**Table S1: Summary of Neonatal Hemoglobin Threshold Trials and Expert Consensus Guidelines.***

| Trial/Guideline | Description | Conclusions | Recommendations |
|---|---|---|---|
| **2020 Transfusion of Prematures (TOP) trial[1]**** | Multi-center study in the US, randomized ELBW infants based on liberal vs restrictive Hct thresholds. | Higher Hb threshold did not improve survival without neurodevelopmental impairment. | Restrictive Hb thresholds ranged 11.0 g/dL-8.5 for neonates age 1-3 weeks with respiratory support. |
| **2020 ETTNO trial[2]**** | Multicenter trial in NICUs in Europe, randomized ELBW neonates based on liberal vs restrictive Hct. | Liberal transfusions did not reduce death or disability at 24 months of corrected age. | Transfusion strategy with Hb target 7-11 g/dL depending on week of life and respiratory support needs. |
| **2024 Clinical Practice Guideline[3]** | Consensus statement from international experts based on systematic review of 6 RCTs. | Low transfusion thresholds likely had little to no difference on outcomes. | Hb thresholds <32 weeks varied by postnatal week and respiratory support: 11, 10, 9 g/dL for respiratory support; 10, 8.5, 7 g/dL otherwise. |
| **2024 Consensus transfusion guidelines[4]** | Guidelines by US network with critical illness defined as specific respiratory criteria. | – | Threshold for transfusion: 11, 10, 8.5 g/dL for critical illness; 10, 8.5, 7 g/dL for no critical illness. |
| **2024 Boston Children's Hospital Guidelines[5]** | Evidence-based guidelines for NICU neonates with Hb thresholds from 7.0 to 11.5 g/dL. | – | Similar ranges to other consensus recommendations based on gestational age, postnatal age, and critical illness needs. |

*Neonatal expert consensus-based guidelines recommend that the decision to transfuse should consider the Hb number together with the neonate's individual physiological status**.**
**It should be noted that in the TOP and ETTNO trials, information on the number of neonates underwent surgery during their NICU course are not provided, therefore the recommended thresholds, at best can only be extrapolated to the perioperative period. Furthermore, the

cohort in these trials is limited to premature neonates not term neonates, for which there are no trials to offer guidance.

References


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3. Deschmann E, Dame C, Sola-Visner MC, et al. Clinical Practice Guideline for Red Blood Cell Transfusion Thresholds in Very Preterm Neonates. JAMA Netw Open. Jun 3 2024;7(6):e2417431. doi:10.1001/jamanetworkopen.2024.17431
4. Gilmore LE, Chou ST, Ghavam S, Thom CS. Consensus transfusion guidelines for a large neonatal intensive care network. Transfusion. Aug 2024;64(8):1562-1569. doi:10.1111/trf.17914
5. See Supplemental Document: Boston Children's Hospital Red Blood Cell Transfusion in Neonates [NICU].