



Comparison of Neonatal Growth Measures in the Neonatal Intensive Care Unit

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Background

Extrauterine Growth Restriction (EUGR) has been historically synonymous with poor growth or growth failure in the Neonatal Intensive Care Unit. According to research and clinical insight, utilizing EUGR is not recommended. An emphasis on utilizing the change in weight z-score from birth to discharge is clinically recommended (ASPEN, Academy of Nutrition and Dietetics). This project compares two nationally recognized standards.

Purpose

To assess the performance of revised neonatal malnutrition indicators compared to EUGR as the historical standard for growth failure diagnosis.

Methods

Data from 2016-2021 in NICU were analyzed. Percent of infants meeting neonatal malnutrition for mild, moderate, and severe malnutrition and the percent of infants weight for age $\leq 10^{\text{th}}$ percentile was collected.

Table 1. Descriptive statistics for infants discharged from the Neonatal Intensive Care Unit from 2016-2021 (N=1483)

Race/ethnicity, n(%)	
Non-Hispanic White	791(53.3)
Hispanic	65(4.2)
Non-Hispanic Asian	215(14.5)
Non-Hispanic Black or African American	91(6.1)
Non-Hispanic Native American	317(21.4)
Other	4(0.3)
At birth:	
Gestational age, weeks ($\bar{x}\pm\text{SD}$)	32.3 \pm 3.6
Birthweight, grams ($\bar{x}\pm\text{SD}$)	1972 \pm 812.3
Weight z-score ($\bar{x}\pm\text{SD}$)	0.04 \pm 1.09
Born at same facility, n(%)	1148(77.4)
At Discharge:	
Weight z-score ($\bar{x}\pm\text{SD}$)	-0.81 \pm 1.04
Change in weight z-score ($\bar{x}\pm\text{SD}$)	-0.86 \pm 0.52

SD, standard deviation

Results

Decline in weight for age z-score as an indicator of neonatal malnutrition has low sensitivity and specificity when compared to EUGR definitions.

Table 2. Sensitivity and specificity of (a) at least mild, (b) at least moderate, and (c) severe neonatal malnutrition compared to EUGR criteria.

		EUGR		
		Yes	No	Total
(a) At Least Mild	Yes	257	562	819
	No	171	483	654
	Total	428	1045	1483
		Sensitivity = 60.0%		
		Specificity = 46.7%		
		EUGR		
		Yes	No	Total
(b) At least Moderate	Yes	103	191	294
	No	325	864	1189
	Total	428	1055	1483
		Sensitivity = 24.1%		
		Specificity = 81.9%		
		EUGR		
		Yes	No	Total
(c) Severe	Yes	15	20	35
	No	413	1035	1448
	Total	428	1055	1483
		Sensitivity = 3.5%		
		Specificity = 98.1%		

Discussion

According to The Academy of Nutrition and Dietetics only one indicator needs to be present to diagnose malnutrition. Researchers are urging for EUGR to be retired and neonatal malnutrition criteria to be adopted.

Implications for Practice

This Project contributes to the evidence basis of the ASPEN and Academy of Nutrition and Dietetics guidelines along with contributing to ongoing research.

Acknowledgments

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For references and additional information, please use the QR code above to view the electronic poster online.