EMS Focus

A Collaborative Federal Webinar Series

EMS Week 2025:
EMS & Prehospital Blood, a Lifesaving Combo

NHTSA's Office of EMS
Tuesday, April 29, 2025 at 12pm ET

EMS FOCUS WEBINAR

VARIETY OF TOPICS

Provides the EMS community with a unique opportunity to learn more about Federal EMS efforts and programs.

EXPERIENCE

Brings Federal, State and local leaders to you!

REGISTER

With opportunity for Q&A. Closed captioning is available.

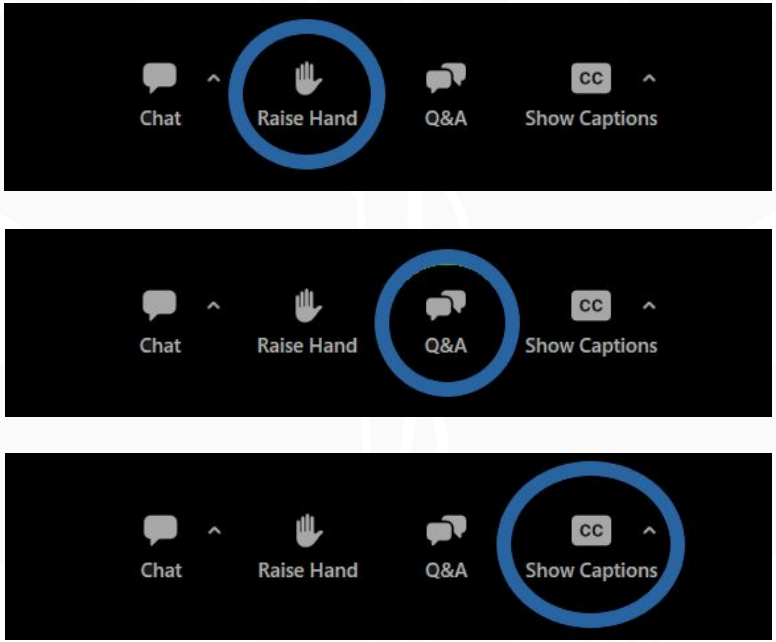
FEEDBACK & QUESTIONS

nhtsa.ems@dot.gov

Zoom Functions

This webinar will utilize three features in the Zoom Meeting controls.

- “Raise Hand” - Use this feature to ask your question live. You will be called upon and unmuted
- “Q&A” - Use this feature to submit your question virtually in a pop-up window/chat box
- “Show Captions” - Use this feature to turn on closed captions at any point during the webinar



NHTSA Office of EMS

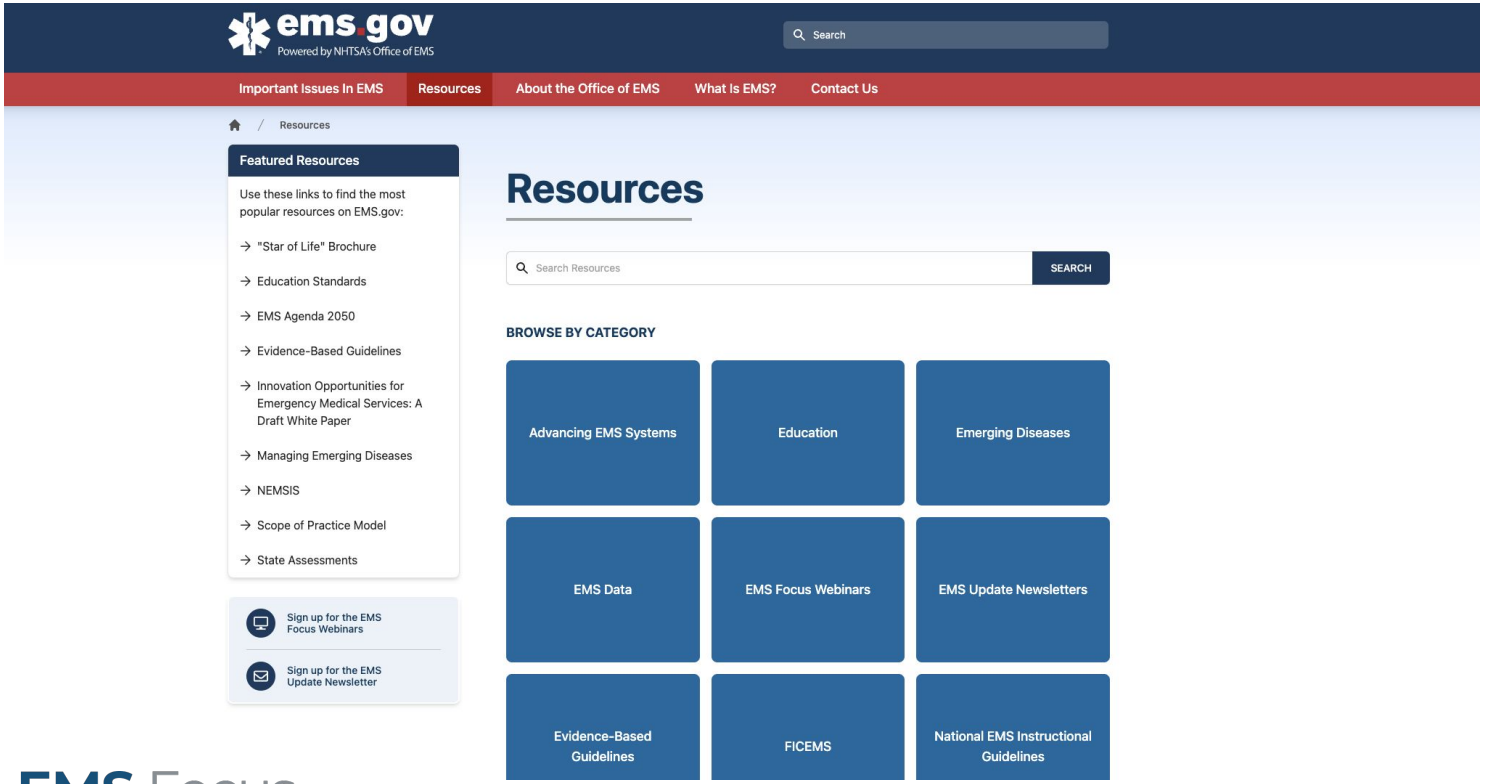
Mission

Reduce death & disability

Provide leadership & coordination to the EMS community

Assess, plan, develop, & promote comprehensive, evidence-based emergency medical services & 911 systems

EMS.gov Resources



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A Collaborative Federal Webinar Series

Today's Agenda

Moderator

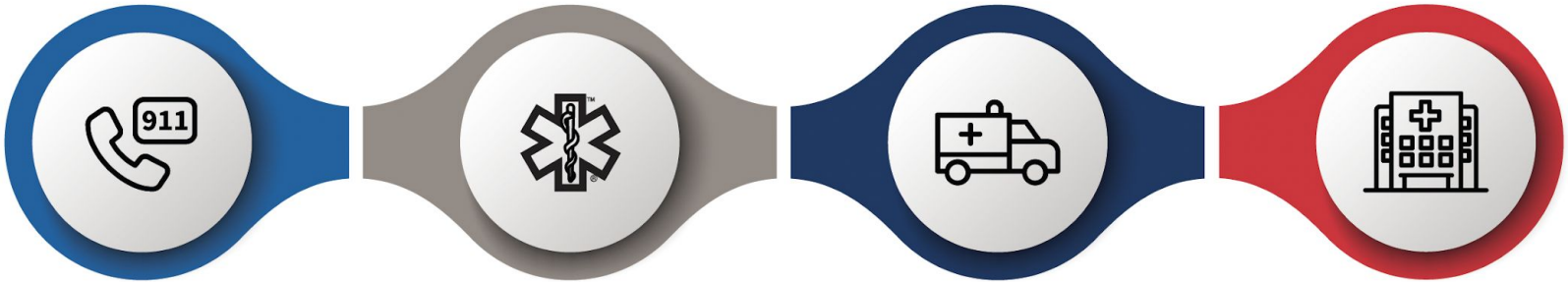
- **Clary Mole**, Emergency Medical Services Specialist, Office of EMS, NHTSA

Speakers

- **Dr. Matthew Angelidis,** Medical Director, UCHealth EMS, Co-Chief Medical Director, Colorado Springs Fire Department, Co-Chief Medical Director, El Paso County AMR, Co-Chief Medical Director, Plains to Peaks RETAC, Clinical Assistant Professor, UC School of Medicine
- **David Long,** Executive Director, Tidewater EMS Council


DEATH AND SERIOUS INJURIES ARE UNACCEPTABLE
HUMANS MAKE MISTAKES
HUMANS ARE VULNERABLE
RESPONSIBILITY IS SHARED
SAFETY IS PROACTIVE
REDUNDANCY IS CRUCIAL
SAFE SYSTEM APPROACH
Safer People
Safer Vehicles
Safer Speeds
Safer Roads
Post-Crash Care

SEAMLESS CARE IMPROVES SURVIVAL



911, Emergency Medical Dispatch & Bystander Care

Timely On-Scene Care

Triage & Transport

Definitive Care at a Trauma Center

THE PROBLEM

40%

WERE ALIVE

WHEN FIRST RESPONDERS ARRIVED, BUT LATER DIED[3]

FARS

42,939

PEOPLE DIED

IN TRAFFIC CRASHES IN 2021[2]

Fatality Analysis Reporting System (FARS)

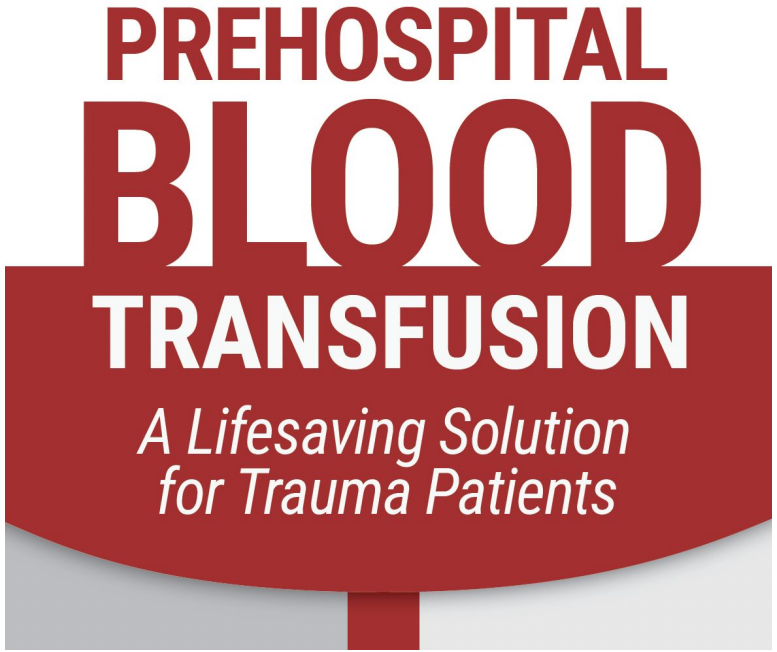
WHY PEOPLE DIE IN A CRASH

The **number-one preventable cause of death** in trauma-related injuries is blood loss.

People die when they don't have enough oxygenated blood in their body.

When someone bleeds internally or externally, they can die in as **little as five minutes**.

WHY PREHOSPITAL BLOOD TRANSFUSION IS IMPORTANT



Severe bleeding is the primary cause of preventable fatalities in trauma patients.[1]

Time is critical. Death can occur in as little as five minutes when someone is bleeding.[2]

For every minute of delay in administering blood, the risk of death increases by 11%.[3]

A LIFESAVING IMPACT ON SURVIVAL RATE

HOST A BLOOD DRIVE DURING EMS WEEK 2025

Extend Your Impact. Save More Lives.

- Blood drives support lifesaving care.
- Show your agency's commitment to community health.
- Engage your team and the public in a meaningful way.

Partner with a local blood center and make a difference this EMS Week!

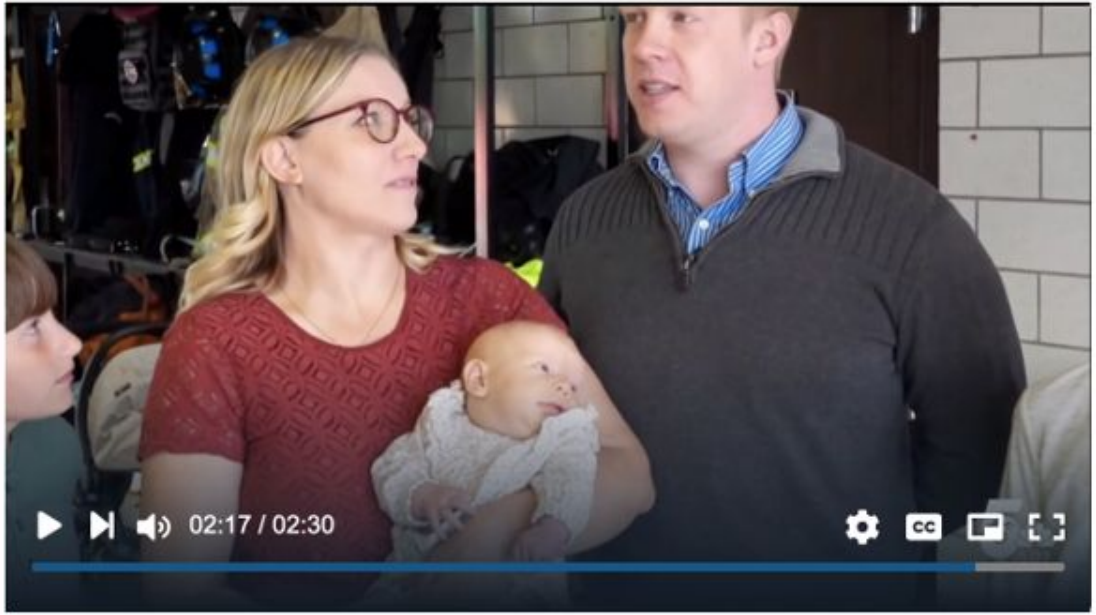
Visit EMSWeek.org for more information

"CSFD DELIVERS LEVEL I TRAUMA CARE IN THE FIELD: OUR EXPERIENCE WITH WHOLE BLOOD"

Matt Angelidis MD

CSFD/AMR EMS Physician Medical Director

Mom, baby and more saved by Colorado Springs new whole blood protocol



Lives have been saved because the Colorado Springs Fire Department now carries whole blood to give to patients at risk of bleeding out before getting to the hospital.

**If You Give A Chil
Book Campaign
Changes Lives In
Community**

COMPONENT THERAPY VS WHOLE BLOOD

Component Therapy Gives You
1U PRBC + 1U PLT + 1U FFP =

- 660 mL
- Hct 29%
- Coag activity 65%
- 750 mg fibrinogen

LOW TITER O(+) WHOLE BLOOD

- It is less likely to cause a severe transfusion reaction
- Contains all the essential Red Cells, Platelets, and clotting factors a bleeding patients need in one bag
- Contains less anticoagulants and additives
- Causes less dilutional coagulopathy
- Is faster and easier to deliver
- It is more cost effective to produce

CERTIFIED ORGANIC CERTIFIED

INGREDIENTS ALL NATURAL INGREDIENTS

NON GMO

GLUTEN FREE

WHOLE BLOOD

WHY EMS?
WHY NOT JUST WAIT TILL HOSPITAL?

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

But I work in a City, I'm never more than 10 minutes from a Trauma Center

FOR EVERY MINUTE DELAY TO TRANSFUSION THERE IS A 5% INCREASE IN MORTALITY

Every minute counts: Time to delivery of initial massive transfusion cooler and its impact on mortality

Meyer, David E. MD; Vincent, Laura E. RN; Fox, Erin E. PhD; O'Keeffe, Terence MBChB; Inaba, Kenji MD; Bulger, Eileen MD; Holcomb, John B. MD; Cotton, Bryan A. MD

Journal of Trauma and Acute Care Surgery: July 2017 - Volume 83 - Issue 1 - p 19–24
doi: 10.1097/TA.0000000000001531
EAST Plenary Paper

Abstract | Author Information | Article Outline | Article Metrics

BACKGROUND American College of Surgeons Trauma Quality Improvement Best Practices recommends initial massive transfusion (MT) cooler delivery within 15 minutes of protocol activation, with a goal of 10 minutes. The current study sought to examine the impact of timing of first cooler delivery on patient outcomes.

METHODS Patients predicted to receive MT at 12 Level I trauma centers were randomized to two separate transfusion ratios as described in the PROPPR trial. Assessment of Blood Consumption score or clinician gestalt prediction of MT was used to randomize patients and call for initial study cooler. In this planned subanalysis, the time to MT protocol activation and time to delivery of the initial cooler were evaluated. The impact of these times on mortality and time to hemostasis were examined using both Wilcoxon rank sum and linear and logistic regression.

RESULTS Among 680 patients, the median time from patient arrival to MT protocol activation was 9 minutes with a median time from MT activation call to delivery of first cooler of 8 minutes. An increase in both time to MT activation and time to arrival of first cooler were associated with prolonged time to achieving hemostasis (coefficient, 1.09; $p = 0.001$ and coefficient, 1.16; $p < 0.001$, respectively). Increased time to MT activation and time to arrival of first cooler were associated with increased mortality (odds ratio [OR], 1.02; $p = 0.009$ and OR, 1.02; $p = 0.012$, respectively). Controlling for injury severity, physiology, resuscitation intensity, and treatment arm (1:1:1 vs. 1:1:2), increased time to arrival of first cooler was associated with an increased mortality at 24 hours (OR, 1.05; $p = 0.035$) and 30 days (OR, 1.05, $p = 0.016$).

CONCLUSION Delays in MT protocol activation and delays in initial cooler arrival were associated with prolonged time to achieve hemostasis and an increase in mortality. Independent of products ratios, every minute from time of MT protocol activation to time of initial cooler arrival increases odds of mortality by 5%.

LEVEL OF EVIDENCE Prognostic, level II; Therapeutic, level III.

THIS IS NOT NEW. LONG STANDING PRACTICE WITH LARGE DATA REPOSITORY TO PROVE SAFETY AND EFFICACY!

- **Whole Blood in Combat**
- *Whole Blood Used prodigiously in WW1 and WW2*
- *US Vietnam > 230,000 units transfused (mostly cold stored)*
- *US OIF/OEF > 10,000 units transfused (almost all fresh):*

THE HOW: SO HOW DO WE(EMS) STORE, CARRY, DELIVER, AND TRANSFUSE LTO+WB?

"POWER PROGRAM:

Kicked off May, 22 2024

2 Supervisory SUVs

4 Units of LTO+WB (2 on each vehicle)

ROTATION CONCEPT:

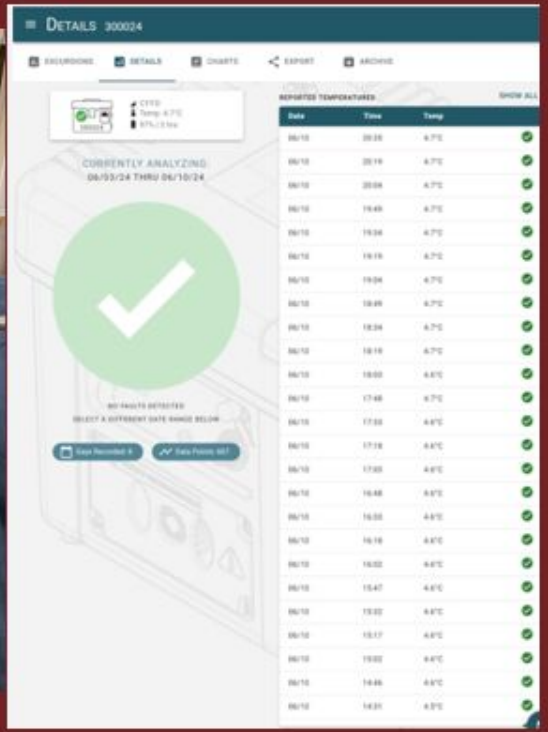
Why Partner with Hospitals?

1. Reduce Wastage
2. Reduce Blood Product Usage
3. Decrease Hospital LOS

How it works

1. The Blood Bank Issues Whole Blood to EMS Agency from its PAR
2. EMS Agency Stores/Transports for 7 days :
   a) *If EMS Transfuse they pay for blood*
   b) *If No Transfuse then return to Blood Bank at 7 days*
3. Hospitals purchase Blood Just Like Always Did but agree to a shortened Half Life Product- some of their units will have been on a Fire Truck

So How is Blood Cold Stored by EMS?

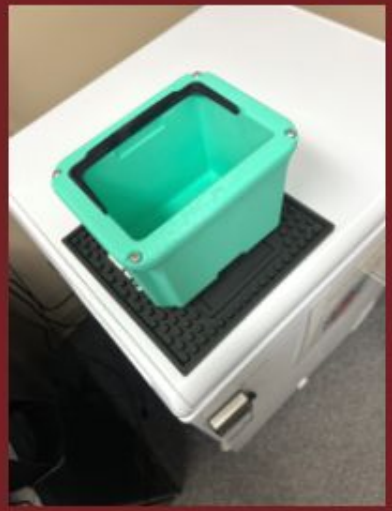


AABB Validated

Blood Temperature between 0-6 degrees Celsius

EMS DAILY RESPONSIBILITIES

REMOVING EMPTY BLE TIC BOX FROM FREEZER @ SHIFT TRADE


Blue TIC box that was removed from freezer is set in ambient temperature for 10 - 15 mins

How do you know it didn't overheat?

SAFE-T-VUE 10 DEVICE

911 CALL ACTIVATES THE SYSTEM:

A. 911 EMD Code Triggers Blood Response Unit (BRU)

- *The Reporting Parties (RP) story triggers BRU to respond immediately*
  1. *Gun Shot Wounds*
  2. *Roll Over MVA*
  3. *Auto vs Pedestrian*
  4. *Stabbing*
  5. *PD Request*
  6. *GI Bleeding*
  7. *Active Labor*

B. Scene Request Blood Response Unit (BRU):

- The first responding unit identifies patient in Hemorrhagic Shock and calls the Blood Response Unit (BRU)

EMS TRANSFUSION GUIDELINE

ADMINISTRATION PROCESS: WHOLE BLOOD THERAPY

REMEMBER

- If applicable, control bleeding, even if not active at time of pt contact, consider MARCH
- Keep patient warm
- If criteria are not met and the Paramedic feels blood is indicated, contact Medical Director for options.

BLOOD INCLUSION CRITERIA

- Blood Product is available **AND**
- Hemorrhagic shock is suspected **AND**
- Age ≥ 6 months old **AND**
- No known religious Exemptions **AND**
- Any 2 of the following are present.
  - Systolic BP ≤ 70
  - Systolic Blood Pressure < 90 mmHg with HR ≥ 110
    - Shock Index (Systolic/HR) ≥ 1
  - Single reading HR ≥ 120
  - EtCO2 ≤ 25
  - Traumatic Cardiac Arrest(TCA) with Narrow Complex PEA >40, Arrest Witnessed by EMS/loss of pulses <10 minutes, and/or Point of Care Ultrasound(POCUS)Displays Cardiac Activity

BUTTERFLY ULTRASOUND

BLOOD WARMER FOR LTOWB ADMINISTRATION

QinFLOW Blood Warmer/Pump

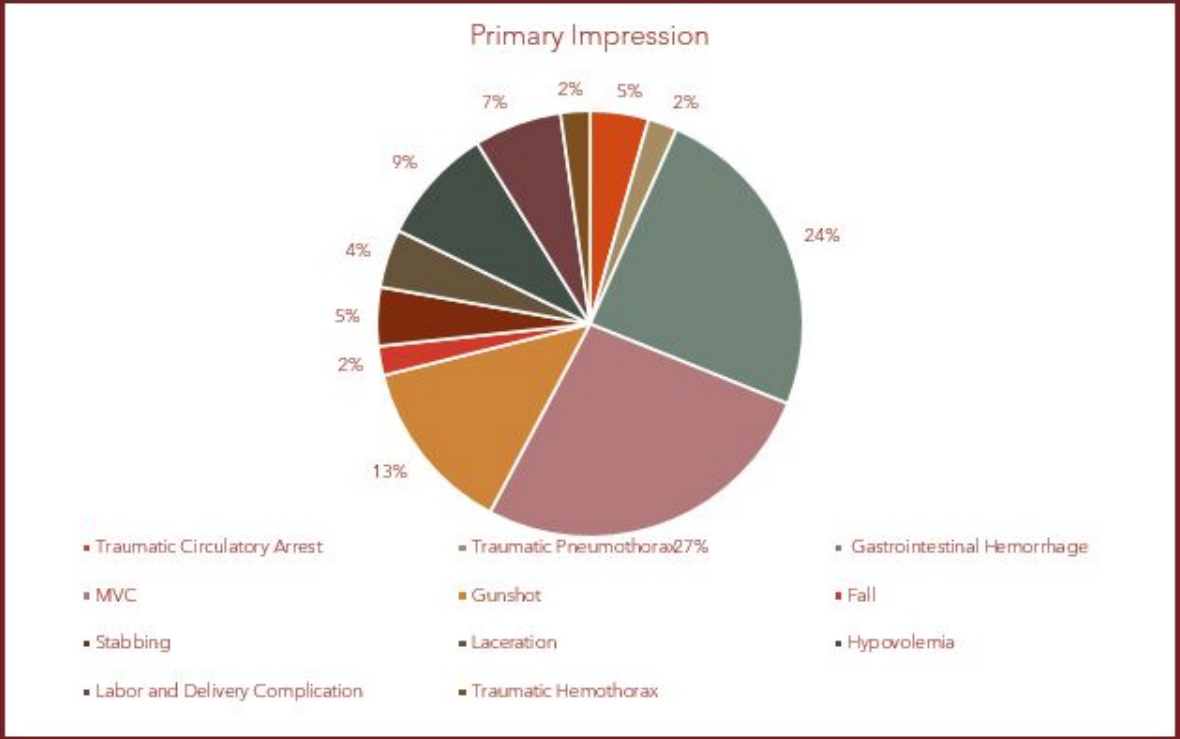
CDU

w/ Blood "Y" Tubing

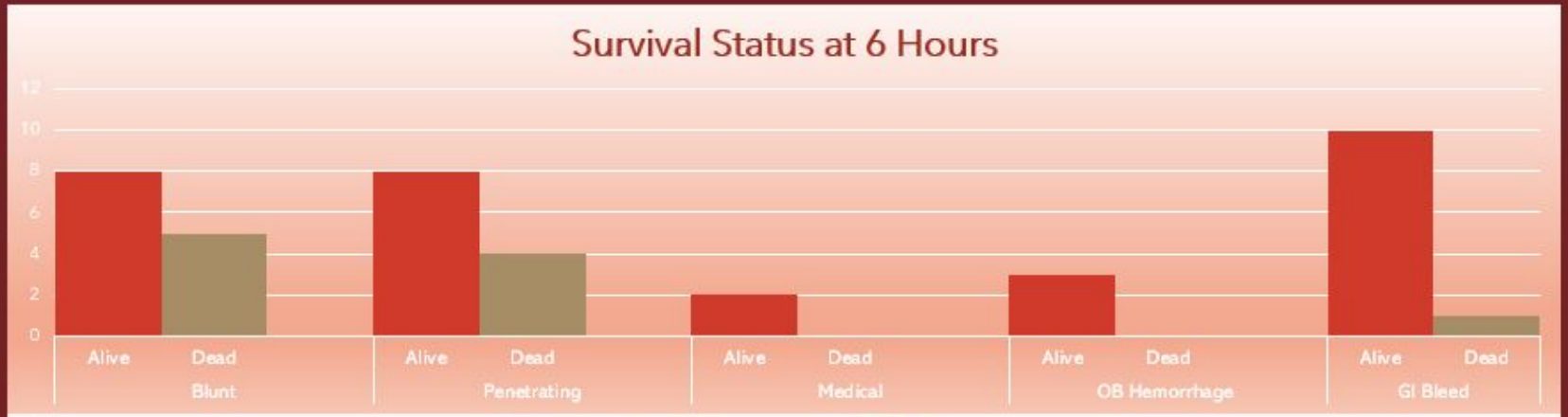
CSFD 1 YEAR

92 Units of Blood Transfused
81 patients
64/81 Alive
No Blood Wasted

WHO, WHY, WHERE IS GETTING BLOOD?

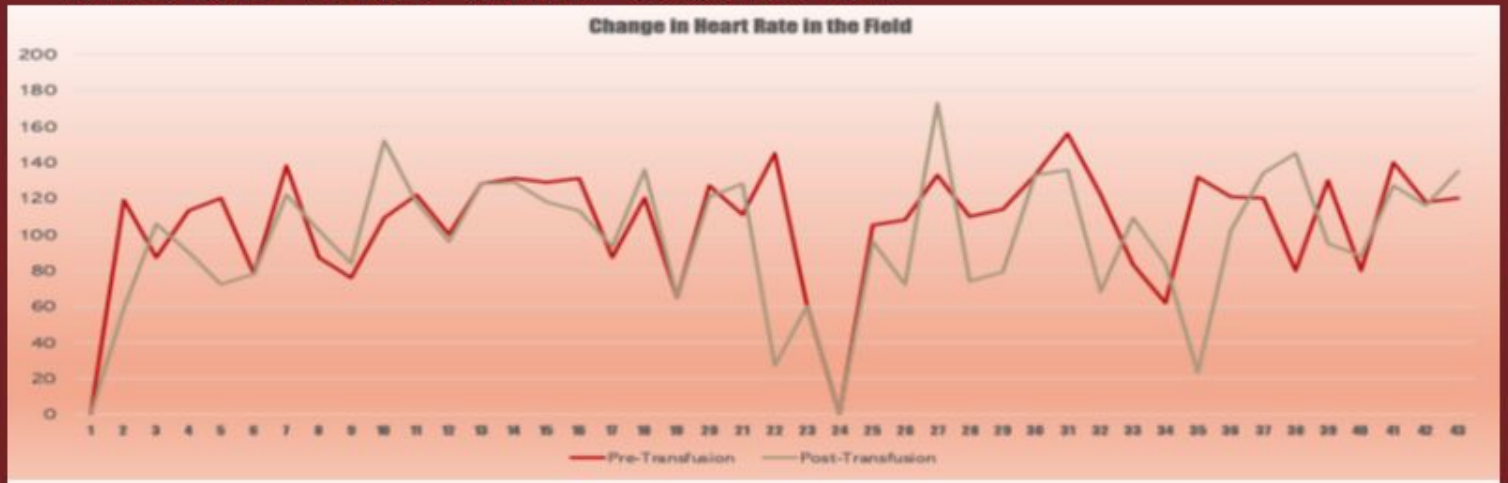


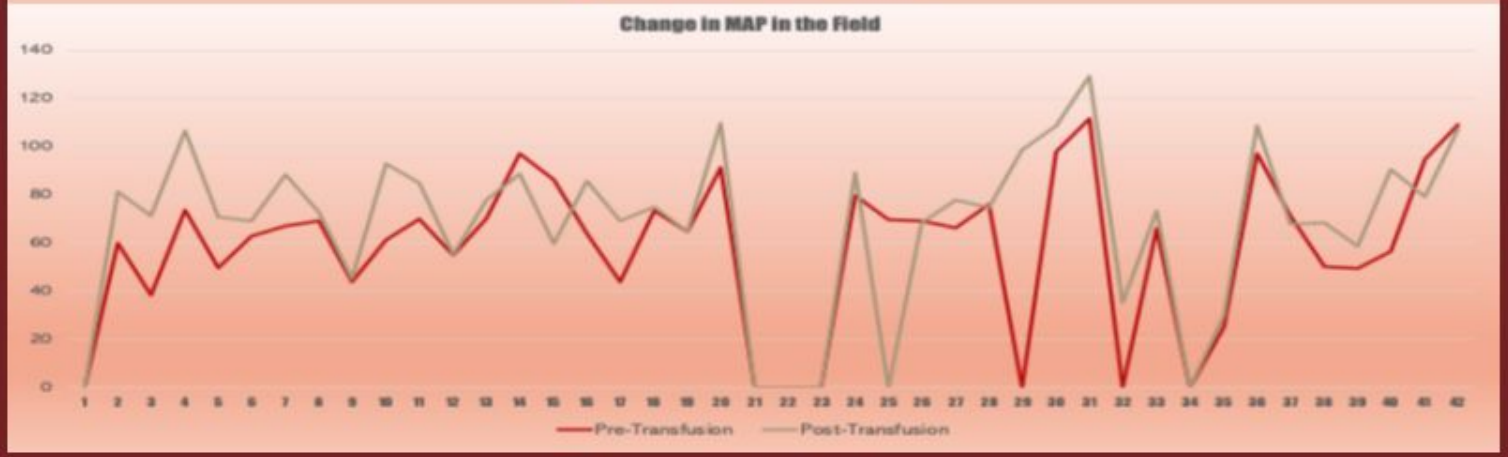
OUTCOMES:


Survival Status at 6 Hours
12
10
8
6
4
2
0
Alive
Dead
Blunt
Penetrating
Medical
OB Hemorrhage
GI Bleed


Survival Status at 24 Hours
10
8
6
4
2
0
Alive
Dead
Blunt
Penetrating
Medical
OB Hemorrhage
GI Bleed

OUTCOMES: HEART RATE DROPS WITH WHOLE BLOOD AND MAP GOES UP





SCENE TIME: < 6 MINUTES DELAY TO HOSPITAL ARRIVAL

Average Response Time

Response Time

00h:05m:38s

Incidents 18

Average Scene Time

Scene Time

00h:19m:19s

Incidents 18

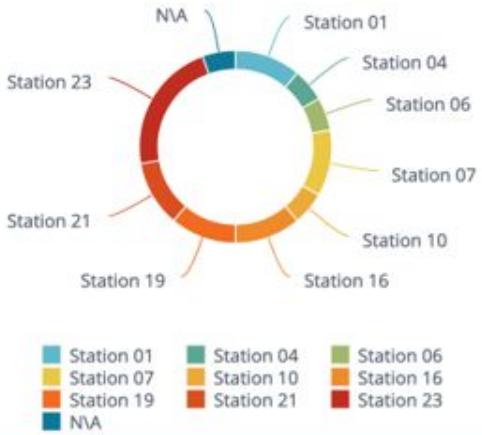
Patient contact to Administration

Time to Administration

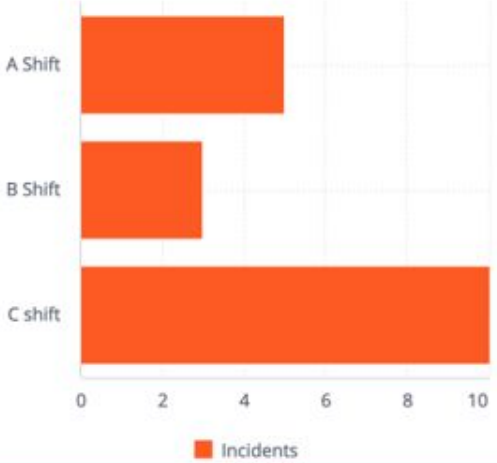
00h:25m:31s

Incidents 18

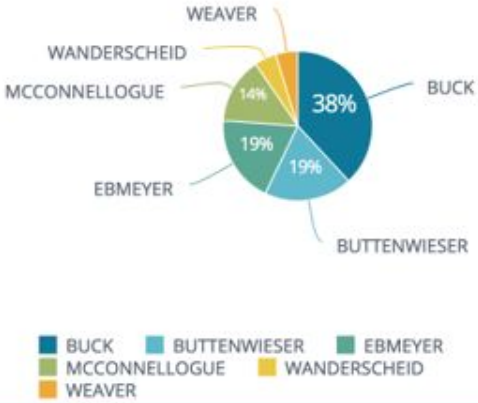
Station Response



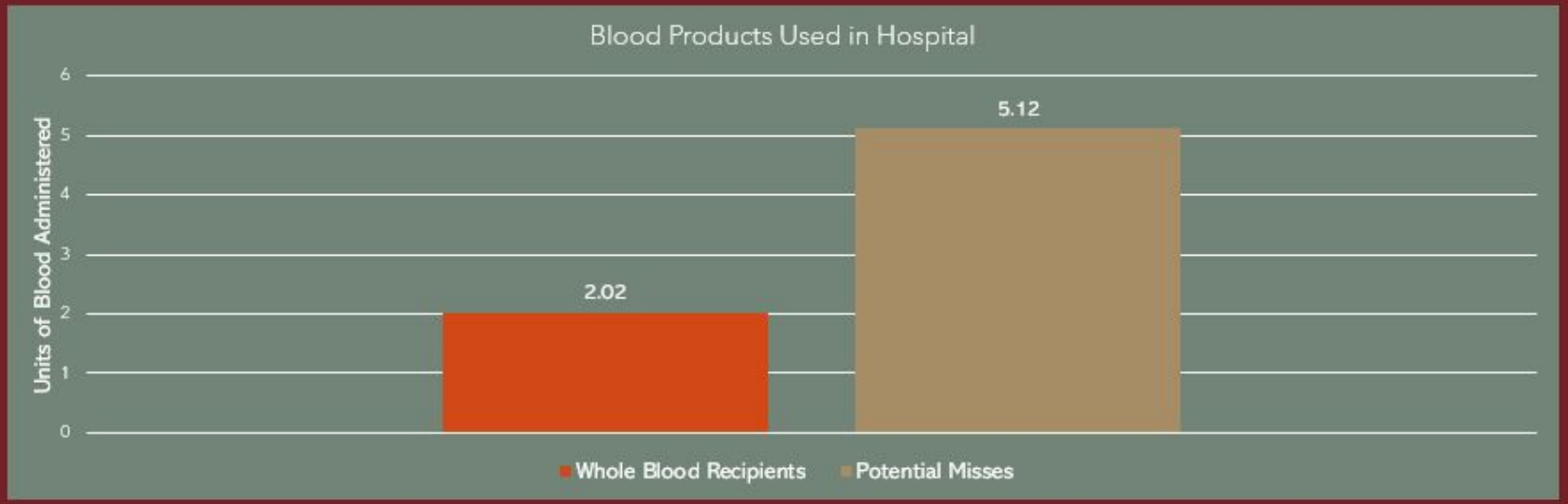
Shift



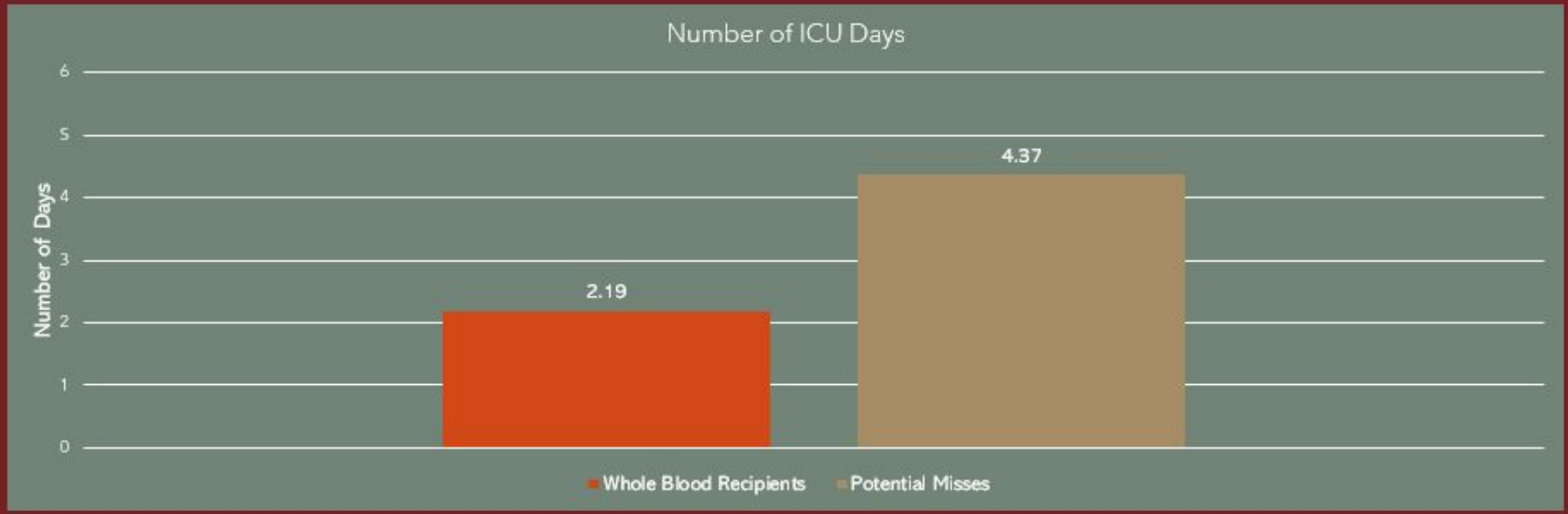
Blood Administration Paramedic



NUMBER OF BLOOD PRODUCTS USED IN HOSPITAL



SAVES HOSPITAL MONEY: DECREASE ICU DAYS



M

HEROES IN ARMS (HIA)

- Low titer O whole blood donors are called and enrolled in the HIA program depending on their interest.
- Donor show rate: around 80%
- Donations per year higher than other donor groups
- Changed names on the 5th anniversary of the program from Brothers in Arms now including never pregnant females.

SOUTH TEXAS BLOOD & TISSUE
HEROES IN ARMS
EST. 2016
TRANSFORMING TRAUMA CARE

South Texas Blood & Tissue Center

A SUBSIDIARY OF BioBridge GLOBAL

BROTHERS IN ARMS
TRANSFORMING TRAUMA CARE

- **David Long,** Executive Director, Tidewater EMS Council

TEMS, Inc.

TIDEWATER EMS COUNCIL

David Long, Executive Director

WHOLE BLOOD INITIATIVE

TIDEWATER EMS COUNCIL

Whole Blood Transfusion Criteria

Clinical Criteria for Whole Blood:

✔ Systolic Blood Pressure ≤ 70

OR

✔ Penetrating Trauma, Any 1 below:

✔ Blunt Trauma or Medical Etiology, Any 2 below:

- Systolic Blood Pressure ≤ 90
- Narrow Pulse pressure ≤ 45
- Heart Rate >120
- Shock Index (HR/SBP) ≥ 1.2
- ETCO2 < 25
- AMS without obvious head trauma
- Anti-coagulant use (not anti-platelet)
- Obvious significant external hemorrhage

About us

The mission of the Tidewater EMS Council is to **reduce death and disability** by facilitating regional cooperation, planning and implementation of an integrated emergency medical services delivery system.

501(c)(3) non-profit organization funded mostly through contracts, local government contributions, and partnerships.

Enhancing EMS Care for Our Region

- Standardizing delivery of Emergency Services across all jurisdictions
- Spearheading innovative programs for the entire region

TOTAL SQUARE MILES = 2,717

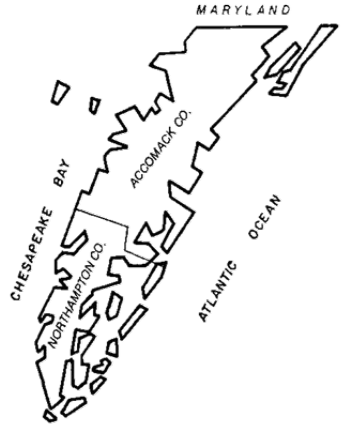
5,285+ EMS PROVIDERS

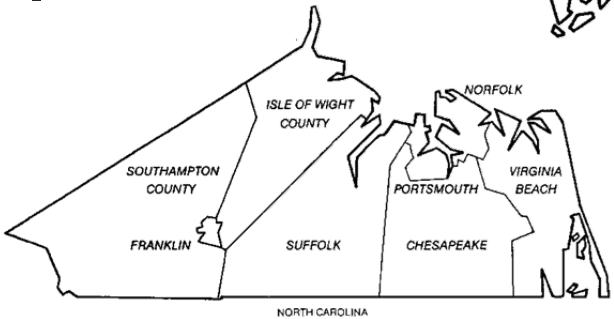
58 EMS AGENCIES

14 RECEIVING HOSPITALS

4 TRAUMA CENTERS

1 AIR-MEDICAL PROGRAM



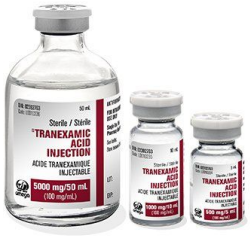


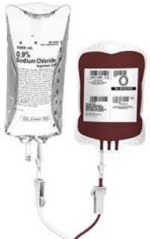
Starting a Whole Blood Program

CONSIDERATIONS: R&D (It's not what you think)

- **IS THERE A NEED**? TEMS reviewed 3-years of PI data
- **BLOOD SUPPLY**– Hospitals, Blood Banks, Blood Suppliers
- **FUNDING** – blood, equipment, and supplies
- **MINIMIZING WASTE –** Innovation & Creativity
- **BLOOD DRIVES - DONATONS**– resupply the Donor Blood Pool

TOOLS FOR PREHOSPITAL WHOLE BLOOD TRANSFUSION PROGRAMS





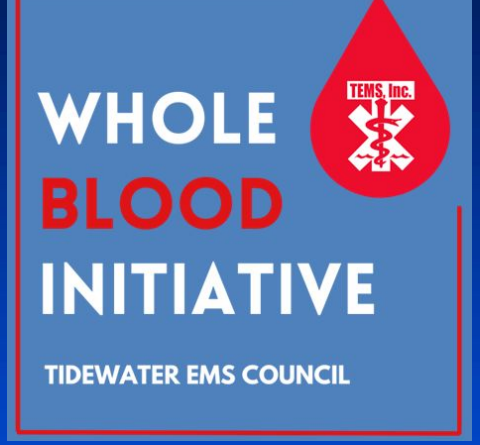
REMEMBER:

- TXA
- CALCIUM
- ETCO2

BloodCOMM

FIND WHAT WORKS FOR YOUR AGENCY

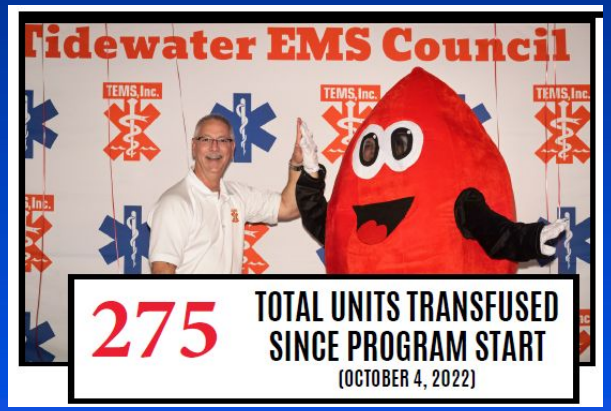
Crawl, Walk…RUN

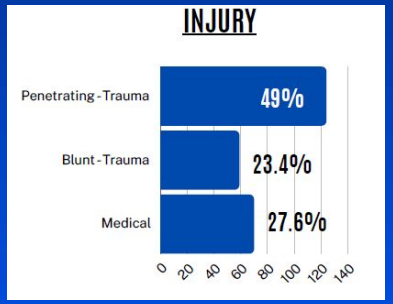


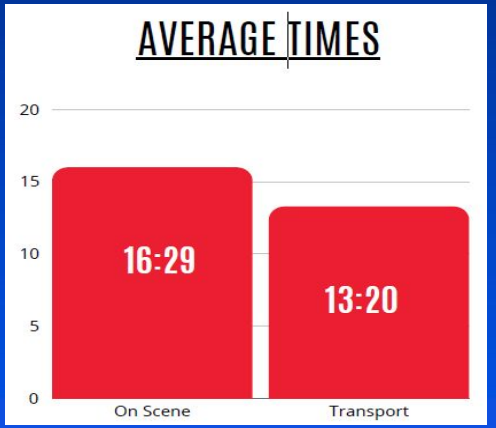
CONSIDERATIONS:

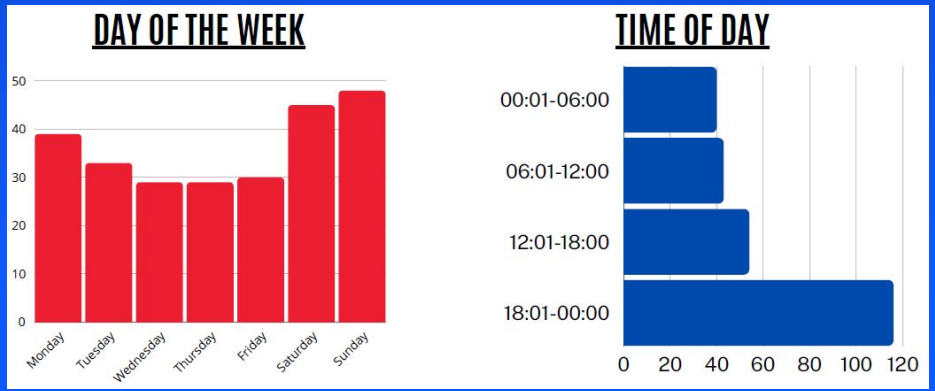
- **Oct 2022** – Program Start Virginia Beach
- **April 2023** – Expansion Chesapeake
- **September 2023** – Expansion 2nd Unit in Virginia Beach
- **October 2023** – Program inclusion of Medial etiology and Pediatrics (5+)
- **November 2023** – Expansion Portsmouth
- **March 2023** – Expansion Suffolk and 2nd Unit on Chesapeake
- **May 2024** – Program inclusion of ARC Bundle (TXA and Calcium Gluconate)
- **October 2024** – Expansion 3rd Unit in Virginia Beach
- **December 2024** – Expansion Norfolk

TRANSFUSION UPDATE









BLOOD DRIVES - DONATIONS

- **Contract Obligation** – Quarterly
- **Public Safety** – Research routine blood donations lowers cancer rick
- **Community Engagement** – shared responsibility – importance of the "Story"
- **Chamber of Commerce** – collaborate with local businesses
- **Incentives** – e-Gift Cards ($20)
- **Social Media, QR Codes, Local Media** – Spread the Word

How You Can Help

- **AWARENESS** - Share what you've learned about TEMS and the impact of the Whole Blood Initiative
- **GIVE BLOOD -** Now treating Pediatric and Medical Need Patients as well as Trauma Patients
- **DONATE FUNDS** - Now planned monthly

UPCOMING BLOOD DRIVES

- ✔ April 26 – Ocean Park Volunteer Rescue
- ✔ May 15 – Tidewater Healthcare Expo
- ✔ May 19 – Suffolk Fire Rescue
- ✔ June 20 – Ocean Park Volunteer Rescue
- ✔ August 14 – Portsmouth Fire, Rescue, and Emergency Services
- ✔ September 18 – Ocean Park Volunteer Rescue
- ✔ October 30 – MOXY Hotel
- ✔ November 20 – Virginia Beach EMS
- ✔ December 12 – Ocean Park Volunteer Rescue

THE BLOOD CONNECTION

BLOODRIVE

Tidewater EMS Council

1104 Madison Plaza, Suite 101, Chesapeake, VA 23320
Tel 757-963-0632, Fax 757-963-2325
Email: tidewater@vaems.org
www.tidewaterems.org

DONATE

Make a Difference by Equipping and Educating EMS in Tidewater!

GIVE BLOOD

Saturday, April 26
11am - 4pm
Ocean Park
Volunteer Rescue Squad

Q&A

Watch Previous Webinars:

EMS Focus

A Collaborative Federal Webinar Series

ems.gov | NHTSA | 911.gov

THANK YOU!

Feedback & Questions

nhtsa.ems@dot.gov