



The Canadian Neonatal Network™/Le Réseau Néonatal Canadien™

2025 CNN-CPTBN Annual Meeting

Research Proposal

Optimizing Adherence to Transfusion Thresholds in Preterm Infants: A Study of Decision-Making Processes in Red Blood Cell and Platelet Transfusion Practices in Neonatology

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Rationale

Preterm newborns (NB) are among the patients most frequently exposed to blood product transfusions. The lack of consensus and differences in the available guidelines regarding transfusion thresholds for preterm infants result in variability in practices. However, a recent meta-analysis including 3,483 preterm infants weighing less than 1.5 kg supports that restrictive hemoglobin (Hb) thresholds for administering red blood cell (RBC) transfusions reduce exposure to blood products without increasing mortality or morbidity. Additionally, maintaining a higher Hb level only increases the number of required blood transfusions without improving survival or neurodevelopmental outcomes. Similarly, a large randomized trial comparing platelet transfusion thresholds (25 vs. 50 x 10⁹/L) in preterm infants showed that a higher threshold was associated with increased mortality and neurodevelopmental impairment. However, transfusion practices remain highly variable in the neonatal population, particularly concerning the transfusion thresholds used. We aim to document the decision-making processes that lead to the administration of RBC and platelet transfusions in preterm infants in Canada, determine if these practices align with the restrictive transfusion thresholds proposed in the literature, and understand any deviations.

Objective

To understand the decision-making processes of medical team members when prescribing RBC and platelet transfusions in preterm newborns. Our hypothesis is that clinicians tend to use higher transfusion thresholds for RBC and platelets in more unstable and critically ill patients.

Methods

A qualitative study using semi-structured focus group interviews will be conducted with clinicians working in neonatology (from 2 Canadian centers and 1 from USA). The questions will be based on data collected from a national survey on transfusion practices in neonatology (ongoing project) to better understand the barriers and facilitators to adherence to the recommended transfusion thresholds. This project will help develop strategies to improve transfusion medicine practices in neonatology. These strategies will then be studied in an implementation project aimed at assessing whether the application of recommendations optimizes the use of blood products in preterm infants.

Expected Outcomes and Impact

This research project is crucial as it will address a significant gap in understanding the barriers and facilitators to implementing restrictive RBC and platelet transfusion thresholds in preterm newborns. It represents an essential first step in identifying effective interventions to promote judicious use based on restrictive transfusion thresholds. Once these interventions are implemented, we will assess whether the adoption of the recommendations improves the quality of care for preterm newborns and their health outcomes. These findings will guide policymakers in developing guidelines to standardize transfusion practices at the provincial and national levels. By presenting this project to CNN-CPTBN Annual meeting please, my primary goal is to establish networking and foster potential collaborations with other centers for this new project, while also welcoming any feedback or suggestions. I am indeed eager to involve additional sites in the semi-structured interviews. Furthermore, in subsequent phases of the project, I aim to explore the implementation of strategies to improve adherence to transfusion thresholds based on the findings of the initial study phase.