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Anesthesiology 2011; 115:656–62 Correspondence

To the Editor:

We read with interest Glance et al.’s paper and the related editorial.1,2 Several retrospective studies have already re-

reported an association between perioperative blood transfu-

sion and altered outcome.3–8 What is new in the Glance et al. study is that a similar negative association may exist in pre-

operative anemic patients having received only one or two units of packed erythrocytes (PRBCs) during the surgical proce-

dure. However, we believe the results of this study should be interpreted with caution for several reasons.

First, as Carson et al.9 wrote, observational studies are subject to uncontrolled confounding. In fact, patients who receive blood transfusions are probably more severely ill than those who do not receive them, and patients who are more severely ill have more adverse clinical outcomes (death, infection, etc.) than less ill patients. Thus, no matter how refined the adjustment is for differences in illness burden, it is never possible to ensure a complete adjustment for differences between pa-

patients receiving and not receiving blood transfusion.

Second, the transfusion trigger that was used in the study population was not specified. Was it a hemoglobin-based transfusion trigger or based on objective indices of oxygen delivery deficiency?10–12 PRBC transfusions are administered to increase oxygen transport and restore tissue oxygenation when oxygen demand exceeds supply.13 The oxygen extraction ratio reflects the adequacy of the cardiorespiratory response of the patient to anemia. Some authors have explored the utility of oxygen extraction ratio for guiding erythrocyte transfusion.14,15 Erythrocyte transfusions can also be based on signs and symp-

toms of impaired global oxygenation with the use of lactate or mixed venous oxygen saturation. The mixed venous oxygen saturation or its surrogate, the central venous oxygen saturation, integrates the relationship between whole-body oxygen uptake and oxygen transport and has been proposed by Vallet et al. as a simple physiologic transfusion trigger.16

Third, the indication for transfusion was not specified in the study. The reason why some anemic patients were trans-

fused with one or two units while other “similar” anemic patients were not was not explained. Reasons could include several factors such as the importance of blood loss, the hemodynamic stability of the patients, and their underlying pathologies that could by themselves influence the postoperative outcome. To minimize the confounding effect of surgical blood loss on patient outcome, the authors have ex-
cluded patients who received four or more PRBC units; however, this effort does not completely eliminate the effect of blood loss on the indication for transfusion. They also attempted to take into account the underlying pathologies of their patients but could not evaluate the effect of these path-

ologies on the transfusion trigger used by the clinician taking care of the patient.

Fourth, another important point that has not been spec-

ified is the etiology of anemia in the patient population. Different etiologies may differentially affect the postopera-

tive outcome. Indeed, Kulier et al. showed that anemic pa-

tients have increased risk of postoperative adverse events, but the extent of preexisting comorbidities substantially af-

fects perioperative anemia tolerance. They recommended that the assessment of blood transfusions should take into account not only the preoperative hemoglobin concentration but also the extent of concomitant risk factors.17

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Erythrocyte Transfusion: A Fair Balance

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This letter was sent to the author of the above-referenced article. The author felt that a reply was not necessary.—James C. Eisenach, M.D., Editor-in-Chief.
Finally, the quality of the blood products that were transfused was not described. Were the PRBC units that were transfused leukoreduced? What about the age of the blood transfused? These factors could have affected the known negative association between the transfusion of one or two PRBC units and postoperative morbidity and mortality. In conclusion, any inappropriate PRBC transfusion should be avoided because the benefit-to-risk ratio of this treatment does not appear favorable for the patient. However, undertransfusion may also be unacceptable because it may expose patients to an increased risk of complications. Distinguishing the effects of PRBC transfusion on patient postoperative outcome definitely requires well-conducted, prospective randomized studies that account for the multiple confounders associated with transfusion practice.

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References

(Received for publication May 19, 2011.)

Other Issues with Defibrillators

To the Editor:

I read with great enthusiasm the updated advisory on the management of cardiac implantable electronic devices. In March 2006, I was a lucky person who survived an out-of-hospital sudden cardiac arrest while on Air Force Reserve duty. Now I have a Medtronic (Minneapolis, MN) automatic implantable cardioverter-defibrillator.

I would like to add a few points:

1. In 2006, there were reported cases of lead fractures with Medtronic Fidelis leads. Although the rate was only 3%, a danger is that people with lead fractures could

This letter was sent to the authors of the above-referenced article. The authors felt that a reply was not necessary.—James C. Eisenbrey, M.D., Editor-in-Chief. Dr. Bloomingfield is a Colonel, Medical Corps, United States Air Force Reserve, Uniformed Services University. The views expressed in this letter are those of the author and do not reflect the official policy or position of the Department of the Air Force, US Department of Defense, or the US government.