continuous self-assessment and care improvement at the department and hospital levels.

Peter Drucker famously said, “culture eats strategy for breakfast.” Nowhere is that better depicted than in the challenges that persist in enacting the good science that now exists around best practices in blood transfusion.

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Commentary: Like politics, transfusion practice is local

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Ever growing numbers of studies have demonstrated an association between red blood cell (RBC) transfusion and adverse surgical outcomes and increasing costs after cardiac surgery.¹⁻³ Initiatives to reduce blood transfusions in cardiac surgery patients have included blood conservation practice guidelines from the Society of Thoracic Surgeons, Society of Cardiovascular Anesthesiologists, and European Association for Cardio-Thoracic Surgery/European Association of Cardiothoracic Anaesthesiology.^{4,5}

Liberal and restrictive transfusion approaches have been studied widely in cardiac surgery. The TRICS trial randomized 5243 moderate- to high-risk adult cardiac surgery patients to liberal and restrictive strategies. The results

CENTRAL MESSAGE

Wide center-level variability exists in the RBC transfusion practices after CABG surgery which is independent of patient characteristics. Further studies might explain this variation between institutions.

showed that the liberal approach was noninferior to the restrictive strategy regarding a composite endpoint of death, myocardial infarction, stroke, renal failure requiring dialysis, and fewer blood transfusions.⁶ The TITRe2 investigators also evaluated both transfusion strategies. The primary outcomes of a serious infection or an ischemic event between both groups showed no differences. However, more deaths occurred in the restrictive group. The authors concluded that the restrictive transfusion threshold was not superior to the liberal approach concerning morbidity

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and health care costs.⁷ In contrast to previous reports,³ that study indicated that liberal transfusion resulted in lower mortality.⁷ At present, the restrictive transfusion approach remains the predominant practice, as reflected in the European guidelines.⁵ These guidelines have been effective, as demonstrated by the National Blood Collection and Utilization Survey, which showed a 6.1% decrease in the units of RBCs transfused in the United States in 2017 compared with 2015.⁸

In their report, Fitzgerald et al⁹ reviewed 22,272 patients undergoing isolated coronary artery bypass graft surgery. One third had required ≥ 1 U of RBC transfusion. The authors used multilevel regression models of patient characteristics, preoperative risks, and intraoperative blood conservation approaches to explain the center-level transfusion variability.⁹ This premise is grounded in their previous work. The patients in the blood transfusions group were older, more often women, and more often undergoing nonelective procedures, with a greater prevalence of preoperative dialysis and anticoagulant therapy. However, the variability in RBC transfusions across the various centers could not be explained. One limitation of an observational registry is the inability to discern the institutional factor, including organizational culture and provider level variability, which could have contributed to the decisions regarding blood transfusions.

The trigger for blood transfusion in these patients is clearly not limited to the patient-related factors. However, we applaud the authors in their attempt to answer this important question in cardiac surgery. Although it might be considered a negative study, the lack of uniformity in the use of blood transfusions across institutions is clear. Although with current evidence and societal guidelines, the restrictive blood transfusion strategy in cardiac surgery has gained traction, better patient care can only be provided by focusing on changing institutional cultures, the

implementation of guidelines and, most importantly, if all providers—including surgeons, anesthesiologists, perfusionists, and intensivists—follow the guidelines. Potentially unwanted RBC transfusion of cardiac surgery patients can be reduced only by further education, followed by improved communication among the team members to minimize the unneeded RBC transfusions.

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