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Name: Klaus Görlinger  
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Erstautor: Dr. Klaus Görlinger, Universitätsklinikum Essen, Essen  
Coautoren: Dr. Lars Bergmann, Universitätsklinikum Essen, Essen  
Dr. Torsten Heine, Universitätsklinikum Essen, Essen  
Heinz Macek, Universitätsklinikum Essen, Essen  
PD Dr. Markus Kamler, Universitätsklinikum Essen, Essen  
PD Dr. Matthias Hartmann, Universitätsklinikum Essen, Essen  
Abstracttitel: Reduction of blood transfusion rate by thrombelastometry and impedance aggregometry based point-of-care coagulation management in thoracic and cardiovascular surgery

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**Background and Goal of the Study:** In April 2004 we implemented rotational thrombelastometry (ROTEM) for point-of-care (POC) coagulation management in thoracic and cardiovascular surgery. In December 2005 we complemented this management by impedance aggregometry (Multiplate) for bedside platelet function analysis. Based on our experience in POC coagulation management in liver transplantation and multiple trauma we developed an algorithm for POC coagulation management in cardiovascular surgery in 2006. The goal of our study was to proof, if our POC coagulation management is effective in reducing transfusion rate in cardiovascular surgery.

**Materials and Methods:** To evaluate the efficiency of our POC coagulation management we analysed in our retrospective study the transfusion rate of blood products from January 2004 to December 2007.

**Results and Discussion:** The number of transfused units of red blood cells (RBC) decreased from 3276 in 2004 to 2840 in 2007 (-13.3%), and the number of transfused units of fresh frozen plasma (FFP) decreased from 1986 in 2004 to 358 in 2007 (-82.0%). Apart from the absolute reduction of transfused RBC and FFP, the RBC:FFP-ratio changed from 1.6 to 7.9. The reduction of FFP transfusion rate seems to be of great importance, because FFP is one of the blood products with the highest risk-benefit-ratio (1-3). In contrast to the reduction in RBC and FFP, the transfusion rate of pooled platelet concentrates (PC) increased from 336 units in 2004 to 619 units in 2007 (+84.2%). This increase is probably a consequence of the increasing number of patients with a dual antiplatelet therapy with acetylsalicylic acid and clopidogrel, particularly in cardiovascular surgery.

**Conclusions:** ROTEM- and Multiplate-based coagulation management is effective in reducing transfusion rate in cardiovascular surgery. This effect is most pronounced for the reduction of FFP transfusion rate. This may particularly be important for the reduction of FFP-induced morbidity and mortality, such as transfusion-related acute lung injury (TRALI) and transfusion-associated circulatory overload (TACO) (1-3). Furthermore, the change of RBC:FFP-ratio from 1.6 to 7.9 reflects a more goal-directed therapy of coagulopathies with specific coagulation factor concentrates.

**References:** (1) Wallis JP, Dzik S. Transfusion. 2005; 44: 1674-5. (2) Dara SI, Rana R, et al. Crit Care Med. 2005; 33: 2667-71. (3) Stanworth SJ. Hematology. 2007: 179-86.