No evidence to change current transfusion practices for adults undergoing complex cardiac surgery

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A National Institutes of Health-funded study found no statistical difference in the primary clinical measure—which assessed changes in function of six organs from before to seven days after surgery—between complex cardiac surgery patients receiving transfusions of red blood cell units stored for short (up to 10 days) versus long (21 or more days) periods. These findings indicate there is no need to alter how hospitals currently transfuse blood in adults going through complex cardiac surgical procedures.

Results of the Red Cell Storage Duration Study (RECESS), supported by the NIH's National Heart, Lung, and Blood Institute (NHLBI), appear today in the *New England Journal of Medicine.*

In the United States, red blood cell units can be stored up to 42 days after collection. Basic research has documented changes in red blood cell units the longer that they are stored. Some studies, primarily observational, have found an association between the transfusion of blood stored for a longer duration and increased morbidity and mortality. However, the clinical significance of these findings is difficult to determine due to study-design limitations.

RECESS was a multicenter trial conducted at more than two dozen U.S. hospitals from January 2010 to January 2014 by the NHLBI-funded Transfusion Medicine and Hemostasis Clinical Trial Network (TMH

CTN). The TMH CTN includes 17 core clinical centers and a data coordinating center. Patients were enrolled at most TMH CTN core clinical centers and some non-network centers.

RECESS evaluated 1,098 cardiac surgery patients who were randomized to receive red blood cell units stored for short or long periods. Patients in the longer storage period group received their transfusions using current care practices.

There was no statistical difference in the change in the primary clinical measure, the Multiple Organ Dysfunction Score (MODS), or mortality from before cardiac surgery to seven or 28 days after the operation for both transfusion groups. The MODS was evaluated because it is an objective and validated way to assess small changes in six organ systems, which includes respiratory, renal, hepatic, cardiovascular, hematologic and neurologic. There were no statistical differences in the mean number of serious and non-serious adverse events between the two groups.

"RECESS contributes to a long-standing question about whether red blood cell storage duration impacts a patient's clinical outcome after transfusion." said Keith Hoots, M.D., director of the NHLBI Division of Blood Diseases and Resources. "These findings are reassuring because they do not support the need to modify transfusion practices in adult patients undergoing complex cardiac surgery. In particular, there does not appear to be something gained by only transfusing red blood products stored for ten days or less."

Because very few RECESS patients were under 18 years of age, findings primarily apply to adult patients undergoing complex cardiac surgery.

More information: Study results are available online: clinicaltrials.gov/ct2/show/NCT00991341