

Jamie Bleyer, Block 7, January 2015

Citation: Holcomb, J., et al. "Prehospital Transfusion of Plasma and Red Blood Cells in Trauma Patients." *Journal of Prehospital Emergency Care*. Jan 2015. Vol 19:1-9.

Clinical Question: Does prehospital transfusion of plasma and/or pRBCs result in improved survival?

Background: Early transfusion of plasma and RBCs has been associated with improved outcome in trauma patients. Prior studies have shown that the mean time to hemorrhagic death after traumatic injury is 2.6 hours. This study was launched off the military approach of damage control resuscitation.

Methods: Single-center retrospective chart review of adult trauma patients, conducted over 20 month study period, analyzing data on demographics, injury scores, shock, coagulopathy, outcomes and blood product utilization. Patients included in study were transported by ground and two helicopter companies. One helicopter system (Life-Flight) gave thawed plasma and RBCs per established protocol, while the other system and ground transport only used crystalloid for resuscitation. Primary outcome was 30-day mortality. Secondary outcomes were 6- and 24-hour mortality, prehospital crystalloid and blood product amounts, 6- and 24-hour blood product vs. crystalloid utilization, and metabolic and coagulation status on hospital arrival.

Results: A total of 1,677 trauma patients were included of which 792 were transported by ground, 716 by Life-Flight (LF) and 169 by other company. Nineteen percent of LF patients received prehospital transfusion. Of the 942 units of pRBCs and plasma stocked on LF, 1.9% was wasted. Transfused patients had improved acid-base status on admission and decreased utilization of blood products over initial 24 hours. Substantial bleeding rates were lower in the LF (16%) vs. OA (23%). There was no difference in 24 hour or 30 day mortality between the two groups.

Discussion/Limitations: The authors conclude that prehospital transfusion is associated with improved early outcomes but no overall survival benefit. This conclusion was based on very slight improvement in 6-hour mortality of the LF group (12 vs. 10%). The major limitation is the study design. This was a single center retrospective study rather than a randomized control study. Life-Flight was the only company attempting pre-hospital transfusions with a clearly defined protocol and collaboration with local blood bank. Morbidity was not addressed in this study, but with no improvement in overall mortality, the benefits do not appear to outweigh the risks.

Bottom Line: This study did not show significant overall mortality benefits with pre-hospital transfusion. More research may be required to address any improvement in morbidity.
