

Mary K. Lee
L2
LSU Health Sciences Center, New Orleans, LA

Dr. Alison Smith, MD, PhD:
LSUHSC, Department of Surgery

“Calcium and Blood Transfusion in Trauma: A Retrospective Comparative Analysis of the Impact Pre-Hospital Blood Transfusions Have on Calcium Levels and Outcomes of Trauma Patients”

BACKGROUND: Military practices for rapid resuscitation after trauma include the advanced resuscitation care (ARC) bundle which involves the administration of blood products, tranexamic acid, and calcium. In April 2024, Virginia Beach EMS expanded the use of the ARC bundle for treatment of civilian trauma. However, the impact of this bundle on civilian trauma patients is under-researched. This study aims to analyze the effects of the pre-hospital ARC bundle on trauma patient outcomes and hospital protocol. The study will retrospectively compare trauma patients who received the ARC bundle with those that did not, with a focus on serum calcium levels, blood product utilization, massive transfusion protocol activation, and overall clinical outcomes.

OBJECTIVES: The objective of this study is to determine the effects of administering a pre-hospital ARC bundle to civilian trauma patients. The primary objective is to compare patients who received the bundle to those who did not, focusing specifically on serum calcium levels, frequency of massive transfusion protocol use, and overall survival. Secondary objectives include evaluating how the bundle impacts the amount of blood products needed and how quickly patients recover. The hypothesis is that receiving this bundle results in better patient outcomes, such as normal serum calcium levels, fewer blood transfusions, and lower mortality rates.

METHODS: The study design is a retrospective chart review comparing outcomes of civilian trauma patients who received a pre-hospital ARC bundle to those that did not. The study includes patients who were treated at Sentara facilities and other related institutions, including University Medical Center-New Orleans, over a three-year period. The design will remain consistent across all institutions. To be eligible, patients must have been 18+ years old who received at least one unit of blood and had the ARC bundle administered before their hospital arrival. Patients excluded include those who experienced pre-hospital cardiac arrest, isolated head injuries, transfer from another hospital, and those from vulnerable populations. Data will be collected from UMCNO via the trauma registry and EPIC medical records, and the variables will include calcium levels, activation of massive transfusion protocols, the amount of blood products administered, vital signs, lab values, and overall patient disposition. Statistical analysis will be conducted with independent t-tests or Mann-Whitney U tests, based on normality of data distribution. All data will be de-identified and stored securely in REDCap. No direct patient contact will be involved in this retrospective study and informed consent is not required.

RESULTS: Awaiting results

CONCLUSIONS: Awaiting conclusion