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

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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:

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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 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, 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
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.\(^{11}\)
References


