

# ACS COT Residents Trauma Papers Competition Title Page

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Title of the Abstract: Four-Factor Prothrombin Complex Concentrate in Adjunct to Whole Blood in Trauma-Related Hemorrhage: Does Whole Blood Replace the Need of Factors?

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## **FOUR-FACTOR PROTHROMBIN COMPLEX CONCENTRATE IN ADJUNCT TO WHOLE BLOOD IN TRAUMA-RELATED HEMORRHAGE: DOES WHOLE BLOOD REPLACE THE NEED OF FACTORS?**

### **Objectives:**

The use of whole blood (WB) for the treatment of hemorrhagic shock and coagulopathy is increasing in civilian trauma patients. Four-factor prothrombin complex concentrate (4-PCC) in adjunct to component therapy showed improved outcomes in trauma patients. The aim of our study is to evaluate the outcomes of trauma patients who received 4-PCC+WB compared to WB alone.

### **Methods:**

We performed a three-year (2015–2017) analysis of the ACS-TQIP database. All adult (age  $\geq 18$  years) trauma patients who received WB were included. Patients on preinjury anticoagulants were excluded. Patients were stratified into two groups: 4-PCC+WB versus WB alone and matched in a 1:2 ratio using propensity score matching. We matched for demographics, vitals, injury parameters, comorbidities, and level of trauma centers. Outcome measures were packed red blood cells (pRBC), plasma and platelets transfused, hospital and ICU length of stay (LOS) among survivors, and mortality.

### **Results:**

A total of 252 patients (4-PCC+WB, 84; WB alone, 158) were matched. Mean age was  $47 \pm 21$  years; 63% were males; median ISS was 27 [21–43], and 85% had blunt injuries. Four-PCC+WB was associated with a decreased requirement for pRBC (5 vs. 8 units;  $p = 0.01$ ) and FFP (3 vs. 6 units;  $p = 0.02$ ) transfusion compared to WB alone. Patients who received 4-PCC+WB had a lower ICU LOS (5 days vs. 8 days,  $p = 0.03$ ). There was no difference in the platelet transfusion ( $p = 0.72$ ), hospital LOS (0.58), and in-hospital mortality ( $p=0.72$ ) between the two groups.

### **Conclusions:**

Our study demonstrates that the use of 4-PCC as an adjunct to WB is associated with a reduction in transfusion requirements and ICU LOS compared to WB alone in the resuscitation of trauma patients. Further studies are required to evaluate the need for factor replacement in adjunct to WB in the resuscitation of trauma patients.