

Prehospital Point-of-Care Testing

*An Evolving Opportunity To Improve Clinical Outcomes
and Systems Optimization*

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- It should be noted that **Dr. Antevy** does have a consulting relationship with **Handtevy**

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BLUF

Point-of-care testing is an evolving tool with increasing uses and growing literature.

Moving meaningful diagnostic information upstream to the prehospital environment, can allow EMS clinicians can better detect and stratify critical conditions, implement patient specific treatments and optimize destination determination.

This can ultimately enhancing survival rates and system efficiency.



Questions?

- 1. Can EMS use Point-of-Care Testing to Triage?**
- 2. What Things Come to Mind?**

What Is Now Clinically Testable in the Field

Test	Clinical Application	Key Decision Supported
Lactate	Assess tissue perfusion and hypoxia	Identify patients needing urgent resuscitation or transport
hs-Troponin	Detect myocardial injury	Early diagnosis of acute coronary syndrome Refine triage and treatment in suspected cardiac events
Chem 8 Panel	Basic metabolic and electrolyte status	Guide fluid and electrolyte management
Blood Gas	Evaluate oxygenation, ventilation, acid-base	Adjust ventilation and oxygen therapy
mTBI Biomarkers	Detect traumatic brain injury	Decide on transport to specialized neurotrauma center

Potential Uses

SEPSIS

Myocardial
Infarction

TBI

Anemia

Renal
Disease /
HyperK

Trauma

CHEST PAIN

PREHOSPITAL TROPONIN IN EMS

hs-Troponin + Clinical Score = Field Risk Stratification

- 1 Paramedic draws blood and runs POC hs-Troponin
- 2 Combines result with HEART, T-MACS, or preHEART score
- 3 Low-risk identified before hospital arrival



99.1%

NEGATIVE PREDICTIVE VALUE

PRESTO trial: T-MACS + POC troponin rules out type 1 AMI



20-40%

LOW-RISK BEFORE ARRIVAL

Stratified in the field with hs-Troponin + HEART or preHEART score



38 min

TO ED DISPOSITION

vs. 138 min with usual care (PROACT-4 trial)

POCT for Trauma & Shock: The Case for Prehospital Lactate



⚠ **Most Studied Trauma Biomarker**

💓 **Detects Occult Hypoperfusion**

🚑 **Guides Trauma Management**

POCT for Sepsis, Stroke & TBI: Expanding the Frontier



Sepsis & Lactate: Early Recognition and Action

**Stroke & TBI Biomarkers:
Emerging Diagnostic Tools**



Real-World Implementation Considerations



\$ Costs

Initial investment, hardware purchase, ongoing cartridge expenses, and quality assurance infrastructure.

- Potential savings from fewer secondary transfers, decreased ambulance offload delays, UHU optimization

⚖️ CLIA, Compliance & Credentialing

Moderate complexity POCT devices require compliance with CLIA regulations, which vary by state.

- Close collaboration with laboratory experts ensures proper licensing, quality control, and oversight.

Credentialing of EMS clinicians

- Initial and ongoing training and competency verification

📦 Consumable Management

Managing cartridge supply chains involves tracking expiration dates, preventing waste, and short date cycling.

- Sustainability depends on volume forecasting and embedding POCT in high-utilization clinical pathways

Rural EMS: A Unique Area of Special Impact for PPCOT



Implementation Burden for EMS



Lab Partnership

Collaborate closely to ensure CLIA compliance, design quality control processes, and validate all POCT devices and assays before

Clinical Training

Develop structured training programs including acquisition techniques, device operation, result interpretation, and clinical application, as well as ongoing training/recertification materials

Protocol Integration

Embed POCT into clinical decision pathways, ensuring test results guide specific treatment and destination decisions rather than being used as standalone data points.

Oversight & Safety Metrics

Implement physician oversight and establish safety and quality endpoints such as 24-hour admission rates, 72-hour bounce-back rates, and 30-day patient outcomes.

Common Failure Modes to Avoid

Have backup protocols, maintain quality control, ensure electronic health record integration, and medical oversight.