

WG 5 (Combat Casualty Care)

Guiding Remote Blood Product Resuscitation, Should Blood Pressure Dominate Above All Others?

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Introduction:

Accurate triage of trauma casualties is one of the most significant challenges faced by pre-hospital providers. The allocation of resources, as well as tactical decisions regarding the use of aerial and ground evacuation forces, depend on the clinical status of the casualty—an assessment that is not always straightforward. Failure to correctly identify casualties in need of life-saving interventions can lead to poor clinical outcomes and, in battlefield settings, may result in preventable deaths.

Methods:

This retrospective, registry-based analysis examined casualties injured during the Swords of Iron War (October 2023 – December 2024). Prehospital data were extracted from the Israel Defense Forces Trauma Registry, while in-hospital data were obtained from the Israeli National Trauma Registry. The study included casualties who exhibited no clinical signs of hemodynamic compromise in the prehospital setting, had no significant head injury, and were not treated with blood products. Patients with favorable outcomes were compared to those with unfavorable outcomes, defined as requiring a blood transfusion in the emergency department, undergoing urgent surgical intervention, having an Injury Severity Score (ISS) greater than 16, or dying.

Results:

A total of 4,295 casualties met the inclusion criteria—showing no clinical signs of shock, not receiving blood product transfusions, and not suffering significant head injuries. Among them, 182 experienced unfavorable outcomes and, in retrospect, should have received more aggressive treatment in the field.

Casualties with unfavorable outcomes were twice as likely to have sustained firearm injuries (22% vs. 11%, $p < 0.001$), torso injuries (35% vs. 16%, $p < 0.001$), or pelvic injuries (15% vs. 6.2%, $p < 0.001$).

Discussion:

Current clinical practice guidelines for combat casualty care in the Israel Defense Forces (IDF) rely primarily on vital signs and other surrogates of hemodynamic compromise. While these indicators have a relatively strong positive predictive value, their negative predictive value—particularly when measured shortly after injury—is debatable.

A data-driven reassessment of clinical practice guidelines, incorporating injury mechanism and field assessment of injury location, may improve patient selection for life-saving interventions and optimize resource allocation.

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Prehospital Whole Blood or Freeze-Dried Plasma in Casualties with Hemorrhagic Shock

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Background and Purpose:

After controlling hemorrhage, volume resuscitation is the most critical component in managing bleeding casualties. The IDF Medical Corps (IDF-MC) has utilized Freeze-Dried Plasma (FDP) as its primary resuscitation fluid since 2013. During the Swords of Iron (SOI) War, Low Titer O Whole Blood (LTOWB) was introduced across all ground and aerial evacuation platforms, making it the most widely used resuscitation product. While blood products are superior to crystalloids, limited data compare LTOWB to FDP alone. This study evaluates the impact of LTOWB compared to FDP on survival outcomes in combat casualties.

Methods:

This retrospective analysis included combat casualties from October 2023 to December 2024 who received prehospital blood product resuscitation. Data were extracted from the IDF-MC Trauma Registry and the Israeli National Trauma Registry. Casualties were categorized by blood product received: LTOWB alone, FDP alone, or both. A multivariable regression analysis assessed the association between blood product type and mortality.

Results:

A total of 380 casualties received prehospital blood products. Among them, 233 casualties (61%) received LTOWB, 77 casualties (20%) received FDP, and 70 casualties (18%) received both. Casualties treated with LTOWB were more likely to exhibit signs of shock prior to treatment compared to those treated with FDP (58% vs. 47%, $p = 0.2$) and were more likely to have severe injuries (ISS ≥ 16 , 69% vs. 47%, $p = 0.024$). Despite greater injury severity, casualties treated with LTOWB had lower mortality than those treated with FDP (22% vs. 34%, $p = 0.045$). In multivariate regression analysis, adjusting for prehospital shock, LTOWB was independently associated with a lower mortality rate than FDP (OR=0.31, 95% CI=0.15-0.63).

Conclusions and Discussion:

Introducing prehospital whole blood represents a major advancement in combat casualty care. This study provides combat-setting evidence that LTOWB improves survival compared to FDP, even in more severely injured casualties. These findings reinforce whole blood as the optimal resuscitation fluid for battlefield trauma, highlighting the need to overcome logistical barriers to its widespread implementation.