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Commentary: Patient blood management in the era of coronavirus disease 2019—is anything really different?

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CENTRAL MESSAGE

Patient blood management, including the appropriate use of red blood cells, platelets, cryoprecipitate, and plasma, is a critical aspect of patient care, COVID-19 pandemic notwithstanding.

Multiple strategies for patient blood management (PBM) are published for clinicians to guide blood transfusion reduction and improve appropriate blood use.¹ In the midst of the current coronavirus disease 2019 pandemic, the critical question is: What is different beyond the critical illness and coagulopathy?² Donor blood availability with current restrictions, lack of workplace attendance, and potential concerns of viral exposure to donors has restricted our donor pool, but reducing allogeneic blood use has always been important for improving patient outcomes, reducing costs, and avoiding transfusion-associated adverse events. However, most strategies directed at PBM are simply anemia management and exclude other essential transfused products like platelets, plasma, and cryoprecipitate. Given the frequent platelet shortages in the critical setting of cardiac surgery, PBM needs to be expanded beyond anemia management, which is the focus of Perelman's article.³

Now is the time to stop having red blood cells as the sole focus of PBM strategies. Other blood products, including

plasma, cryoprecipitate, and platelets, have shortages, cause adverse events, and are used inappropriately. Examples of expanding PBM include using fibrinogen concentrate instead of cryoprecipitate to replete fibrinogen.⁴ Other factor concentrates can be used, including prothrombin complex concentrates for bleeding⁵ and antithrombin for heparin resistance instead of plasma.⁶ Regarding platelets, which are extensively used in cardiac surgery, better clinical studies and guidelines are needed because there is no high-quality evidence beyond guidance/guideline documents to support their administration in bleeding patients.^{7,8} Platelets are the most expensive blood product, have a short shelf-life, are frequently in short supply, and additional safety measures are needed to prevent septic reactions. Administration of platelets and coagulation factors is enhanced by the limited availability of appropriate point-of-care platelet or coagulation function tests to guide administration. Transfusion triggers and/or algorithms use platelet counts as the laboratory value for administration rather than clotting capacity. Despite the usefulness of viscoelastic testing (ie, thromboelastography or rotational thromboelastometry) for transfusion algorithms, clot strength determination is highly influenced by fibrinogen levels. Nonetheless, the clinical use of any algorithm for goal-directed therapy prevents empiric administration, especially in the absence of bleeding. Further, there are no current standards for clinical or laboratory assessment

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of the hemostatic efficacy of platelet administration in bleeding patients.⁹

It is time to stop focusing on anemia and red blood cell administration and expand our efforts to reduce all blood product use by performing studies to determine appropriate clinical use and expanding the use and development of potential substitutes. There are multiple areas in which PBM needs improvement. We need to improve RBC transfusion triggers beyond specific hemoglobin levels and instead focus on examination of physiologic end points for administration. We also have factor concentrates available that can be increasingly used for surgical bleeding. For platelet transfusions, the potential for cold-stored platelets provides other potential mechanisms to increase the availability of platelets when needed.¹⁰ Current research is investigating lyophilized and synthetic platelets to provide another potential alternative. Finally, perhaps it is time to reconsider the hemoglobin-based oxygen carriers previously studied in patients undergoing cardiac surgery.¹¹

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