

## The Efficacy of Pre-Hospital Packed Red Blood Cells in the Treatment of Severe Trauma: A Retrospective, Matched, Cohort Study

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**Abstract :** Introduction: Major trauma is the leading cause of death in 15-45 year olds and a significant human, social and economic costs. Resuscitation is a stalwart of trauma management, especially in the pre-hospital environment and packed red blood cells (pRBC) are being increasingly used with the advent of permissive hypotension. The evidence in this area is lacking and further research is required to determine its efficacy. Aim: The aim of this retrospective, matched cohort study was to determine if major trauma patients, who received pre-hospital pRBC, have a difference in their initial emergency department cardiovascular status; when compared with injury-profile matched controls. Methods: The trauma databases of the Royal Brisbane and Women's Hospital, Royal Children's Hospital (Herston) and Queensland Ambulance Service were accessed and major trauma patient (ISS>12) data, who received pre-hospital pRBC, from January 2011 to August 2014 was collected. Patients were then matched against control patients that had not received pRBC, by their injury profile. The primary outcomes was cardiovascular status; defined as shock index and Revised Trauma Score. Results: Data for 25 patients who received pre-hospital pRBC was accessed and the injury profiles matched against suitable controls. On admittance to the emergency department, a statistically significant difference was seen in the blood group (Blood = 1.42 and Control = 0.97, p-value = 0.0449). However, the same was not seen with the RTS (Blood = 4.15 and Control 5.56, p-value = 0.291). Discussion: A worsening shock index and revised trauma score was associated with pre-hospital administration of pRBC. However, due to the small sample size, limited matching protocol and associated confounding factors it is difficult to draw any solid conclusions. Further studies, with larger patient numbers, are required to enable adequate conclusions to be drawn on the efficacy of pre-hospital packed red blood cell transfusion.

**Keywords :** pre-hospital, packed red blood cells, severe trauma, emergency medicine

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