NEW blood Vs. OLD blood or no blood at all

In the March 20th issue of the *New England Journal of Medicine*, Koch et al investigated the link between complications and mortality following cardiac surgery and the age of transfused red blood cells. The authors concluded that transfusion of red blood cells which had been stored for more than two weeks was associated with a significantly increased risk of postoperative complications as well as reduced short-term and long-term survival. What is the reason for this association between the age of the red cells and poor outcomes? It is postulated that it is due to the storage lesion which negatively affects the quality of the transfused product. During storage, RBC's undergo both chemical and physical changes including loss of flexibility, decrease NO, loss of organic phosphates and the generation and release of proinflammatory cytokines. Based on this study of over 6000 patients, what should be done to improve outcomes in this patient population? Initially, one might jump to the conclusion that "newer blood" be used for cardiac surgery patients. However, there are important practical limitations to this suggestion including: the availability of compatible blood, the ability to recruit in a time-sensitive manner the large number of donors that would be needed if the storage time of blood was reduced by even half and the problems of inventory management during seasonal shortages. Indeed, during last week's spring break in Jacksonville, Florida, the Mayo Clinic had to limit surgical cases due to a blood shortage. Therefore, the feasibility of using newer blood units is hampered by the adverse effect on the blood supply. What else can be done? There are alternative means to avoid the risk transfusing older units of blood and of transfusing blood altogether. Blood management and blood conservation programs advocate a prospective approach to anemia therapy with the goal of correcting anemia prior to major surgical procedures using nutritional and pharmaceutical approaches. In addition, use of intraoperative blood salvage and preoperative hemodilution in selected cases are additional modalities aimed at minimizing the need for transfusion. Lastly, conservative triggers, as used here at Saint Anthony, can assist in avoiding transfusion. Blood management makes both good economic sense and based on the article described here, good medical sense. ♦

N Engl J Med 2008; 358: 1229-1239.

Respectfully submitted,

J.S. Lyzak, M.D., M.B.A., Saint Anthony Medical Center, Crown Point.