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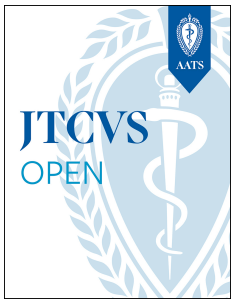

Commentary: Patient blood management in COVID19- is anything really different?

Jerrold H. Levy, MD, FAHA, FCCM, Negmeldeen Mamoun, MD, PhD, Beth Shaz, MD

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Commentary: Patient blood management in COVID19- is anything really different?

Jerrold H. Levy*, MD, FAHA, FCCM, Negmeldeen Mamoun, MD, PhD**, Beth Shaz, MD

***** Departments of Anesthesiology, and Surgery (Cardiothoracic), Duke University School of Medicine, Durham, NC

** Department of Anesthesiology, Duke University School of Medicine, Durham, NC

*** Department of Pathology, Duke University School of Medicine, Durham, NC

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Address for correspondence:
Jerrold H. Levy, MD, FAHA, FCCM, Duke University Medical Center, 2301 Erwin Rd., 5691H HAFS, Box 3094, Durham, NC 27710, USA. Tel: +1 919 684 0862; fax: +1 919 681 8994; E-mail: jerrold.levy@duke.edu

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Central Message: 200/200 characters

Patient blood management, including the use of blood alternatives, is a critical aspect of patient care, with or without COVID-19 pandemic, and includes appropriate use of all blood products: red blood cells, platelets, cryoprecipitate, and plasma.

Central Picture Legend:

Jerrold H. Levy, MD, FAHA, FCCM

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Multiple strategies for patient blood management (PBM) are published for clinicians to guide blood transfusion reduction and improve appropriate blood use.[1] In the current COVID-19 pandemic, the critical question is what's 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: platelets, plasma, and cryoprecipitate. Given the frequent platelet shortages that are critical in the setting of cardiac surgery, PBM needs to be expanded beyond anemia management, the focus of Perelman's article.[3]

Now is the time to stop having red blood cells (RBCs) 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 bleeding[5] 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, as 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 with frequent shortages, 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

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coagulation function tests to guide administration. For platelets, transfusion triggers and/or algorithms use platelet counts as the laboratory value for administration rather than clotting capacity. Despite the usefulness of viscoelastic testing (i.e., TEG or ROTEM) 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 of the hemostatic efficacy of platelet administration in bleeding patients.[9]

In summary, it's 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 to improve PBM. We need to improve RBC transfusion triggers beyond specific hemoglobin levels and instead focus on examination of physiologic endpoints 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 one more potential alternative in our armamentarium. Finally, perhaps it's time to reconsider the hemoglobin-based oxygen carriers previously studied in cardiac surgical patients.[11]

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