November 3, 2026

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Office of Emergency Medical Services
National Highway Traffic Safety Administration
U.S. Department of Transportation
1200 New Jersey Avenue SE
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RE: Request for Information: Nationwide Implementation of Prehospital Blood Transfusion (NHTSA–2026–2113)

Dear Ms. Wang,

The Association for the Advancement of Blood & Biotherapies (AABB), America's Blood Centers (ABC), and the American Red Cross appreciate the opportunity to respond to the request for information (RFI) that the National Highway Traffic Safety Administration (NHTSA) issued on behalf of the Federal Interagency Committee on Emergency Medical Services (FICEMS) on the nationwide implementation of prehospital blood transfusion.

Collectively, our organizations represent the nation's blood collection establishments, transfusion services, and transfusion medicine professionals. Our organizations share FICEMS's commitment to reducing preventable deaths from severe hemorrhage and support the expansion of prehospital blood transfusion. Our comments address the questions where the blood community has direct expertise.

Question 1: What are the current impediments to possible solutions for achieving the following national goals by the end of calendar year 2028?

Prehospital transfusion can save lives from hemorrhage, but broad adoption will test the capacity of the U.S. blood supply.[1] Current impediments to increasing the number of EMS agencies nationwide with active prehospital blood transfusion programs to 2,028 by 2028 include (1) operational challenges that may limit the ability of blood collectors to meet increased demand for blood and blood components and (2) flawed reimbursement policy.

1. **Operational Challenges**

Evidence indicates that prehospital blood transfusions, whether in the form of low-titer O whole blood (LTOWB) or component blood therapy, are lifesaving interventions. Currently, there are different perspectives among subject matter experts regarding the comparative benefits of LTOWB transfusion versus component blood therapy (either plasma or plasma and red blood cells)

[1] Young PP, Wood D, Holcomb JB, Jenkins DH, Levy MJ. Scaling of prehospital blood: A model describing impact on U.S. blood donors, distribution and cost. Transfusion. 2026. https://doi.org/10.1111/trf.70325

transfusion for patients requiring prehospital hemostatic resuscitation. However, there is general agreement that both therapies are superior to the current standard of care (crystalloid resuscitation without blood).

Our organizations support policies that encourage access to all FDA-approved blood and blood components in the prehospital setting. National expansion should remain product-flexible and regionally tailored, allowing EMS agencies to work with their blood collector and hospital partners to choose the components that fit their local protocols and supply, rather than equating prehospital transfusion with a single product.

Blood collectors need to be positioned to support prehospital blood transfusion programs. Some operational challenges may include: (1) donor recruitment; (2) manufacturing; (3) supply chain; (4) the ability to meet demand; and (5) product stewardship. These considerations may affect EMS providers' ability to provide LTOWB or component blood therapy.

- **Donor support.** Challenging trends in blood donor recruitment and retention will affect blood collectors' ability to support prehospital blood transfusion programs. For example, over the past 10 years, the number of donors under age 30 has declined by 39 percent. Blood collectors will need to recruit new group O donors, who are critical to ensuring that whole blood or red blood cell units are available for prehospital transfusion programs. Hospital demand for group O universal blood frequently outpaces supply, and the need for low-titer units draws from an even smaller pool of donors. Blood collectors will therefore incur donor recruitment and operational costs to support prehospital blood transfusion programs.

- **Manufacturing.** Leukoreduced LTOWB must be manufactured within 8 hours of collection, which significantly limits the pool of group O donors from which the product can be made. Donors must also meet other requirements, such as being aspirin-free, low titer, and transfusion-related acute lung injury (TRALI)-safe, which further constrains the number of eligible group O donors.

- **Supply chain.** Blood bag supply is a vulnerability for blood collection generally, and an even greater one for LTOWB programs. Blood collection establishments rely on a limited number of blood bag types to support whole blood collections. The limited availability of these bags restricts the number of potential whole blood collections.

- **Demand.** Blood collection establishments are concerned about their ability to meet increased demand for LTOWB, which could affect blood availability for hospitals. A successful prehospital blood transfusion program requires collaboration among blood collectors, hospitals, and local EMS providers, as well as robust community engagement to support donor recruitment and retention.

- **Product Stewardship:** Blood collectors and hospital transfusion services operate under established quality management systems that protect blood quality and safety, from donor to patient. EMS agencies that launch transfusion programs take on that same responsibility, but do not have comparable systems in place. Blood collectors and hospitals are more willing to partner with EMS agencies when they can show quality systems that keep the chain of custody intact, prevent wastage, and protect patients.

To address these challenges, our organizations recommend that NHTSA and its federal partners take the following actions:

- Develop a federal grant program that provides funding for donor recruitment and public awareness efforts.
- Recognize the blood supply as critical infrastructure in FICEMS and the Department of Health and Human Services' preparedness planning and include blood collectors and hospitals in FICEMS working groups on prehospital transfusion.
- Foster collaboration among blood collectors, hospitals, and EMS agencies, along with community engagement, so that prehospital programs expand without depleting hospital inventories.
- Support product-flexible, regionally-tailored strategies and continued innovation to meet the diverse needs of EMS systems.
- Encourage EMS agencies to adopt nationally recognized standards for prehospital transfusion, such as the *AABB Standards for Emergency Prehospital and Scheduled Out-of-Hospital Transfusions*, and to pursue independent accreditation. Accreditation gives blood collectors and hospitals objective evidence that an EMS agency's quality management system is adequate. Federal grants for prehospital transfusion programs should treat standards adoption and accreditation as allowable costs.

2. Flawed reimbursement policy

Flawed reimbursement policies and inadequate payment rates will limit the widespread availability of prehospital blood transfusion. The Medicare ambulance fee schedule does not separately pay for blood products or for transfusion in the field. Rather, Medicare reimburses ambulance services for prehospital blood transfusion through its bundled Advanced Life Support, Level 2 (ALS2) payment, which does not adequately cover the costs of providing prehospital blood transfusion.

A paper published in 2024 describes lessons learned from implementing a prehospital whole blood program in Maryland. Because this is a single example, we emphasize that the costs of each aspect of a prehospital blood transfusion program will vary with factors such as location, supplier contracts, labor expenses, and volume of blood used. The following description of the Maryland program's budget and finance considerations illustrates that the current ALS2 payment is insufficient to cover prehospital blood transfusion:

> The initial cost to equip each EMS supervisor vehicle and station was approximately $6500 in 2023. Each unit of blood used costs $550, and administration equipment was approximately $375. The fluid warmers cost $4600, and each disposable circuit costs $87.50. Training costs, including salary support, were funded through existing budget lines and were estimated to be approximately $225 per each of the 12 EMS supervisors assigned to the field. No salary support was needed for the six EMS supervisors on a daywork schedule, totaling approximately $2700. Budget reallocations and grant funding enabled blood storage and administration equipment purchase and additional costs, including salaries for personnel training, training supplies, reserve equipment, and ongoing effort support for program

administration. Estimated annual program costs are between $46,250 and $69,375 (50–75 patients/year × $925/patient) and depend on blood utilization.[2]

Another study indicates that the average cost of a unit of LTOWB ranges from $500 to $600, and a midsized EMS program reported blood product costs of $80,000 per year.[3] Because of reimbursement concerns, only a small share (approximately 1 percent) of well-funded prehospital agencies have implemented this proven lifesaving intervention. Reimbursement policy must align with coverage so that EMS providers can implement prehospital blood transfusion programs. Recognizing these reimbursement challenges, the Defense Health Agency (DHA) will launch a demonstration project in January 2027 to evaluate the impact of a separate add-on payment for prehospital blood transfusion provided during eligible ground and air ambulance transports under TRICARE.

Our organizations recommend that NHTSA and its federal partners address these challenges by:

- Encouraging the Centers for Medicare & Medicaid Services (CMS) to establish separate payment for blood products and transfusion services furnished by ambulance providers, such as a prehospital blood product add-on payment that incorporates the costs of manufacturing, procuring, storing, and administering blood, building on the TRICARE prehospital blood transfusion demonstration that takes effect January 1, 2027.
- Encouraging CMS to issue guidance urging state Medicaid programs to cover, and provide sufficient payment for, prehospital transfusion.
- Continuing to expand federal grant programs, including those offered by the Department of Defense and NHTSA, that support establishing prehospital blood transfusion programs, and ensure that the funds cover all costs, including blood products and equipment.

Question 3: What mechanisms, technical standards, or policy enhancements are needed to advance data integration and linkage across local, State, and national data systems (e.g., NEMSIS, trauma registries) in support of prehospital blood transfusion surveillance and quality measurement?

As prehospital transfusion programs continue to expand, FICEMS should help the EMS community adopt consistent, widely accepted terminology for blood and blood products. We recommend that data systems capture ISBT 128 unique identifiers (i.e., donation identification numbers) and product codes, which will enable standardized data to be captured across the transfusion continuum of care. The standardized data elements would support both outcomes measurement and safety surveillance.

Our organizations recommend the following:

- **Standardize transfusion data elements in NEMSIS.** We recommend that NHTSA, working through FICEMS, standardize NEMSIS data elements related to prehospital blood transfusions. These data elements may include product type, ISBT 128 unique identifiers, product codes, time

[2]Levy MJ, Garfinkel EM, May R, Cohn E, Tillett Z, Wend C, Sikorski RA, Troncoso R Jr, Jenkins JL, Chizmar TP, Margolis AM. Implementation of a prehospital whole blood program: Lessons learned. J Am Coll Emerg Physicians Open. 2024;5(2):e13142. doi:10.1002/emp2.13142.

[3]Schaefer RM, Bank EA, Krohmer JR, Haskell A, Taylor AL, Jenkins DH, Holcomb JB. Removing the barriers to prehospital blood: A roadmap to success. J Trauma Acute Care Surg. 2024;97(2S Suppl 1):S138–S144. doi:10.1097/TA.0000000000004378.

of transfusion, and transfusion reactions. NHTSA may also support EMS agencies as they adopt these standardized data elements.

- **Capture data that supports research.** Data on patients who receive prehospital blood transfusions, such as prehospital transport time or rural versus urban location, may be valuable to researchers as they continue to assess the impact of prehospital blood transfusions.
- **Preserve traceability and hemovigilance**. When the hospital or blood collector that supplies a unit is not the hospital that receives the patient, it is difficult to keep the unit linked to its recipient, including when investigating a suspected transfusion reaction. Two steps would help: a standard documentation hand-off to the receiving hospital's transfusion service, including for patients who expire before arrival, and a pathway for reporting prehospital adverse events to national surveillance, such as the CDC National Healthcare Safety Network Hemovigilance Module.

Question 4: How might improved military and civilian EMS integration advance prehospital blood transfusion practices, logistics, cold-chain management, and clinical training?

Military and civilian prehospital transfusion depend on each other. When they work as one system, both get stronger. The case for prehospital blood transfusion came from combat casualty care, and civilian programs learn from the military's clinical and logistics experiences. Every day, civilian blood establishments collect, manufacture, and distribute blood, and clinicians transfuse it. That daily work creates a foundation that can scale up in a mass-casualty event or a public health emergency. In a large-scale combat operation, the Department of Defense would draw on the same base.

For this reason, the civilian blood supply should be considered part of national security, and prehospital transfusion programs are part of this infrastructure. Closer integration of the military and civilian blood systems would support enhanced coordination and planning for surge capacity and response.

Two areas offer immediate opportunities:

- **Product innovation:** Military-civilian partnerships can speed the development and adoption of products that ease cold-chain limits, such as products with longer shelf life, cryopreserved products that can be made at scale, and dried plasma. We encourage FICEMS to recommend that the Department of Defense, the Food and Drug Administration, civilian blood collectors, and hospitals continue working together so these products reach civilian use once they are licensed.

- **Joint Exercises:** Tabletop exercises can bring together the military and civilian blood communities to test protocols, surge capacity, and communication in advance of a crisis. These exercises should include prehospital transfusion programs, which form part of the front line of the national response to disasters, emergencies, and mass-casualty events.

Question 5: What improvements and curriculum enhancements are needed within the EMS education and training system to support transfusion medicine, clinical competency, and other innovative prehospital practices?

Standard paramedic education does not currently include transfusion medicine. In response, education and training programs have emerged to support EMS agencies as they consider, implement, and manage safe, effective prehospital transfusion programs. Existing programs, such as AABB's Prehospital Transfusion Certificate Program, cover pertinent topics including (1) the clinical rationale; (2) blood products; (3) implementation models; (4) logistics and operations; (5) field administration; (6) quality and safety; and (7) collaboration and communication.[4]

We encourage FICEMS to work with its federal partners to include education and training as allowable costs in federal grants that support prehospital transfusion programs.

Question 6: Do you have any additional comments regarding the nationwide implementation of prehospital blood transfusion programs?

The blood supply is key to achieving the national goals related to expanding prehospital transfusion programs. A study published in July 2026 concludes that:

> While prehospital transfusion has the potential to substantially improve survival from hemorrhage, its large-scale implementation carries significant system-level implications for the U.S. blood supply. Sustaining national readiness would require careful alignment of product selection, donor availability, and operational logistics, with LTOWB supply emerging as the principal limiting factor. Moreover, since EMS agencies are regulated and supported by state and regional funds, it will require cooperation and understanding of local leaders to these issues. Hospital–EMS rotation partnerships were critical to mitigating discard and preserving feasibility, underscoring that prehospital transfusion cannot function as a stand-alone EMS intervention but rather as part of an integrated regional blood delivery system. Together, these findings suggest that equitable and sustainable national adoption will depend on deliberate planning, targeted LTOWB donor recruitment, and strategic use of complementary products such as liquid plasma, tailored to operational context and regional capacity.[5]

To achieve sustainable nationwide implementation of prehospital blood transfusion, our organizations recommend that FICEMS and its federal partners prioritize four actions: (1) assess the impact of expanded prehospital transfusion on the national blood supply and support donor recruitment and regional inventory stewardship; (2) establish adequate reimbursement for blood products, transfusion services, and ongoing program readiness; (3) promote nationally recognized transfusion standards, training, traceability, and hemovigilance; and (4) support flexible product strategies and continued innovation to meet the diverse needs of urban, rural, and pediatric EMS systems. Thus, we urge FICEMS to work with the blood community to address the challenges that may create barriers to the adoption of prehospital transfusion programs.

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[4] AABB Prehospital Transfusion Certificate Program, *available at* http://www.aabb.org/EMSCert.

[5] Young PP, Wood D, Holcomb JB, Jenkins DH, Levy MJ. Scaling of prehospital blood: A model describing impact on U.S. blood donors, distribution and cost. Transfusion. 2026. https://doi.org/10.1111/trf.70325

If you have any questions or need additional information, please contact Leah Stone (301-215-6554, lmstone@aabb.org), Susan Leppke (202-654-2988, sleppke@americasblood.org), or Julie Manes (202-417-5147, julie.manes@redcross.org).

Sincerely,

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