Commentary: Reducing unnecessary transfusions in cardiac surgery: A TEG talk

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Bianco and colleagues1 present an observational study of non-red blood cell (RBC) transfusions in cardiac surgery patients. Of 14,280 patients from the Society of Thoracic Surgeons database, they identify 398 patients who received platelet, fresh-frozen plasma (FFP), or cryoprecipitate transfusions but not RBC transfusions, whom they propensity-match with patients who did not receive blood products. The authors find no difference in mortality, although patients who received non-RBC transfusions had prolonged ventilation and intensive care unit length of stay and greater rates of reoperation.

Bianco and colleagues contribute to the scant evidence regarding non-RBC transfusion in cardiac surgery patients, but their study is inconclusive. Like all nonrandomized studies, it is susceptible to confounding. Due to small sample size and event numbers, it is underpowered to detect a mortality difference. By excluding patients who received RBC transfusions, the authors could tease out the known negative impacts of RBC transfusion from the uncertain impacts of non-RBC transfusion, but at the cost of generalizability: only 3% of their cohort received only non-RBC transfusions.

The goal of blood product use is to avoid unnecessary transfusions, thereby reducing costs and harms and conserving resources. We have guidelines on RBC transfusion thresholds in cardiac surgery thanks to the randomized Transfusion Requirements in Cardiac Surgery III (TRICS III),2 Transfusion Indication Threshold Reduction (TITRe2),3 and Transfusion Requirements After Cardiac Surgery (TRACS)4 trials, which all showed noninferiority of a restrictive transfusion threshold compared with a liberal transfusion threshold.

The non-RBC transfusion literature is less robust. The best available evidence for FFP transfusions is a systematic review of 15 randomized trials of prophylactic FFP transfusions, the largest of which included only 224 patients.5 There was no difference in mortality, reoperation, or RBC transfusion between those who did and did not receive prophylactic FFP, but the evidence is low-quality and heterogeneous. The best-available evidence for platelet transfusion is a meta-analysis of observational studies (9 studies including 101,511 patients) that found no difference in death or thrombosis in adjusted analyses.6

Even if there is no harm to non-RBC transfusions (and this remains unclear due to limitations of the available evidence), the current study does not answer the key clinical question regarding blood product use in cardiac surgery, which is not whether to transfuse, but rather: if the patient is bleeding, which blood product should we transfuse, and when?

Point-of-care hemostatic testing, such as rotational thromboelastometry and thromboelastography (ROTEM and TEG),7 detects the precise coagulation deficit in bleeding patients, permitting targeted blood product administration. In a stepped-wedge cluster randomized controlled trial of 7402 patients at 12 centers, point-of-care hemostatic testing combined with a transfusion algorithm, compared with standard care, reduced RBC and platelet transfusion and major bleeding.8 One of the challenges in interpreting...
Bianco and colleagues’ study is the absence of standardized protocols for transfusion of non-RBC products. Perhaps the way forward in non-RBC product use for cardiac surgery patients is not in randomized trials of platelets, FFP, or cryoprecipitate, but rather in fine-tuning interpretation, thresholds, dosages, and response measurement with point-of-care hemostatic testing to create a standardized algorithm for blood product transfusion.

References


