of categorizing malnutrition using z-scores or growth velocity reduction were A) weight z-score of 0.8-1.2 Z (mild), 1.2-2 Z (moderate), and > 2 Z (severe); B&C) WGV by 25% (mild), 50% (moderate), and 75% (severe) of ideal WGV of 16g/kg/d or 20g/kg/d; D) length criteria including both z-score and using 0.9cms/week as ideal velocity. Composite categorization using the 2 WGV and length categories were performed.

**RESULTS** Demographics of 495 preterm infants included are presented in table I. Malnutrition diagnosis distribution in infants at discharge using different methods is shown in figure I. Similar malnutrition distributions were observed in weight z-score and 16 g/kg/day

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WGV methods. Correlation matrices comparing malnutrition categories using different methods are shown in figure 2. Length-based categories were poorly correlated with weight-based categories. A total of 155 (44%) of the 349 infants diagnosed with malnutrition were only identified using a single method. NICU demographics/parameters are summarized for each malnutrition method (table 1-5).

Conclusions 1. Using 16g/kg/day as an ideal WGV from birth to discharge was a closer representation of the weight z-score pattern than 20g/kg/day. 2.

Length measures did not correlate with weight measures. Hence a composite method including both weight and length criteria is necessary to identify more infants with malnutrition.

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