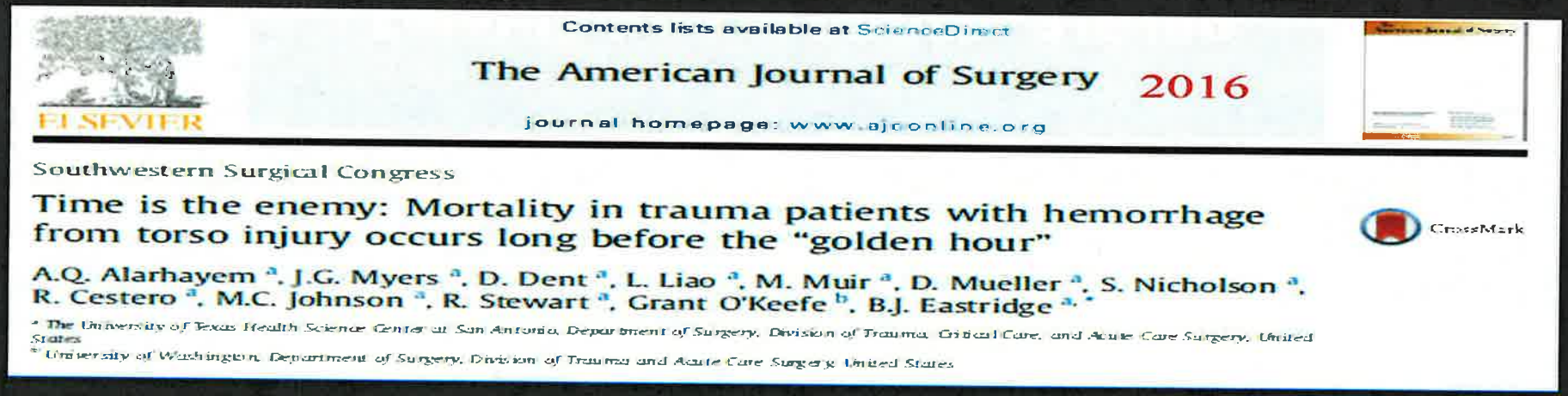
Exhibit A

Whole Blood Program

Established at PBCFR: 7/5/22

EXCELLENCE TODAY IMPROVING TOMORROW

The Why?



Contents lists available at ScienceDirect

The American Journal of Surgery 2016

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"

A.Q. Alarhayem [a], J.G. Myers [a], D. Dent [a], L. Liao [a], M. Muir [a], D. Mueller [a], S. Nicholson [a], R. Cestero [a], M.C. Johnson [a], R. Stewart [a], Grant O'Keefe [b], B.J. Eastridge [a, *]

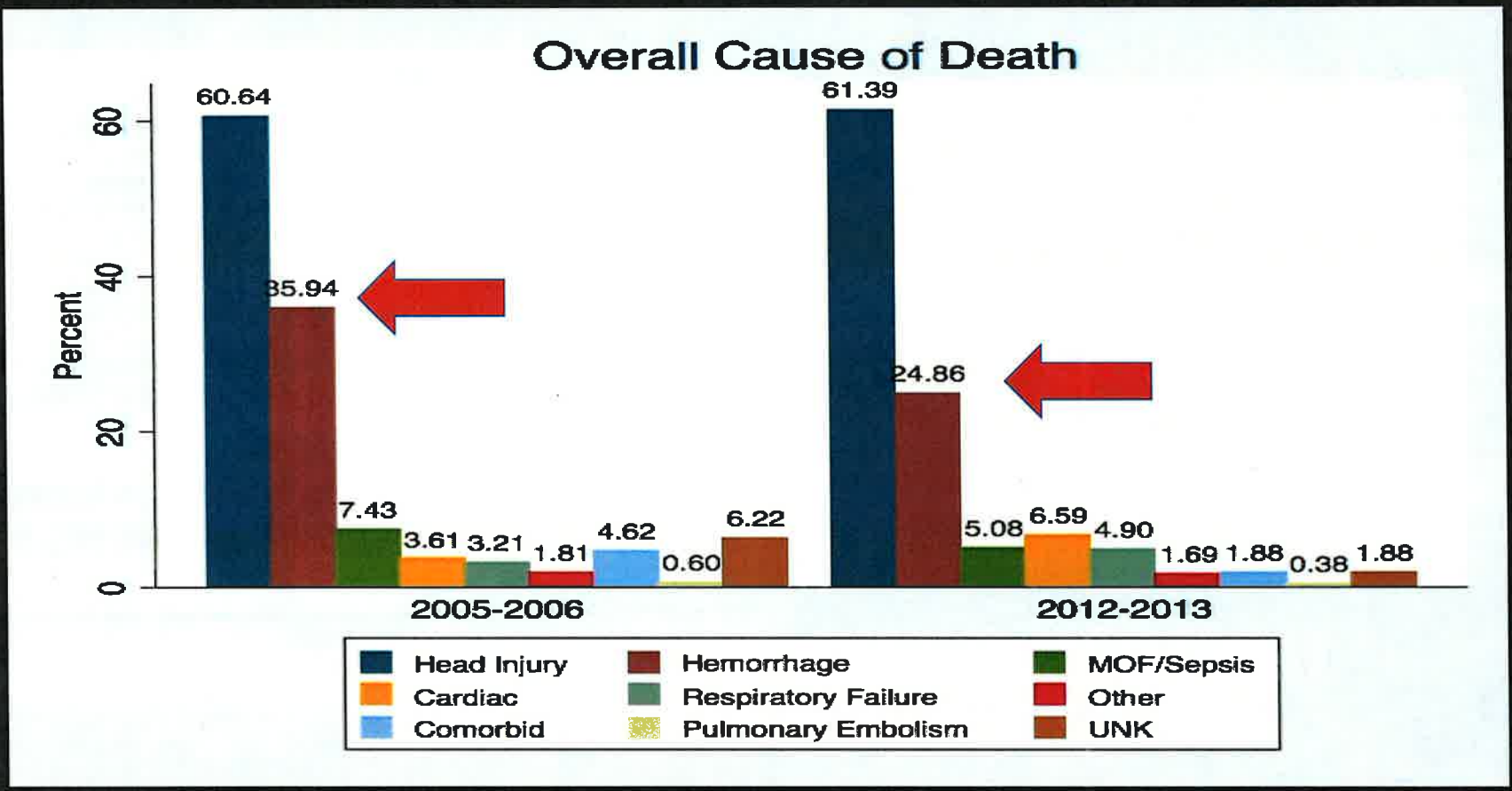
[a] The University of Texas Health Science Center at San Antonio, Department of Surgery, Division of Trauma, Critical Care, and Acute Care Surgery, United States

[b] University of Washington, Department of Surgery, Division of Trauma and Acute Care Surgery, United States

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

Bleeding Control Bundle of Care

Oyeniyi B et al. Injury 2017



ASA PAPER

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

A Multicenter Study

Joshua P. Hazelton, DO,✉ Anna E. Ssentongo, DrPh, MPH,¶¶¶ John S. Oh, MD,* Paddy Ssentongo, MD, PhD,* Mark J. Seamon, MD,§ James P. Byrne, MD, PhD,§ Isabella G. Armento, BS,‖ Donald H. Jenkins, MD,¶ Maxwell A. Braverman, DO,¶ Caleb Mentzer, DO,# Guy C. Leonard, BS,# Lindsey L. Perea, DO,** Courtney K. Docherty, DO,†† Julie A. Dunn, MD,‡‡ Brittany Smoot, BS,‡‡ Matthew J. Martin, MD,† Jayraan Badiee, MPH,† Alejandro J. Luis, MD,§§ Julie L. Murray, BSN, RN,‖‖ Matthew R. Noorbakhsh, MD,¶¶ James E. Babowice, DO,¶¶ Charles Mains, MD,## Robert M. Madayag, MD,## Haytham M.A. Kaafarani, MD, MPH,*** Ava K. Mokhtari, MD,*** Sarah A. Moore, MD,††† Kathleen Madden, MD,††† Allen Tanner, II, MD,‡‡‡ Diane Redmond, MSN,‡‡‡ David J. Millia, MD,§§§ Amber Brandolino, MS,§§§ Uyen Nguyen, BS,‖‖‖ Vernon Chinchilli, PhD,¶¶¶ Scott B. Armen, MD,### and John M. Porter, MD****

esuscitation

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 use in the resuscitation of trauma patients.

colloids and WB?

EXCELLENCE TODAY IMPROVING TOMORROW

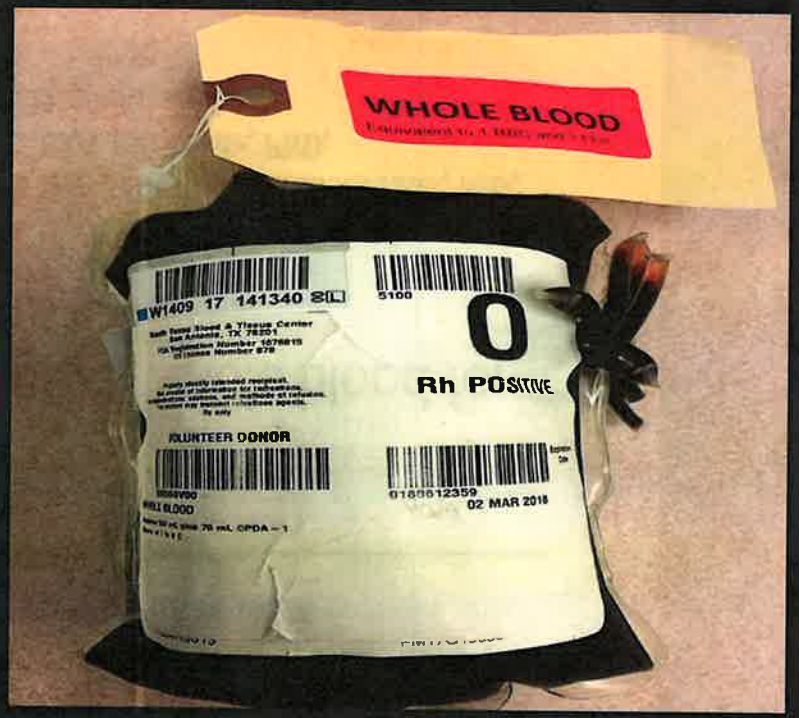
2019 EAST PODIUM PAPER

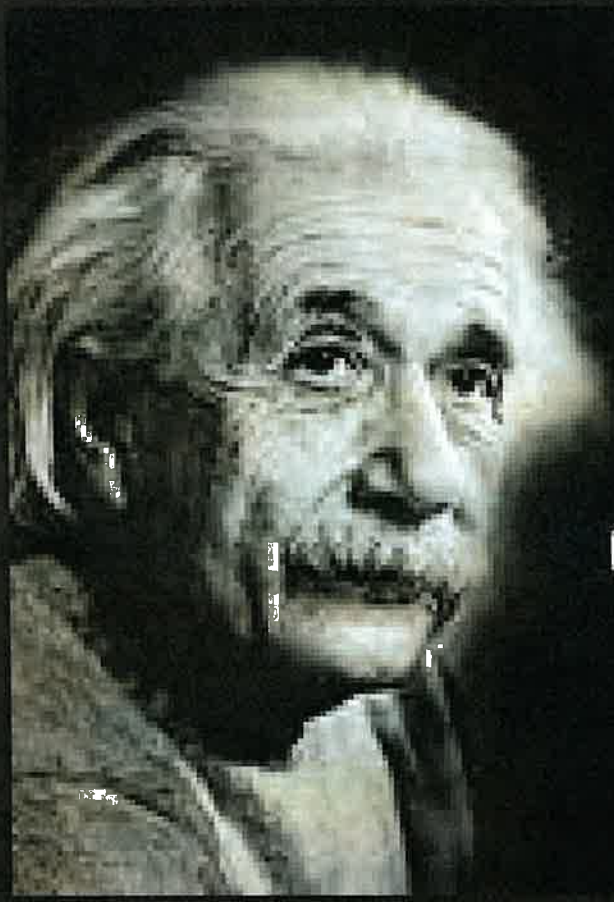
Safety profile and impact of low-titer group O whole blood for emergency use in trauma

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*

Why Whole Blood ?

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





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

Albert Einstein

EXCELLENCE TODAY

PALM BEACH COUNTY FIRE RESCUE

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STRAC

STRAC
Southwest Texas Regional Advisory Council

Need an account? Runsheets | Wave | WebEOC

- Home
- About
- Trauma
- Acute Care
- Bids & RFPs
- Calendar
- Careers
- Conference
- ED Operations
- Education
- EMS (Prehospital Care)
- EMTF 8
- Healthcare Coalition
- Infection Control

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?

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

EXCELLENCE TODAY — PALM BEACH COUNTY FIRE RESCUE — IMPROVING TOMORROW

IT TAKES A VILLAGE

DELRAY MEDICAL CENTER
PALM BEACH HEALTH NETWORK

St. Mary's Medical Center
West Palm Beach, Florida

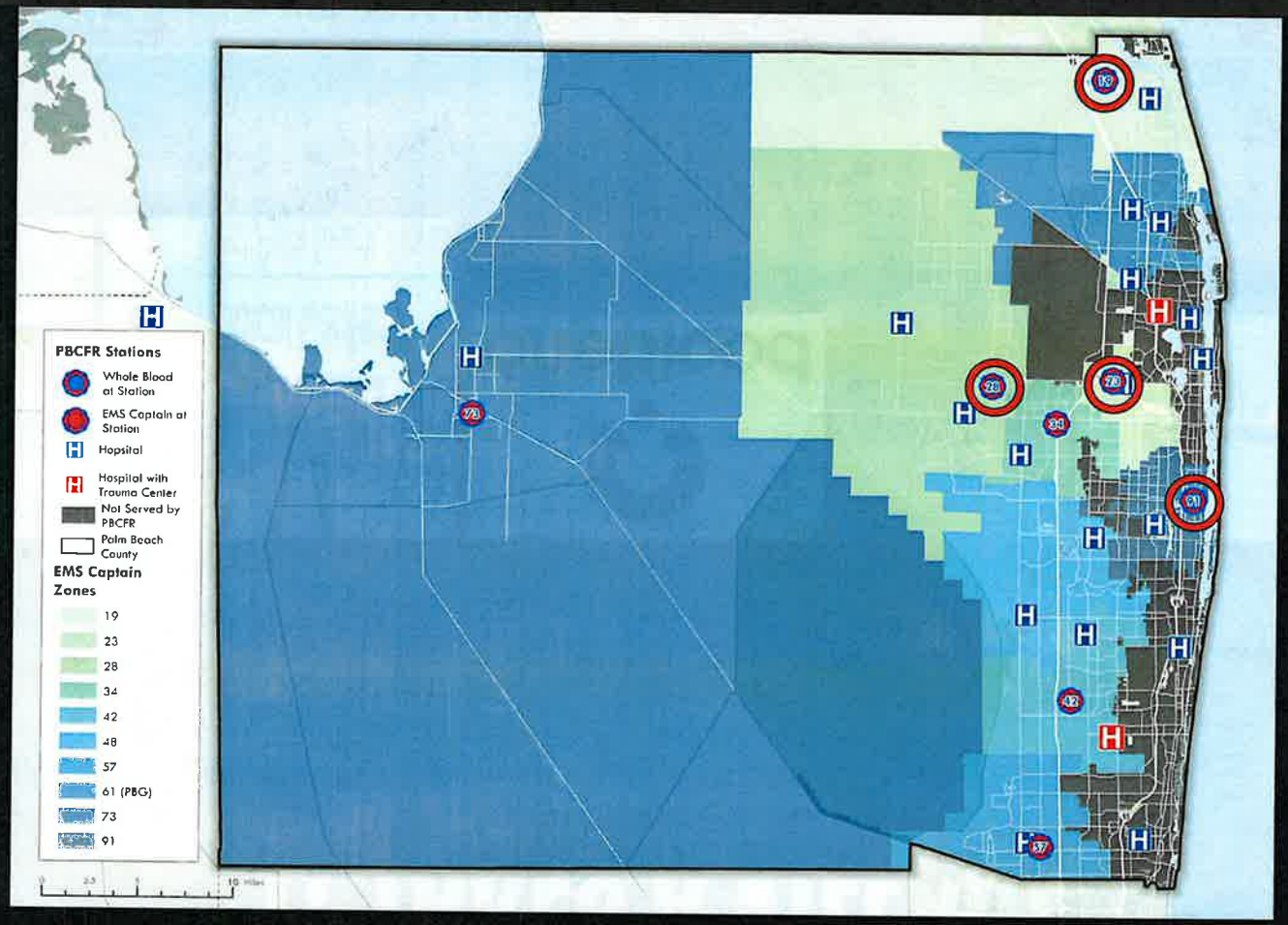
oneblood

Health Care District
PALM BEACH COUNTY

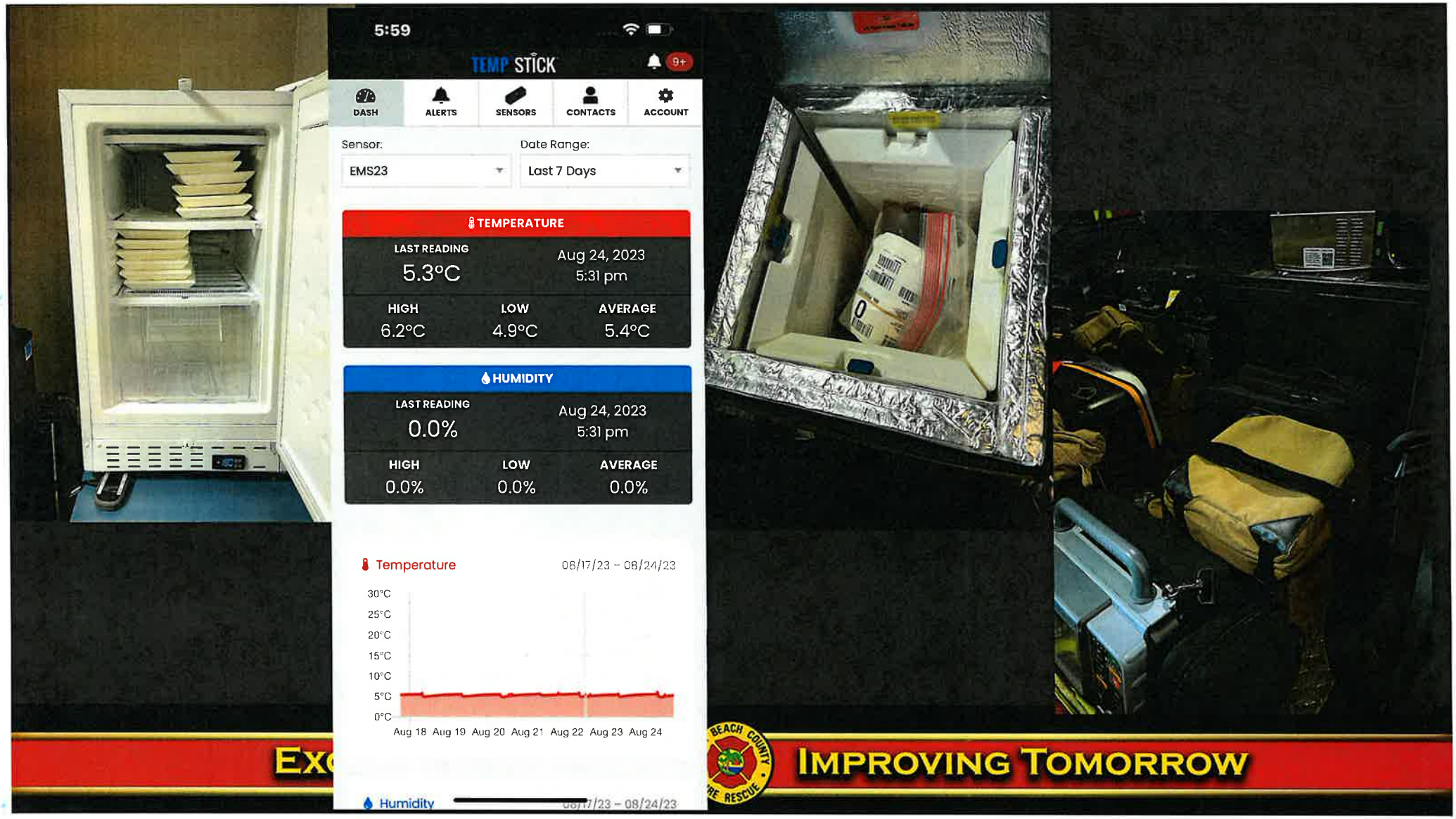
EXCELLENCE TODAY

PALM BEACH COUNTY FIRE RESCUE

IMPROVING TOMORROW



EXCELLENCE TODAY IMPROVING TOMORROW


5:59
TEMP STICK
9+
DASH
ALERTS
SENSORS
CONTACTS
ACCOUNT
Sensor:
EMS23
Date Range:
Last 7 Days
TEMPERATURE
LAST READING
5.3°C
Aug 24, 2023
5:31 pm
HIGH
6.2°C
LOW
4.9°C
AVERAGE
5.4°C
HUMIDITY
LAST READING
0.0%
Aug 24, 2023
5:31 pm
HIGH
0.0%
LOW
0.0%
AVERAGE
0.0%
Temperature
08/17/23 – 08/24/23
30°C
25°C
20°C
15°C
10°C
5°C
0°C
Aug 18 Aug 19 Aug 20 Aug 21 Aug 22 Aug 23 Aug 24
Humidity
IMPROVING TOMORROW

EXCELLENCE TODAY

PALM BEACH COUNTY FIRE RESCUE

IMPROVING TOMORROW

PBCFR Whole Blood Outcomes

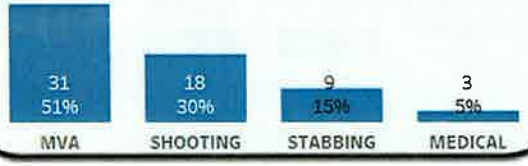
61 Patients

7/30/2022 - 7/25/2023

MONTHLY VOLUME

AGE DISTRIBUTION

MECHANISM OF INJURY

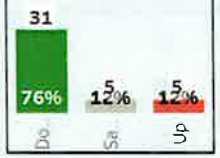


DESTINATION

PATIENT OUTCOME

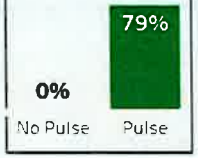
SHOCK INDEX

patients with an initial pulse



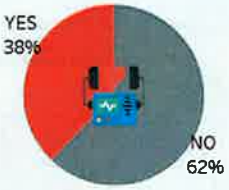
SURVIVAL RATE

Pre-WB Pulse

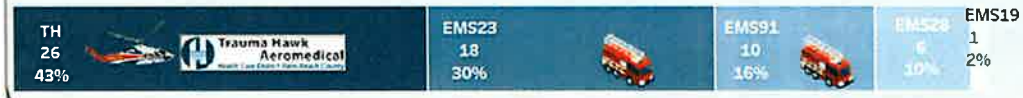


UNITS GIVEN

CARDIAC ARREST



RESPONDING UNIT

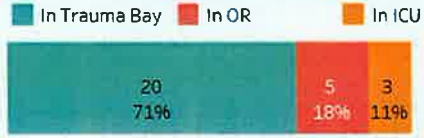


AVERAGE TIMES

TXA RECEIVED

*Data as of May 2023

DECEASED LOCATION

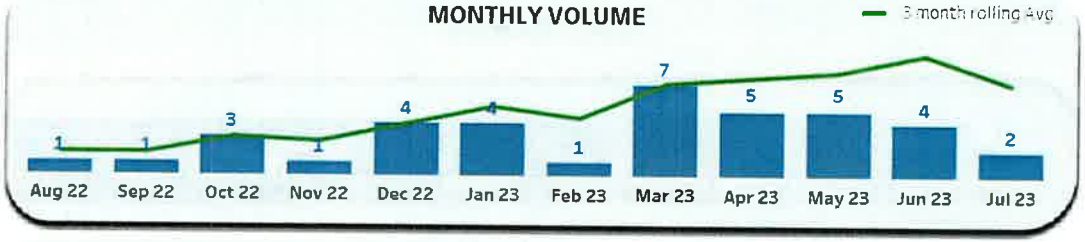


PBCFR Whole Blood Outcomes

38
Patients

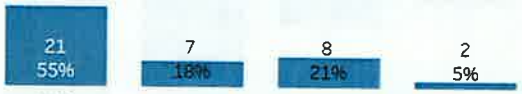
7/30/2022 - 7/25/2023

MONTHLY VOLUME



AGE DISTRIBUTION

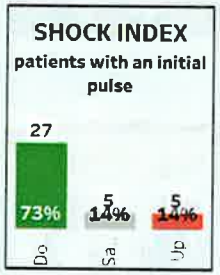
MECHANISM OF INJURY



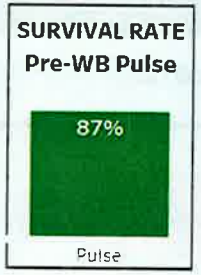
DESTINATION

PATIENT OUTCOME

SHOCK INDEX
patients with an initial pulse



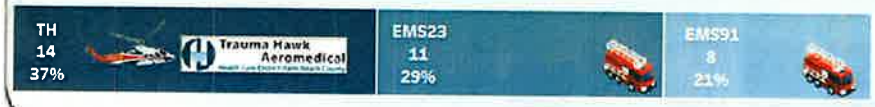
SURVIVAL RATE
Pre-WB Pulse



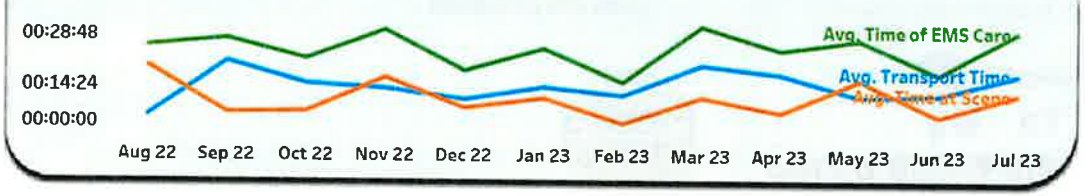
UNITS GIVEN

CARDIAC ARREST

RESPONDING UNIT



AVERAGE TIMES



TXA RECEIVED

*Data as of May 2023

DECEASED LOCATION

RESEARCH REPORT

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

Charles Coyle, EMT-P;[1] Tony Zitek, MD;[2] Paul E. Pepe, MD, MPH;[1] Madonna Stotsenburg, RN;[3] Kenneth A. Scheppke, MD;[1] Peter Antevy, MD;[1] Richard Giroux, DO;[1] David A. Farcy, MD[1,2]

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

Keywords: Emergency Medical Services (EMS); prehospital; transfusions; trauma; whole blood

Abbreviations:
EMS: Emergency Medical Services
HR: heart rate
SBP: systolic blood pressure
WBT: whole blood transfusion

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Accepted: May 25, 2023

doi:10.1017/S1049023X23005952

Abstract

Introduction: In far-forward combat situations, the military challenged dogma 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 Service (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.

Objective: A prehospital WBT program was recently implemented in Palm Beach County, Florida (USA). This report will discuss how the program was implemented, the obstacles faced, 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 one of the major obstacles being the legal team's perception of potential liability that might occur with 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) < 70mmHg or SBP < 90mmHg plus heart rate (HR) > 110 beats per minute.

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.

Conclusion: Despite a number of logistical and legal obstacles, Palm Beach County Fire Rescue successfully implemented a prehospital WBT program. Other EMS systems that are considering a prehospital WBT program should review the included protocol and the barriers to implementation that were faced.

Coyle C, Zitek T, Pepe PE, Stotsenburg M, Scheppke KA, Antevy P, Giroux R, Farcy DA. The implementation of a prehospital whole blood transfusion program and early results. *Prehosp Disaster Med.* 2023;00(00):1–5.

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).[1,2] Moreover, there has been renewed interest regarding the use of WBTs for trauma patients with hemorrhagic shock in trauma centers,[3–5] and multiple recent publications suggest that WBT may be of similar efficacy[6–7] or even superior to component-based transfusion.[8,9]

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[10,11] and Israel,[12] and some other locations within the United States, including San Antonio, Texas[13] and Pittsburgh, Pennsylvania,[14,15] have been using WBTs for years. Data from these systems


QUESTIONS
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