

VetCOT Education Committee – Journal Review Style – Table Format

Factors affecting physicians' decision to start prehospital blood product transfusion in blunt trauma patients: A cohort study of Helsinki Trauma Registry – JAMA 2024 Jama T, Lefering R, Lauronen J, Handolin L. Transfusion. 2024; 64(S2): S167–S173. https://doi.org/10.1111/trf.17791 Review by Lee Palmer	
Background	Prehospital blood transfusions are used in treatment for bleeding trauma patients at risk for exsanguination. Triggers for starting transfusion in the field are less studied. The study analyzed the factors affecting the decision of physicians to start prehospital blood product transfusion (PHBT) in adult blunt trauma patients.
Rational and Objective	Several studies report a survival benefit with an early transfusion of packed red blood cells (pRBCs) and/or plasma in trauma patients suffering massive bleeding. However, due to the heterogeneity and low quality of mainly retrospective small studies, current data from systematic reviews and meta-analyses fail to definitively show clear survival benefit. The objective of this study was to identify factors affecting the decision to start PHBT at the site of an accident.
Trial Design	Retrospective, cohort study
Patient population and location	<u>Location:</u> - Helsinki University Hospital Trauma Unit, Helsinki, Finland. <u>Inclusion criteria:</u> - All adult (age ≥ 16 years) blunt trauma patients from the Helsinki Trauma Registry between March 2016 and July 2021. - Patients were admitted within 24 h after an accident with new injury severity score (NISS) >15. - Patients treated by physician-staffed prehospital emergency medical care (P-S PHEC) with PHBT capabilities. <u>Exclusion criteria:</u> - Patients treated in situations with no PHBT capability - Patients with all trauma mechanisms other than blunt (such as penetrating trauma and burns) - Isolated head injuries: Head Abbreviated Injury Scale (AIS) >2 with other regional AIS <2 - Patients undergoing interhospital transfers Prehospital Blood Product Transfusion was defined as infusion of packed RBCs, freeze-dried plasma, or both during the prehospital phase of care.
Methods	- Retrospective analysis of data of all adult (age ≥ 16 years) blunt trauma patients from the Helsinki Trauma Registry between March 2016 and July 2021. - Univariate analysis for the identification of predictive factors and multivariate regression analysis for their importance as predictive factors for the initiation of PHBT were applied.

	Patients given PHBT were compared with patients not given PHBT using univariate analysis.
Endpoints (if applicable)	n/a
Results	1652 patients registered in the Helsinki Trauma Registry (HTR) database: 556 (556/1652; 33.6%) patients were treated by a P-S PHEC unit. 394 (394/556; 70.9%) patients (study population) were treated by transfusion-capable P-S PHEC units. - PHBT (red blood cells and/or plasma) was initiated for 78 (78/394) or 19.8% of the patients. - The study identified three highly significant clinical triggers for initiating PHBT in adult blunt trauma patients: - Need for high crystalloid volume (>500 mL) - Shock index ≥ 0.9 - Need for prehospital pleural decompression (performed five times more often in patients with PHBT than in patients without PHBT)
Limitations	- Retrospective in nature - Only included patients from the HTR during the study period - Only included blunt trauma; therefore, the results of this study may not be applicable in penetrating trauma
Clinical Relevance and Conclusions	Study identified the following factors as the most feasible indicators of the need for PHBT in adult blunt trauma patients. - A high requirement for crystalloid fluids (>500 mL) prior to or alongside blood products heavily influenced the decision to transfuse and provided the strongest association and most important trigger for PHBT. - A shock Index of ≥ 0.9 served as a strong, immediate indicator for hypovolemic resuscitation. - The need for prehospital pleural decompression (often indicating or ruling out tension pneumothorax) was a key factor, likely reflecting high-energy trauma with an increased risk of severe, noncompressible torso hemorrhage. Of note, the need for pleural decompression should be used as a trigger for PHBT only in cases when patient condition is not improving after decompression. Although these clinical indicators were effectively used to pinpoint patients at high risk for exsanguination, the study found no independent effect of the PHBT on overall patient outcomes in this specific cohort.