



2022 High-Performance EMS Benchmarking Study

Part 2: Clinical Outcomes & Total Quality Management

AIMHI

ACADEMY OF
INTERNATIONAL
MOBILE HEALTHCARE
INTEGRATION

The AIMHI benchmarking studies perform a fundamental service to EMS by providing tools through which we can continue to learn about the successes and opportunities of today’s emergency care system, ensure its progress and growth, and work to expand the reputation and efficiency of EMS nationally and internationally. The 2022 study is the latest addition to the body of knowledge required for effective service delivery and improvement.

Since the first study in 1998, AIMHI has developed valuable *evidenced-based* studies to share *clinical, operational, and economic* data across EMS systems serving diverse geographic and demographic communities. Our goal is to provide the EMS community, elected and appointed officials, and regulators with tools, data, and outcomes that demonstrate the value of high-performance, high-value mobile healthcare as the initial point of entry to, and the safety net of, the healthcare continuum.

Agency Name	Organizational Structure
Emergency Medical Services Authority (Oklahoma City, OK)	Public Utility Model: Self-Operated
Emergency Medical Services Authority (Tulsa, OK)	Public Utility Model: Self-Operated
Mecklenburg EMS Agency (Charlotte, NC)	Public Utility Model: Self-Operated
Medic Ambulance (Solano, CA)	Private
MEDIC EMS (Davenport, IA)	501c3
MedStar Mobile Healthcare (Fort Worth, TX)	Public Utility Model: Self-Operated
Metropolitan EMS (Little Rock, AR)	Public Utility Model: Self-Operated
Niagara Emergency Medical Services (Region of Niagara, CA)	Third Service Model
Northwell Health Center for EMS (Syosset, NY)	Health System Based EMS Agency
Novant Health New Hanover EMS (New Hanover County, NC)	Hospital-Based
Pinellas County EMS - Sunstar (Pinellas County, FL)	Public Utility Model: Contracted
Pro EMS (Cambridge, MA)	Contractor
Regional Emergency Medical Services (Reno, NV)	Public Utility Model: Self-Operated
Richmond Ambulance Authority (Richmond, VA)	Public Utility Model: Self-Operated

What Is High Performance/High Value EMS (HP/HVEMS)?

HP/HVEMS systems share key features of system design rarely associated with less cost-effective systems. Characteristics typically include:

- **Sole provider:** All emergency and non-emergency ambulance services are granted to a sole and often competitively selected provider for a specific population or service area.
- **Control center operations:** The ambulance provider has control of the dispatch center.
- **Accountability:** HP/HVEMS systems have performance requirements that can result in financial penalties or replacement of the provider when the requirements are not met. HP/HVEMS systems use and collect data regularly to meet these performance requirements, which has allowed for the ability to collect data for the HP/HVEMS Market Study.
- **Revenue maximization:** HP/HVEMS systems incorporate the business function into their operations, resulting in an understanding of the billing requirements, thus collecting all appropriate revenues from Medicare, Medicaid, self-pay and other third-party payors.
- **Flexible production strategy:** HP/HVEMS match scheduled resources with predicted changes in response demand based on time of day, day of week and time of year.
- **System Status Management (SSM):** HP/HVEMS systems use the dynamic deployment techniques to position resources in anticipation of when and where ambulances will be needed.

Clinical Quality and Total Quality Management Key Metrics & Takeaways

- **100%** of AIMHI member agencies **hold at least one accreditation.**
- **53%** of AIMHI member agencies **changed ambulance deployment from all ALS, to tiered responses,** including the use of Emergency Vehicle Operator (EVO) / EMT staffing for low-acuity transfers.
- 100% of AIMHI member agencies require CPR and EMD certification for dispatch personnel, and **84% are Accredited Centers of Excellence by the International Academies of Emergency Dispatch.**
- **100%** of AIMHI member agencies **publish Clinical Performance Dashboards.**
- **None of the HP/HV EMS systems require ALS Medical First Response (MFR).**

Table 1: EMS System Delivery Changes

Agency	Have you changed ambulance staffing configuration in the past 3 years?	What changed in your staffing configuration?
EMSA - Oklahoma	Yes	From all ALS to tiered ambulance deployment.
Mecklenburg EMS Agency - MEDIC (Charlotte, NC)	Yes	From all ALS to tiered ambulance deployment.
Metropolitan EMS (Little Rock, AR)	Yes	Added BLS emergencies and EVO/EMT units for low acuity transfers
MedStar Mobile Healthcare (Fort Worth, TX)	Yes	From all ALS to tiered ambulance deployment.
Northwell Health Center for EMS (Syosset, NY)	Yes	From all ALS to tiered ambulance deployment.
Regional Emergency Medical Services (Reno, NV)	Yes	Ability to utilize an EMT vs. EMT-I on ALS Ambulance with Paramedic
Richmond Ambulance Authority (Richmond, VA)	Yes	From all ALS to tiered ambulance deployment.

Table 2: Dispatch Center Accreditation

Agency	Accreditation?
EMSA - Oklahoma	IAED/ACE
Mecklenburg EMS Agency - MEDIC (Charlotte, NC)	IAED/ACE
Medic Ambulance (Solano, CA)	IAED/ACE
MEDIC EMS (Davenport, IA)	IAED/ACE
Metropolitan EMS (Little Rock, AR)	IAED/ACE
MedStar Mobile Healthcare (Fort Worth, TX)	IAED/ACE
Niagara Region EMS (Niagara, Canada)	IAED/ACE
Northwell Health Center for EMS (Syosset, NY)	IAED/ACE
Regional Emergency Medical Services (Reno, NV)	IAED/ACE
Richmond Ambulance Authority (Richmond, VA)	IAED/ACE



Table 3: Emergency Medical Dispatch (EMD) System, Personnel & Response Modes

Agency	Formal EMD Program	EMD System	CPR	EMD	EMR	EMT	How is your response mode (HOT/COLD) determined?
EMSA - Oklahoma	Yes	MPDS ProQA	X	X	X		EMD Determinant
Mecklenburg EMS Agency - MEDIC (Charlotte, NC)	Yes	MPDS ProQA	X	X			EMD Determinant
Medic Ambulance (Solano, CA)	Yes	MPDS ProQA	X	X			N/A
MEDIC EMS (Davenport, IA)	Yes	MPDS ProQA	X	X			EMD Determinant
Metropolitan EMS (Little Rock, AR)	Yes	MPDS ProQA	X	X			EMD Determinant
MedStar Mobile Healthcare (Fort Worth, TX)	Yes	MPDS ProQA	X	X			EMD Determinant
Niagara Region EMS (Niagara, Canada)	Yes	MPDS ProQA	X	X			EMD Determinant
Northwell Health Center for EMS (Syosset, NY)	Yes	MPDS ProQA	X	X		X	EMD Determinant
Novant Health New Hanover EMS (New Hanover County, NC)	Yes	MPDS ProQA	X	X			EMD Determinant
Pro EMS (Cambridge, MA)	Yes	MPDS ProQA	X	X			EMD Determinant
Regional Emergency Medical Services (Reno, NV)	Yes	MPDS ProQA	X	X		X	EMD Determinant
Richmond Ambulance Authority (Richmond, VA)	Yes	MPDS ProQA	X	X		X	EMD Determinant

Table 4: Cardiac Arrest Outcomes

Agency	Utstein survival to discharge w/CPC 1 or 2 percentage for last reported outcomes	Total number of total cases meeting Utstein criteria for the last reported outcomes?	Do you have a field termination of resuscitation protocol?	# of field terminations in calendar year 2021
EMSA - Oklahoma	25.3%	71	Yes	489
Mecklenburg EMS Agency - MEDIC (Charlotte, NC)	41.0%	130	Yes	395
Medic Ambulance (Solano, CA)	68.0%	25	Yes	201
MedStar Mobile Healthcare (Fort Worth, TX)	22.6%	84	Yes	654
Novant Health New Hanover EMS (New Hanover County, NC)	45.8%	24	Yes	86
Pro EMS (Cambridge, MA)	25.0%	4	Yes	8
Regional Emergency Medical Services (Reno, NV)	25.0%	511	Yes	801
Richmond Ambulance Authority (Richmond, VA)	25.9%	27	Yes	115

Table 5: Medical First Response (MFR) - Minimum Qualifications



Agency	What is the minimum level of certification of your Medical First Response personnel?					
	None	CPR / First Aid	EMR	EMT	Paramedic	
EMSA - Oklahoma		X				
Mecklenburg EMS Agency - MEDIC (Charlotte, NC)				X		
Medic Ambulance (Solano, CA)				X		
MEDIC EMS (Davenport, IA)			X			
Metropolitan EMS (Little Rock, AR)	X					
MedStar Mobile Healthcare (Fort Worth, TX)			X			
Niagara Region EMS (Niagara, Canada)			X			
Northwell Health Center for EMS (Syosset, NY)				X		
Novant Health New Hanover EMS (New Hanover County, NC)				X		
Pro EMS (Cambridge, MA)		X				In MA, First Responders are locally certified, but not certified as EMRs
Regional Emergency Medical Services (Reno, NV)				X		
Richmond Ambulance Authority (Richmond, VA)				X		



Table 6: Ambulance Staffing / Response Plan

Agency	Do you staff all ALS, or a combination of ALS and BLS ambulances?	Are non-ALS ambulances authorized for 911 responses	What is the minimum staffing for an ALS Ambulance?	What is the minimum staffing for a BLS Ambulance?
EMSA - Oklahoma	ALS and BLS	Yes	EMT - Paramedic	EMT - EMT
Mecklenburg EMS Agency - MEDIC (Charlotte, NC)	ALS and BLS	Yes	EMT - Paramedic	EMT - EMT
Medic Ambulance (Solano, CA)	ALS only	No	EMT - Paramedic	EMT - EMT
MEDIC EMS (Davenport, IA)	ALS and BLS	No	EMT - Paramedic	EMT - EMT
Metropolitan EMS (Little Rock, AR)	ALS and BLS	Yes	EMT - Paramedic	EMR - EMT
MedStar Mobile Healthcare (Fort Worth, TX)	ALS and BLS	Yes	EMT - Paramedic	EMT - EMT
Niagara Region EMS (Niagara, Canada)	Advanced or Primary Care Paramedics	N/A	2 Primary Care Paramedics	N/A
Northwell Health Center for EMS (Syosset, NY)	ALS and BLS	Yes	EMT - Paramedic	EMR - EMT
Novant Health New Hanover EMS (New Hanover County, NC)	ALS only	N/A	Paramedic/AEMT	NA
Pro EMS (Cambridge, MA)	ALS and BLS	Yes	EMT - Paramedic	EMT - EMT
Regional Emergency Medical Services (Reno, NV)	ALS/ILS/BLS	Yes	EMT or EMT-I with Paramedic	EMT - EMT
Richmond Ambulance Authority (Richmond, VA)	ALS and BLS	Yes	EMT - Paramedic	CPR / First Aid Driver - EMT

Table 7: Publication of Clinical Performance Dashboards

Agency	Clinical Dashboards Published?	Cardiac Arrest Management	Ventilation Management	STEMI	Stroke	Trauma	Other
EMSA - Oklahoma	Yes		X	X	X	X	X
Mecklenburg EMS Agency - MEDIC (Charlotte, NC)	Yes		X		X	X	X
Medic Ambulance (Solano, CA)	Yes		X	X	X	X	X
MEDIC EMS (Davenport, IA)	Yes		X				
Metropolitan EMS (Little Rock, AR)	Yes		X				
MedStar Mobile Healthcare (Fort Worth, TX)	Yes		X	X	X	X	X
Niagara Region EMS (Niagara, Canada)	Yes				X		
Northwell Health Center for EMS (Syosset, NY)	Yes		X		X	X	X
Novant Health New Hanover EMS (New Hanover County, NC)	Yes		X		X	X	X
Pro EMS (Cambridge, MA)	Yes		X		X	X	
Regional Emergency Medical Services (Reno, NV)	Yes		X		X	X	X
Richmond Ambulance Authority (Richmond, VA)	Yes		X		X	X	

Table 8: Service Innovations in the past 3-years.

Agency	Innovations
<p>EMSA - Oklahoma</p>	<ul style="list-style-type: none"> • 2021 Moved patient care reporting systems to allow for health data exchange. Currently 65% live with partner hospitals and working on outcomes-based metrics. • July / August 2019 Airway Task Force initiative rolled out, was a field provider, OMD, and management task force to review and update airway management practice and tools. • Changed Laryngoscopes to Intubrite, control cric system for surgical airways, and moved from King LTD to iGels. • This incorporated retraining and shifting to emphasis on full team dynamics in intubations, the EMT is just as responsible for intubation success as the Paramedic. 2019 Rolled out Handtevy Pediatric Reference APP and training. 2021 Handtevy Pediatric Kits implemented.
<p>Medic Ambulance (Solano, CA)</p>	<ul style="list-style-type: none"> • Implemented Mechanical Chest Compression Devices (MCDs).
<p>MEDIC EMS (Davenport, IA)</p>	<ul style="list-style-type: none"> • Implemented program where rural operation paramedic personnel conduct quality audits for all rural first responders utilizing the statewide Image Trend system.
<p>MedStar Mobile Healthcare (Fort Worth, TX)</p>	<ul style="list-style-type: none"> • COVID Testing for the community. • COVID vaccines for the community. • mAb infusions. • Partnership with a commercial payer to reimburse for treat/no transport. • New MIH agreements with Medicaid MCO and Care Management Organization. • Launched "MedStar On Demand" subscription-based MIH program.
<p>Richmond Ambulance Authority (Richmond, VA)</p>	<ul style="list-style-type: none"> • Implemented in-house EMT classes as well as virtual/online continuing education.
<p>Regional Emergency Medical Services (Reno, NV)</p>	<ul style="list-style-type: none"> • Alternative care pathways consistent with ET3 initiatives including transport to alternative destinations and treatment in place telehealth referral. • Routing additional low acuity dispatch determinants to Nurse Health Line for review prior to dispatching an ambulance resource.



Agency	Innovations
Northwell Health Center for EMS (Syosset, NY)	<ul style="list-style-type: none"> • Telehealth services available 24x7 for EMS, OLMC, D2C, 9-1-1 Navigation, physician off-hours service.
Metropolitan EMS (Little Rock, AR)	<ul style="list-style-type: none"> • Partnered with an insurance carrier to trial community paramedicine with a specific population of their insured. • Partnered with a local hospital providing CP as a "safety net" for a patient population sent home earlier than normal on telemedicine.
Niagara Region EMS (Niagara, Canada)	<ul style="list-style-type: none"> • Added Emergency Communications Nurses embedded within our dispatch center. • Updated our MPDS response plans with the inclusion of linked clinical outcome data from our local hospital systems.
Pro EMS (Cambridge, MA)	<ul style="list-style-type: none"> • In April 2020 we initiated COVID testing; this grew into a program that has handled over 3 million COVID tests covering locations throughout New England. • We have also done extensive vaccinations in the City of Cambridge.

CURRENT AIMHI MEMBERS

Emergency Health Service
Halifax, NS

Medic Ambulance
Vallejo, CA

New Hanover EMS
Wilmington, NC

Pinellas County EMS Authority/Sunstar Paramedics
Largo, FL

Richmond Ambulance Authority
Richmond, VA

Emergency Medical Services Authority
Tulsa & Oklahoma City, OK

MEDIC Emergency Medical Services
Davenport, IA

Niagara Emergency Medical Services
Niagara-On-The-Lake, ON

Pro EMS
Cambridge, MA

Three Rivers Ambulance Authority
Fort Wayne, IN

Mecklenburg EMS Agency
Charlotte, NC

MedStar Mobile Healthcare
Fort Worth, TX

Northwell Health Center for EMS
Syosset, NY

Regional EMS Authority
Reno, NV

Metropolitan Emergency Medical Services
Little Rock, AR

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