Supplemental Online Content

Chock VY, Kirpalani H, Bell EF, et al; Eunice Kennedy Shriver National Institute of Child Health and Human Development Neonatal Research Network. Tissue oxygenation changes after transfusion and outcomes in preterm infants: a secondary near-infrared spectroscopy study of the Transfusion of Prematures randomized clinical trial (TOP NIRS). *JAMA Netw Open*. 2023;6(9):e2334889. doi:10.1001/jamanetworkopen.2023.34889

eTable 1. Hemoglobin Transfusion Thresholds

eTable 2. CART Variables

eFigure. Flow Diagram

This supplemental material has been provided by the authors to give readers additional information about their work.

	High Hgb threshold (g/dl)		Low Hgb threshold (g/dl)	
Postnatal Age	Respiratory support*	No respiratory support	Respiratory support*	No respiratory support
Week 1	13.0	12.0	11.0	10.0
Week 2	12.5	11.0	10.0	8.5
Week ≥3	11.0	10.0	8.5	7.0

eTable 1. Hemoglobin Transfusion Thresholds

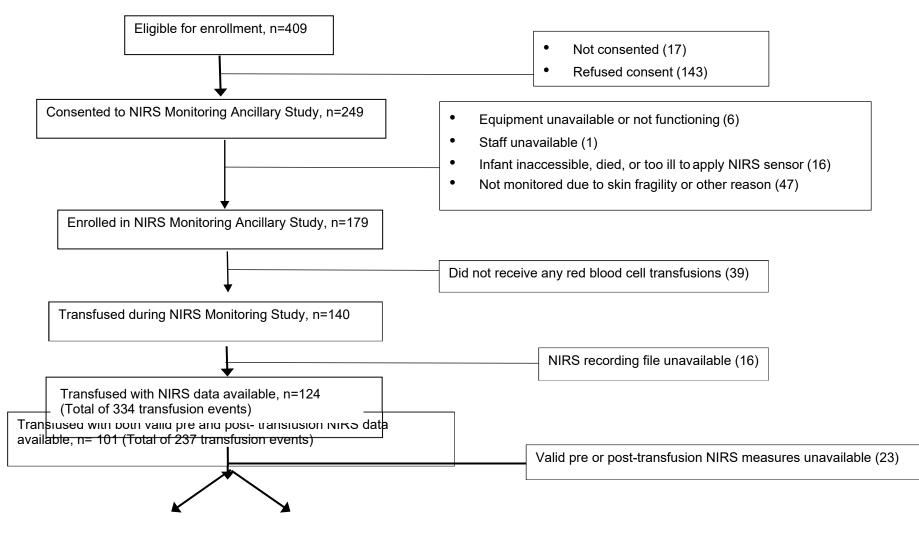
*Respiratory support defined as mechanical ventilation, continuous positive airway pressure, fraction of inspired oxygen >0.35, or nasal cannula flow \geq 1 liter per minute

Category	Variable included for model development	
Demographics		
	Gestation (in completed weeks)	
	Sex	
	Birth weight (g)	
	Singleton	
	Antenatal steroids given	
	Private insurance	
	Maternal education level ^a	
Clinical factors		
	Days of ventilation within first 28 days	
	Total days on ventilation	
	Days of parenteral alimentation	
	Necrotizing enterocolitis ^b	
	Abnormal head ultrasound ^c	
	Any sepsis (early or late onset)	
	Ventriculomegaly ^d	
NIRS measures		
	Pre-transfusion mean Csat ^e	
	Pre-transfusion mean cFTOE ^e	
	Delta Csat ^e	
	Delta cFTOE ^e	
	Csat <50% in first 72 hours	
	% time Csat <50% in first 72 hours	
	Total transfusions with mean pre-transfusion Csat <50%	
	Total transfusions with mean post-transfusion Csat <50%	
Hemoglobin or transfusion factors		
	Hemoglobin transfusion threshold (high vs. low)	
	Total transfusions	
	Total transfusions triggered per protocol	
	Total transfusions with NIRS measures available	
	Hemoglobin at randomization ^e	
	Hemoglobin triggering transfusion per protocol ^e	
	Mean hemoglobin over entire study period ^e	

eTable 2. Variables used for CART analysis to predict death or NDI*

^{*}The importance of each predictor was set as the attributable change in the residual sum of squares (RSS) over all node splits of the tree. The entropy method was used to select the variables for the tree, the costcomplexity method was used to prune it, and each leaf was restricted to a minimum number of 10 observations. NIRS = near-infrared spectroscopy; Csat = cerebral saturation; cFTOE = cerebral fractional tissue oxygen extraction; ^aThree-level categorical variable; ^bModified Bell stage II or higher; ^cSevere intraventricular hemorrhage (grade 3 or 4), cerebellar hemorrhage, intraparenchymal echodensity, periventricular leukomalacia, or ventriculomegaly on cranial ultrasound obtained prior to discharge; ^dSeen if concurrent intraventricular hemorrhage grade 2 or higher; ^eVariables summarized at the infant level over the entire study period and also separately for the following time periods: first postnatal week, after the first postnatal week, up to 28 days, after 28 days, from 8-28 days

eFigure. Flow Diagram of Enrollment



Transfused over the first 28 days (primary analysis sample, n=80 with 164 transfusion events)

Data available for death or NDI (secondary analysis sample, n=97)

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