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News

STS Press Release

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“Fresher” Blood Donations May Be Better for Recipients

Modernized system could greatly diminish storage duration and reduce complications

Chicago – Although clinical evidence is lacking on the relationship between the storage time of red blood cells and outcomes in transfused patients, the authors of a review article in the November 2013 issue of *The Annals of Thoracic Surgery* are advocating for a modernized blood management system—similar to inventory management systems seen in the retail sector—to potentially reduce patient complications.

Duration of storage is dependent on a number of factors, including the management system, supply and demand, and blood type (less common blood types, such as Type AB negative, tend to be stored longer than more common types, particularly Type O). Currently, the Food and Drug Administration (FDA) limits storage duration to a maximum of 42 days, depending on the storage system.

“Stored blood undergoes changes, meaning that transfusion of older red blood cells may result in the delivery of high concentrations of red blood cell components such as hemoglobin, free iron, and red blood cell fragments,” said Colleen G. Koch, MD, MS, MBA, from the Cleveland Clinic in Ohio. “These components may contribute to adverse clinical events observed in a number of investigations.”

Dr. Koch and colleagues reviewed existing literature to examine the presence of storage-related complications in patients who underwent blood transfusions. They found several studies in trauma and cardiac surgery that linked increased blood storage duration to post-injury multiple organ failure, infection, deep vein thrombosis, and hospital mortality, while other studies reported no apparent relationship between storage duration and clinical outcomes.

Key Points

- Current FDA policy limits storage duration of red blood cells to 42 days for most storage systems.
- Suitability of transfusion in relation to red blood cell storage life has not been well established.
- Establishing a blood management system based on modern inventory management strategies could greatly reduce storage duration and potentially reduce complications associated with transfusion of stored blood.

Several ongoing randomized controlled trials may answer more questions in the future. Meanwhile, the researchers recommend exploring changes to the current first-in, first-out process. They pointed to new models of inventory management in the retail sector that would reduce inventory shelf time in favor of just-in-time delivery of products.

“We hope our results engage others in the medical community to investigate alternative inventory management strategies that would contribute to reducing the storage age of the red cell product without adversely influencing inventory availability,” said Dr. Koch.

One existing model involves blood platelet donation. Platelets expire 5 days after donation, so managing platelet inventory requires hourly monitoring and more frequent deliveries from blood collection agencies. Using these same techniques for red blood cell donations could help reduce blood storage duration to 14 days or less, according to the researchers.

“We recommend further work with inventory management to explore strategies that would optimize fresher blood for patients,” said Dr. Koch. “Until results of ongoing randomized controlled trials in the area of storage duration are completed, we cannot recommend a change in the current FDA formal guidelines; however, we encourage surgeons to remain aware of the possible complications associated with red blood cell transfusion.”

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For a copy of the study, contact Cassie Brasseur at 312-202-5865 or cbrasseur@sts.org.

Founded in 1964, The Society of Thoracic Surgeons is a not-for-profit organization representing more than 6,700 cardiothoracic surgeons, researchers, and allied health care professionals worldwide who are dedicated to ensuring the best possible outcomes for surgeries of the heart, lung, and esophagus, as well as other surgical procedures within the chest. The Society’s mission is to enhance the ability of cardiothoracic surgeons to provide the highest quality patient care through education, research, and advocacy.

The Annals of Thoracic Surgery is the official journal of STS and the Southern Thoracic Surgical Association.