

Whole Blood Program

Established at PBCFR: 7/5/22

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The Why?

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Journal homepage: www.ajconline.org



Southwestern Surgical Congress

Time is the enemy: Mortality in trauma patients with hemorrhage from torso injury occurs long before the "golden hour"



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- 2.5 million patients' retrospective study (2012-14)
- ALS 4 chest and abdominal, significant TBI excluded
- Prehospital time and mortality

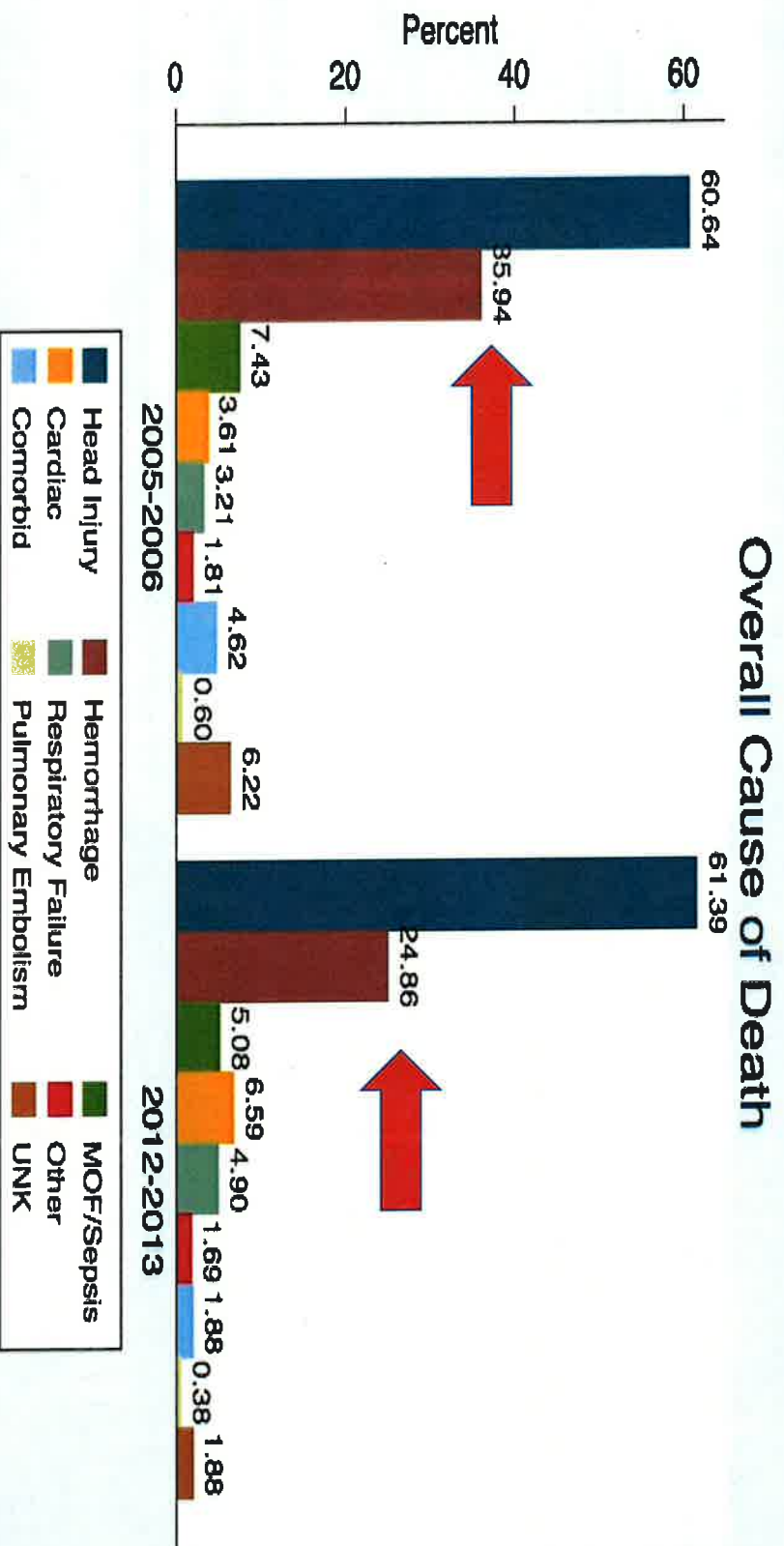
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Bleeding Control Bundle of Care

Oyeniyi B et al. Injury 2017



Use of Cold-Stored Whole Blood is Associated With Improved Mortality in Hemostatic Resuscitation of Major Bleeding

A Multicenter Study

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 Julie L. Murray, BSN, RN,||| Matthew R. Noorbakish, MD,¶¶
 James E. Babonice, DO, Charles Meins, MD,## Robert M. Madayag, MD,##
 Haytham M.A. Kasfarami, MD, MPH,*** Ava K. Mokhtari, MD,***
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 Diane Redmond, MSN,††† David J. Milita, MD,§§§ Amber Brandolino, MS,§§§
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 and John M. Porter, MD****

Resuscitation

Results: A total of 1623 [WB: 1180 (74%), BCT: 443(27%)] patients who sustained penetrating (53%) or blunt (47%) injury were included. Patients who received WB had a higher shock index (0.98 vs 0.83), more comorbidities, and more blunt MOI (all $P < 0.05$). After controlling for center, age, sex, MOI, and injury severity score, we found no differences in the rates of acute kidney injury, deep vein thrombosis/pulmonary embolism or pulmonary complications. WB patients were 9% less likely to experience bleeding complications and were 48% less likely to die than BCT patients ($P < 0.0001$).

Conclusions: Compared with BCT, the use of WB was associated with a 48% reduction in mortality in trauma patients. Our study supports the use of WB in the resuscitation of trauma patients.

COLLOIDS and WB?

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2019 EAST PODIUM PAPER

Safety profile and impact of low-titer group O whole blood for emergency use in trauma

James Williams, BS, Nicholas Merutka, BS, David Meyer, MD, MS, Yu Bai, MD, PhD, Samuel Prater, MD,
Rodolfo Cabrera, BSN, EMT-P, John B. Holcomb, MD, Charles E. Wade, PhD,
Joseph D. Love, DO, and Bryan A. Cotton, MD, MPH, *Houston, Texas*

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Why Whole Blood?

- Red cell replacement in acute blood loss with hypovolemia
- Transports oxygen to the main organs of the body
- Increases the body's clotting factors to internally control the hemorrhage



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**"Insanity is doing the same
thing over & over again &
expecting different results."**

Alton S. White

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STRAC



Southwest Texas Regional Airway Council

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Trauma

Acute Care

Bids & RFPs

Calendar

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ED Operations

Education

EMS
(Prehospital Care)

EMTF 8

Healthcare
Coalition

Infection
Control

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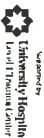
Regional Whole Blood Program Low Titer O Positive Whole Blood (LTOWB)

STRAC is the recipient of a \$150,000 grant from the San Antonio Medical Foundation. This inter-institutional collaboration with the South Texas Blood and Tissue Center, UT Health San Antonio, University Health Systems (UHS), and the US Army Institute of Surgical Research / San Antonio Military Medical Center was formed to study and address the optimizing care of seriously injured or ill patients in STRAC region. This care need is met through the development of a cold stored whole blood product and implement transfusion of cold stored whole blood in the prehospital setting for helicopters emergency medical services. Funding from the Remote Trauma Outcomes Research Network (through the Department of Defense) allowed for an expansion to ground emergency medical services.

What is Whole Blood?



Whole Blood: What is it and when should it be used?
- Dr. Dorinda Jenkins MD FACS



Quick Reference

- Committee Information
- Participating Organizations
- Air Medical Bases Carrying LTOWB

Resources

- EMERGENCY RELEASE LOW TITER GROUP O WHOLE BLOOD IS NOW PERMITTED BY THE AABB STANDARDS
- STRAC Regional Whole Blood Program Rotation Process
- Dr. Jenkins LTOWB Presentation
- STRAC Blood Product Transfusion Record



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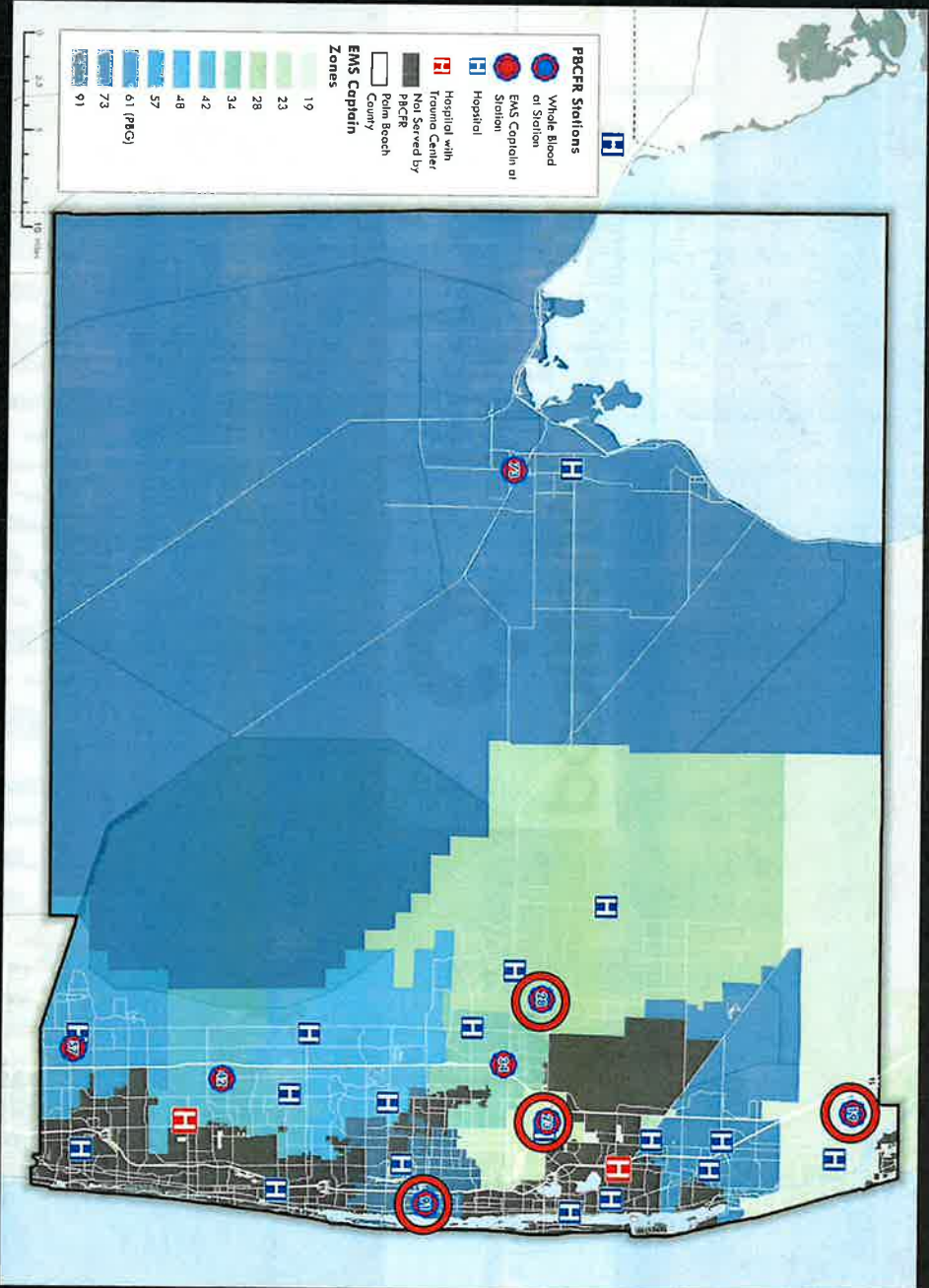
IT TAKES A VILLAGE



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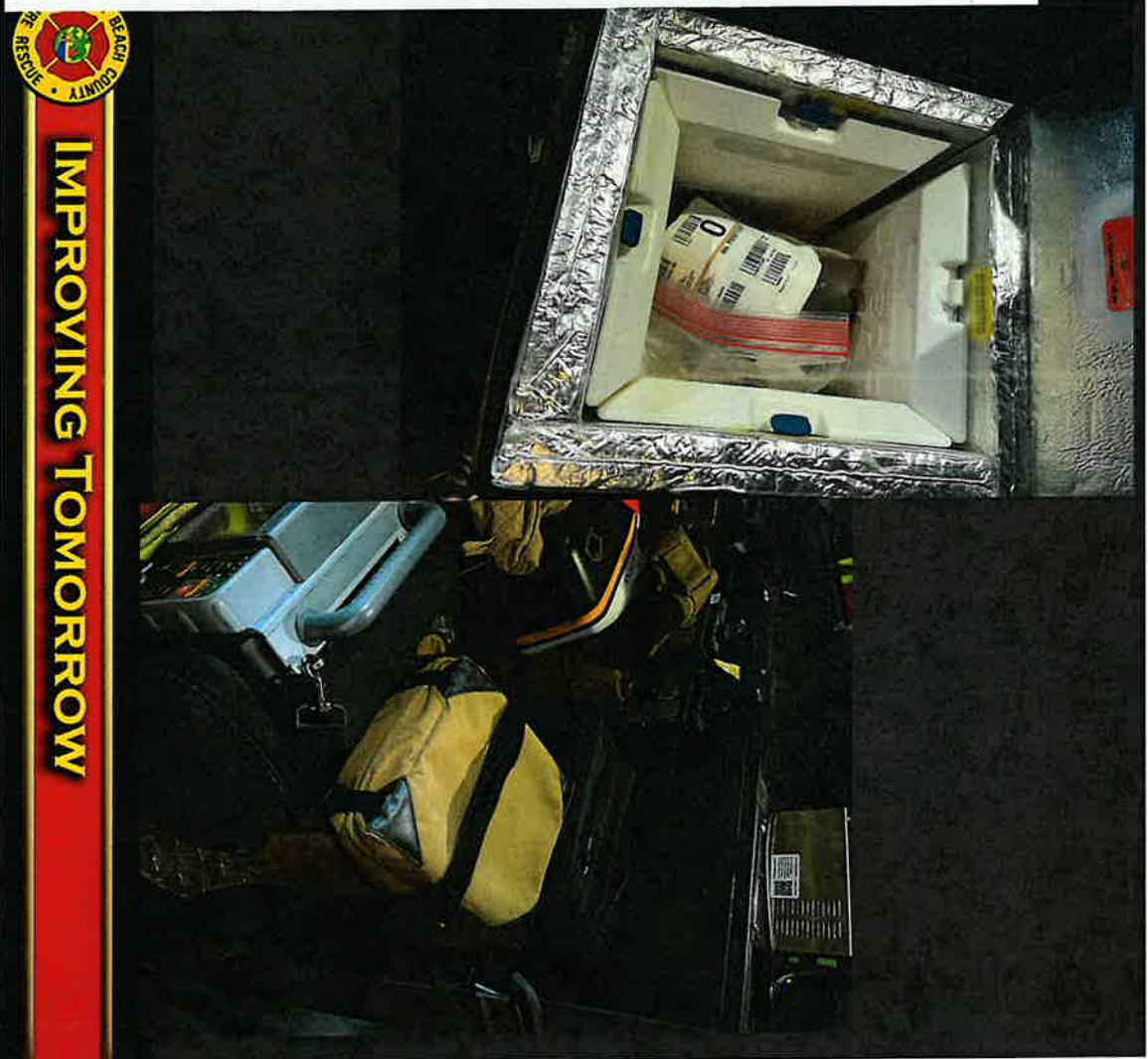
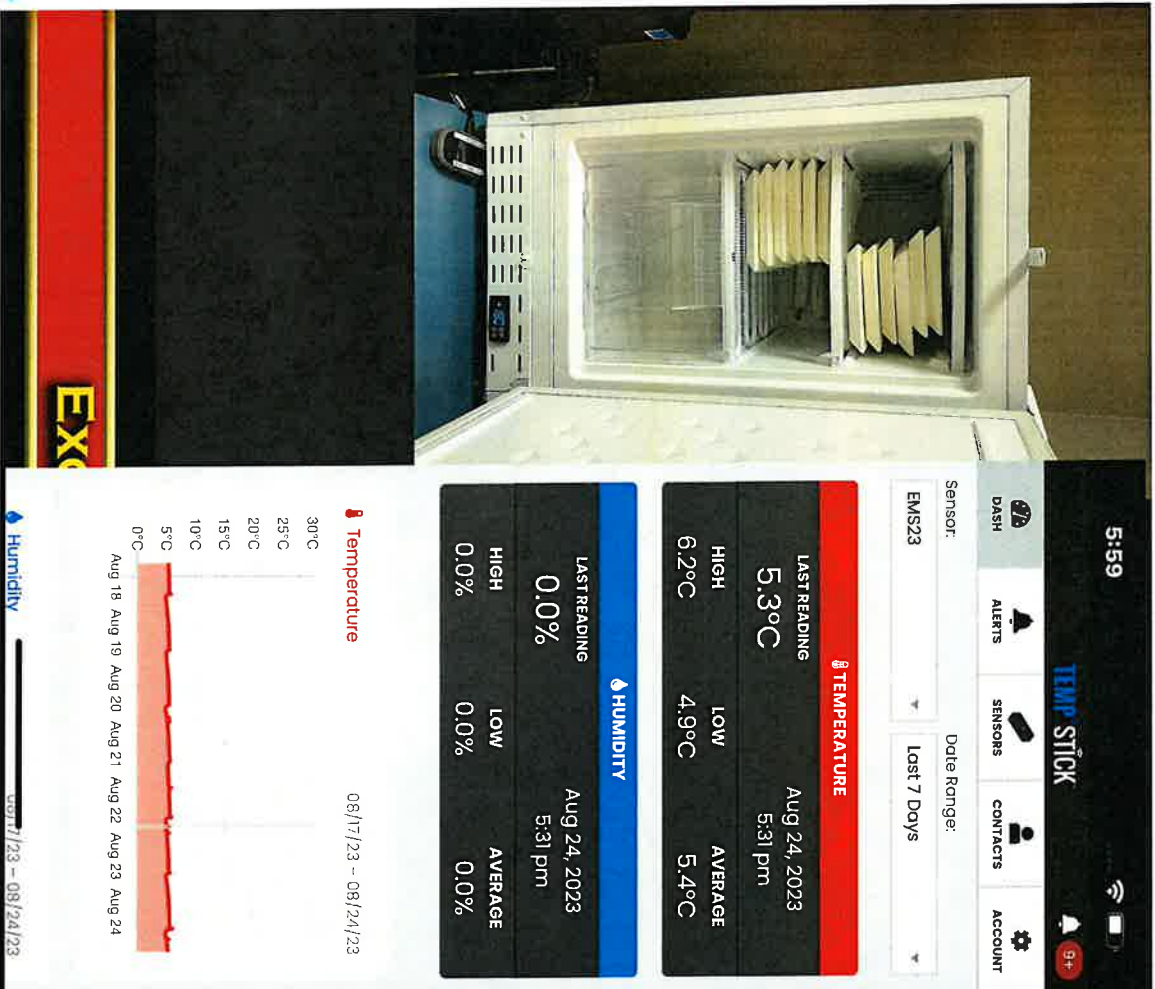
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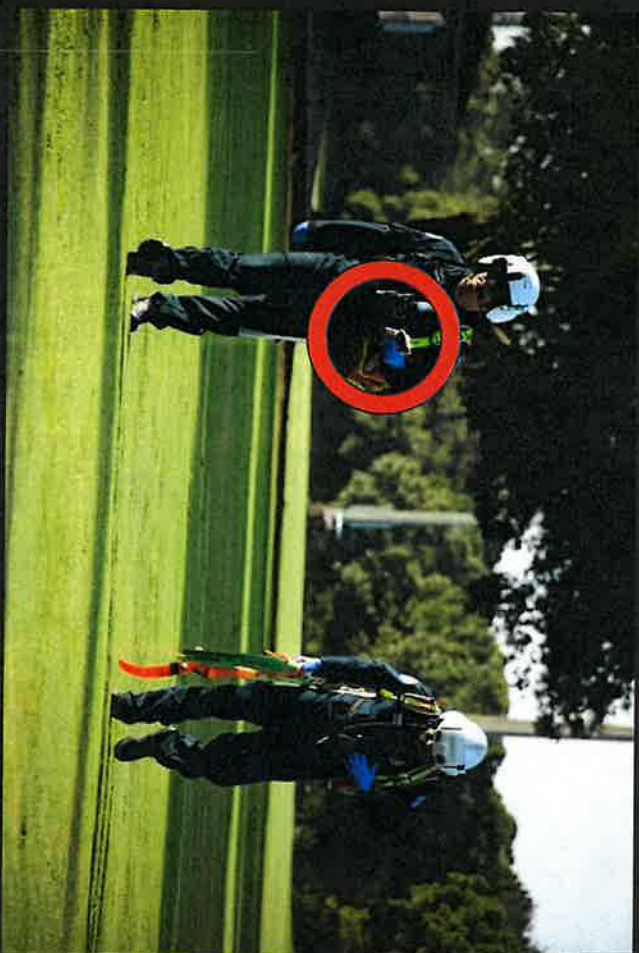
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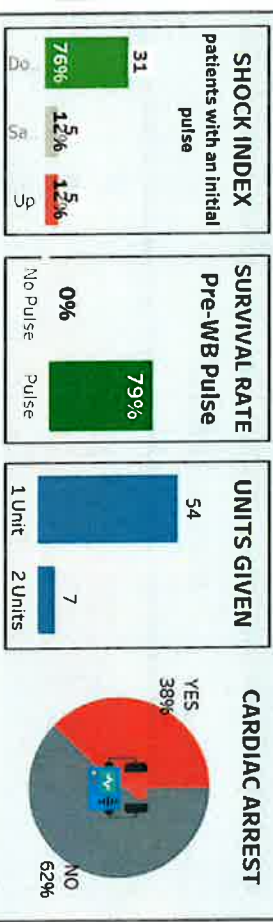
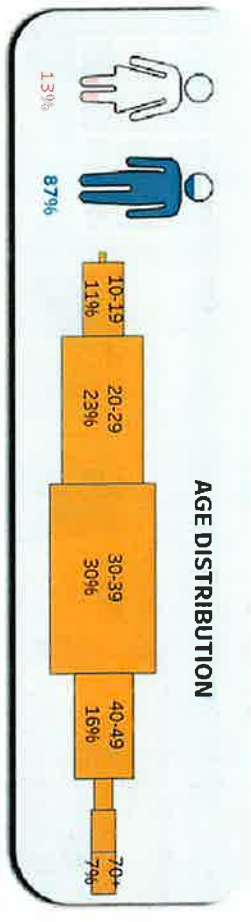
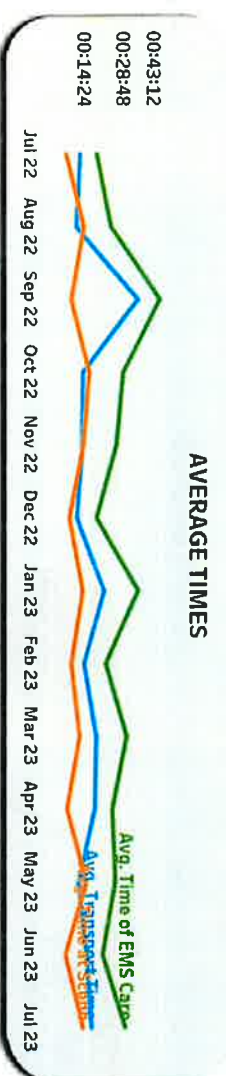
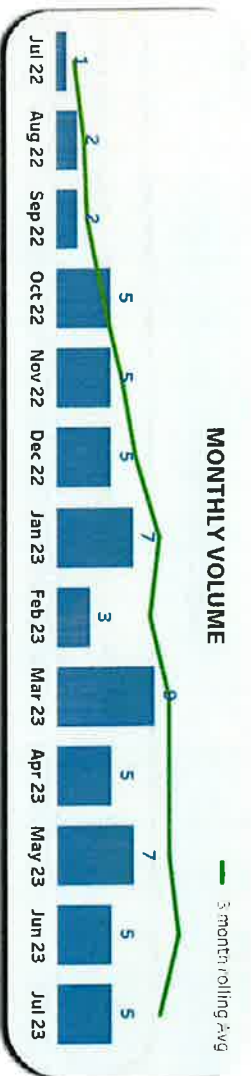
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PBCFR Whole Blood Outcomes

61 Patients

7/30/2022 - 7/25/2023



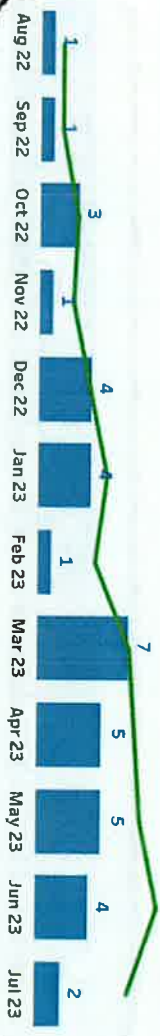


PBCFR Whole Blood Outcomes

38 Patients

7/30/2022 - 7/25/2023

MONTHLY VOLUME



MECHANISM OF INJURY



DESTINATION



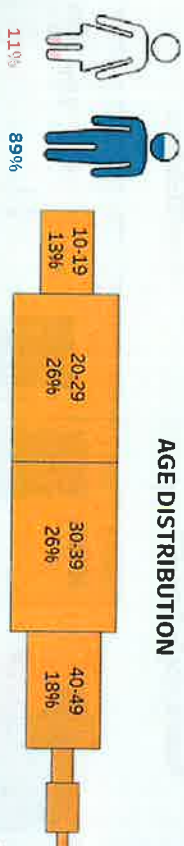
RESPONDING UNIT



AVERAGE TIMES



AGE DISTRIBUTION



PATIENT OUTCOME



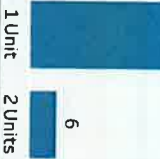
SHOCK INDEX



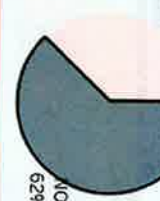
SURVIVAL RATE



UNITS GIVEN



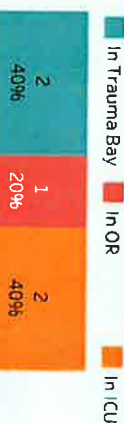
CARDIAC ARREST



TXA RECEIVED



DECEASED LOCATION



The Implementation of a Prehospital Whole Blood Transfusion Program and Early Results

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Keywords: Emergency Medical Services (EMS), prehospital, transfusion, trauma, whole blood

Abbreviations:
EMS: Emergency Medical Services

JHE: heart rate

SBP: systolic blood pressure

WBT: whole blood transfusion

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Abstract
In far-forward combat situations, the military challenged delays by using whole blood transfusions (WBTs) rather than component-based therapy. More recently, some trauma centers have initiated WBT programs with reported success. There are a few Emergency Medical Services (EMS) systems that are using WBTs, but the vast majority are not. Given the increasing data supporting the use of WBTs in the prehospital setting, more EMS systems are likely to consider or begin WBT programs in the future. Our prehospital WBT program was recently implemented in Palm Beach County, Florida (USA). This report will discuss how the program was implemented, the details of the program, and the initial results.

Methods: This report describes the process by which a prehospital WBT program was implemented by Palm Beach County Fire Rescue and the outcomes of the initial case series of patients who received WBTs in this system. Efforts to initiate the prehospital WBT program for this system began in 2018. The program had several obstacles to overcome, with the most significant being the need for a new prehospital blood transfusion program. This obstacle was overcome through education of local elected officials regarding the latest scientific evidence in favor of prehospital WBTs with potential life-saving benefits to the community. After moving past this hurdle, the program went live on July 6, 2022. The initial indications for transfusion of cold-stored, low titer, leukoreduced O+ whole blood in the prehospital setting included traumatic injuries with systolic blood pressure (SBP) < 70 mmHg or SBP < 90 mmHg plus tachycardia (HR > 100 bpm).

Findings: From the date of onset through December 31, 2022, Palm Beach County Fire Rescue transported a total of 881 trauma activation patients, with 20 (2.3%) receiving WBT. Overall, nine (45%) of the patients who had received WBTs so far remain alive. No adverse events related to transfusion were identified following WBT administration. A total of 18 units of whole blood reached expiration of the unit's shelf-life prior to transfusion.

Conclusions: Despite a number of logistical and legal obstacles, Palm Beach County Fire Rescue successfully implemented a prehospital WBT program. This system is now considering a prehospital WBT program should receive the intended protocol and the barriers to implementation that were faced.

Conflicts of interest/funding: CC, TZ, PEP, MS, KAS, PA, and DAF declare no competing interest. No funding was received for this manuscript.

Introduction

Although component-based blood transfusions currently remain the most widely used strategy for blood transfusions, military data have shown improved outcomes with whole blood transfusions (WBTs).¹ Moreover, there has been renewed interest regarding the use of WBTs in civilian trauma centers.² In addition, some civilian EMS systems have begun to use WBTs, and some publications suggest that WBT may be of similar efficacy^{3–6} or even superior to component-based transfusion.^{4,6}

In the prehospital setting, with only one blood product to store and administer, WBT is simpler than component therapy, which may not be feasible for some Emergency Medical Service (EMS) systems. Indeed, some other countries, including Norway,^{4,6} Israel,⁷ and some other locations within the United States, including San Antonio, Texas⁸ and Pittsburgh, Pennsylvania,⁹ have been using WBTs for years. Data from these systems



QUESTIONS



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