## Abstract:

**Title:** Implementation and Outcomes of a Prehospital Whole Blood Transfusion Program

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**Objectives:**

The objective is to describe the design and implementation of a prehospital whole blood transfusion program at a level II trauma center by outlining the steps taken to start the program and its outcomes in the first 48 months.

**Methods:**

We conducted a single-center, retrospective study at a level II trauma center analyzing patients who received prehospital whole blood transfusion in ground medical transport vehicles over two years from the program's inception in 2024. Information about demographics, type and mechanism of hemorrhage, and paramedic intercepts were collected and analyzed. Total costs for set up and maintenance were calculated.

**Results:**

There were 37 cases where whole blood was transfused in an ambulance. Among these patients, 78.4% were male, and the average age was 45 years. Trauma patients made up 67.6% of prehospital transfusions with 80% of these patients injured due to penetrating injury and 20% due to blunt force. The other 32.4% of transfusions were due to medical causes, such as hematemesis, rectal or gastrointestinal bleeding, vaginal bleeding, and varicose vein hemorrhage. Out of these patients, 93.5% met the guidelines for transfusion and an average of 253 mL of blood was given to the patients. 21.6% of patients were handed off from emergency medical services vehicles without transfusion capability to a paramedic service that transfused the patient. Total set up cost was estimated to be approximately $25,000. Subsequent cost per patient transfused is estimated to be $880. Cost analysis did not include medical director or paramedic oversight salaries.

**Conclusion:**

Prehospital whole blood requires a significant investment of time, medical oversight and equipment. Recent literature (in Europe and the US) implies that there is no benefit to prehospital whole blood in the urban environment. This small retrospective study serves as a datapoint for future analysis regarding the efficacy of whole blood in the prehospital environment to reduce mortality. This study provides impetus to evaluate the effect on mortality with future analysis, comparing rural and urban outcomes.