

<p>Platelet transfusion increases risk for acute respiratory distress syndrome in non-massively transfused blunt trauma patients: 83 cases (2008–2013)</p> <p>George Kasotakis; Nichole Starr; Erek Nelson; Bedabrata Sarkar; Peter Ashley Burke; Daniel George Remick; Ronald Gary Tompkins; The Inflammation and Host Response to Injury Investigators; (European Journal of Trauma and Emergency Surgery (2019) 45:671–679 https://doi.org/10.1007/s00068-018-0953-4)</p> <p>Review by Dean Thompson</p>	
Background	In this project, they aim to identify the effect of platelet (PLT) transfusion in non-massively transfused blunt injured patients as there may be a connection between ARDS (Acute Respiratory Distress Syndrome) and high-ratio blood component therapy. Careful selection of trauma patients should be considered before initiation.
Rational and Objective	To study the differences in mortality and secondary outcomes based on the amount of platelet transfusion in the first 48h after injury.
Trial Design	Retrospective case selections (2003-2010?)
Patient population and location	<ul style="list-style-type: none"> • 2002 blunt trauma patients (human) enrolled in the Glue Grant database (Large scale collaborative of nine trauma centers that collected detailed clinical data with severe blunt injury, as well as cytokine and genetic data on a subset of these patients) • 488 patients included in analysis based on exclusions: <ul style="list-style-type: none"> ○ Exclusions (1,465 patients): <ul style="list-style-type: none"> ▪ Received >10 units packed RBCs in first 12h: n=465 ▪ Received no PLTs in first 48h: n=983 ▪ Expired within 48h of admission: n=17 • Study group age between 16 and 90 years of age, arrived at the ED less than 6h of injury, and had blood drawn within 12h. • 65.6% were male patients. • Overall population was young (age 43.7 +/- 19.9) and relatively healthy.
Methods	<p>Patients were grouped into quartiles depending on the volume of PLT therapy they received. Mantel-Haenszel tests performed and multivariate logistic and linear regression analyses were fitted, respectively, adjusting for age, severity, injury burden, comorbidities, pre-hospital care, crystalloid and colloid therapy and transfused blood products in the first 48h post injury.</p> <p>Multiple odds ratios and models were performed across all groups. Tests also included subjects that received <250 ml of PLT (the lowest volume quartile) versus those that received more.</p>
Endpoints (if applicable)	n/a
Results	<ul style="list-style-type: none"> • Identified that PLT transfusion is an independent predictor of ARDS development in non-massively transfused blunt injured patients. The risk appears to double if they receive >250 ml; this increase is not linear. • Higher incidence of ARDS does not lead to excess mortality.

	<ul style="list-style-type: none">• Platelets contribute to more than just hemostasis. They have been shown to potently drive inflammatory response. Platelet activation alone promotes neutrophil recruitment in the lungs contributing to ARDS development.• Hypothesis that pre-hospital use of antiplatelet drugs may be associated with lower incidence of ARDS.
Limitations	Small, human retrospective study.
Clinical Relevance Conclusions	<ul style="list-style-type: none">• In non-massively transfused patients without the risk of death from exsanguination and massive transfusion ruled out, PLT transfusion independently increases the risks for ARDS and should be avoided in the absence of true or functional thrombocytopenia.