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## Old Red Blood Cells May Double Mortality In Trauma Patients

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Philip Spinella and Christopher Carroll, both paediatric intensivists from Connecticut Children's Medical Center, Hartford, Connecticut, USA and their team studied 202 severe trauma patients treated at Hartford Hospital following a critical injury with five or more units of red blood cells. They found that even one unit of red blood cells stored more than 28 days doubled the incidence of deep vein thrombosis and increased death secondary to multiple organ failure. Though medical experts had long suspected that older red blood cells caused complications, this is one of the first studies to strongly support this dramatic link. This study differs from previous studies since the amount of RBC units transfused to the fresh and old RBC study groups were equal. As a result, this eliminated the major criticism of previous studies that it is the amount of RBCs transfused not the storage age that was affecting outcomes.

Over 29 million units of blood were transfused in the United States in 2004, and this is a routine and reliable part of trauma care treatment around the world. However, red blood cell transfusion continues to be associated with adverse complications. This study provides evidence that allows doctors to reduce these risks by giving fresher red blood cells to severe trauma patients who need these major transfusions for life-saving procedures.

According to Spinella, 'The preferential use of younger RBCs to critically ill patients has the potential to increase waste due to outdating. Since blood is often a scarce resource this is important and methods need to be developed to minimize waste while providing the most efficacious and safe blood product for a given patient.'

The authors speculate, 'These important findings should encourage research into the effects of old blood and coagulation in critically ill patients. With the widespread of use of red blood cell transfusion for critically injured patients, this study has the potential to cut deaths in hospitals around the world.'

### Journal reference:

Philip C Spinella, Christopher L Carroll, Ilene Staff, Ronald Gross, Jacqueline Mc Quay, Lauren Keibel, Charles E Wade and John B Holcomb. Duration of red blood cell storage is associated with increased incidence of deep vein thrombosis and in-hospital mortality in patients with traumatic injuries. *Critical Care*, 2009; (in press) [link]  
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