



PREHOSPITAL  
BLOOD TRANSFUSION  
COALITION

# **Prehospital Blood Transfusion Civilian Clinical Practice Guidelines**

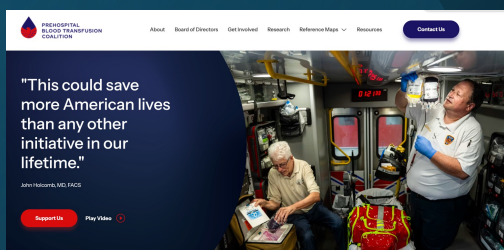
AMBULANCE

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# Approved by Prehospital Transfusion Coalition BOD 6/3/2025



## Prehospital Blood Transfusion Coalition Clinical Practice Guideline for Civilian Emergency Medical Services

### PURPOSE

This Clinical Practice Guideline (CPG) provides essential instructions for prehospital blood product transfusion in civilian Emergency Medical Services (EMS) systems. This guideline supports early resuscitation with blood products for patients experiencing hemorrhagic shock, regardless of etiology, with the objective of reducing mortality and improving clinical outcomes. Implementation of a prehospital blood transfusion program requires careful planning, appropriate training, quality control measures, adherence to regulations, close physician medical oversight, and coordination with regional blood suppliers and receiving facilities.

### INTRODUCTION

Early administration of blood products to patients experiencing hemorrhagic shock, irrespective of etiology, has been demonstrated to improve survival. Research indicates that patients who receive blood products within the initial minutes after injury or onset of hemorrhagic shock exhibit significantly decreased mortality compared with those who receive delayed transfusion. Prehospital transfusion programs are, by their nature, resuscitation programs intended for patients with clear evidence of hemorrhagic shock.

**Prehospital blood transfusion coalition clinical practice guideline for civilian emergency medical services**

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**PURPOSE**  
This Clinical Practice Guideline (CPG) provides essential instructions for prehospital blood product transfusion in civilian emergency medical services (EMS) systems. This guideline supports early resuscitation with blood products for patients experiencing hemorrhagic shock, regardless of etiology, with the objective of reducing mortality and improving clinical outcomes. Implementation of a prehospital blood transfusion program requires careful planning, appropriate training, quality control measures, adherence to regulations, close physician medical oversight, and coordination with regional blood suppliers and receiving facilities.

**INTRODUCTION**  
Early administration of blood products to patients experiencing hemorrhagic shock, irrespective of etiology, has been demonstrated to improve survival.<sup>1-7</sup> Research indicates that patients who receive blood products within the initial minutes after injury or onset of hemorrhagic shock exhibit significantly decreased mortality compared with those who receive delayed transfusion.<sup>2-7</sup> Prehospital transfusion programs are, by their nature, resuscitation programs intended for patients with clear evidence of hemorrhagic shock. The body of evidence surrounding prehospital transfusion continues to evolve. When creating this CPG, the recent literature was reviewed, including, but not limited to, the 2025 Prehospital Trauma Compendium: Transfusion of Blood Products in Trauma-A Position Statement and Resource Document of the National Association of Emergency Medical Services Physicians (NAEMSP) by Brown *et al.*<sup>1</sup> This CPG represents the current position of the prehospital blood transfusion coalition and is meant

**PREHOSPITAL PRINCIPLES OF RESUSCITATION AND TRANSFUSION**

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# Why Civilian EMS Prehospital Blood Transfusion Guidelines ?

Increasing evidence  
supports prehospital  
transfusion (PHT)

Continued growth in the  
number of EMS systems  
implementing PHT  
programs

The details matter,  
How we do this matters,  
Being good partners  
matters

PHT Coalition recognizes  
the importance of having  
current, best-practice  
guidelines for EMS  
systems to follow

Civilian clinical practice  
guidelines fill an important  
gap and are informed by  
military and other  
international guidelines

These Guidelines are a  
living document - evolves  
with evidence



# CPG Sections and Components:

- Purpose & Introduction
- Principles of resuscitation and transfusion
- Criteria for transfusion
- Transfusion procedure
- Documentation
- Quality and Safety
- Training
- Implementation





# Preamble: Cornerstones of Resuscitation Success

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Effective communication is essential

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Multiple urgent interventions in parallel

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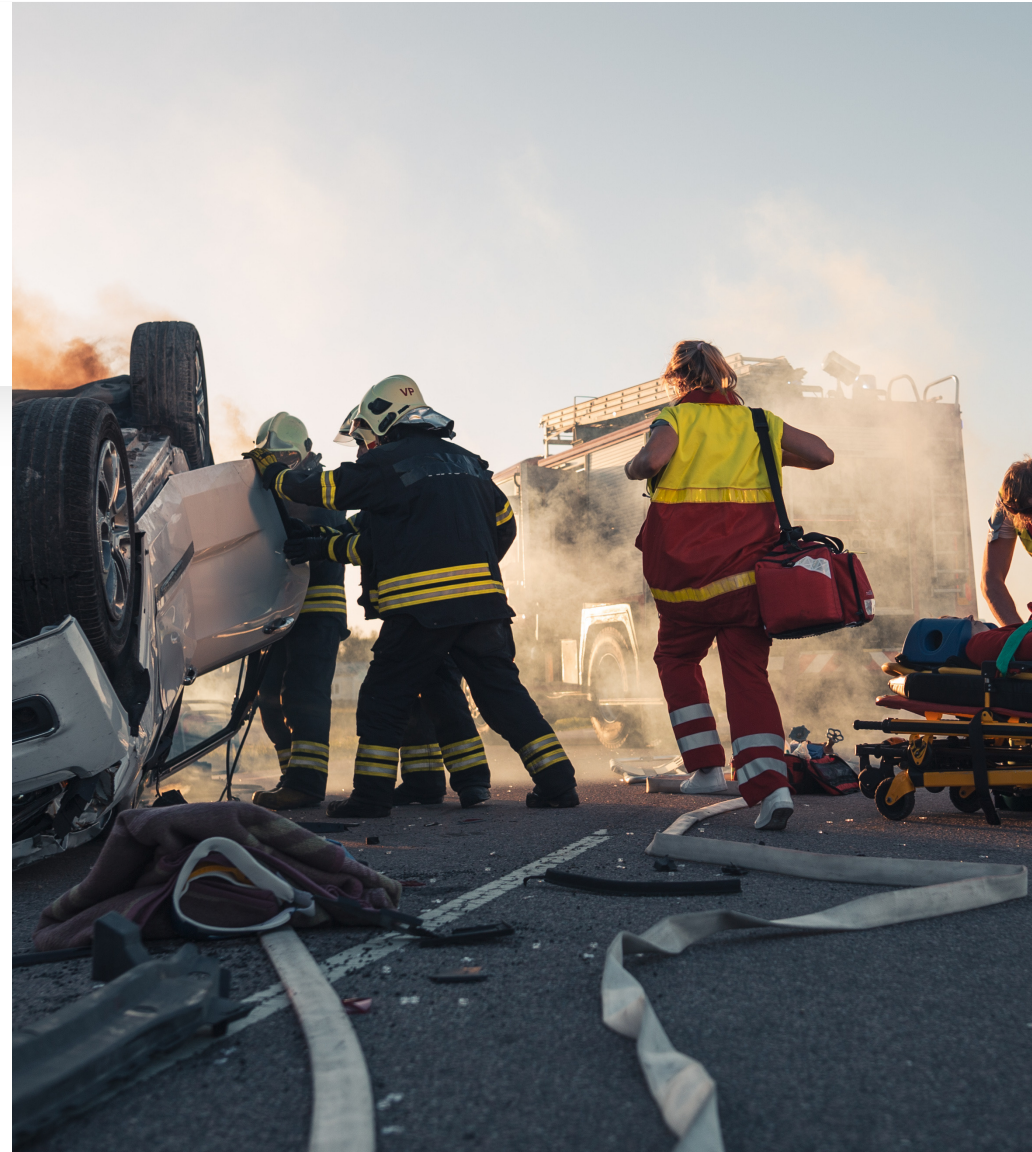
Structured handoffs are critical

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Continuity from field to hospital is key

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Standardized practices and procedures





# Key Principles of Resuscitation

- Rapid recognition of hemorrhagic shock
- Hemorrhage control
- Hemostatic resuscitation
  - WB (LTOWB if available) or Plasma or PRBCs (1:1)
- Minimize crystalloid use
- Prevention of hypothermia
- TXA administration
- Calcium administration



# Criteria for Transfusion

Hemorrhagic shock with hemodynamic instability

Traumatic injuries with significant blood loss

Clinical signs of shock despite initial resuscitation

Based on clinical judgment and protocols

Consider mechanism of injury

**Table 1** Clinical indicators of hemorrhagic shock

Clinical indicator	Description
Hypotension	Systolic BP < 90 mm Hg
Tachycardia	Heart rate > 100 bpm; unresponsive to initial interventions
Respirations	Rapid/shallow respirations
Pulse quality	Weak, thready pulse
Capillary refill	> 2 s
Mental status	Decreased (excluding head injury and/or intoxication)
ETCO <sub>2</sub>	< 25 mm Hg
Skin	Pale, cool, clammy
Bleeding	Active hemorrhage from non-compressible source
Shock Index	> 1.0 (heart rate/systolic BP)
BP, blood pressure; ETCO <sub>2</sub> , end-tidal carbon dioxide.	

**Examples of patient presentations consistent with suspected hemorrhagic shock necessitating prehospital blood transfusion**

**Trauma patients with uncontrolled hemorrhage**

- ▶ Any proximal amputation above knee/elbow or amputations requiring a tourniquet.
- ▶ Penetrating trauma to neck/chest/abdomen/pelvis with signs of shock.
- ▶ Evidence of significant blood loss (> 500 mL estimated).
- ▶ Unstable pelvic fracture with hemodynamic instability.

**Medical patients with significant hemorrhage**

- ▶ Gastrointestinal bleeding.
- ▶ Ruptured ectopic pregnancy.
- ▶ Peripartum hemorrhage.
- ▶ Ruptured aortic (thoracic or abdominal) aneurysm.
- ▶ Ruptured arteriovenous (AV) fistulas/grafts.
- ▶ Postsurgical complications.
- ▶ Epistaxis.
- ▶ Post-tonsillectomy bleeding.



# Transfusion Procedure

- Preparation and Storage
- Adult Dosing
- Pediatric Dosing
- Transfusion Process
  - Before
  - During
  - After
- Monitoring for signs of transfusion reactions
  - Vitals q3-5 min
- Hospital handoff of care
- Documentation
  - Transfusion reaction reporting

## Box 1 Prehospital blood transfusion procedure checklist

### Before transfusion:

- ⇒ Confirm indication for transfusion meets criteria.
- ⇒ Quickly assess for indicators that the patient would not want to receive blood (verbal consent if possible, medical alert tag, wallet card).
- ⇒ Establish adequate intravenous/intraosseous access (ideally 2 points of access).
- ⇒ Obtain and record baseline vital signs.
- ⇒ Verify blood product unit information and expiration.
- ⇒ Check temperature indicator on blood bag (if present).
- ⇒ Inspect blood product for abnormalities.
- ⇒ Prepare administration set with appropriate filter.

### During transfusion:

- ⇒ Monitor vital signs every 5 min before, during, and after transfusion.
- ⇒ Watch for signs of transfusion reaction.
- ⇒ Document time transfusion started.

### After transfusion:

- ⇒ Record post-transfusion vital signs.
- ⇒ Document time transfusion completed.
- ⇒ Document total volume infused.
- ⇒ Notify receiving facility of blood administration.
- ⇒ Transport all blood product bags to hospital.
- ⇒ Complete all required documentation.
- ⇒ Return unused products according to protocol.

### Quality management:

- ⇒ Maintain detailed records of all blood products deployed in the field including daily check-off procedures.
- ⇒ Have a local database of all prehospital blood cases to track administration and patient outcomes.
- ⇒ Immediate post-transfusion hot-wash with emergency medical service clinicians.
- ⇒ Review case in detail: Indications, procedure, documentation, outcomes.
- ⇒ Ensure that a prescriber's authorization note is attached/ uploaded to the prehospital chart.



# Documentation

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Document any transfusion reactions

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Immediate intervention protocols

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Patient response tracking

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Mandatory reporting procedures

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Follow-up requirements

# Ensuring Safety



Storage:  
Continuous  
temperature  
monitoring



Equipment:  
Regular  
maintenance  
and calibration



Personnel:  
Competency-  
based  
assessments



Program: Case  
reviews and  
outcome  
tracking



Reporting: All  
adverse events



# Storage and Handling

COORDINATION WITH BLOOD SUPPLIERS

STRICT STORAGE TEMPERATURE REQUIREMENTS

CONTINUOUS TEMPERATURE MONITORING

ROTATION PROTOCOLS TO MINIMIZE WASTE

PROPER TRANSPORT PROCEDURES

**Table 2** Blood product cold chain storage requirements

Parameter	Requirement
Temperature	1°C–6°C (storage) 1°C–10°C (transport)
Monitoring	Continuous with audible alarm capability
Documentation	Temperature log maintained
Container	Validated by blood supplier
Maximum time outside controlled storage	4 hours for transfusion
Maximum time in an approved, locally validated cooler	Per cooler (typically 24–48 hours)

# EMS Clinician Training and Preparedness

Initial didactic training

Hands-on skills practice and sign-off

Simulation and case-based training

Ongoing competency demonstration

Annual skills currency verification

# Program Implementation Considerations

- Program Components

- Training and education
- Medical oversight and protocols
- Blood supplier coordination
- Hospital coordination
- Infrastructure considerations
- Administrative considerations

- Quality Assurance

- Storage and transport
- Equipment maintenance
- Personnel competencies
- Program management
- Outcomes tracking
- Blood product administration review





# Discussion



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