4-Factor Prothrombin Complex Concentrate Dosing for Anticoagulated Intracranial Hemorrhage Patients – Hasbrouck, M, Kurczewski, L; Virginia Commonwealth University Health System, Richmond, VA

**Background:** 4-Factor Prothrombin Complex Concentrate (4F-PCC) consists of factors II, VII, IX, and X as well as Protein C and S. It is used to reverse the effects of anticoagulation medications in patients who are bleeding or who require urgent procedures. 4F-PCC is recommended for the reversal of anticoagulation due to vitamin K antagonists (VKA) and oral direct factor-Xa inhibitors (DOACs) in patients suffering from an intracranial hemorrhage (ICH). An increased risk of thrombosis has been associated with 4F-PCC, so there exists a challenge of stopping a bleed while not precipitating clot formation. Small, retrospective studies have evaluated weight-based dosing and fixed-dose strategies for the reversal of VKAs and DOACs. However, these often excluded or had limited numbers of ICH patients.

**Objective:** The objective of this study is to assess the current dosing strategy of 4F-PCC in an ICH population on therapeutic anticoagulation with either a VKA or DOAC and to determine the feasibility of implementing a new 4F-PCC dosing strategy.

**Methods:** This is a single center, retrospective medical record review from January 1, 2014- January 31, 2020 of adult patients suffering from an intracranial hemorrhage on anticoagulation who received at least one dose of 4F-PCC to reverse their warfarin, apixaban, rivaroxaban, edoxaban, or dabigatran. Patients were excluded if they were pregnant, a prisoner, had liver disease with elevated baseline INR, had a diagnosis of any clotting factor deficiency, or if they did not have an INR on admission and were taking warfarin. The primary outcome was to characterize current 4F-PCC dosing in median units per dose and units/kg per dose in ICH patients at our institution. Secondary endpoints include the incidence of thromboses within 30 days, incidence of hemostasis, degree of hematoma expansion, need for additional doses of 4F-PCC, and the number of blood product transfusions required. Data collection is currently ongoing at this time and will be analyzed using descriptive statistics.

**Results:** Eighty-two patients met our inclusion criteria and were included in this study; of which, 52 were taking warfarin and 30 were taking a DOAC at baseline. Most patients presented with either an intraparenchymal hemorrhage or a subdural hemorrhage (40% and 45% respectively). The mean dose of 4F-PCC for warfarin reversal was 2220 units (27.6 units/kg) and 3379 (40.9 units/kg) for DOAC reversal. Zero patients experienced a thromboembolic event within 30 days of receiving 4F-PCC reversal. A subsequent dose was needed in 2 patients, both in the warfarin group due to lack of reaching the target INR. Hemostasis occurred in 40% and 44% for the warfarin and DOAC groups respectively. More results will ensue regarding the degree of bleed expansion in those without hemostasis, pending final CT scan readings.

**Conclusion:** In patients with an ICH on oral anticoagulation with warfarin, our institution is dosing 4F-PCC according to the FDA labeling and according to society guidelines for DOAC patients. Our current dosing strategy is not leading to significant numbers of thromboembolic events and is achieving hemostasis in about 40% of our patients. More analysis will occur once our final reads of CT scans are completed with regards to the degree of bleed expansion and the discussion of a possible fixed-dose policy implementation.