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EMS WITH HEART

Out-of-Hospital Cardiac Arrest
Case Studies from the SouthWest Region

Tarrant County Nation of Lifesavers –2026

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Executive Summary

Out-of-hospital cardiac arrest (OHCA) remains one of the most time-critical medical emergencies in modern health care.¹ Outcomes from cardiac arrest depend on the chain of survival: Recognition of cardiac arrest and activation of the emergency response system, early cardiopulmonary resuscitation (CPR), rapid defibrillation, advanced resuscitation by EMS and other healthcare providers, post-cardiac arrest care and recovery (including additional treatment, observation, rehabilitation, and psychological support). Despite decades of research and operational improvements, survival rates continue to vary significantly between communities.

In January 2026, representatives from fire-rescue departments, emergency medical services agencies, and regional health care partners convened as experienced experts in cardiac arrest response. The purpose of the meeting was to examine current challenges and share successful campaigns that have strengthened community response to out-of-hospital cardiac arrest across North Texas.

Participants shared operational insights, data-driven strategies, and community engagement initiatives designed to improve early recognition of cardiac arrest, increase lay responder CPR, expand public access to defibrillation (AEDs), and enhance coordination across the chain of survival.

This white paper synthesizes those discussions into practical recommendations for EMS systems, public safety agencies, health care leaders, and policymakers seeking to strengthen cardiac arrest survival in their communities.

Introduction

Out-of-hospital cardiac arrest represents a profound public health challenge. Successful resuscitation requires seamless coordination between lay responders, telecommunicators, emergency medical services, and hospitals. When any link in the chain of survival fails, the likelihood of neurologically intact survival decreases dramatically.

Communities that achieve high cardiac arrest survival rates consistently demonstrate several shared characteristics:²

- Strong data collection and performance improvement systems
- Effective telecommunicator-assisted CPR programs
- Robust public CPR training initiatives
- Accessible and well-maintained AED networks
- Integrated lay responder alert systems
- Coordinated EMS and hospital quality improvement efforts

Recognizing these factors, the SouthWest region of the American Heart Association's Nation of Lifesavers Committee convened a regional forum of public safety and health care leaders across North Texas to explore best practices and identify opportunities for improvement.

The recommendations outlined in this report are intended to assist EMS agencies and community leaders nationwide as they evaluate and strengthen their own cardiac arrest response systems.

Data Collection and Performance Measurement

Standardized data collection is foundational to improving outcomes in out-of-hospital cardiac arrest. The [Cardiac Arrest Registry to Enhance Survival \(CARES\)](#) provides a nationally validated platform for tracking survival outcomes and benchmarking system performance.³

Participation in CARES allows agencies to:

- Automate extraction of key data elements from electronic patient care records
- Capture hospital outcomes including neurologic status at discharge
- Monitor Cerebral Performance Category (CPC) scores
- Benchmark performance against national survival data

Focusing analytic efforts on **Utstein cases**—lay responder-witnessed arrests with an initial shockable rhythm—allows agencies to establish meaningful survival benchmarks and track improvements over time.

Recommended Performance Metrics

Core performance indicators include:

- Utstein survival with favorable neurologic outcome
- Bystander CPR Rate
- Public Bystander AED Rate
- Overall Survival
- Risk Adjusted Survival
- Bystander Witnessed Survival
- Airway and Ventilation Quality Measures



Monthly performance dashboards incorporating run charts and trend analysis support transparent performance monitoring. Continuous quality improvement frameworks such as **driver diagrams and Plan-Do-Study-Act (PDSA) cycles** help agencies test targeted interventions and identify operational drivers of survival.

Airway and Mechanical CPR Device Considerations

Research consistently demonstrates that airway management strategies must align with local system capabilities.⁴

Key considerations include:

- Systems with high first-pass intubation success may continue endotracheal intubation protocols
- Systems with lower success rates may benefit from supraglottic airway-first strategies
- High-quality bag-valve-mask ventilation often provides effective early airway management

Mechanical CPR devices not be routinely deployed solely for survival improvement.⁵ Instead, their use should be limited to specific operational environments such as:

- Potential to improve CPR quality during patient transport
- Logistical constraints that may be impractical to perform manual CPR or may impact rescuer safety
- Prolonged resuscitations with limitations in the number of individuals for manual CPR
- Significant risk of infectious disease transmission

Continuous monitoring of survival outcomes, airway performance, and compression interruptions is essential whenever protocol changes occur.

AED Registries and Strategic Deployment

Early defibrillation remains one of the most effective interventions for cardiac arrest survival. Ensuring that automated external defibrillators are easily identifiable and rapidly accessible is therefore a critical system priority.⁶

AEDs are registered in systems that integrate directly with:

- Public Safety Answering Points (PSAPs)
- Computer-Aided Dispatch (CAD) platforms
- Lay responder alert applications

Communities are encouraged to implement comprehensive AED registries such as the [National Emergency AED Registry \(NEAR\)](#).



Best Practices for AED Programs

Recommended strategies include:

- QR-code based AED registration processes
- Automated integration with dispatch systems
- Standardized AED cabinet labeling
- Placement strategies ensuring retrieval within two minutes

Community engagement initiatives—such as **AED scavenger hunts**—have proven effective in identifying unregistered devices and increasing public awareness. Loaner AED programs may also provide temporary coverage for large public events or high-risk individuals.

Key Performance Indicators

- Percentage of public buildings with registered AEDs
- Rate of new AED registrations
- CAD-based AED alert utilization
- Lay responder defibrillation rate
- Call-to-shock interval

Lay Responder Alert Systems

Smartphone-based responder alert systems represent a powerful tool for reducing the time between cardiac arrest onset and initiation of CPR.⁷

Applications such as [PulsePoint Respond](#) and [GoodSAM](#) enable dispatch centers to notify trained volunteers who are located near a suspected cardiac arrest.

These systems expand the reach of emergency medical services by mobilizing trained citizens during the earliest and most critical moments of resuscitation.

Key Program Elements

Successful lay responder programs typically include:

- Direct integration with computer-aided dispatch systems
- Screening and verification of responder training
- HIPAA-compliant communication protocols
- Real-time responder status updates
- Rapid alert cancellation capability



According to the 2026 Heart Disease and Stroke Statistics Update from the American Heart Association, approximately 73% of out-of-hospital cardiac arrests occur in the home.⁸

Performance Metrics

- Telecommunicator identification accuracy
- Call-to-first compression interval
- Responder arrival times compared with EMS units
- AED retrieval and application rates

Proper governance, legal review, and responder vetting help address common concerns related to privacy and liability.

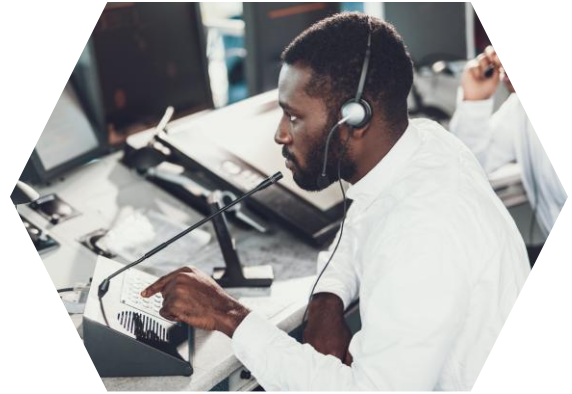
Dispatch Pre-Arrival Instructions and Telecommunicator-Assisted CPR

Telecommunicator-assisted CPR (T-CPR) remains one of the most effective and cost-efficient interventions for improving cardiac arrest survival.⁹

High-performing dispatch systems prioritize rapid recognition of cardiac arrest and immediate initiation of CPR instructions.

Training should emphasize recognition of symptoms including:

- Sudden collapse
- Abnormal or absent breathing
- Cyanosis
- Agonal respirations



Standardized scripted protocols supported by metronomes help guide callers through effective CPR.

Performance Goals

Recommended performance targets include:

- Cardiac arrest recognition within **<90 seconds**
- Call-to-first compression interval of **<150 seconds**

Quality assurance programs should review every cardiac arrest call, providing feedback and recognition for dispatch personnel.

Training Standards

The American Heart Association recommends:

- **3–4 hours of initial T-CPR training** for telecommunicators without EMS certification
- **2–3 hours of annual continuing education regardless of experience or background**

Potential components of initial and ongoing training curricula include anatomy, physiology, OHCA recognition, and scenario-based simulation exercises.

Support systems such as **Critical Incident Stress Management (CISM)** and peer support programs should also be available for dispatch personnel.

Community Training and Public Awareness

Implementing a bundle of community initiatives is a reasonable strategy to improve lay rescuer response to out of hospital cardiac arrest.¹⁰

Adult and teen hands-only CPR training can be delivered rapidly through public education campaigns conducted at schools, airports, community festivals, sporting events and corporate workplaces.

These short, high-impact training sessions can reach thousands of participants annually.

Integrated Community Preparedness

Combining CPR instruction with additional lifesaving skills enhances community engagement, including:

- Bleeding control training
- Naloxone administration
- AED awareness

Public education campaigns supported by local media partnerships may be considered to promote learning of CPR skills in all populations.¹⁰

Program Evaluation Metrics

- Number of individuals trained
- Participant confidence levels
- AED registrations following outreach events
- Social media and news engagement metrics

Sustained impact requires ongoing training opportunities rather than one-time events (Yu et al. 2020).



Mission: Lifeline EMS Quality Measures

The **American Heart Association Mission: Lifeline EMS program** provides a nationally recognized framework for measuring and improving cardiovascular emergency care.

Participation in the **Quality, Care, and Timeliness (QCT) data portal** allows agencies to track performance and benchmark outcomes to increase adherence to guidelines and improve patient outcomes.^{11,12}

American Heart Association EMS Performance Measures

Beginning in 2026, the American Heart Association EMS Performance Measures include cardiac arrest measures:

- Lay responder CPR rates
- Call-to-first compression intervals
- Dispatch-to-first compression intervals
- Lay responder defibrillation rates
- Time to first shock

Agencies are encouraged to pursue **Mission: Lifeline Systems of Care distinctions for Heart Attack and Stroke**, using program resources to recognize the contributions of dispatch personnel, EMS responders, and hospital teams. The Cardiac Arrest System of Care distinction will be launched in 2026 based on AHAEMS16.0 – OHCA with PSAP call to first compression (lay responder or EMS) within 420 seconds (50%).

Heart-Safe Community Programs

Heart-Safe Community initiatives provide a structured framework for improving cardiac arrest readiness at the community level.¹³

Programs such as those administered by the [North Central Texas Trauma Regional Advisory Council](#), the [Citizen CPR Foundation](#) and the [International Association of Fire Chief's](#) translate evidence-based recommendations into measurable system improvements.

Key elements include:

- Community CPR training initiatives
- AED deployment and maintenance programs
- Lay responder alert integration
- CARES participation and data reporting



Program Implementation

Effective programs require:

- Dedicated program leadership
- Stakeholder engagement across public safety and health care sectors
- Continuous quality improvement processes

Comprehensive documentation of training activities, AED inventories, and response protocols supports program sustainability.¹⁴ Ensuring equitable access to resources—particularly in underserved communities—is essential to reducing disparities in cardiac arrest outcomes.⁵

Conclusions

Improving survival from out-of-hospital cardiac arrest requires sustained commitment, transparent data sharing, and collaborative leadership across the entire chain of survival.

High-performing systems consistently demonstrate:

- Robust data collection and analysis
- Strong telecommunicator-assisted CPR programs
- Accessible AED networks
- Active community training initiatives
- Integration of lay responder alert technologies
- Continuous quality improvement processes

Adopting structured improvement frameworks such as the [Institute for Healthcare Improvement's Model for Improvement](#) enables agencies to identify system drivers, test innovations, and refine protocols based on real-world outcomes.

Ultimately, successful resuscitation systems are not built through isolated interventions, but through coordinated, data-driven strategies that strengthen every link in the chain of survival.

Acknowledgements

Thanks to the following subject matter experts and agencies for their contributions to this document:

Matt Zavadsky

PWW Advisory Group

Committee Co-Chair, American Heart Association Tarrant County Nation of Lifesavers

Raylon Bryant

Parker County Hospital District EMS

Mark Cantrell

Colleyville Fire Department

Shaun Curtis

Fort Worth Fire Department

Jeffrey Jarvis, MD

Fort Worth Office of the Medical Director

Chris Muscle

Best EMS

Stephanie Chapman

Nation of Lifesavers - American Heart Association

Jordan Campos

Nation of Lifesavers - American Heart Association

Hilda Colunga

Community Impact- American Heart Association

Eva Olivas

Community Impact- American Heart Association

Alexander Kuhn

Quality, Outcomes Research & Analytics- American Heart Association

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