Mobile Integrated Healthcare

The Future of E(U)MS?

Jeff Beeson DO, FAEMS
Fort Worth, TX

Disclosures:

- Chief Clinical Officer Crosswalk Health

EMS Core Content
-2.0 Medical Oversight of EMS??

EMS AGENDA 2050

Twenty years ago, pioneers and leaders in the EMS industry described a vision of data-driven and evidence-based systems in the *EMS Agenda for the Future*. Since then, the profession has worked tirelessly to fulfill the vision set out in that landmark document.

Throughout 2017 and 2018, the EMS community came together to develop a new vision for the future of EMS. EMS Agenda 2050 was a collaborative and inclusive two-year effort to create a bold plan for the next several decades. EMS community members, stakeholder organizations and the public were all involved in writing a new Agenda for the Future that will set forth a vision for the next thirty years of EMS system advancement. Soon, the final EMS Agenda 2050 will be released, marking not the end, but the beginning of a new era for EMS as we work together to turn the vision into a reality.

NAEMSP

Questions

- Is EMS **YOUR** practice of medicine?
- Do you believe/trust your data?
- How do you define success in your system?
- Does your system add **Value**?
- Change Behavior or Response?

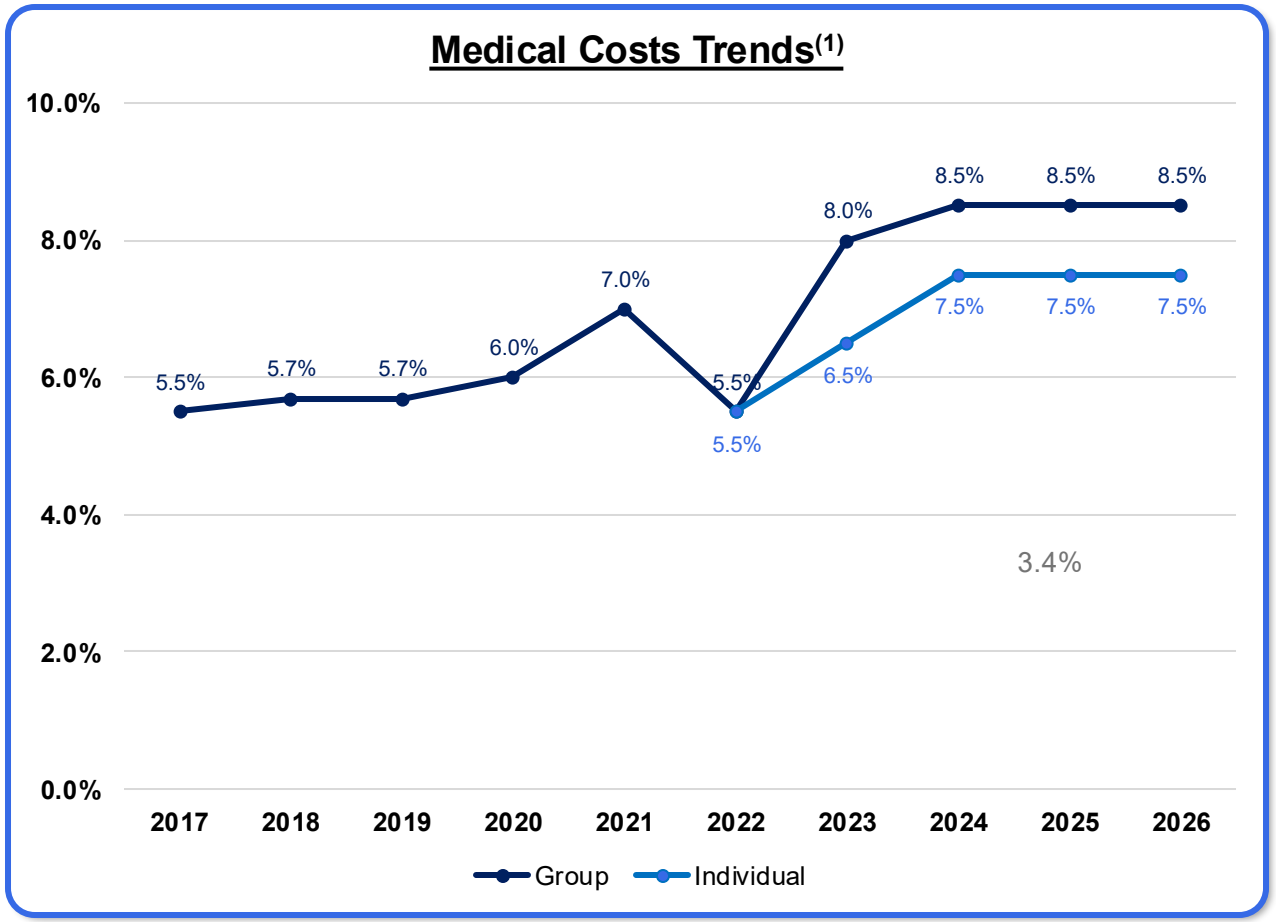
The Healthcare System Isn't Broken

It is Functioning as Designed

The Problem: Medical Costs are Rising

Current State of U.S. Medical Costs

- Medical cost trends have outpaced inflation for over 5 years
- Financial strain on consumers results in difficulty affording medical care and drugs
- Payors are under pressure to control spend and improve outcomes



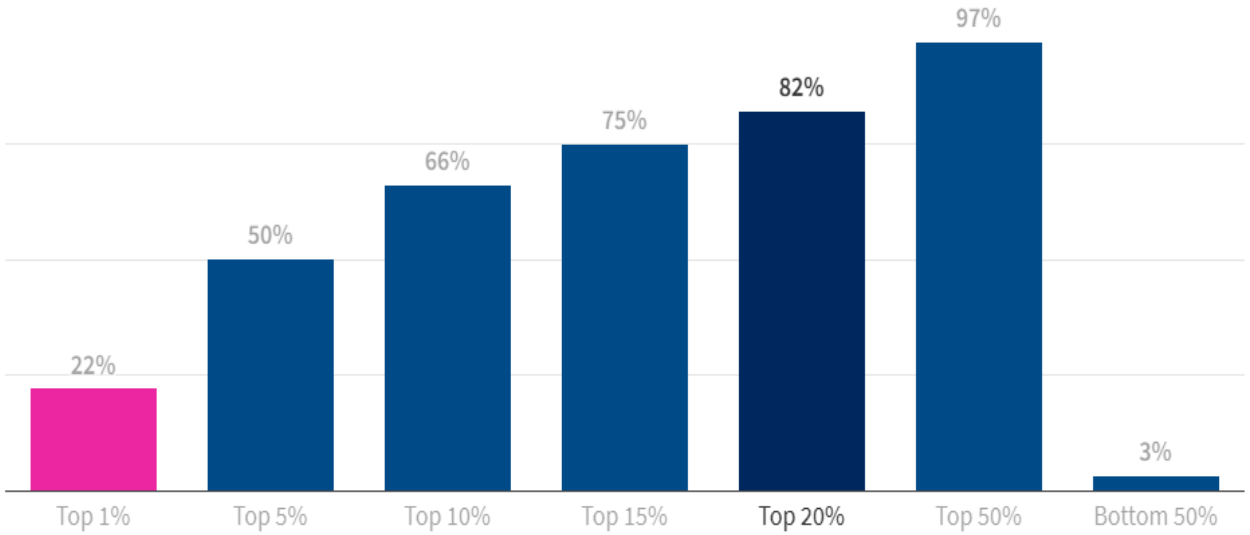
(1) Medical cost data sourced from PwC report: "Medical Cost Trend: Behind the Number 2026. Inflation data sourced from Bureau of Labor Statistics through *Investopedia.*

Concentration of Spend Across Population

Spend Analysis

- A small portion of patients consume the majority of spend
- Top 5% of people account for half of all healthcare spend
- Top 1% of people have average spending of ~$150,000 per year

Share of Total Health Spending by Percentile (2022)

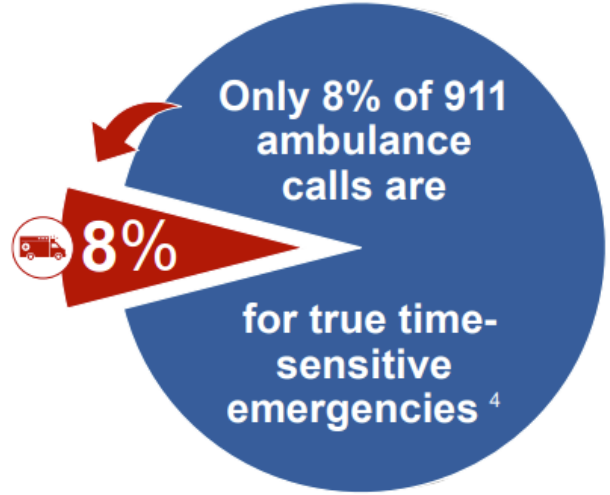


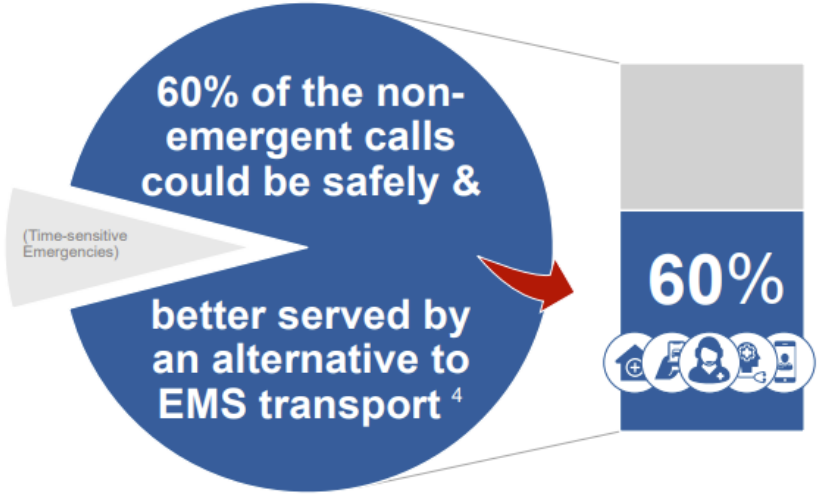
Source: KFF analysis of 2022 Medical Expenditure Panel Survey

The Current State of EMS

EMS Trends

- 911 Call volume is increasing without commensurate increase in resources
- High rates of turnover and burnout among crews
- Low proportion of 911 calls are for true emergencies
- High rate of avoidable transports to ED that could be treated elsewhere



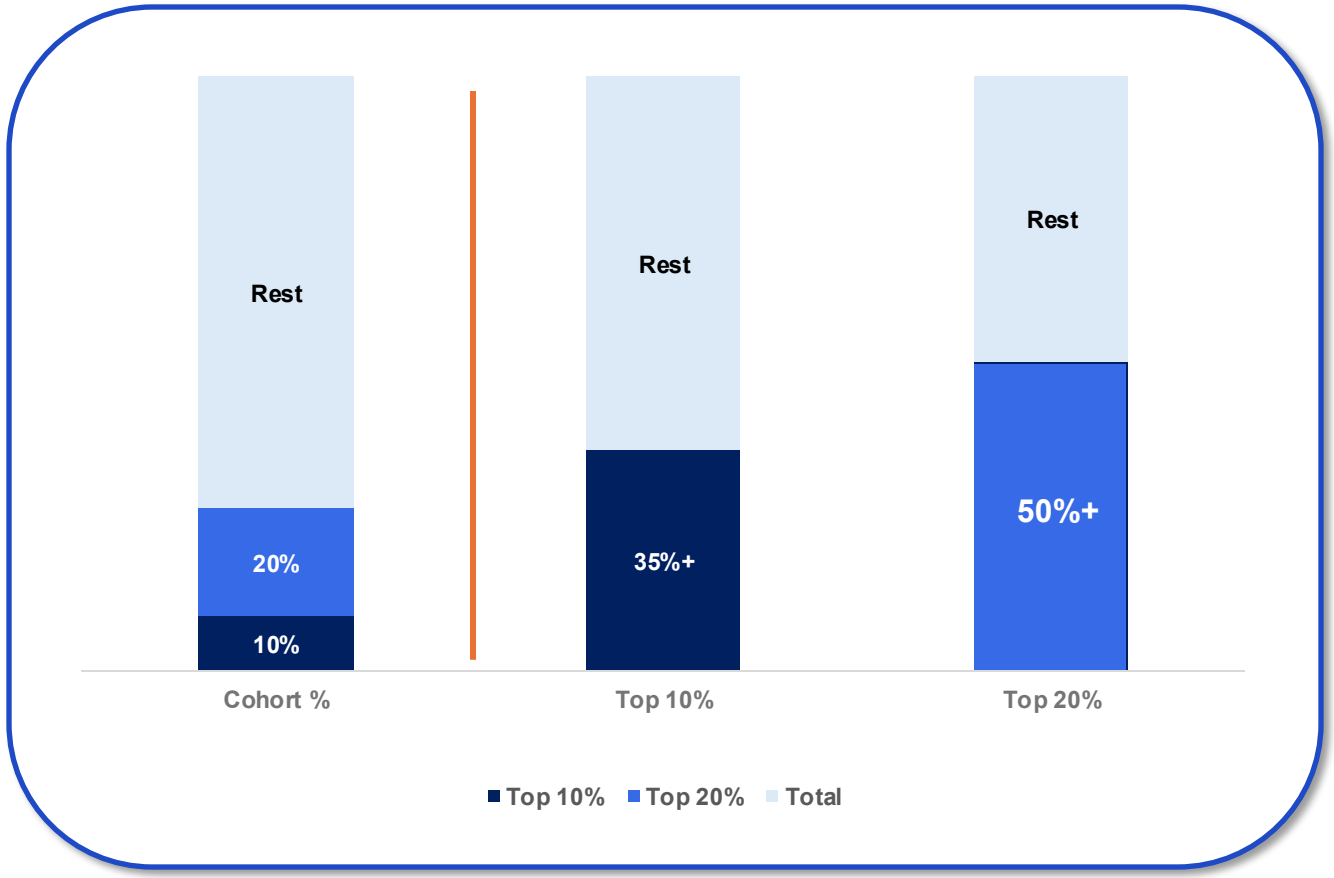


Source: Dispatch Categories as Indicators of Out-of-Hospital Time Critical Interventions and Associated Emergency Department Outcomes

Concentration of EMS Use Across Population

Frequent Utilizer Analysis

- High-utilizers of ambulance resources account for an outsized amount of medical spend
- Top 10% of patients consume 35% of utilization and spend, average 6+ transports
- Top 20% of patients consume 50% of utilization and spend, average 4+ transports

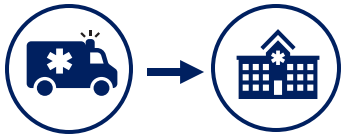


Source: Billing data from select EMS agencies

Payor Experience of EMS

Current State: EMS is dispatched to patient, default response is to transport patient to ED

Ambulance to ED

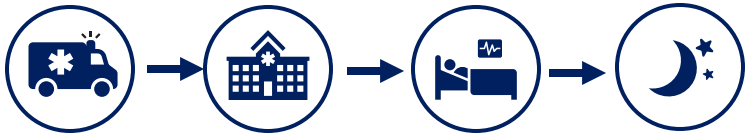


$1,400

Ambulance to ED to Observation Stay

$3,000

Ambulance to ED to Inpatient Stay



$13,000

Average cost of episode initiated at 911

$4,500

Source: Analyzed claims data from RBE

VIEWPOINT

JAMA®
The Journal of the American Medical Association

Realigning Reimbursement Policy and Financial Incentives to Support Patient-Centered Out-of-Hospital Care

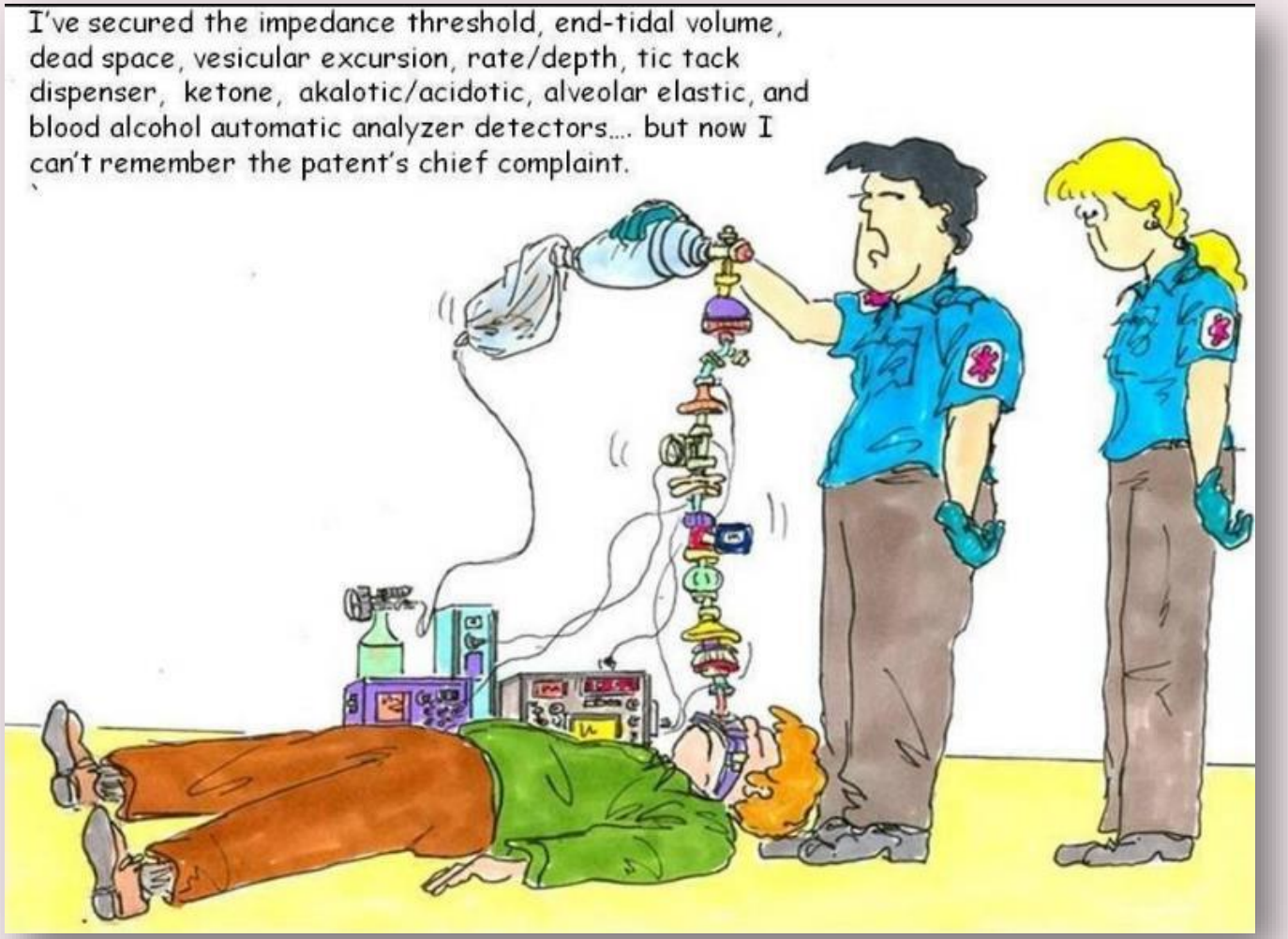
Kevin Munjal, MD, MPH

Brendan Carr, MD, MS

668 JAMA, February 20, 2013—Vol 309, No. 7

NAEMSP

We do a lot of things **to** our patients……



58% of EMS Responses get Transported

NEMSIS
BETTER DATA. BETTER CARE.

PATIENT/CREW DISPOSITION

eDisposition.12 - Type of disposition and/or transport of the patient by this EMS Unit. For additional information, click on the following link to see the Extended Data Definitions.

Incident/Patient Disposition Name	Count of Events	Percent of Total
Patient Treated, Transported by EMS	21,065,219	57.9%
Canceled (Prior to Arrival At Scene)	2,332,290	6.4%
Patient Treated, Transferred Care to Another EMS Professional	2,329,724	6.4%
Patient Refused Evaluation/Care (Without Transport)	2,111,613	5.8%
Patient Treated, Released (AMA)	1,824,722	5.0%
Canceled on Scene (No Patient Contact)	1,496,872	4.1%
Canceled on Scene (No Patient Found)	1,147,272	3.2%
Patient Evaluated, No Treatment/Transport Required	863,636	2.4%
Patient Treated, Released (per protocol)	779,707	2.1%
Assist, Unit	693,021	1.9%
Assist, Public	418,211	1.2%
Assist, Agency	407,062	1.1%
Standby-Public Safety, Fire, or EMS Operational Support Provided	294,953	0.8%
Patient Dead at Scene-No Resuscitation Attempted (Without Transport)	260,615	0.7%
Standby-No Services or Support Provided	116,676	0.3%
Patient Dead at Scene-Resuscitation Attempted (Without Transport)	106,006	0.3%
Patient Treated, Transported by Private Vehicle	46,770	0.1%
Patient Treated, Transported by Law Enforcement	41,522	0.1%
Patient Refused Evaluation/Care (With Transport)	19,101	0.1%
Patient Dead at Scene-No Resuscitation Attempted (With Transport)	6,267	<0.01%
Patient Dead at Scene-Resuscitation Attempted (With Transport)	3,304	<0.01%
Transport Non-Patient, Organs, etc.	2,698	<0.01%
TOTAL	**36,367,261**	

Inclusion criteria: 911 initiated and patient contact was made. Values that were marked Not Applicable or Not Recorded are removed.

NAEMSP

Is Call Intake Information Useful?

- EMD Determinant
- Transport Trends
- Time-Critical Intervention
- Time-Critical ED Outcome
- Safe or Unsafe to Hold in Queue

PREHOSPITAL EMERGENCY CARE
https://doi.org/10.1080/10903127.2024.2342015

Taylor & Francis
Taylor & Francis Group

Check for updates

Dispatch Categories as Indicators of Out-of-Hospital Time Critical Interventions and Associated Emergency Department Outcomes

Matthew J. Levy[a], Remle P. Crowe[b], Heidi Abraham[c], Anna Bailey[d], Matt Blue[e], Reinhard Ekl[b], Eric Garfinkel[a], Joshua B. Holloman[f], Jeff Hutchens[g], Ryan Jacobsen[h], Colin Johnson[i], Asa Margolis[a], Ruben Troncoso[a], Jefferson G. Williams[j], and J. Brent Myers[b]

[a]Johns Hopkins University, Baltimore, Maryland; [b]ESO, Austin, Texas; [c]Austin Travis County EMS, Austin, Texas; [d]Office of the Medical Director, Metropolitan Oklahoma City and Tulsa, Oklahoma; [e]Charleston County EMS, Charleston, South Carolina; [f]Johnston County EMS, Smithfield, North Carolina; [g]Guilford County EMS, Greensboro, North Carolina; [h]Office of the Medical Director, Johnson County EMS System, Olathe, Kansas; [i]Lee County EMS, Fort Myers, Florida; [j]Wake County EMS, Raleigh, North Carolina

ABSTRACT

Objectives: Emergency medical services (EMS) systems increasingly grapple with rising call volumes and workforce shortages, forcing systems to decide which responses may be delayed. Limited research has linked dispatch codes, on-scene findings, and emergency department (ED) outcomes. This study evaluated the association between dispatch categorizations and time-critical EMS responses defined by prehospital interventions and ED outcomes. Secondarily, we proposed a framework for identifying dispatch categorizations that are safe or unsafe to hold in queue.

Methods: This retrospective, multi-center analysis encompassed all 9-1-1 responses from 8 accredited EMS systems between 1/1/2021 and 06/30/2023, utilizing the Medical Priority Dispatch System (MPDS). Independent variables included MPDS Protocol numbers and Determinant levels. EMS treatments and ED diagnoses/dispositions were categorized as time-critical using a multi-round consensus survey. The primary outcome was the proportion of EMS responses categorized as time-critical. A non-parametric test for trend was used to assess the proportion of time-critical responses Determinant levels. Based on group consensus, Protocol/Determinant level combinations with at least 120 responses (~1 per week) were further categorized as safe to hold in queue (<1% time-critical intervention by EMS and <5% time-critical ED outcome) or unsafe to hold in queue (>10% time-critical intervention by EMS or >10% time-critical ED outcome).

Results: Of 1,715,612 EMS incidents, 6% (109,250) involved a time-critical EMS intervention. Among EMS transports with linked outcome data (543,883), 12% had time-critical ED outcomes. The proportion of time-critical EMS interventions increased with Determinant level (OMEGA: 1%, ECHO: 38%, p-trend < 0.01) as did time-critical ED outcomes (OMEGA: 3%, ECHO: 31%, p-trend < 0.01). Of 162 unique Protocols/Determinants with at least 120 uses, 30 met criteria for safe to hold in queue, accounting for 8% (142,067) of incidents. Meanwhile, 72 Protocols/Determinants met criteria for unsafe to hold, accounting for 52% (883,683) of incidents. Seven of 32 ALPHA level Protocols and 3/17 OMEGA level Protocols met the proposed criteria for unsafe to hold in queue.

Conclusions: In general, Determinant levels aligned with time-critical responses; however, a notable minority of lower acuity Determinant level Protocols met criteria for unsafe to hold. This suggests a more nuanced approach to dispatch prioritization, considering both Protocol and Determinant level factors.

ARTICLE HISTORY
Received 27 February 2024
Revised 4 April 2024
Accepted 4 April 2024

Introduction

Increasing emergency medical services (EMS) call volumes and workforce shortages create resource challenges, impeding the ability of agencies to respond immediately to every call for service (1–4). With multiple simultaneous requests for emergency response, often complicated by limited ambulance availability to meet call demand, dispatchers must decide which calls are emergent and thus require immediate response versus which may be safely deferred to preserve readiness until more resources are available (5,6). Many EMS systems utilize standardized dispatch response prioritization systems designed to match a response's acuity and urgency with appropriately resourced response units (5, 7–9). However, most dispatch systems were not designed to identify which calls need an immediate response versus which can be safely held in a queue.

In times of low unit availability, EMS systems may rely on the dispatch acuity Determinant level to determine which requests will receive immediate dispatch and which may be delayed for dispatch or referred to alternative options such as telemedicine or secondary nurse triage. However, this

CONTACT Matthew J. Levy levyej@mi.edu
Supplemental data for this article can be accessed online at https://doi.org/10.1080/10903127.2024.2342015.

Can we respond differently to certain 911 calls?

Can EMS Support Cost of Care Initiatives?

Unique value creation in EMS

1. **Differentiated Patient Access**
2. **Community Trust**
3. **Patient Data**
4. **Clinical Capability**

EMS Capabilities

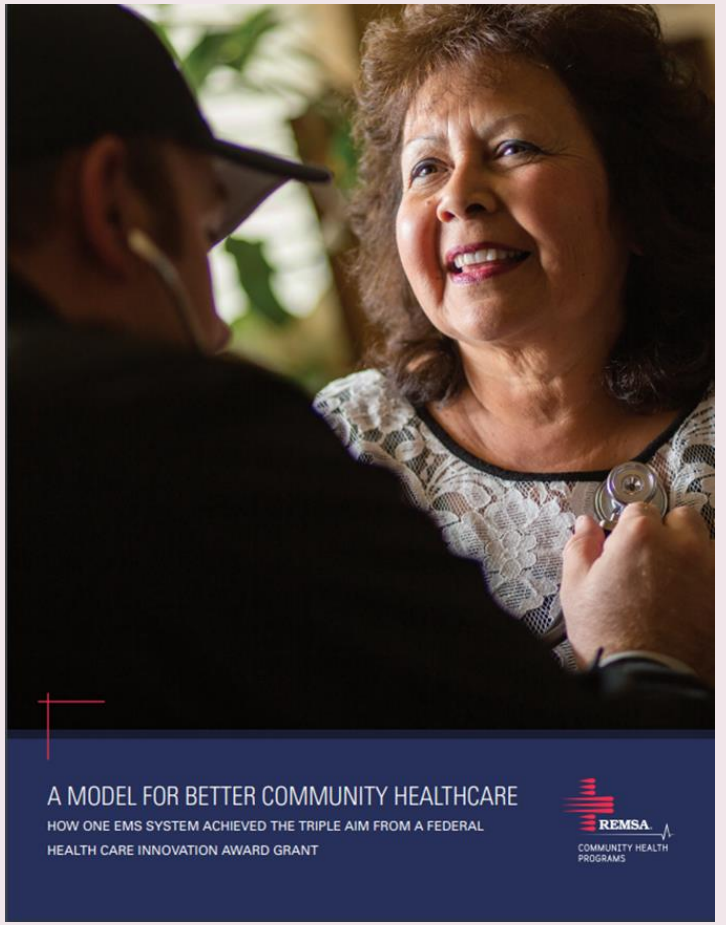
Alternate responses

- Treat no transport
- Re-navigate low acuity callers to alternative destinations

High-Utilizer Management

- Proactively outreach and manage high utilizers who utilize significant public and health resources
- MIH response teams

Emergency Triage, Treat, and Transport (ET3)



NAEMSP

EMS AT THE HEALTHCARE TABLE

AS THE COMMUNITY PARAMEDICINE CONCEPT EVOLVES, EMS WILL PLAY AN INTEGRAL PART

BY DAVID R. TAN, M.D., FAEM

A new paradigm for reliable healthcare emerged from a two-day meeting of EMS thought leaders held in Chicago in December. The group developed a framework to align the interests of patients, payers and providers in the first step in repositioning "community paramedicine" as one element in a more complete and comprehensive practice of medicine. The framework is intended to engage a wide spectrum of providers, including traditional EMS personnel as well as nurses, mid-level providers and physicians.

The group, which included representatives from private EMS, fire-based EMS, public safety EMS, fire/rescue agencies, academic institutions, educational institutions and various national EMS organizations, was supported by an unrestricted educational grant from the Medtronic Foundation.

"The Medtronic Foundation recognizes the crucial role that frontline healthcare providers play worldwide in expanding access to care, including chronic disease care," says Joan Mellor, program manager for the Medtronic Foundation. "We believe a project like this will lead to stronger community health systems that will ultimately improve patient outcomes."

SEEKING DEFINITION

Although the concept of "community paramedicine" in North America is more than 20 years old, it has only recently gained momentum as the effects of healthcare reform have crystallized, such as penalties imposed on hospitals for patients who are readmitted within 30 days of discharge. Many agencies are answering the call to integrate EMS into the complete spectrum of healthcare delivery (as outlined in *EMS Agenda for the Future*); ironically, however, many such initiatives are moving away from the "emergency" aspect of EMS, instead more general medical services that address specific community needs, such as managing high-frequency system users, helping hospital partners reduce 30-day readmission rates and offering appropriate alternative destinations for complaints that do not require transport to a hospital emergency department.

Interest in community paramedicine has never been to heavenly status, with Google search engine results for the term topping 12,000 and more than 13,000 hits for the term "community paramedic" as of December 10, 2012. However, these Internet search results also show that there's little consensus on what the term actually means. "Community paramedicine" is delivered and practiced in dozens of different ways.

These ambiguities and lack of common definitions has caused confusion and misunderstanding both within the EMS community and among outside observers. The lack of a standard taxonomy has meant that payers have been rightfully reluctant to reimburse providers for the care provided by EMS, a reluctance which new challenges the continued existence of many pilot programs. No consensus role definition, business model, competencies or metrics exist, and programs range from using on-duty paramedics in an alternative role without additional training to programs supported by college-level curricula, yielding practitioners who can bill for services provided.

Local, state and federal officials are beginning to explore the implications of a new provider role. Will this new role require expanded scopes of practice or simply an optimization of the current EMS provider role and skill set to better serve patients? This increasing dialogue is necessary and healthy, but it remains challenging to unify efforts and approaches at this early stage.

"This is an historic opportunity for EMS to take a prominent seat at the healthcare table," says Ed Racht, M.D., chief medical officer of American Medical Response (AMR). "It's critical for everyone involved to develop this new practice of medicine to work collaboratively and benefit from the substantial EMS and healthcare expertise around us."

SIX PRINCIPLES

The group that met in Chicago developed six basic principles that address the patient experience, quality and cost issues for the EMS industry to consider as it moves forward with community paramedicine.

1. Identify the gaps in our current state of affairs.

"A unifying framework and taxonomy to define this practice and its relationship to healthcare at large has been notably missing," says Eric Bock, M.D., medical director for the EMS system for the city of Chicago. "Community paramedicine has so many variations in practice that many people have only a vague concept of the term."

Across the country, community paramedicine practice ranges from simple diabetic patient follow-ups to full preventive medicine services, including the administration of vaccinations. Jeff Goodloe, M.D., medical director of the EMS System for Metropolitan Tulsa and Oklahoma City, adds, "I'm not even sure if 'community paramedicine' is the most appropriate term. Basic EMT providers could accomplish many of our goals, so I like to think of this concept more broadly as 'mobile integrated healthcare practice.'"

Mobile Integrated Healthcare Practice

NAEMSP

Concept

- Interprofessional team
- Practicing at top of scope
- Person Centered
- EMS Inclusive
- Financially Sustainable

Mobile Health Implementation Plan

- What problem are you trying to solve?
  - Disease specific
  - Population specific
- Community Needs Assessment
- Community Resources
  - Volunteer
  - Health System
- Can Do vs Should Do

Start at the End

- What are the results
- How do we measure them
  - EMS data
  - Health data
- Financial Measurements
  - Cost vs Savings
  - Medical Actuary

Considerations

- Legal and Legislative
- Political Environment
  - Labor Management
  - Healthcare Delivery
- Education and Training
  - Budgeting and Staffing
    - Staff pulled from regular duties
- Staff Selection
  - Not always your best paramedic

Technology

- Health Information
- Electronic Medical Records
  - Records vs Reports
- Telemedicine
- Tele-Health

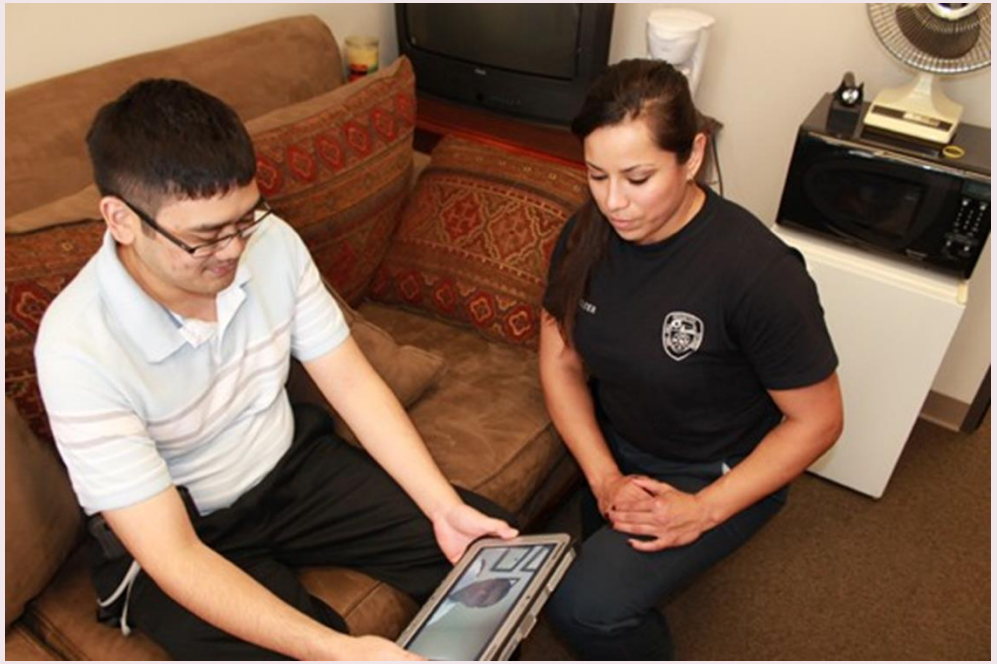
Funding

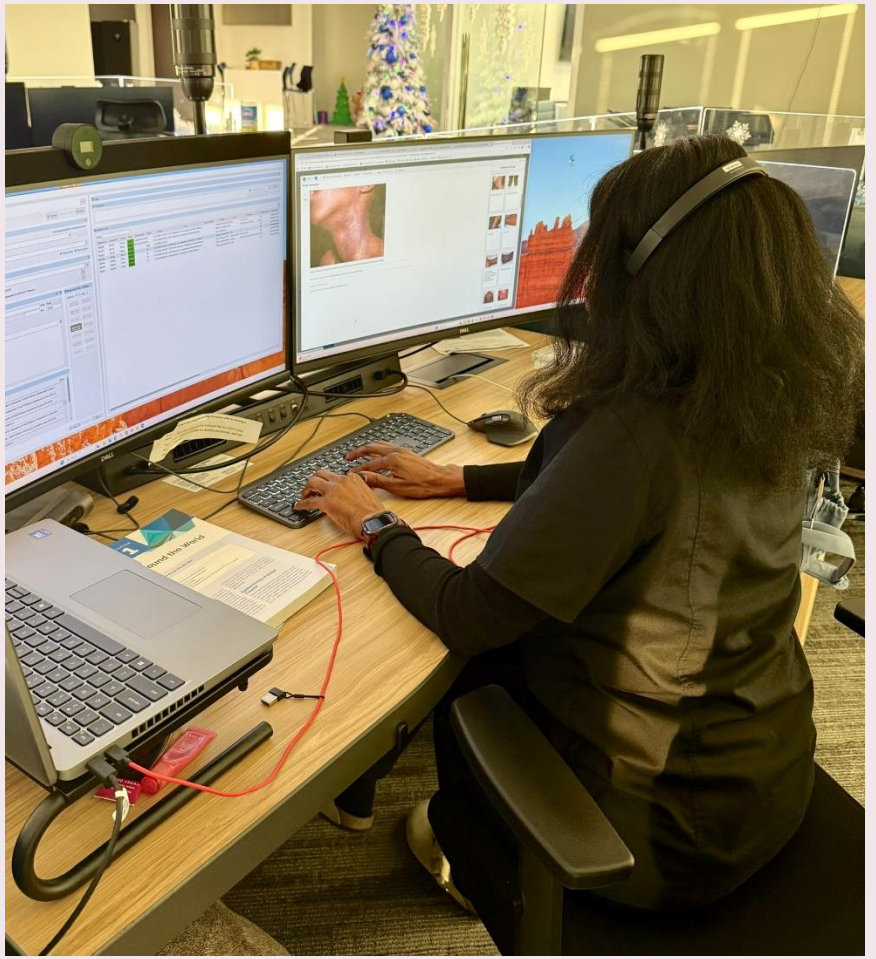
- Medical Contracting
  - Fee for Service
  - Capitation/IPAs/ACOs
  - Shared Savings
  - LPG/DSRP
- Learn Billing/Coding
  - Primary Care vs Emergency
    - 99283 (1.4 RVU) Allowable $68.29
    - 99203 (1.6 RVU) Allowable $108.97
    - 99213 (1.5 RVU) Allowable $89.01
  - CMS ED 80/20 with $257 deductible

Programs Examples

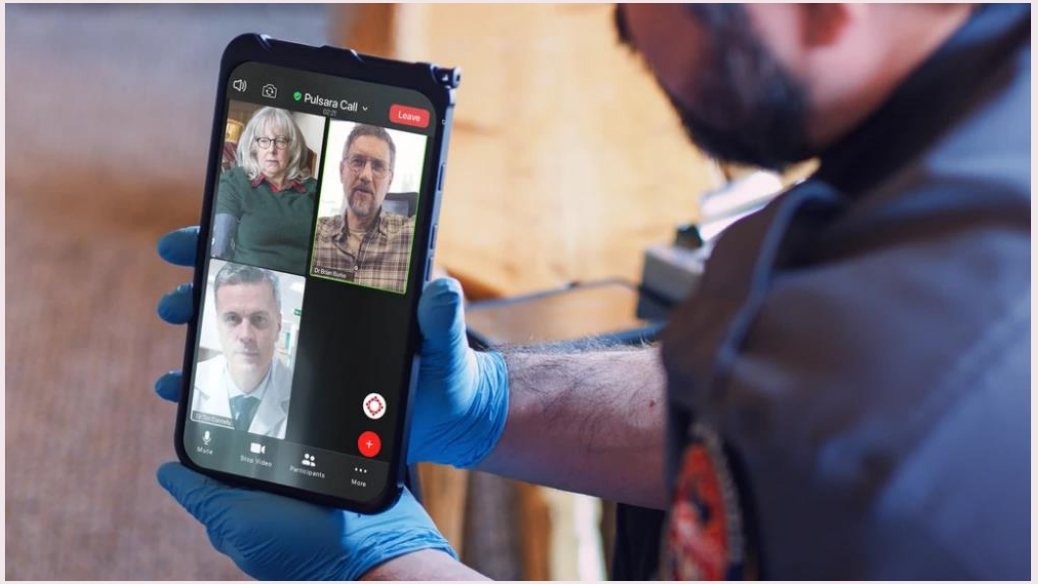
- Care Navigation
  - Low Acuity Complaints
  - Loyalty Programs
  - Addiction
  - Mental Health
- Primary Care
  - Health Risk Assessments
  - Medicaid Reimbursement for Paramedic
- Readmission Avoidance
  - Transitional Care Programs

Care Navigation





EMS Medical Practice



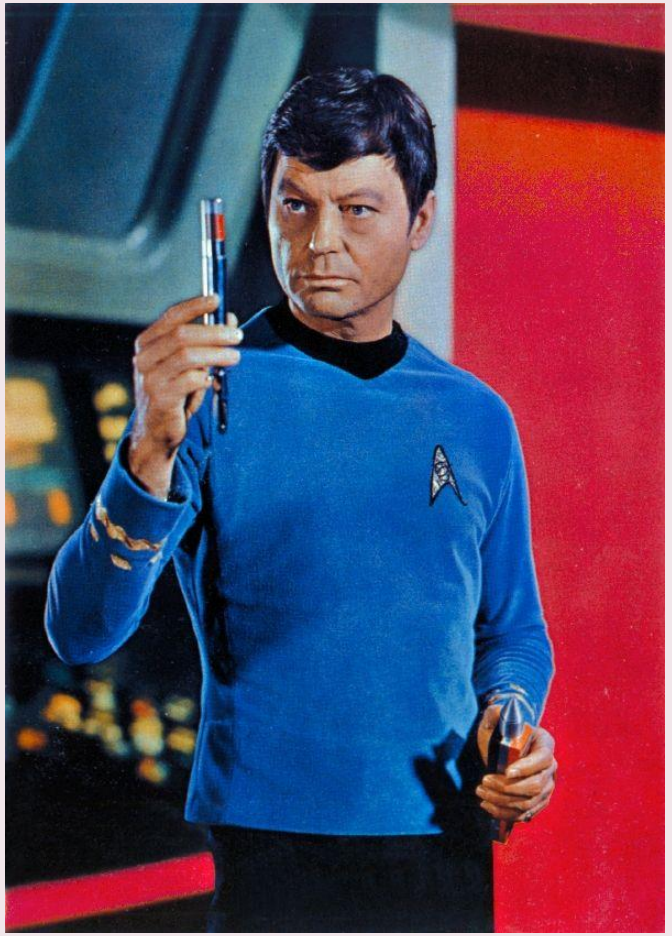
NAEMSP

Looking into the FUTURE:

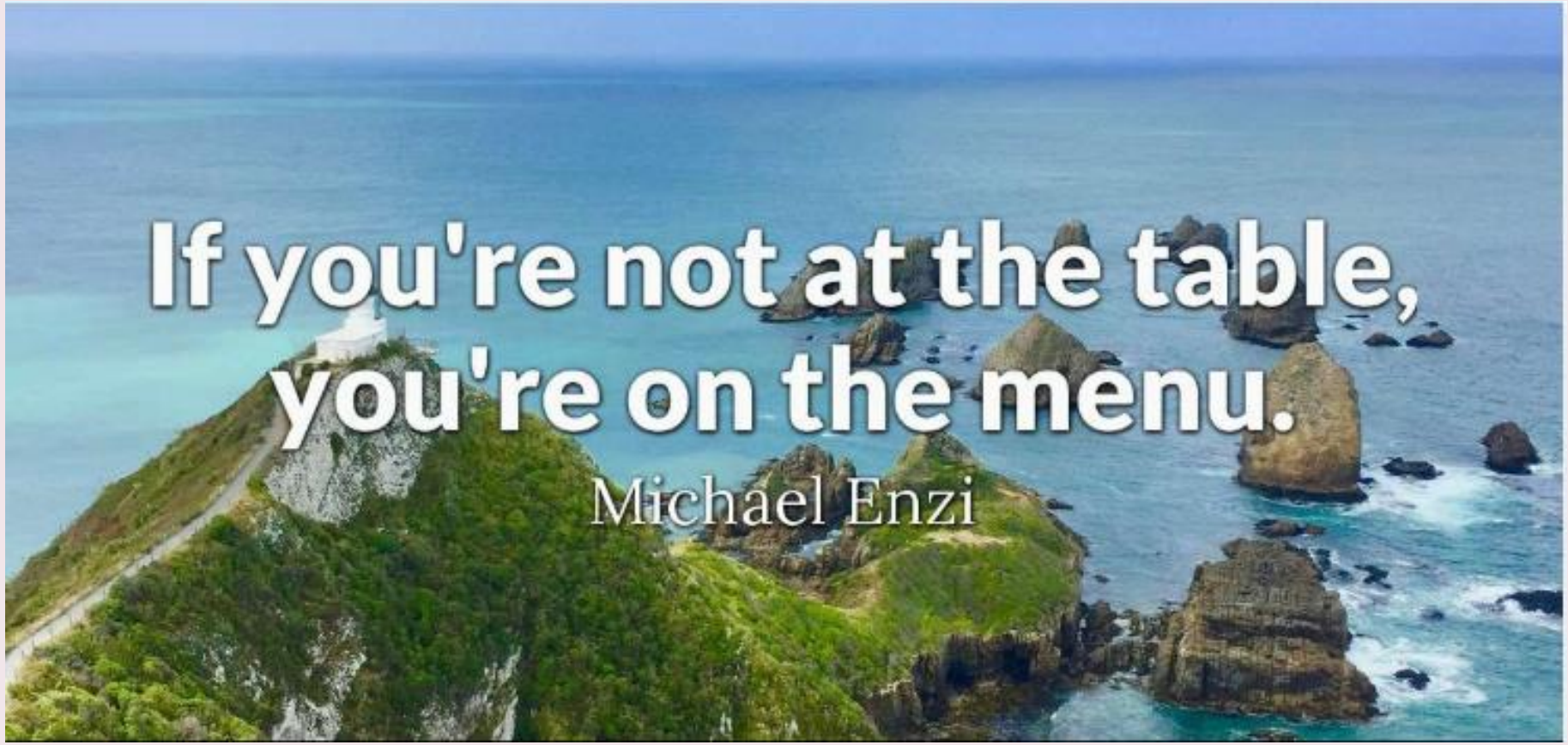
- 911 caller triaged
- Time Critical Emergencies Identified
  - Ambulance dispatched
  - Field referral for Navigation
- Low Acuity Callers
  - Linked to Payor data
  - Needs identified
  - Resources located
  - Caller Navigated
  - Responsible entity notified
  - Closed loop confirmation

Medical Director of Future

- Clinical Expert
- Educational Advisor
- Consulting Physician
  - Liaison
  - Advocate
  - Office Manager
  - Case Manager
- Revenue Cycle Advisor
- Patient Advocate



A Vision without Resources is a Delusion….


If you're not at the table,
you're on the menu.
Michael Enzi

Conclusions

- Change response to a Behavior
- Future is more than transportation
  - Care Coordination
  - Care Navigation
  - Definitive Care
- Less **EMERGENCY**
- More **MEDICINE**
- Definitely **SERVICES**

Questions?

Resources

Emergency Response

Fire Based Mobile Integrated Healthcare and Community Paramedicine (MIH & CP) – Data and Resources

By Sreenivasan Ranganathan, Fire Protection Research Foundation | 30-Apr-2016

The concept of Mobile Integrated Healthcare and Community Paramedicine (MIH & CP) has existed for quite some time internationally, but has been less prevalent in the United States. The primary purpose of MIH & CP programs is to provide healthcare services directly to patients on location therefore minimizing trips to the hospital. Fire Departments have typically always responded to medical emergencies, regardless of whether or not a fire has occurred. Many Emergency Medical Services (EMS) rely on Fire Departments to easily reach out to their communities. The main objectives of this project include identifying where mobile integrated healthcare and community paramedicine (MIH & CP) is used in the USA, determine what information is available from those communities, and produce a report to help the NFPA Technical Committee (TC) on Emergency Medical Services (EMS-AAA) develop a document relating to firebased MIH & CP systems.

The project tasks included:

- Conducting a literature review and preparing a report on the information regarding the best practices in MIH & CP programs (with a focus on fire-based MIH & CP programs in the United States).
- Understanding how existing EMS resources are being used to provide services, through available fire-based case studies.
- Conducting a brief literature review on functioning MIH & CP programs from around the world.
- Identifying resources and reference materials available regarding these functioning programs.

Fire Based Mobile Integrated Healthcare and Community Paramedicine (MIH & CP) – Data and Resources

Download the Full Report

NAEMT Advancing the EMS profession

Member Portal | Course Administration

Select Language | Powered by Google Translate

JOIN | EDUCATION | ADVOCACY | INITIATIVES | RESOURCES | EVENTS | ABOUT NAEMT | ABOUT EMS | Search

MIH-CP
- MIH-CP Program Toolkit
- MIH-CP Knowledge Center
- MIH-CP Agency Contact Form

Home / Resources / MIH-CP

Mobile Integrated Healthcare-Community Paramedicine

2nd NATIONAL MIH-CP SURVEY

Mobile Integrated Healthcare–Community Paramedicine (MIH-CP) is the provision of healthcare using patient-centered, mobile resources in the out-of-hospital environment. MIH is provided by a wide array of healthcare entities and practitioners that are administratively or clinically integrated with EMS agencies, while CP is one or more services provided by EMS agencies and practitioners that are administratively or clinically integrated with other healthcare entities. **View Vision Statement.**

Background

The landmark 1996 ***EMS Agenda for the Future*** called for EMS to add *service lines* and, therefore, *value* to the communities it served through: *"Community-based health management... fully integrated with the overall health care system... able to identify and modify illness and injury risks... able to provide acute illness and injury care and follow-up, and, able to contribute to treatment of chronic conditions and community health monitoring..."*

Beginning in the early years of the new millennium, a handful of innovative EMS agencies began to offer community healthcare services often called "community paramedicine" (CP) to their patients. As the cost of healthcare continued to skyrocket while the overall health of the U.S. population declined, healthcare payers - both private insurance companies and the federal government, through Medicare and Medicaid - began transitioning from a fee-for-service payment model that links payment to the *quantity of care provided* to a payment model linked to the *quality of care provided and measurable patient outcomes*. As a result, previous distinct healthcare delivery entities including hospitals, physician groups, nursing homes, and many others, began to coordinate the care they provide resulting in the creation of large "integrated healthcare delivery systems."

Today, hundreds of EMS agencies across the nation, of all sizes and types are partnering with hospitals, primary care physicians, nurses, and mental health and social services providers on innovative programs that navigate patients to the right level of care. The goal: to lower costs, improve care, and enable EMS practitioners – including EMTs, Paramedics and Community Paramedics –

NAEMSP