

Neonatal Platelet Transfusion Guidelines

This guideline is intended for neonates and infants admitted to the NICU. The goal of platelet transfusion is to maintain and/or restore appropriate coagulation and decrease the risk for bleeding.

Term neonates are believed to generally have blood platelet counts within the same range as older children and adults (i.e. 150,000–450,000/ μ l). Preterm neonates, however, may possess a lower normal limit of 120,000/ μ l in the first days following birth.¹ Using the conventional lower limit of 150,000/ μ l for normal values, <1% of term neonates will have thrombocytopenia,² whereas 20–35% of ELBW preterm infants will have platelet counts less than 150,000/ μ l.³

Prior to 2019, only one randomized controlled trial had been performed to study platelet transfusions in preterm neonates.⁴ This trial enrolled preterm neonates during the first week of life and assigned them to a liberal group who received a transfusion whenever the blood platelet count fell below 150,000/ μ l or a conservative group where they received transfusions only for clinical concern about bleeding or whenever the blood platelet count fell below 50,000/ μ l. There was no difference between groups in the incidence of intracranial hemorrhage, which was the primary endpoint of the study.

In 2019, Curley et al reported the results of their large randomized clinical trial assessing platelet transfusion in preterm infants – the largest such study to date.⁵ The liberal group in this study received transfusion for platelet counts <50,000/ μ l, while the conservative group had a cutoff of 25,000/ μ l. This study demonstrated more transfusions and higher rates of death or major bleeding in the liberal transfusion group. A secondary analysis of their data showed that all preterm infants included in the trial benefited from the lower threshold, regardless of their risk of bleeding, with a smaller NNT in the highest risk groups than the lower risk. The risks that were assessed for included gestational age, postnatal age, necrotizing enterocolitis, sepsis, and previous bleeding event.⁶ Together, these trials, along with general expert opinion,⁷ have informed the below suggested transfusion guidelines.

Transfusion Criteria

	Population	Threshold
Thrombocytopenia	Stable preterm or term infant	25,000/ μ l
	ELBW (BW<1000 g) in the first week of life	25,000/ μ l
	Clinically unstable* infant	25,000/ μ l
	Immediately pre-/post-op	50,000/ μ l
	ECMO or active bleeding	100,000/ μ l
Normal platelet count	Massive transfusion protocol initiated	

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Normal platelet count	Active bleeding with known qualitative platelet defect
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*Clinically unstable defined as evidence of sepsis, necrotizing enterocolitis, intracranial hemorrhage, hypotension requiring vasopressors, or other hemodynamic instability

References

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