

Duration of red blood cell storage is associated with increased incidence of deep vein thrombosis and in-hospital mortality in patients with traumatic injuries.

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INTRODUCTION: In critically ill patients the relationship between the storage age of red blood cells (RBCs) transfused and outcomes are controversial. To determine if duration of RBC storage is associated with adverse outcomes we studied critically ill trauma patients requiring transfusion. **METHODS:** This retrospective cohort study included patients with traumatic injuries transfused [greater than or equal to]5 RBC units. Patients transfused [greater than or equal to]1 units of RBCs with a maximum storage age of up to 27 days were compared to those transfused 1 or more RBC units with a maximum storage age of [greater than or equal to] 28 days. These study groups were also matched by RBC amount (+/- 1 unit) transfused. Primary outcomes were deep vein thrombosis and in-hospital mortality. **RESULTS:** Two hundred and two patients were studied with 101 in both decreased and increased RBC age groups. No differences in admission vital signs, laboratory values, use of DVT prophylaxis, blood products or Injury Severity Scores were measured between study groups. In the decreased compared to increased RBC storage age groups, deep vein thrombosis occurred in 16.7% vs 34.5%, ($p=0.006$), and mortality was 13.9% vs 26.7%, ($p=.02$), respectively. Patients transfused RBCs of increased storage age had an independent association with mortality, OR (95% CI), 4.0 (1.34 - 11.61), ($p=0.01$), and had an increased incidence of death from multi-organ failure compared to the decreased RBC age group, 16% vs 7%, respectively, ($p=0.037$). **CONCLUSIONS:** In trauma patients transfused [greater than or equal to]5 units of RBCs, transfusion of RBCs [greater than or equal to] 28 days of storage may be associated with deep vein thrombosis and death from multi-organ failure.