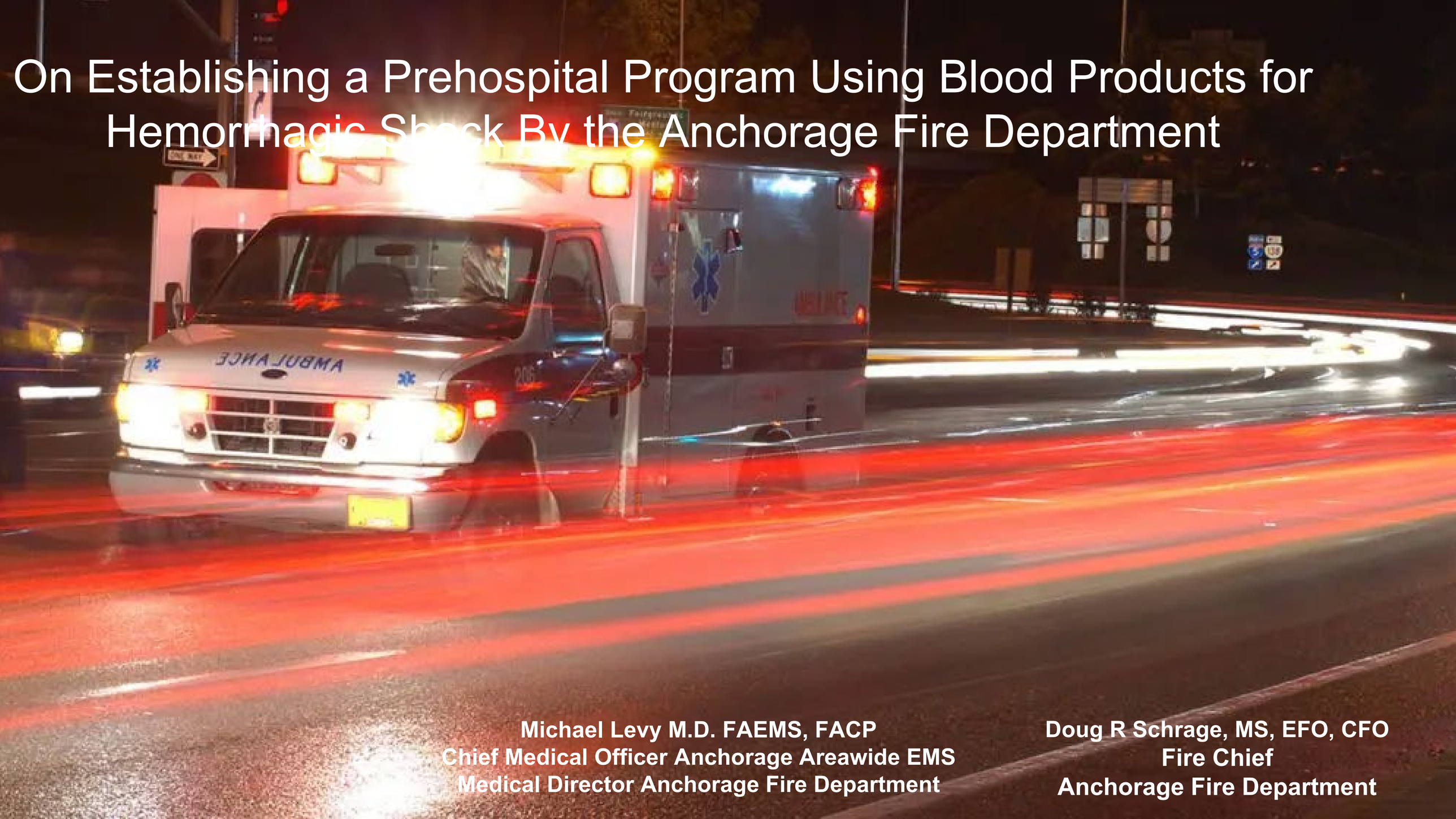
On Establishing a Prehospital Program Using Blood Products for Hemorrhagic Shock By the Anchorage Fire Department



Michael Levy M.D. FAEMS, FACP
Chief Medical Officer Anchorage Areawide EMS
Medical Director Anchorage Fire Department

Doug R Schrage, MS, EFO, CFO
Fire Chief
Anchorage Fire Department

Executive Summary

- A presentation on a major public health and safety initiative by AFD
- Discussion of out-of-hospital severe hemorrhage, a preventable cause of death in Anchorage
- Roadmap for the AFD Transfusion Program

Introduction to the Problem


REUTERS

Prehospital Hemorrhage and Preventable Death

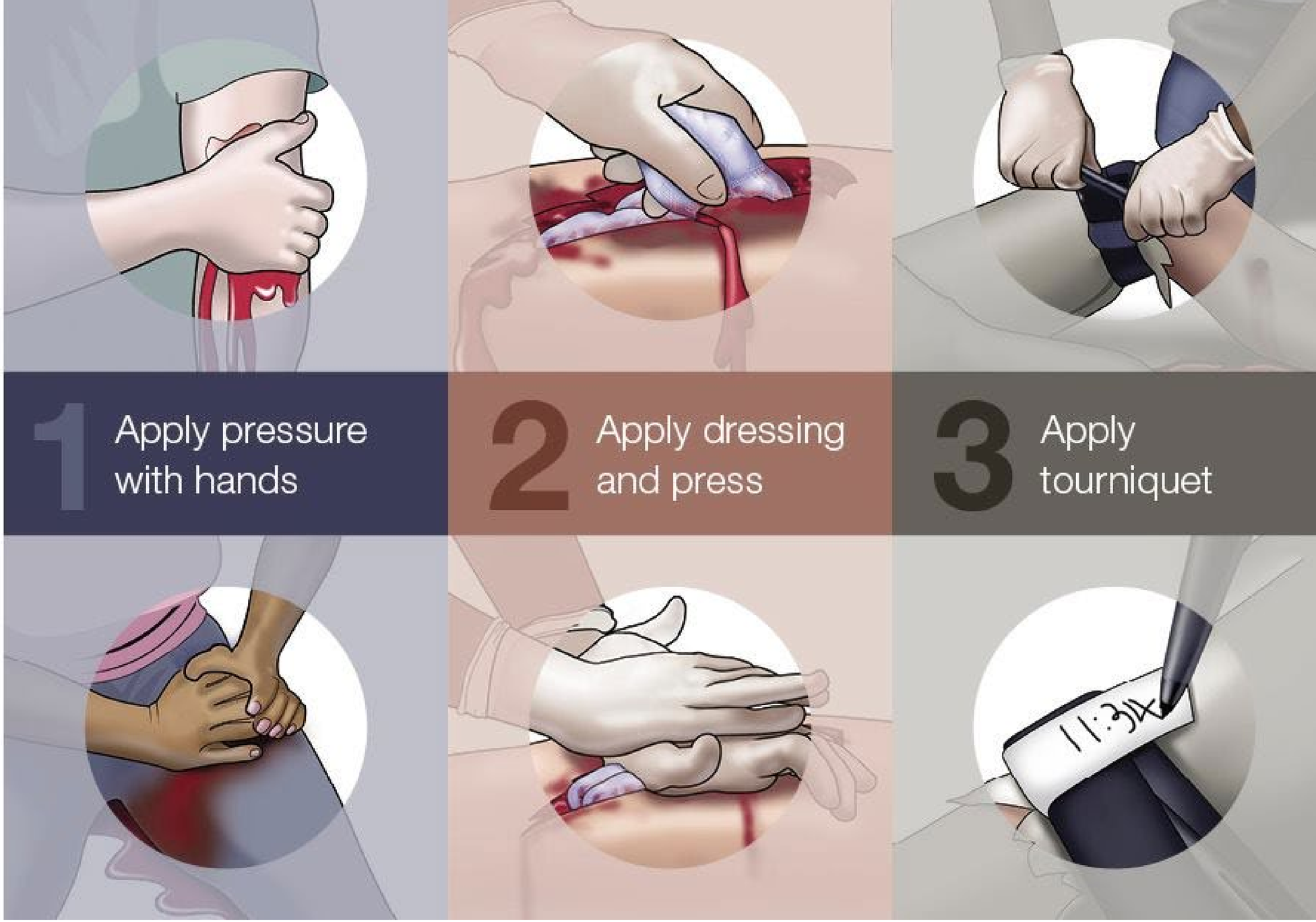
- Uncontrolled hemorrhage is the leading preventable cause of death in out of hospital shock
  - Hemorrhage accounts for ~30-40% of trauma deaths overall
  - In potentially survivable trauma, hemorrhage is responsible for up to 50% of deaths
  - It is the single most common cause of preventable death in trauma
  - It is a significant cause of death from medical problems such as GI and obstetrical bleeding

Standard EMS Tools for Severe Hemorrhage

CALL 911

STOP THE BLEED®

Save a life




Lactated Ringer's
Injection USP
REF L7500
NDC 0264-7750-00
DIN 01931636
HK 22614
1000 mL
EXCEL® CONTAINER
Each 100 mL contains: Sodium Chloride USP 0.6 g; Sodium Lactate 0.31 g; Potassium Chloride USP 0.03 g; Calcium Chloride•2H2O USP 0.02 g; Water for Injection USP qs
pH may be adjusted with HCl NF or NaOH NF
pH: 6.2 (6.0-7.5); Calc. Osmolarity: 275 mOsmol/liter
Electrolytes (mEq/liter): Na+ 130; K+ 4; Ca++ 3; Cl− 110; Lactate 28
Sterile, nonpyrogenic. Single dose container. Do not administer simultaneously with blood. Do not use in series connection. For intravenous use only. Use only if solution is clear and container and seals are intact.
WARNINGS: NOT FOR USE IN THE TREATMENT OF LACTIC ACIDOSIS.
Some additives may be incompatible. Consult with pharmacist. When introducing additives, use aseptic techniques. Mix thoroughly. Do not store.
Recommended Storage: Room temperature (25°C). Avoid excessive heat. Protect from freezing. See Package Insert.
Do not remove overwrap until ready for use. After removing the overwrap, check for minute leaks by squeezing container firmly. If leaks are found, discard solution as sterility may be impaired.
Not made with natural rubber latex, PVC or DEHP. Rx only
*EXCEL is a registered trademark of B. Braun Medical Inc.
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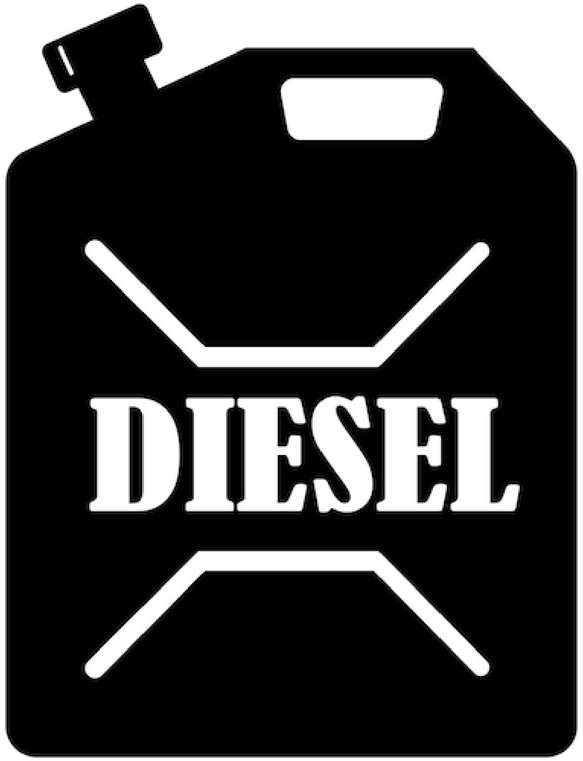
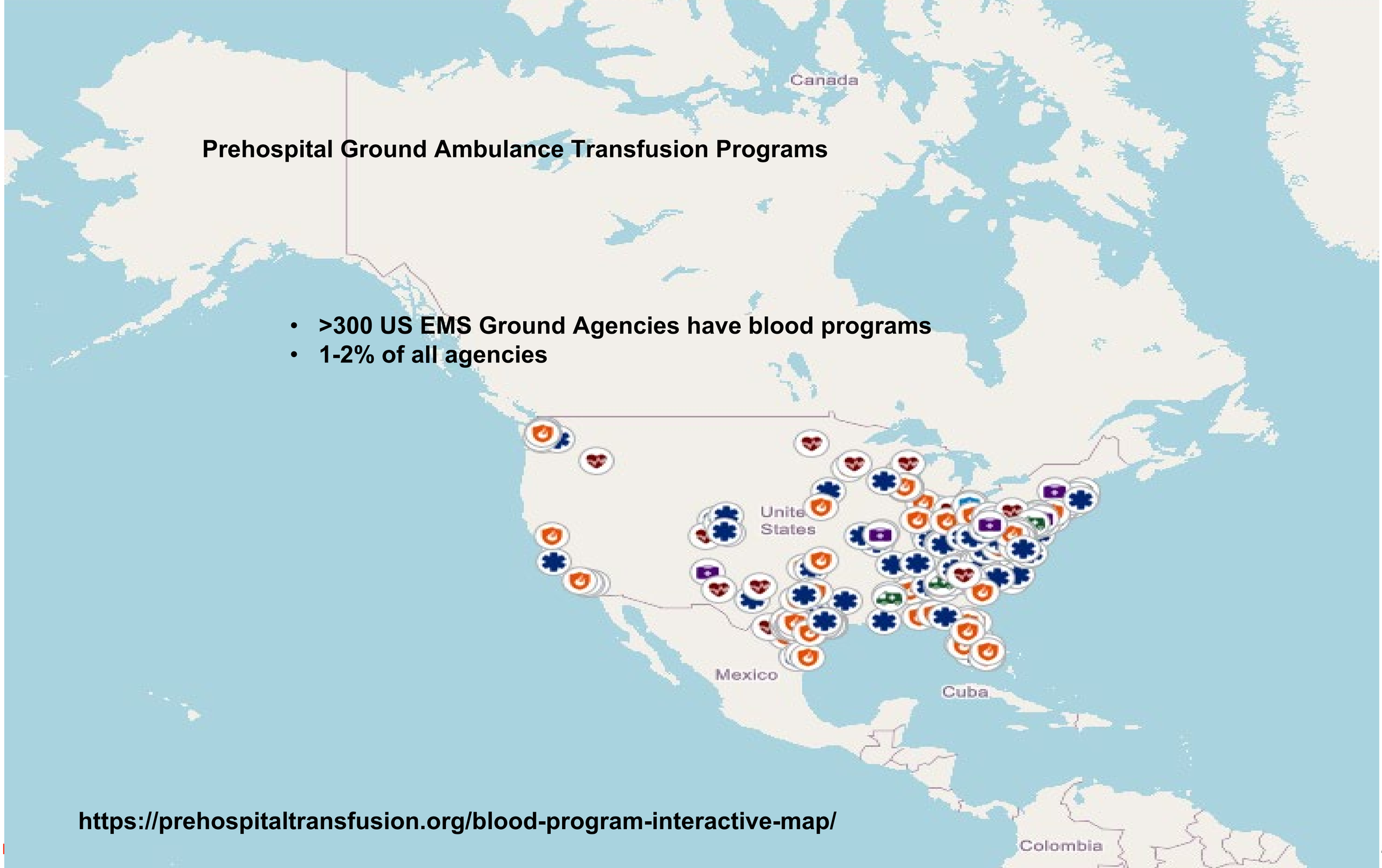

DIESEL

Prehospital Ground Ambulance Transfusion Programs

- >300 US EMS Ground Agencies have blood programs
- 1-2% of all agencies

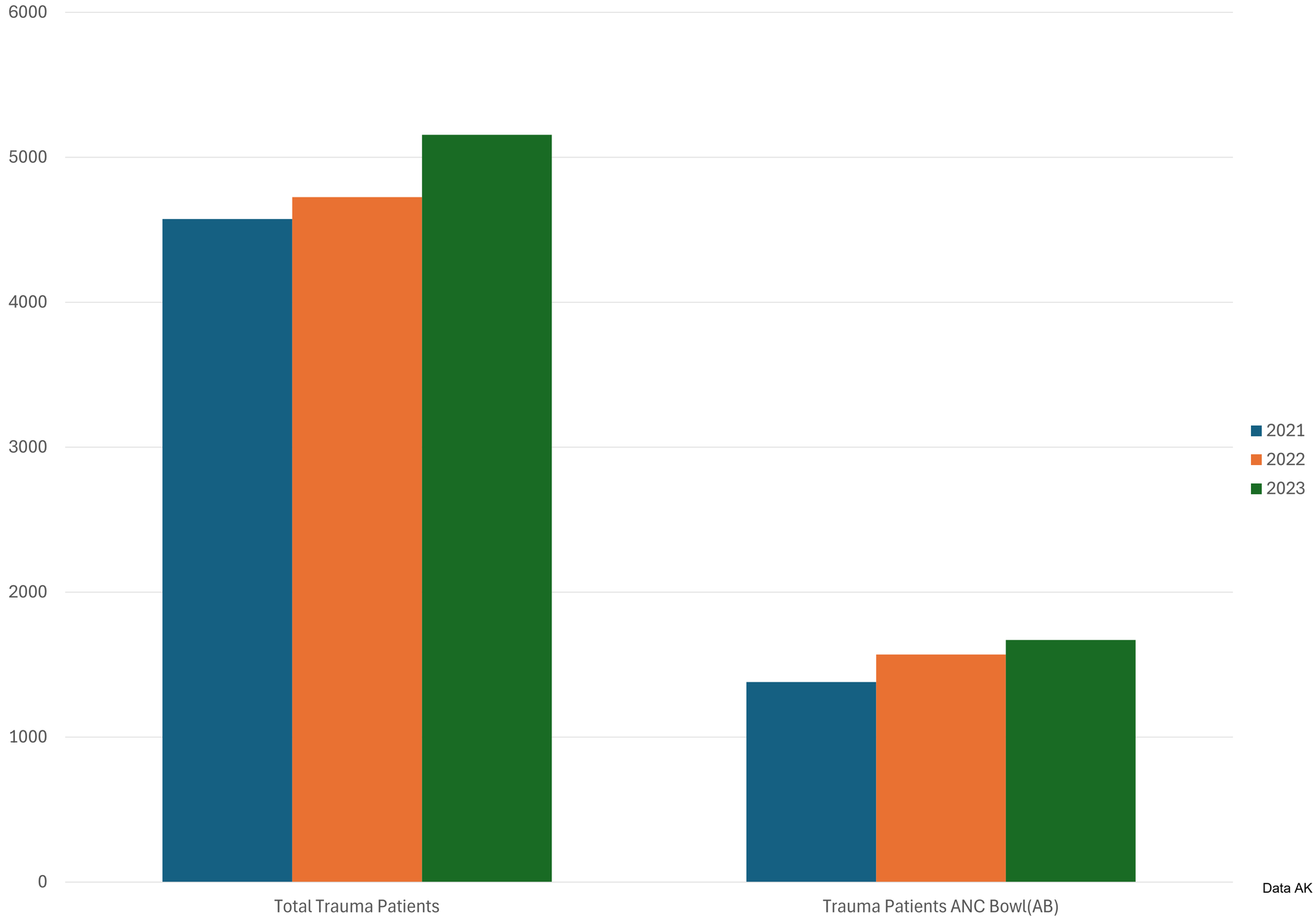


https://prehospitaltransfusion.org/blood-program-interactive-map/

Anchorage

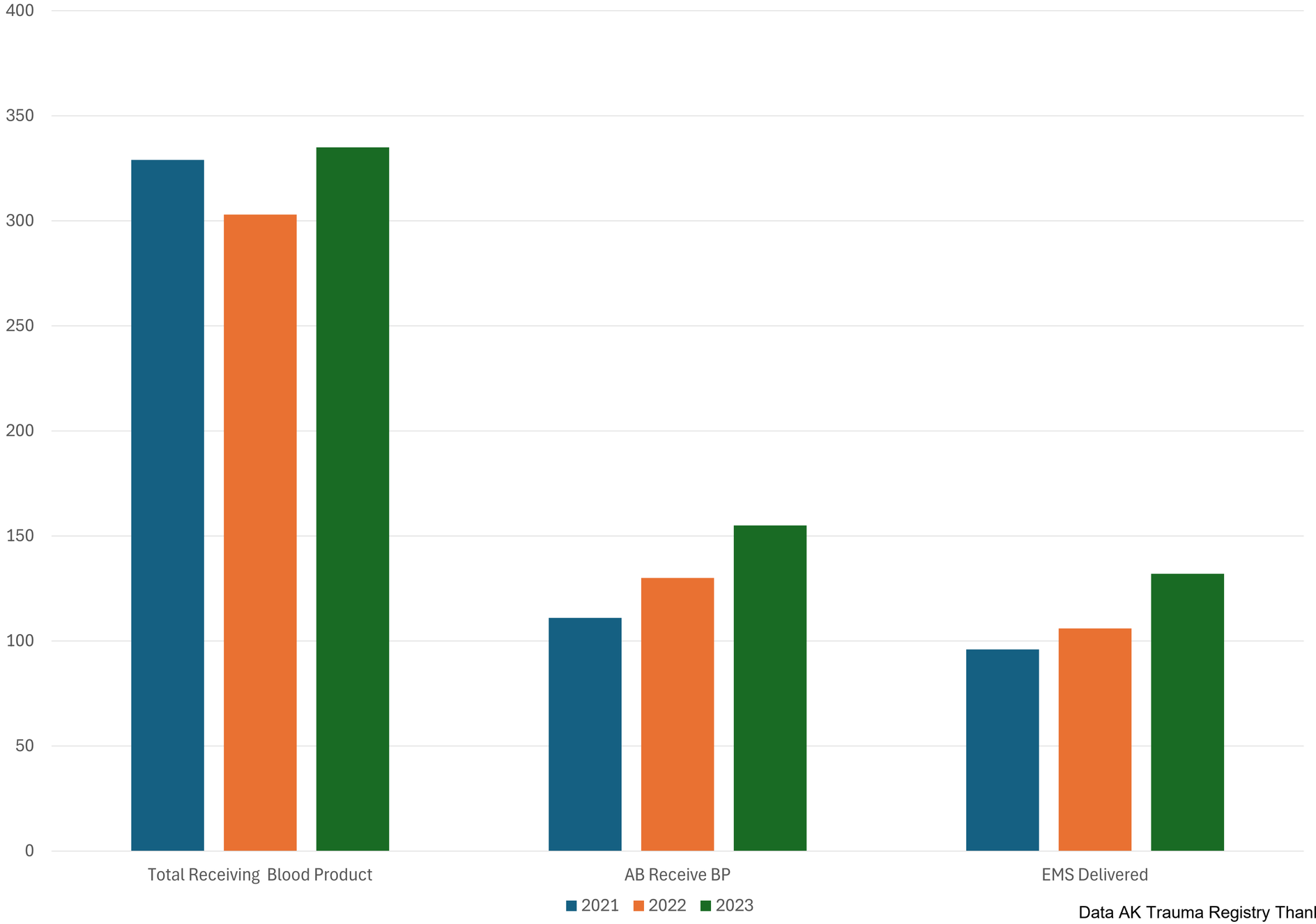
- 50% of the state's population
- 2 L2 Trauma Centers
- Career Metro Fire Department: well trained, well staffed
- Geographic area defined by ocean and mountains

Trauma Patients: Total Alaska and Total Anchorage by Year



Data AK Trauma Registry Thanks to Charlotte Bender

Trauma Patients Receiving BP by Year



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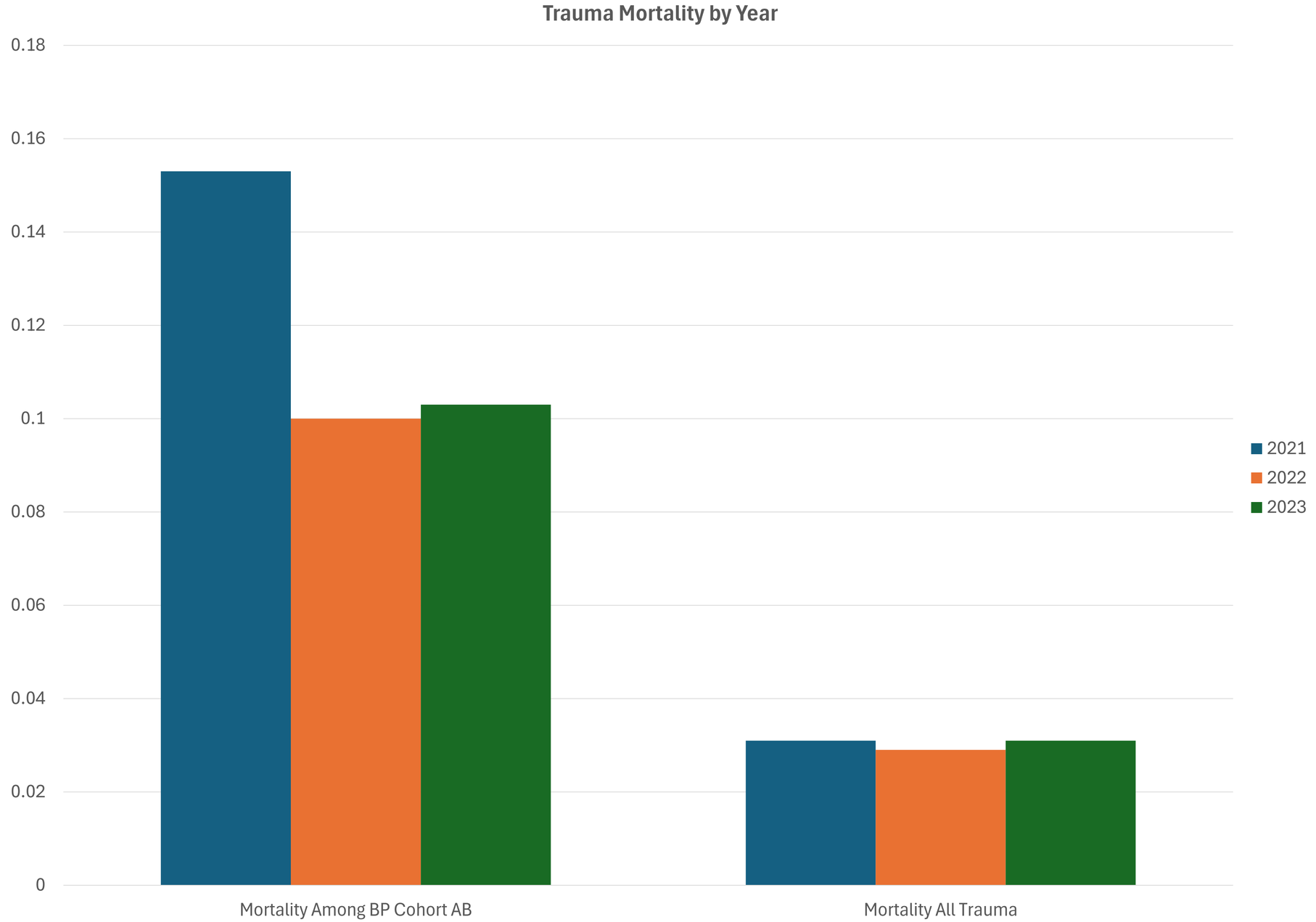
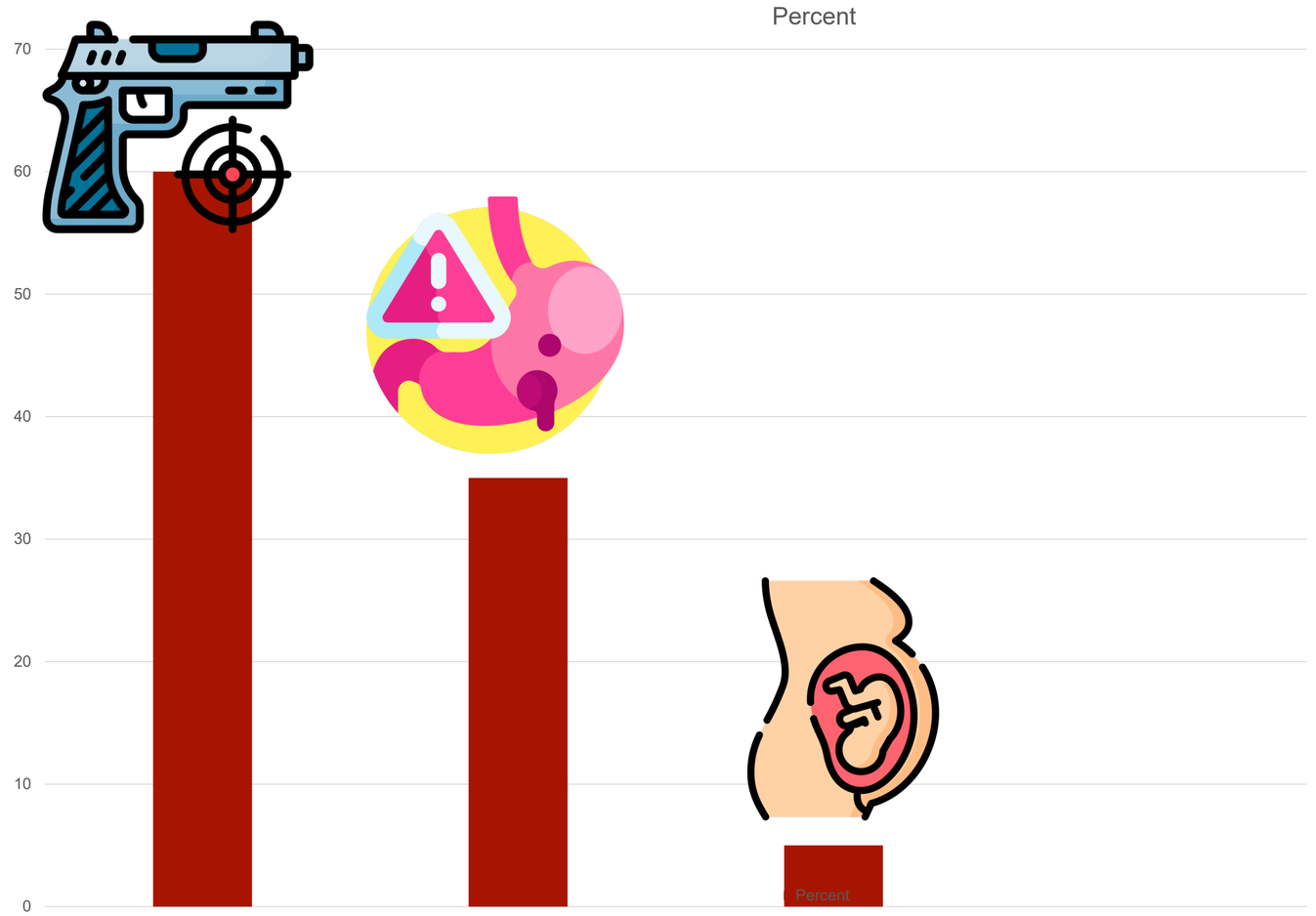
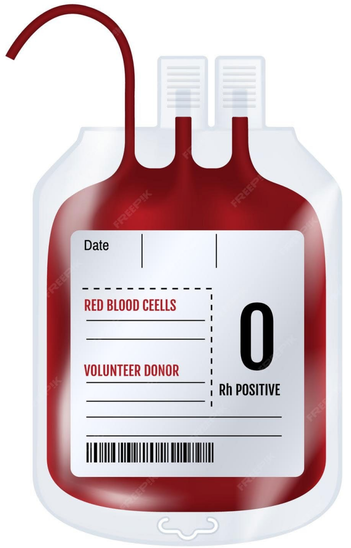


Data AK Trauma Registry Thanks to Charlotte Bender

Hemorrhagic Shock Causes



Prehospital Fluid Options



Review > Transfusion. 2025 May:65 Suppl 1:S288-S296. doi: 10.1111/trf.18183.
Epub 2025 Apr 3.

From shortages to solutions: Liquid plasma as a practical alternative to whole blood for prehospital trauma resuscitation

Aashish Rajesh [1], Randall M Schaefer [2], Jon R Krohmer [3 4 5], Eric A Bank [6], John B Holcomb [7], Donald H Jenkins [1]

Affiliations + expand

PMID: 40181605 DOI: 10.1111/trf.18183

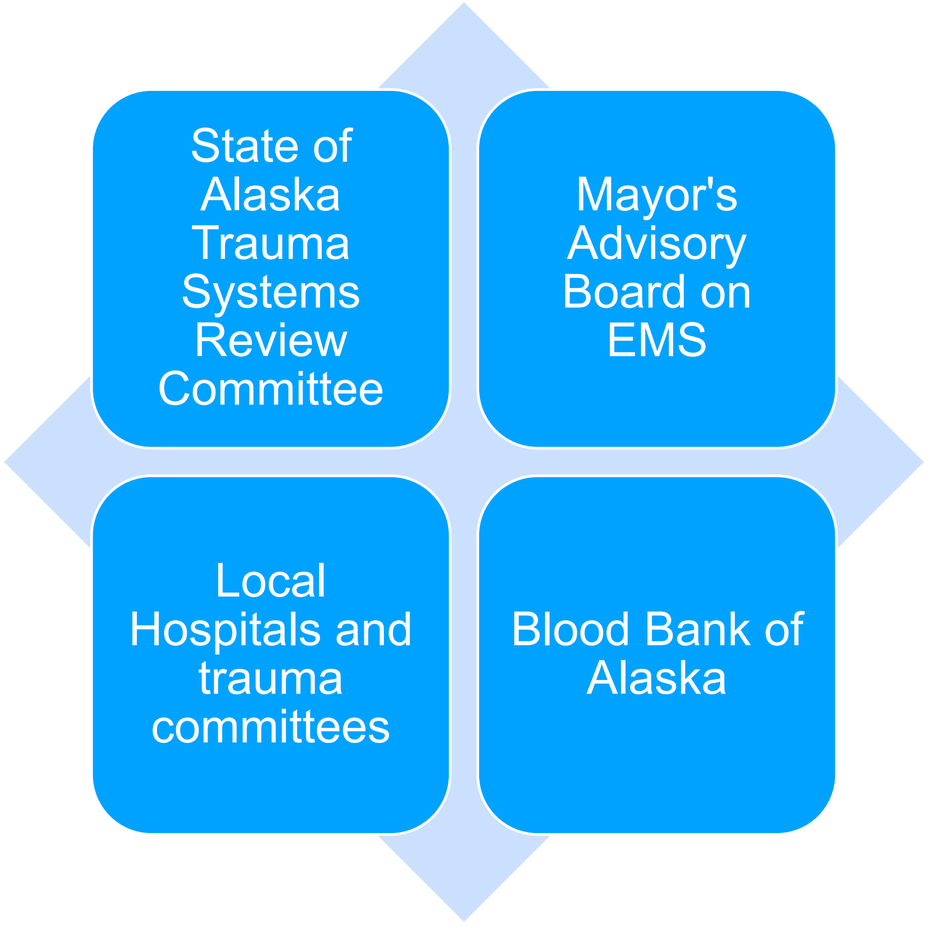
Sign in

Abstract

Trauma-induced hemorrhagic shock remains a leading cause of preventable mortality, necessitating timely and effective resuscitation strategies. While low-titer O whole blood (LTOWB) is the preferred choice for prehospital resuscitation due to its balanced composition and ease of use, overall widespread implementation is hindered by persistent supply chain issues and daily logistical challenges of access and deployment. Platelets, containing plasma as a component, are considered the next best alternative to LTOWB but are constrained by their short shelf life and ongoing scarcity, and ongoing storage compliance, rendering their use impractical. This review evaluates plasma-based alternatives, particularly liquid plasma (LP), as a viable and cost-effective substitute therapeutic modality. LP offers a 26-day refrigerated shelf life compared to the 5-day limit of thawed fresh frozen plasma (FFP) and eliminates the challenges associated with freezing and thawing while maintaining clinical efficacy. Preliminary economic analyses further underscore the advantages of LP, demonstrating reduced wastage and lower costs compared to LTOWB, especially when partnering with a hospital system. Acknowledging the barriers in implementing prehospital blood transfusion programs due to blood supply and costs, we advocate for emergency medical service (EMS) adoption of LP, highlighting its availability, comparable efficacy to LTOWB, and cost-effectiveness. Until LTOWB becomes more accessible, LP should be prioritized in prehospital care to optimize outcomes for trauma patients in hemorrhagic shock.

"…we advocate for emergency medical service (EMS) adoption of LP, highlighting its availability, comparable efficacy to LTOWB and cost-effectiveness."

Widespread Support from the Anchorage Medical Community



Press Release 12/16/2025

EMS News ems.gov

Uniformed Services University Partners with NHTSA to Improve Post-Crash Survival on Highways

Prehospital Blood Transfusion to be the Main Focus

The Uniformed Services University (USU) in Bethesda, Maryland, through its National Institute for Defense Health Cooperation (NIDHC), is partnering with the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) to save lives on America's roadways with prehospital blood transfusions.

https://www.newswise.com/articles/uniformed-services-university-partners-with-the-national-highway-traffic-safety-administration-to-improve-post-crash-survival-on-highways

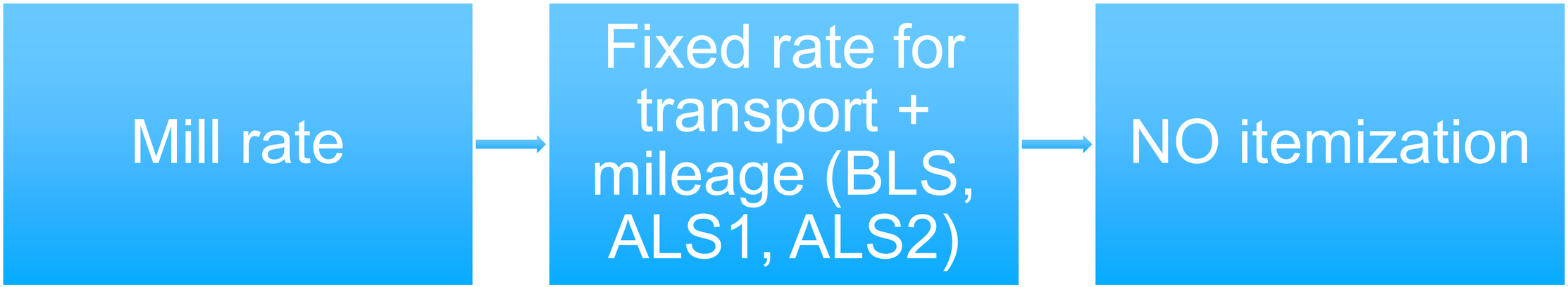
Consequences of AFD Blood Program

Potential life-saving intervention for most critical patients in AFD daily operations

Readiness

Disaster response	Program is scalable and flexible for other transfusion approach including whole blood

EMS Funding 101



Start Up Costs

Program Initiation Costs							
	Item type	**Product**	**Level**	**Price per unit**	**Number**	**Total**	**I**
	Product Cooler	Delta APRU6L	Mandatory	17200	2	34,400.00	
				4580	2	9,160.00	
	Blood warmer	Qinflow Warrior	Mandatory	4200	2	8,400.00	
		Thermal Angel					
	Rapid Infuser	Lifeflow	Optional	470	3	1,410.00	
	Liquid Never Frozen Plasma		Mandatory	130	48	6,240.00	
	Establish tracking system	OPIQ should work for this					
	Establish dashboard to track use						
	Training						
Total						**59,610.00**	
Sustaining Costs							
	Cost per Unit Transfused	**Projected Units per Month**					
	$135	10				1,350.00	
Blood tubing	$100	10				1,000.00	
Lifeflow (1 per patient transf	$260	10				2,600.00	
Total per month						**4,950.00**	

Summary

- An AFD transfusion program will save lives
- The concept is proven in communities across the country
- It is widely supported by the Anchorage Medical Community
- We ask for the Anchorage Assembly's endorsement and financial commitment to initiate the program.

Thoughts and Discussion