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Leiden
The Netherlands

Hemolytic disease of the fetus and newborn: awareness precedes change

Winter, D.P. de

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CHAPTER

8



Balancing Blood Product Wastage And Patient Safety: Primum Non Nocere

Derek P. de Winter, Christian V. Hulzebos, Masja de Haas, Enrico Lopriore

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We thank Professor Jon F. Watchko for his insightful thoughts about our recently published study on the use and waste of reconstituted whole blood exchange transfusions in the Netherlands.¹ In his letter, Watchko highlights the challenges and, importantly, the potential severe consequences associated with delayed treatment for severe neonatal hyperbilirubinemia (SNH).

To our knowledge, this is the first study to assess the use and waste of reconstituted whole blood exchange transfusions. Our findings represent the current landscape in a country with a single, centralized blood supply organization. Thus, our findings may not apply to other contexts one-to-one. We hope our report encourages others to assess and evaluate their level of blood product wastage on a hospital, regional, or national level and identify opportunities to limit waste without putting patients with SNH at risk.

We wholeheartedly agree that safety is the principal focus of managing neonates with SNH. A crash-cart approach in any neonate with SNH is recommended, including the immediate initiation of high intensity, double-sided phototherapy. Although in general, this will reduce bilirubin levels very quickly, the absolute decline in the individual patient is not predictable. Thus, whenever indicated, exchange transfusions should not be subject to delay considering the potential detrimental effects of SNH. In our study, we found that almost 50% of exchange transfusion products for SNH were unused. Although absolute data on the total bilirubin levels in relation to the exchange transfusion threshold were not at hand in any of the included cases, we were informed that a response to intensive phototherapy contributed largely to the waste of blood products. As such, it is tempting to speculate that a treat-and-see policy of 1 hour after admission of neonates with SNH without signs of acute bilirubin encephalopathy and a bilirubin level just touching the exchange transfusion threshold offers a safe approach that may limit waste of blood products. While awaiting the final decision to perform an exchange transfusion, preparation of the infant and the equipment as well as informing the parents on the exchange transfusion procedure and on potential complications can be done. Although solely based on personal clinical experience of the authors, we think that this work flow, including double-sided, high-intensity phototherapy and close monitoring of bilirubin levels before ordering blood products may be justified in this subgroup of neonates with SNH.

As mentioned by Professor Watchko, there may be alternative ways to limit blood product waste. During the 11-year period of our study, ie, from 2011 to 2021, exchange transfusion thresholds were based on the American Academy of Pediatrics 2004 Hyperbilirubinemia Guideline,² which are currently still in place in the Netherlands as well as the hyperbilirubinemia and neurotoxicity risk factors. Implementation of the

increased exchange transfusion thresholds established in the novel American Academy of Pediatrics 2022 Hyperbilirubinemia Guideline³ in the Netherlands may be an option, and is currently being studied.

All in all, our primary objective in the management of SNH must always be to minimize the risk of bilirubin toxicity. If indicated, prompt action must be taken to perform an exchange transfusion without unnecessary delay. At the same time, avoiding the unnecessary wastage of blood products should also be an important goal in any medical discipline, including neonatology. Apart from financial considerations, we have a responsibility to honor the generosity of our blood donors.

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