

DRAFT

Promoting Innovation in Emergency Medical Services

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Participants in the Survey and Interviews

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Introduction

The State of EMS

If one set out to design a prehospital care system for the United States from the ground up it would look very different from the EMS system that we have today. The purpose of this document is to identify the barriers and champion the opportunities to create a model EMS system for our nation.

Our current EMS system suffers from multiple challenges including marked fragmentation. For example, five models of administration are currently employed – private, volunteer, fire, hospital, and public – and thousands of agencies of different sizes rarely collaborate.¹ There are wide variations in system design and standards of care. While many EMS patients suffer from non-emergent conditions, current models of financial reimbursement, medical direction, and EMS educational standards focus almost exclusively on emergency care. Certifications vary greatly from state to state, and there is little collaboration between EMS and the academic community. EMS rarely makes effective use of data or shares information with other agencies, community health stakeholders, or patient care teams. EMS has made impressive progress in many of the technical aspects of treating critical patients, but as the Institute of Medicine (IOM) explained in 2006, “Fragmentation, silos, and entrenched interests prevail throughout emergency and trauma care.”²

As a result, EMS is neither designed to provide many of the services our communities need nor to adapt to new opportunities. While many barriers to innovation are external to EMS, others are the consequence of purely internal challenges. For example, the EMS culture has often been resistant to innovation, which has created a barrier to the recognition of EMS and its integration within the larger healthcare system. Conformance to the status quo has prevented EMS from adapting to new public safety needs and has contributed to our services becoming a neglected area of healthcare in America.

Conversely, we envision an EMS system that maximizes value to the community by providing new and essential services. In this vision, EMS is an integral part of the healthcare system and

¹ *Emergency Medical Services at the Crossroads*. Washington, DC: National Academies Press, 2007.

² *Ibid*

central to community resilience. This EMS of the future brings definitive care into patients' homes and uniquely addresses barriers that so often interfere with achieving the nation's Triple Aim: increased quality of care, decreased costs, and improved health of the communities.

The *EMS Agenda for the Future* (1996) and the Institute of Medicine (IOM) *Future of Emergency Care* (2007) proposed a very different EMS system- one that was proactive rather than reactive, and one that delivered necessary care rather than traditional care. According to the *EMS Agenda for the Future*, "In order to optimize the positive influence of EMS on community health we must move to a system of finance that is proactive, accounting for the costs of emergency safety net preparedness and aligning EMS financial incentives with the remainder of the healthcare system."³ Similarly, the IOM Report also made the case for integration with the rest of the healthcare system: "To function effectively, the components of the emergency and trauma care system must be highly integrated. Operationally this means that all of the key players in a given region...must work together to make decisions, deploy resources, and monitor and adjust system operations based on performance feedback."⁴ So why hasn't EMS advanced to this point?

EMS was on track to develop standardized, high quality, coordinated emergency care as the result of initial direct investments and federal leadership stemming from the 1970 National Highway Traffic Safety Act and the 1973 Emergency Medical Services Systems Act. However, EMS splintered when direct support dissipated in the 1980's. The current system was shaped in an age of fee-for-service medicine and a hospital-based healthcare system that promoted an uncoordinated, poorly funded, transportation-focused system that fell short of providing the services communities need. EMS became progressively constrained by path dependence.

Now that healthcare is rapidly moving towards population-based care management, EMS must adapt to provide the enhanced care that it is uniquely qualified to deliver. Innovation requires energy but we believe the environment is finally right to create a system that the *EMS Agenda for the Future* and the IOM report envisioned.⁵ This document seeks to provide a framework to

³ *Emergency Medical Services Agenda for the Future*. National Highway Traffic Safety Administration, 1996.

⁴ *Emergency Medical Services at the Crossroads*, 2007.

⁵ <http://jama.jamanetwork.com/article.aspx?articleid=1653531>

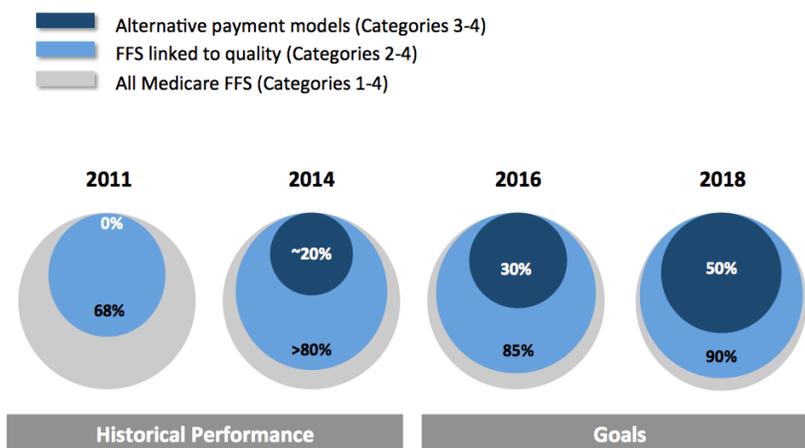
recognize obsolescence, overcome barriers and adopt innovation to build a better pre-hospital system.

Changing Healthcare Environment: The Time to Innovate is Now!

Healthcare has changed dramatically in the past few decades. The 2010 passing of the Patient Protection and Affordable Care Act was the culmination of a healthcare reform movement many years in the making. The healthcare industry is now focused on value and quality over quantity, and will increasingly move in this direction. Projected future payment models reflect this change, as **Figure 1** shows.

Figure 1:⁶

Target percentage of payments in 'FFS linked to quality' and 'alternative payment models' by 2016 and 2018



While EMS has often been a neglected area of medicine within the national policy arena, as a major provider of out-of-hospital care, it has much to contribute to the changing face of health care. EMS has the advantage of extensive experience working with patients in homes and communities at a time when health reform has recognized the value of home-based care, social determinants of health, and community-based care. For example, while attending a meeting with social workers and ED nurses to address

⁶ <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/HVBP/2013-2015-HVBP-Presentation-.pptx>.

the needs of a high-utilizing patient, an EMS medical director recently recalled how surprised the team was to learn that seven EMS providers had visited the patient's home within the last month and were able to provide valuable information regarding the patient's social environment. In many ways, EMS providers are a step ahead and with additional training could coordinate care, navigate patients, provide education, and ultimately lower cost and improve the quality of patient care. EMS has the further advantage of operating 24 hours a day, 7 days a week rather than just during business hours.

Healthcare reform promotes systems integration to provide higher quality, less expensive care. While EMS intersects with inpatient care, primary care, and community health it has too often not been adequately integrated with key elements of the care continuum.⁷⁸ The success of EMS systems in providing more timely care for stroke, heart attack, and trauma and emergency management over the last two decades attests to their value to population health. Yet more effort is needed. There is very little penetration of modern telecommunication technologies and suboptimal compliance with evidence based medicine, national guidelines, and educational standards. We encourage EMS providers to reference the Innovation Opportunities for Emergency Medical Services Draft White Paper from NHTSA, ASPR, HRSA to improve the patient experience and decrease costs.⁹

⁷ <http://content.healthaffairs.org/content/32/12/2069.full>

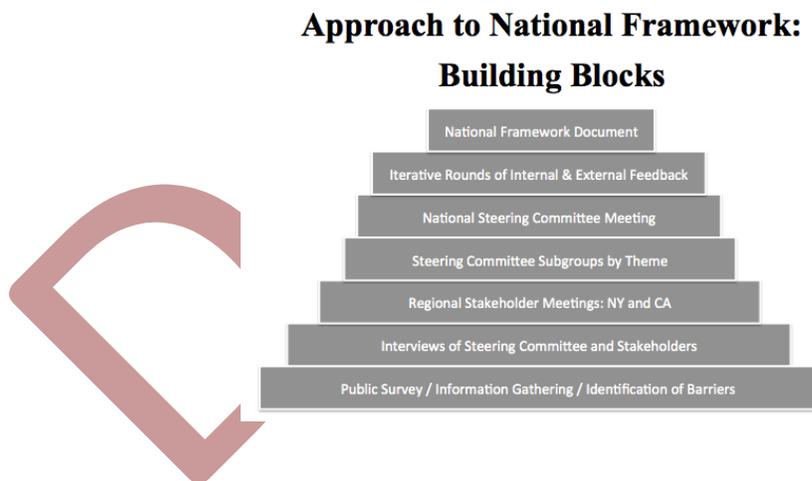
⁸ http://www.rand.org/pubs/research_reports/RR280.html

⁹ http://www.ems.gov/pdf/2013/EMS_Innovation_White_Paper-draft.pdf

Purpose of the Framework Document

The purpose of this project and resulting document is to engage a diverse group of stakeholders in a national dialogue about common challenges toward EMS innovation faced at the local level. This national framework document seeks to serve as a guide for local communities and regions to overcome regulatory, financial and other barriers to innovative delivery models in the out-of-hospital environment and to enable rapid cycle testing of promising ideas and treatments. Ultimately, EMS will benefit from the widespread implementation of well-tested evidence-based delivery system reforms that improve the alignment of EMS care with that of the healthcare system. Though the authors of this document understand the important role Congress and federal agencies play in EMS, this document was primarily written to provide a framework that describes how local stakeholders can promote innovation in the absence of federal action.

How we developed this document



Partnerships and Stakeholders

Partners representing New York and California from the Icahn School of Medicine at Mount Sinai, the New York Mobile Integrated Healthcare Association and the City of San Diego Emergency Medical Services in partnership with local and regional stakeholders worked

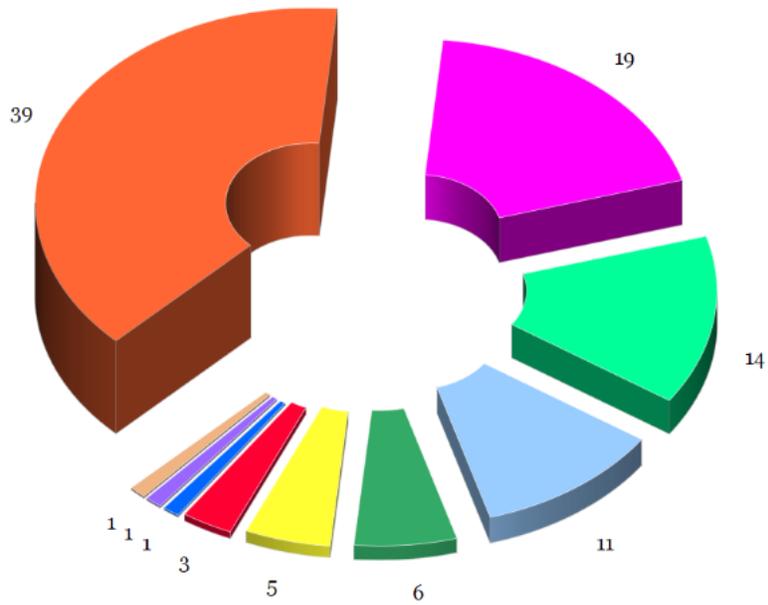
collaboratively to lead this project seeking to overcome local, regional, state, and national barriers to promoting innovative models of EMS. A Steering Committee was assembled, consisting of a diverse group of representatives of local and state governments, a disparate group of EMS agencies including volunteer, commercial, hospital and fire-based services, experts in the fields of community paramedicine and mobile integrated healthcare, health economists, as well as public health and political science experts.

Surveys and Interviews

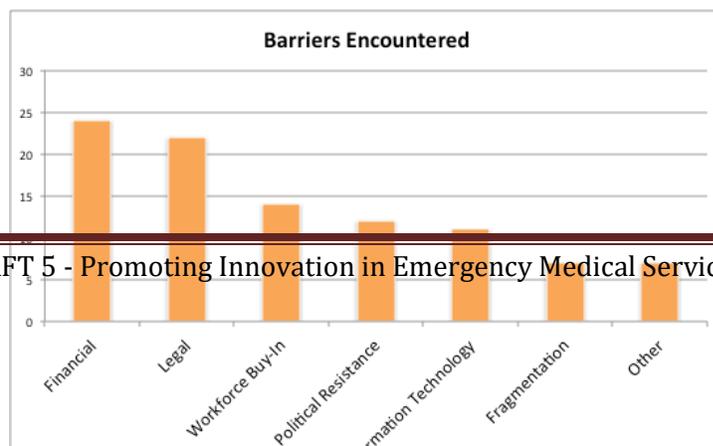
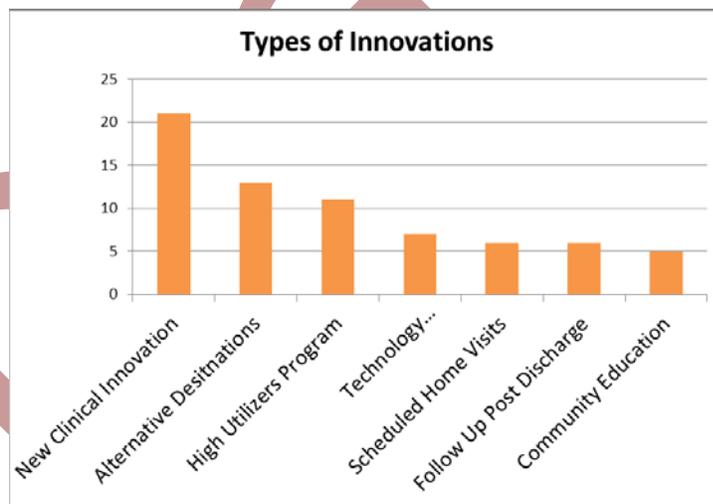
Together, the steering committee and project leadership facilitated an expansive exploration of experiences and challenges faced by other localities throughout the United States through a structured process including an open survey and exploratory interviews. Overall, project leadership surveyed 189 EMS stakeholders, and used the survey responses to guide in-depth interviews of 48 providers, industry representatives, and experts. Insights gleaned from this exploratory process were fed into the conversation at subsequent stages, including the creation of our initial five “themes” or categories of challenges: legal, finance, education, workforce and culture, and data.

Survey Results:

The 189 survey respondents came from 38 states and included 122 EMS providers, 32 physicians, 18 allied health providers, 43 EMS directors, 46 EMS administrators, as well as experts in business, public health, law, and policy (there was crossover between professions). EMS providers from commercial, volunteer, municipal, hospital-based, government/military, and public utility agencies were all included in the surveys. Of the 73 innovative projects highlighted in the survey, new clinical interventions, alternative destination initiatives, and programs to support high utilizers were the most common.



- EMS Agency
- Health Care Provider
- Fire Department
- Government
- Other
- Business
- Technology Company
- Social Work/Community Based Care
- Insurance Plan (Payer)
- Police Department



Viewpoints from Surveys and Interviews:

On EMS Design

“We built this entire system around this 1% of patients, patients with cardiac arrest, patient with life taking trauma...whereas the 99% of the people, which is really what EMS deals with every single day, we designed a system that may be not the best.”

“It would be great to have EMS be patient navigators because most of what they’re doing now is navigating in a way that’s not terribly beneficial for patients”

“The ability for EMS to enter into the patient home and connect directly to providers (e.g. Physicians) has limitless opportunities.”

“There should be some process that allows the patient, the paramedic, and the physician – the primary care physician for that patient – to have some discussions, some collaboration, some discussion on care continuum so that the right decision is made for that patient.”

“The connection to the PCP for 60-70% of our calls has to be considered. The determination of where that patient is going or even a notification that the patient went to the hospital, the connection to that PCP is weak at best and in most cases I would say non-existent.”

On Innovation

“I think that perception of HIPAA is more of a barrier than HIPAA actually is. I think that HIPAA has become this overwhelming all inclusive medium to say no to innovation in a lot of areas.”

“You meet with whoever may be impacted by the innovation first, in private. The first time that the head of the nursing union for the hospitals should be hearing about the nurse triaging program is not on the front page of your local newspaper”

“Proving value for your innovation has, by definition, got to be with your local stakeholders. Now, local could be town, city, county, state or feds. We, as a profession, have done a pretty poor job demonstrating value.”

On Regulation

“The current configuration of EMS at least by statute and regulation ... doesn’t reflect in any way, shape or form the way we are actually using the service”

“In most states, the EMS provider is [legally] tagged to an ambulance”

On Data

“MIH/CP for [my hospital] is a complete non-starter until the EMS providers are fully integrated into our electronic health [record].”

On Quality Measurement

“I try to get away from documenting how many calls you made and how fast you got there. Everybody can do that.”

On Education

“Its time to rethink initial education and integrate more community and population health into the base.”

“100% of our education for EMS professionals is preparing them for 1/5 calls”

On Becoming a Profession

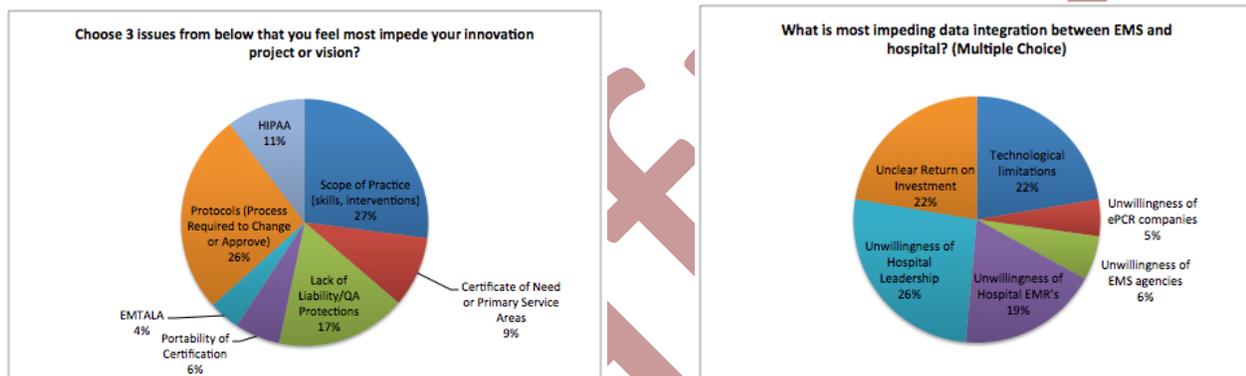
“Becoming more professional, ... I mean [EMS] being more like the rest of healthcare, where nurses have a degree, doctors have degrees.”

“If you don't pay people enough to feel like they are a part of the healthcare profession and a professional then it is really tough to expect that we will have people in the profession that are looking at it as a lifetime career”

“We have for too long cried to be recognized as professionals, but are not willing to put in the time to be considered a professional.”

Conferences to Develop the Framework

Regional meetings were held in New York and California to advance local efforts to promote innovations in EMS by coming up with local solutions to local challenges. Breaking into small workgroups across the original five themes helped subject matter experts and in some cases disparate experiences to come together and work on the same problem. The ideas generated, while intentionally focused on the nuances of the local region, were not surprisingly broadly applicable to other jurisdictions and became the earliest iteration of proposed recommendations to be considered by the steering committee. An example of the discussion can be seen in the following results from a survey of conference attendees:



The project leadership consolidated the learnings from these 2 regional conferences into conference proceedings documents and continued to analyze the data from the previous stages of information gathering. In consultation with the steering committee, the original five themes were reorganized into the seven themes that we have included as chapters within this document: legal, financial, medical direction, interdisciplinary collaboration, regional EMS coordination, education, and data and telecommunications. The project team wrestled with the idea of including a chapter on "quality" for quite some time but ultimately decided that since quality was the goal and not a category of barriers, it would not be organized into a chapter. Instead, the reader will find strategies to improve quality peppered throughout the document, sometimes as the urgency for which a barrier must be overcome, and at other times, the pursuit of quality is the strategy or vehicle toward overcoming a barrier.

The steering committee organized itself into small workgroups for each of the seven themes and met to discuss both the recommendations offered by the regional conference attendees as well as from a qualitative analysis performed of all interview transcriptions and survey submissions. The steering committee itself then went about the task of writing the next iteration of recommendations as well as to begin vetting the emerging draft national framework document.

At the midpoint of the project, a national Steering Committee Meeting was held in our nation's capital to allow for discussion and debate of the key issues identified and advanced by the efforts of Mount Sinai, NYMIHA, and UCSD. At that national meeting, 77 attendees both in person and via web, heard presentations from the project leadership and workgroup members, and voted on each and every one of the proposed recommendations. Written and verbal feedback as well as web-based submissions were collected. Following dissemination of conference proceedings, the Steering Committee members as well as other invited stakeholders continued to work in subgroups to explore and affirm support for the recommendation ultimately included in this document.

An initial public comment period was held in January and February of 2016, with the recommendations available at that point. Over 150 responses were received. Most of the comments were favorable, while others raised new issues or perspectives. All were thoughtful and contributed to the iterative vetting process that has resulted in the recommendations contained in this document. Each comment was reviewed by the project team and steering committee as the group worked toward a near-final draft.

Following a final open comment period, the end result will hopefully be a document that provides meaningful guidance on how to develop an infrastructure for states, communities, and agencies to promote, authorize, fund, regulate and evaluate innovative demonstration projects in Emergency Medical Services.

Designing Sustainable Innovation

The business community defines Innovation as “the process of translating an idea or invention into a good or service that creates value for which customers will pay.”¹⁰ An important takeaway from this is that innovation is not simply having a new idea; the idea is only the beginning! The innovator must be able to capture some of the value from that idea for it to be sustainable. To achieve sustainability, the innovator should collect evidence to demonstrate value to local stakeholders, partner with these stakeholders, convince them to pay for that value, and plan for sustainability from the beginning.

(The idea is only the beginning!)

Who creates the value? Who captures it?

Clinical innovations, acute care integration, and Mobile Integrated Healthcare all have the potential to improve quality while reducing costs. However, the EMS system was developed in a fee-for-service environment that can make it difficult for agencies to benefit from innovations that bring value to their communities- especially if these innovations reduce the number of transports to the emergency department. While the environment for innovation is improving, agencies must become entrepreneurial in order to best identify how to adapt their services and obtain reimbursement from new sources of revenue. Agencies must be able to show that their new services benefit stakeholders, and convince these stakeholders to pay for the service.

Often, innovative EMS agencies launch a pilot program to demonstrate proof of concept, either through a grant or through self-funding. Due to lack of planning for sustainability, many of these pilot programs are cut when funding runs out, even after demonstrating significant value to the community. Agencies planning new programs should develop a

¹⁰ Business Dictionary. Accessed April 13,2015.
<http://www.businessdictionary.com/definition/innovation.html>

clear plan to capture the value they create through innovation before they launch their pilot program.

What are the essential components of EMS innovation?

- **Fill gaps in patient care:** Innovation should start by identifying what local needs are not being served by the current local EMS system or the healthcare system as a whole?
- **Work with the local community:** Sustainable initiatives require community buy-in. How is your agency serving the community? Are community members aware of the value and needs of your organization? Are there community members who will be affected by your innovation?
- **Approach stakeholders early:** You should start communicating with those who will be affected by your innovation early. This will prevent you from developing a service that already exists or from being surprised by resistance later.
- **Integrate with other providers:** EMS is one part of a greater healthcare and public safety infrastructure. The patient experience is not contained within EMS, and your mindset should not be either.
- **Foster a culture of innovation:** Innovation does not always originate from leadership. It is often those who work with patients every day who are most acutely aware of gaps in patient care and difficulties in providing services. Leadership should promote an innovative culture and support all members of the patient care team who want to improve the patient experience.

How do agencies plan for sustainability?

- **Create value:** Healthcare innovation seeks to promote the Triple Aim: improving the patient experience (quality, safety, and satisfaction), promoting community health, and decreasing costs.

Financial Sustainability: the Case of REMSA

The Regional Emergency Medical Services Authority (REMSA) was founded in 1986 to improve the quality of EMS services in the Reno, Nevada area. REMSA won a Round 1 Health Care Innovation Award (HCIA) (one of six awarded to EMS in the country) in July, 2012 to launch Community Health Programs including a community paramedicine program, a Nurse Health Line, and an alternative transport destination initiative. The HCIA was awarded by the CMS Innovation Center to develop “new models of care and payment that continuously improve health and healthcare for all Americans.”



REMSA planned from the beginning of the grant to build a program that would be sustainable by the time the grant expired. To achieve sustainability, they decided to build a strong evidence base to demonstrate value, then work closely with local stakeholders to form partnerships based on the value they provided. By providing patient-centered, quality care, REMSA saved the health system an estimated \$7.2 million over its first two years and prevented 4,284 ED visits. Because of its success, REMSA was able to secure contracts with local stakeholders that allowed it to continue to serve the community once the grant expired in July of 2016. On a larger scale, REMSA committed itself to advocating for reforming payment models that reward value, which will create a healthcare environment that makes these programs more sustainable in the future.

- **Use evidence to demonstrate value:** Any new initiative must be evaluated. Use data to measure the effect of the innovation, improve the innovation, and demonstrate value to the community and to stakeholders.

- **Partner with local stakeholders to capture value:** A major challenge of innovation in EMS is that it usually produces value that is difficult to capture, especially in a pay-for-transport reimbursement environment. If an innovation creates value for patients, communities, health plans, or hospitals, the EMS agency must have a plan from the beginning to capture that value, or they risk providing a valuable service only temporarily.

- **Start with a realistic, sustainable plan:** Plan for sustainability. Having a new idea or building a valuable service is not enough. Agencies must have a plan for financial sustainability from the start. Identify who will pay for the service early. Some examples could be: patients, local governments, payers, hospital systems, and nursing homes. Some innovations can help EMS agencies save resources, and thus capture value without needing to seek out a payer.

Draft 5

Innovation from Every Perspective

EMS Providers

EMS responders are intensely creative people. We spend every shift adapting and innovating to some degree. No two patients are exactly alike. While commonalities exist, there is no cookie-cutter solution that works for every chest pain call, trauma call, or diabetic emergency. Transportation routes differ by destination, traffic, time of day, weather. What worked yesterday may not today.

Every day we rise to meet new challenges, whether they are operational, institutional, or cultural. We see first-hand what works and what doesn't. This means we are in an enviable position to recognize gaps and use our creative, problem-solving ways to innovate on behalf of our agencies, our systems, our communities, and, most importantly, our patients.

To do so, we must embrace life-long learning, not just the nuts and bolts of our daily trade, but also how to research, identify evidence-based best practices, use data to frame solutions, advocate positions, and work with others toward a common goal.

Successful EMS leaders and systems embrace this "from the street up" process for innovation. They encourage input from their responders and work with them to translate good ideas into system-wide innovation.

Look for every opportunity to innovate. Advocate to create a culture of innovation among your colleagues. What is at stake? Nothing less than the EMS profession our successors will work in, and the emergency care our children and grandchildren will receive.

Ed Mund

Director At-Large, EMS/Rescue Section, NVFC

EMS Educators

Educators have an important role in shaping the personalities, actions and priorities of the future EMS workforce. Technology and evidence base educational practices are continually changing for EMS educators; future educators must embrace the current evidence in education to provide the best educational delivery models for their students. Educators should commit to teaching evidence-based medicine with evidence-based practices. They should remind their students that the difference between what they learn in the classroom and "how it's done in the field" is that the medicine taught in the classroom is evidence based, and they should encourage students to advocate for more evidence based medicine in future care delivery.

The ideal EMS professional of the future will be a "continuous lifelong learner", and must

stay actively connected to current research, will understand research methods and how to use data to solve problems, and will seek out higher educational opportunities. Because of this, the current EMS educator should become familiar with these skills and teach their importance to students.

Baxter Larmon, PhD, MICP

*Professor Emeritus, Emergency Medicine, the David Geffen School of Medicine at University of California at Los Angeles (UCLA)
Founding Director, Prehospital Care Research Forum
National Association of EMS Educators (NAEMSE)*

Medical Directors

As Medical Directors, we have traditionally focused on ensuring high quality patient care through protocol development, provider credentialing, education and training, and quality assurance. Our efforts have not, however, always effectively translated from policy and program into ‘rubber meets the road’ quality and value. As such, we are now faced with the compelling responsibility to nurture innovation, and to thereby help redirect the cultural, political and financial forces that typically drive our systems. It is in this respect that we have the unique opportunity to broaden our traditional scope: to utilize clinical research and outcome-based performance measurement to ensure evidence-based patient care through evidence-driven system design, management, and policy development.

The challenge is a multifaceted one: how to develop and hone our own skills sets, and how to effectively couple these with sufficient authority and a spirit of collaboration both within and outside of our systems. To accomplish this, we also have to broaden our perspective from one of emergency medical care to one of emergency medical navigation. Not every patient needs an ambulance or an emergency department but may require, instead, an accountable and high quality, integrated system of care - one that incorporates and surrounds every aspect of the individual with a comprehensive approach to prevention, management, and population health.

Any such approach to innovation should focus not only on new initiatives - whether readmission avoidance or the management of primary or chronic care medical problems. The same spirit of leadership, collaboration and innovation that is being brought to bear on the out-of-hospital management of low acuity patients may also be brought to the prehospital management of those with acute, time-sensitive emergencies. The opportunities are similar and critical for both - value-based decision making and enhancing the health of all of our communities.

Neal J. Richmond, M.D., FACEP
Medical Director, MedStar Mobile Healthcare

State EMS Offices

State offices of Emergency Medical Services (EMS) are uniquely positioned to provide for an atmosphere which encourages change and innovation within their individual states. While frequently we are primarily perceived as regulatory agencies for EMS, we actually have the opportunity to influence the many elements of the healthcare continuum on a frequent basis.

The means we have for change and innovation are varied and may require a slightly different interpretation than we have used before. Because of our regulatory charge it is easy to establish a relationship with our lawmakers. This relationship gives us the opportunity to also relate the needs of the industry, propose changes, and potential innovation to those that can help us facilitate needs.

While we may see funding, from the state or other sources, as an opportunity to sustain current operations, we could instead enact initiatives to catalyze innovation. Our state office has supported the development of pilot projects to improve EMS; we have worked with designated regions to establish data collection and quality improvement efforts, as well as encouraged local ambulance services and communities to embrace community paramedicine and heart-healthy initiatives. Consideration of innovation centers, in conjunction with our partners' efforts and expertise, could affect real change in all we do.

Because of our unique position we are able to have a much broader perspective of EMS in our

State EMS Director Facilitating Innovation

Maine's State EMS Director, Jay Bradshaw, saw the value of community paramedicine early, and his support for community paramedicine in Maine serves as a model for how state EMS directors can foster innovation. Before community paramedicine programs had become common in Maine, he held a forum of about 100 stakeholders, both supportive and opposed to community paramedicine. This forum opened communication between all stakeholders, and helped assuage fears while giving everyone input. A steering committee, which was formed out of the forum, allowed the state to foster innovation in community paramedicine while also shaping its future development.

The steering committee supported twelve pilot programs in the state, which were subject to a number of requirements. These requirements included medical direction involvement and partnerships with primary care providers in the community. This pilot award structure fostered interest among EMS agencies that were not originally interested in innovating in this area, while the requirements on the pilot programs allowed the state EMS director to shape the industry and ensure quality.

The example of Maine demonstrates that state EMS directors who see their role as supporting EMS in their state, rather than simply regulating it, can strongly influence the quality of care provided to state residents. State EMS directors often have relationships with state lawmakers, can support innovation with funding, or can simply offer a big-picture perspective that is helpful to individual EMS agencies. Maine's success in community paramedicine shows that state EMS directors who foster innovation in their state can be an invaluable resource for EMS providers and their patients.

state, rather than individual agency perspective. This gives our office the advantage of recognizing all the elements of the healthcare continuum and how they should work together. This position also establishes the need for the development of synergy of many elements working together to form a far more effective team. Some tools at our disposal to aid in these synergizing efforts are quality improvement, system development, leadership and mentorship.

While our focus to this point has been on state initiatives and progress, it should be recognized that we can also affect change nationally. Organizations that we are a member of such as the National Association of State EMS Officials (NASEMSO) and the Joint Committee of Rural Emergency Care (JCREC) give us an opportunity to work with other state offices to bring about change nationally.

We need to become facilitators of change and adopt attitudes that foster change, rather than become obstacles that hamper progress and transformation. A favorite quote of mine comes from Henry David Thoreau; I believe this quotation reflects both innovation as well as practical application: **“If you have built castles in the air, your work need not be lost; that is where they should be. Now put the foundations under them.”** We need to make it easier to build bridges than silos. Together with our diverse partners, with our institutional knowledge and the experience of our providers in the field, we can work together to truly lead, facilitate change, and foster innovation in EMS.

Thomas Nehring
*Director, Division of Emergency Medical Systems
North Dakota Department of Health*

EMS Agency Leadership

Most EMS leaders choose their profession because they recognize the unique opportunity it provides to serve their communities. They consider themselves fortunate to be in their position and are looking for ways to expand the value of their services to their communities. To improve their services successfully, EMS managers must transform from managers to leaders who can guide their agencies and local communities to support and encourage in EMS innovation.

Leaders should strive to maintain a culture of innovation, and encourage and support providers who work to improve patient care. Leaders should encourage their workforce to question existing structures and constantly be looking for new ways to better serve their communities, even if these services don't always fit in the traditional role of EMS. They should try to stay up to date with current trends and innovations in the field and support providers in their agencies who want to pursue higher educational opportunities.

EMS leaders should also make measuring quality and outcomes a priority and experiment with interventions that improve the quality of services their agencies provide. They should also be intimately familiar with their care model and cost/revenue streams, and work to find new ways to save costs by adding services that improve care and provide value.

Finally, for many agencies, successful innovation is a three-legged stool that depends on EMS leadership, the EMS workforce, and the community the agency serves. It is the responsibility of the leadership to work closely with the workforce and community to understand their needs and demonstrate how potential innovations can improve the value to patients, employees, and other providers. Many innovative projects stall due to resistance from one of the three legs, especially when they already have a shaky relationship. EMS leaders should consider maintaining a good relationship with the workforce and community as an important part of the job, and should collaborate with them proactively.

Legislators and Regulators

Legislators and regulators should create policies that facilitate EMS inclusion in healthcare innovation as much as possible. This would include establishing an EMS regulatory board in their state, or if one already exists, delegating appropriate authority to the board to encourage innovative pilot projects. Currently, some states require approval from the legislature to launch pilot programs, which places an undue regulatory burden on innovation. While public safety is the first concern, regulators should be able to allow EMS agencies to test new ideas and provide new, valuable services to their communities under the supervision of local medical control.

An ambulance ride to the hospital may not necessarily be the best way to improve patient outcomes in every circumstance. Community integrated paramedicine is the use of paramedics outside their customary public safety emergency response and transport roles to meet community needs and provide patient-centered healthcare services. To be successful, EMS providers must be allowed to practice to the full extent of their scope of practice. For example, paramedics trained to give IM injections should be permitted to administer vaccines to their communities without onerous regulatory barriers.

All 911 calls for medical assistance need attention, but not all of them are medical events that require the typical 911 emergency response. Local officials should employ proven *outcome* measures, rather than *process* measures, to evaluate the effectiveness of their EMS system. The use of outcome measures allows agencies more flexibility to find innovative solutions to the local health challenges that best matches needs to resources. For example, many cities rely heavily on response times to each and every 911 call for medical assistance as a measure of EMS quality, even though research suggests little correlation between response times and patient outcomes in most circumstances. Focusing on response times alone forces EMS agencies to place an emphasis on “getting there faster”

instead of investing in system improvements and innovations that can truly improve quality of care. If regulators and local officials were to instead use outcome measures, agencies would be free to explore innovative ways to improve patient care that may be much more effective and less expensive than decreasing response times. Furthermore, investing in EMS innovation frees valuable public safety resources to respond to emergencies where there is demonstrable benefit to a quicker response.

Scott Somers, PhD
Former Vice Mayor, Mesa Arizona City Council
Professor of Practice, ASU College of Public Service
Senior Fellow, GW Center for Cyber and Homeland Security

Community Healthcare Groups

Success in out-of-hospital healthcare reform requires significant collaboration between EMS and other out-of-hospital care stakeholders. Community healthcare groups are encouraged to reach out to local EMS agencies and seek areas of collaboration. They should articulate their challenges to EMS and ask about challenges local EMS agencies face. The EMS service delivery model has significant advantages that can complement community healthcare services, and integration of the two can drive significant innovation. There will often be ways in which community health services and EMS can provide better all-around patient care at lower costs by being partners rather than working in isolation.

Health Plans

As we continue the evolution from volume to value-based health care, health plans should recognize the opportunity that exists within the EMS community and services they provide to greatly assist in this shift. Value, as measured by health outcomes relative to total cost incurred, can be easily achieved by utilizing and rewarding EMS agencies for assisting in the care of some of our most costly customers. Many of these costly customers have complex and chronic medical conditions that result in overutilization of hospital services in ways that are largely preventable. Care coordination, transitional care and patient education are three proven methods that help reduce hospitalization rates, and innovative programs with EMS agencies have been able to implement each of these methods and bring value to us as payers as well as, more importantly, our customers (i.e. patients).

Health plans should consider innovative programs and contracts with EMS agencies that will increase value in our health care system by providing higher quality, less expensive care. Mobile Integrated Healthcare models have been clearly demonstrated to better coordinate care and avoid unnecessary ED visits and hospital admissions. Health plans should seek EMS partners willing to innovate and provide primary care, chronic disease management, mental health support, or patient navigation services on top of traditional emergency transport. We must stop looking at EMS agencies as just a transportation service and start

utilizing EMS agencies in ways that ultimately improve the health outcomes of our customers at a markedly reduced cost.

Mike Edgeworth, MD
*Medical Director, Cigna-HealthSpring
Tele-neurologist, HCA*

Managed Health Plans, Hospitals, ACOs
The best hospital discharge or outpatient plan on paper is of little value if it doesn't translate into a patient's real-life ability to follow the plan. Hospital and even personal outpatient providers may have too little awareness of the family, social, financial, cognitive, dietary, logistic, transportation, emotional, and even spiritual obstacles a patient may face. EMS has unique access to patients' living situations (including when homeless) and can both inform providers of challenges and potentially help overcome these challenges with innovative links to the providers and to community resources. Health plans should evaluate the role EMS in this broader sense (not just as a 911 responder and ambulance) might play within their internal structures that are built to address these issues. There are difficult workforce issues, information exchange challenges, branding and cultural issues to address when considering incorporating EMS into a health plan's approach to its population. The intersection of EMS as a community provider with a health plan is complex, and will likely be different for different kinds of health plans. Plans should be open to the possibilities, though, and consider pilot projects.

For large plans, hospitals, and ACOs, whose goals are to sustainably maintain the health of their constituents, incentives of the community are entirely aligned with those of the health plan. There is really no "us" or "them". "Value" is care that improves outcomes in the insured population and also meets patients' (and families') service and convenience needs (or patients will take their business—and revenue—elsewhere). When obstacles to health in the patient's environment are not identified, they cannot be addressed. EMS may be a critical component to identifying these needs. Health plans should be willing to consider how EMS can increase their success as they expand their perspective to include the complex personal realities of their patients' lives.

Jay Goldman, MD, FACEP
Medical Director of EMS and Ambulance, Kaiser Permanente NCAL

Innovation is the cornerstone of emergency medical services (EMS) in both pre-hospital and hospital-based emergency care. In fact, in the absence of innovation and its diffusion - there would be no EMS framework, system or real-world capability to address community medical and injury emergencies in a timely, life- and limb-saving manner. The first major

innovation that created EMS as we know it today was the combining of disparate components such as communication, technology, specialized transportation, training and physician oversight into one interlinked emergency response system.

Since the early 1970s there have been considerable public and private resources focused on EMS development and operation. Funding, research, technology, education, leadership and public policy have been integral parts of the process. In America's hospitals and healthcare systems, EMS development fostered the rise of emergency departments and trauma, cardiac, burn, stroke and rehabilitation centers. People experiencing true emergencies are often dependent on every element of the modern EMS system for their survival.

Communities and hospitals across the country should share in the responsibility of assuring the availability and effectiveness of comprehensive EMS systems. Ironically, the success of EMS has also created a platform capable of spawning innovation related to non-emergency care. The best current example is Mobile Integrated Health (MIH). This innovation brings together paramedics with additional primary care training, nurses, and physicians to provide field-based care designed to avoid unnecessary ambulance transport, emergency department visits, hospitalizations and readmissions. MIH is designed to improve patient outcomes and their care experience while reducing resource utilization and healthcare costs.

For EMS innovations to flourish, meaningful input from leaders across the healthcare spectrum is essential. This means that physicians, nurses, planners, administrative leaders and others will need to be actively engaged in discussions and actions. There is no question that the national healthcare system can improve, but to get there we must take advantage of opportunities to share ideas, innovate and lead. Innovations within EMS should continue to be part of the solutions.

William K. Atkinson, Ph.D., MPH, MPA, EMT-P, FACHE

Former CEO, WakeMed Health & Hospitals

Areas of Innovation: What is possible?

EMS currently serves a dual role as a healthcare provider, delivering emergency medical care, and as a public safety entity, providing emergency management and preparedness. There is ample room for innovation in both of these roles, but the EMS industry should also consider population health and integrated healthcare as areas where it can serve a vital role in healthcare delivery, transforming its relationship with the medical system. EMS should take advantage of the current climate of healthcare reform to demonstrate its advantages

Survey Respondents pointed to the following projects that they are currently pursuing:

- X-rays/Ultrasound on the ambulance
- Integrating AED location data into CAD system and notifying bystanders
- Sepsis Pathway (Blood Cx's, Lactate, & Abx)
- Video Interface (Telemedicine) with:
 - ER physician
 - Primary care physician
 - Trauma surgeon (follow-up)
- Referral Programs to:
 - Home Health
 - Social Services
 - Mental Health Services
- Emergency Preparedness Training for Vulnerable Populations
- EMS supporting DOT programs for TB patients
- Direct Transport to:
 - Sobering Centers
 - Mental Health Clinics

to the medical system as a community-based out-of-hospital delivery method that can provide value and save resources. This section of the document is meant to provide examples of innovations and areas of focus and in no way should this list constrain organizations

from coming up with new ideas and areas of focus.

Clinical Acute Care

The core of EMS has always been providing high quality emergency care for acute time-sensitive conditions such as Cardiac Arrest and Trauma. More recently, Acute Myocardial Infarction and Stroke have become core clinical areas of focus for EMS. In these and other areas, EMS should be pushing the envelope and enabling the development and testing of new treatments or delivery models that result in better outcomes for patients.

Cardiac Arrest

EMS has found exciting new applications of technology and data sharing to improve cardiac arrest survival rates. Apps that notify the public of nearby cardiac arrests have increased rates of bystander CPR by 14%¹¹. Data sharing will allow agencies to monitor CPR quality and track clinical outcomes, while improving cardiac arrest research.

EMS has also been used to connect families to organ donation centers after a cardiac arrest has been called in the field, if the family is interested in organ donation. This example shows how an integrated EMS workforce can have an impact on areas of medicine that are not traditionally seen as part of the EMS role.

Trauma

Trauma care is an area that can benefit greatly from EMS innovation. The National Academy of Sciences, Engineering and Medicine recently concluded that, in order to improve our civilian and military trauma systems to eliminate preventable death EMS should be considered as a key component of the healthcare system rather than being viewed as a transport mechanism. To better trauma care the Academies also recommended: incorporation of EMS data; amending the Social Security Act and the CMS Ambulance Fee Schedule; making HHS responsible for EMS, & conducting a national EMS needs assessment¹². The inclusion of imaging technology, especially ultrasound, on ambulances is already becoming more common. Telemedicine will further improve diagnostics and pre-hospital care, and may improve education by connecting EMS providers with trauma surgeons for debriefing and coordination.

Acute Myocardial Infarction

Improved accuracy of diagnosis, prehospital activation of resources

¹¹ <http://www.ncbi.nlm.nih.gov/pubmed/26061836>

¹² National Academies of Science, Engineering and Medicine. 2016. A national trauma care system. *Integrating civilian and military trauma systems to achieve zero preventable deaths after injury*. Washington, DC. The National Academies Press. Doi: 10.17226/23511.

Improved diagnosis and risk-stratification and clinical management for NSTEMI / Unstable Angina.

Stroke

Improved regionalization of care to facilitate emerging treatment modalities.

Improved prehospital identification and notification.

Emergency Management

At the core of EMS has always been, and increasingly since events like 9/11, its public safety role and in particular its emergency management / preparedness role.

- a) EMS of the future should include disaster and victim tracking as well as EMS leadership at the scene.
- b) There should be communication between EMS, hospitals, and back to patients with one portal for patient information query.
- c) EMS should share data and serve as a disease outbreak surveillance system.
- d) EMS should improve emergency preparedness and community resilience through data sharing and community education, especially for the elderly and homebound.

Primary Care & Population Health

There is an immense need to improve access to primary care and to improve the efficiency of coordinating care with primary care physicians. In the setting of increasingly realigned incentives that encourage physicians, hospitals, and health plans to focus more on population health and coordinating care through a primary care physician, EMS needs to improve its ability to provide the care that patients and their healthcare teams are looking for. This presents an important opportunity for EMS to reposition itself as a mobile

healthcare resource to support primary care and population health rather than be seen as a failure of prevention or a burden to the healthcare system.

In particular, there is a natural partnership and alliance between EMS and home based primary care (HBPC) practitioners. Both groups are familiar with caring for patients in the out-of-hospital environment and patients who qualify for HBPC programs are usually homebound, frail elderly adults who require ambulance or other medical transport assistance to leave the home. Thus, it could be envisioned that HBPC physicians could use EMS providers to help meet urgent or chronic care needs among their patient population and that EMS could reach out to HBPC providers to coordinate care when called to respond to an HBPC patient.

Current Partnerships

Because of this natural partnership, there are pockets of collaboration already under way including 1) the Mount Sinai Visiting Doctors group which has partnered with TransCare, a private EMS organization to provide telemedicine enhanced community paramedic urgent assessments; 2) the Wake County EMS partnership with an HBPC group to reduce transports for minor falls in assisted living facilities, and 3) the North-Shore Long Island Jewish Health System which has an internally run HBPC group known as “House Calls” and an accredited EMS agency under the same organizational umbrella.

Project participants described the following goals for the future of collaboration between EMS and Primary Care / Population Health.

- a) 911 should be designed to bring emergency room capabilities to the patient for disposition decisions.
- b) There is a need for developing shared care plans between disciplines.
- c) EMS should be better utilized to bring primary care to patients.
- d) Conducting safety checks in the home should be part of EMS.

Home Health & Hospice

In the setting of an increased emphasis on improving transitions of care and end-of-life care, EMS has an obligation to improve its relationship with providers of home health care, palliative care, and hospice care. EMS should react to this trend by becoming more patient-centered and increasing collaboration and familiarity with home health and hospice. EMS should work to improve communication and develop an integrated reimbursement structure for a collaborative model. EMS services should move to include Medical (or Physician) Order for Life Sustaining Treatment (MOLST, POLST) and on-call technical support for home health and hospice.

Collaboration should include developing standardized protocols for home health and hospice issues, as well as post-discharge involvement for chronic conditions. Finally, home health should be permitted to render first aid and EMS should become more involved in addressing gaps in home health and hospice care and coverage. This could include the provision of services for patients who would benefit from having healthcare delivered in their homes, but who do not currently qualify for home care because they are mobile. There should be recognition of EMS, home health, and hospice as important part of the same health care continuum.

Mental Health

Behavioral healthcare remains one of the biggest gaps in our healthcare system. As a result, a significant portion of the nation's overall healthcare burden is related to untreated behavioral health conditions. Many super-utilizers of EMS and a substantial portion of low-acuity EMS patients suffer from unaddressed behavioral health conditions. EMS should become more engaged with the behavioral health care teams to fill gaps and improve care coordination for these patients. Service delivery between EMS and mental health services can be integrated. Other mental health professionals should recognize the significant

contact EMS has with these patients and work closely with EMS to improve the services these patients receive.

EMS agencies should develop outcome measures for mental health clients. They also need to test better ways to care for low-acuity behavioral dispatches that don't fit into the traditional emergency role of EMS. For example, EMS and mental health professionals could incorporate telemedicine and out-of-hospital mental health teams.



This could provide the opportunity to assess and divert patients to facilities other than emergency departments. Many patients simply need transport to psychiatric facilities or

assistance scheduling appointments with mental health professionals. More integrated EMS-behavioral health teams could reduce cost, provide better care, and avoid burnout.

Patient & Provider Safety

A range of recommendations has recently come forward to address current issues of patient and provider safety. It will be incumbent upon regulators, providers and industry to continue to develop the types of equipment and safety systems that reduce error and preventable injury and death. Many resources, such as NASEMSO's <http://www.safeambulances.org/>, have been developed to aid providers and regulators in improving patient and provider safety. In light of the growing number of active shooter and other domestic terrorist events, it goes without saying that enhanced training, communications and personal protective equipment will be essential to assure safety in the increasingly militarized environment in which EMS providers find themselves.

Data and Health Information Exchanges

Health Information Exchanges (HIEs) are organizations that effectively share information between institutions and across the care continuum. By nature, EMS collaborates with a number of healthcare organizations, and current operations, as well as new innovations, demand secure and efficient sharing of data. The HIE model is an effective way for organizations to share data across a region to improve patient care, streamline acute care response, better integrate systems, evaluate quality of care, improve public health, and respond to disasters. Including social work and home health in an HIE can also improve healthcare integration with social services. The San Diego Beacon Project provides an example of the benefits HIEs can provide for EMS organizations and their patients.

Education and Public Health

EMS and fire services have embraced their role in prevention, from providing carbon monoxide detectors to participating in community education campaigns. As the major

provider of out-of-hospital care, EMS has a unique role to play in the medical system's engagement with the community.

- a) EMS providers can act as community health workers in a non-emergent role to coordinate care for patients at home under the hotspotting model.
- b) EMS agencies should allow Paramedics to serve as public health educators in their local communities and build relationships with the public during downtime on shifts.
- c) EMS providers should be incentivized to prevent emergencies, for example by surveying houses for fall risks and training the elderly in disaster preparedness.
- d) EMS should be harnessed to screen, intervene and refer patients for food insecurity, vaccination status, elder and child abuse, and domestic violence.

Draft 5

A Focus on the User Experience

Steve Jobs was generally considered one of the most successful innovators of his lifetime. His success did not come from great technical knowledge, but rather from an unparalleled ability to know what the customer wanted before the customer did. When his technical expertise was questioned, he famously replied, “You’ve got to start with the customer experience and work backward to the technology. You can’t start with the technology and try to figure out where you’re going to try to sell it.”

Both medicine and EMS often fall into the trap of trying to build up a patient care model starting with technology, payment models, and regulations. EMS leadership and providers should instead start by asking, “What gaps currently exist in the way our patients are served by the EMS system? By the healthcare system at large?” A system built around the patient experience will often produce results that improve care, lower costs, increase access, and be sustainable.

Mobile Integrated Healthcare

One of the largest gaps in the services that EMS provides is that it is largely reactive rather than proactive, and is not well integrated with the rest of the medical system. Many patients’ conditions are not ideally treated in the Emergency Department, but that is the only option that many EMS agencies can offer.

EMS should recognize this failure and pursue innovative models of providing care that expand the role and increase the value of EMS systems to the community, to patients, and to the health care system.^{1,2} The EMS Agenda for the Future published in 1996 envisions EMS treatment to be a part “of a complete health care program,” with “finances ... linked to value.”³ In 1997, Neely et. al. articulated the Multiple Option Decision Point model which allows for an EMS call to be responded to with a variety of transportation options and to a variety of destinations.⁴ In 2001, a brief article in the Rural Health News described the idea of a “community paramedic” that would “integrate with the larger healthcare sector.”⁵ In 2006, the Institute of Medicine recommended detaching reimbursement for transportation

from the assessment and medical treatment rendered by Emergency Medical Services and the funding of demonstration projects to explore alternatives to existing models of care.⁶

In recent years, all of these innovative ideas and efforts around expanding the role of the EMT and paramedic have become part of a movement under the banner of Mobile Integrated Healthcare (MIH). While the precise definitions of this term is not entirely agreed upon, we will use the definition recently laid out by the National Association of Emergency Medical Technicians (NAEMT) as follows:

[Mobile Integrated Healthcare is] the provision of healthcare using patient-centered, mobile resources in the out-of-hospital environment in a coordinated manner with physicians, hospitals, and other providers.⁷

In the last few years, healthcare has started moving away from fee-for-service medicine and started to realign incentives with value and efficiency.¹⁹ These recent trends have been facilitated and accelerated by the passage of the American Recovery and Reinvestment Act (ARRA) of 2009, which incentivized hospitals and physicians to adopt electronic medical records, and the Patient Protection and Affordable Care Act (ACA) of 2010 which authorized numerous demonstration projects within Medicare including the Accountable Care Organization (ACO). The culmination of these changes and innovations in the healthcare system is an environment less focused on in-hospital care and more conducive to experimentation with new approaches to patient care and population health management. The promotion of new and innovative models of EMS care in which existing health care resources are being redeployed to better meet patient needs is thus very much in line with the goals of the ACA and is now beginning to attract the attention from health care systems, payers, and providers beyond the EMS community.

Acute Care Integration

Innovation through improving the patient experience is important for emergency care as well. One major gap in the way the healthcare system serves patients today is a lack of integration for acute cardiac, stroke, and trauma patients.

As the example of the Pagosa Springs Medical Center's (PSMC) Cardiac and Stroke Care for Southwest Colorado shows, innovative agencies can use system integration, telemedicine, education, and patient outreach to provide better care for acute patients as well. This program, which started with a Health Care Innovation Award in 2012, sought to find a better way to care for cardiac and stroke patients in a rural setting. All paramedics were certified in Critical Care Emergency Transport, which allowed the system to avoid costly and often delayed air transport of critical patients. They also used telemedicine to allow access to specialist neurology care in rural areas. The program used Patient Navigators to coordinate care and community outreach programs to conduct health screenings, patient education, and behavior change interventions.

The Patient Navigation side of the program earned an almost 100% satisfaction rate from patients, and reduced Emergency Department visits by 63% compared to a control group. Among the most high risk patients, the community outreach initiative was able to reduce Body Mass Index for 56% of patients, LDL cholesterol for 45% of patients, and systolic blood pressure for 45% of patients between screenings. PSMC estimates a cost savings to the system of \$5,659,000 due to the program. (<http://www.civhc.org/News-Events/News/Spotlight-on-Innovation--Where-Are-They-Now--Cardi.aspx/>)

Fire Department adapt to serve their communities

Fire departments provide an excellent example of innovating to fill gaps in patient services. In the middle of the 20th century, some enterprising fire departments recognized that their communities did not have adequate access to emergency medical care, and sought to provide EMS to their communities. They faced resistance from some who thought offering EMS would distract from the core mission of fighting fires. However, the departments that did adopt EMS offered an invaluable service to their communities, and retained staffing and even expanded services when the incidence of fires dropped dramatically by the end of the century.



Alan Brunacini, the former Fire Chief of the Phoenix Fire Department, is well known for his focus on the patient experience, literally writing the book on it (*Essentials of Fire Department Customer Service*, 1996). He wrote, “I believe she (the customer) should begin to play the central role in both our personal and professional (occupational) mentality and in our organizational service delivery game plan.” His department would conduct fall risk assessments, and even return to finish mowing a heart attack patient’s lawn after dropping him off at the ER. In doing so, he demonstrated continued value to his community and retained their support for continued growth and staffing at a time that many departments around the country were downsizing.¹³

¹³ <http://www.firehouse.com/article/10545461/essentials-of-fire-department-customer-service>

A note about gaps in patient care

Innovation in EMS often seeks to fill gaps in the way healthcare is delivered to communities. As such it is sometimes seen as conflicting with the interests of other providers, such as home healthcare or nurses. The current system provides enough gaps in patient care that EMS leaders should focus on providing services that are not currently offered by any industry before competing over turf with fellow healthcare providers. Many leaders in EMS innovation have found that coordination with home healthcare and nursing agencies has produced valuable allies in improving the way EMS and the system as a whole cares for its patients.

Quality First, Then Innovation

While it is the clear and expressed purpose of this document to promote innovation at the local level, an agency should not prioritize the development of new modalities of providing care over the implementation of known best practices and evidence-based care in their system. In most communities, it will take as much or more of the same entrepreneurial spirit, leadership and collaboration to move current EMS practice to what has been proven more effective elsewhere than it will to test some new model that is as yet unproven.

Today, there exists a significant amount of unjustified variation in the quality of care delivered in EMS. This has been most well described in the cardiac arrest literature but is true across most clinical conditions. Several evidence based consensus guidelines¹⁴ have been developed which help to establish basic standards that every EMS agency should seek to achieve. Yet the implementation of these guidelines and other best practices has proved difficult and may be due in part to a multitude of factors including a large number of small agencies, lack of involved medical direction, limited data collection and few resources dedicated towards quality improvement. Indeed, these are the same barriers that we have described elsewhere in this document as inhibiting innovation at large.

Thus, as a national EMS industry, we should strive to reduce unjustified variation between EMS systems. Doing so will take significant effort across all parts of the industry but will create the substrate for a far greater future for EMS – one in which the care we provide is high quality, consistently reliable, and determined by medical evidence, and where new

¹⁴ National Association of State EMS Offices. National Model EMS Clinical Guidelines. Available at: <http://nasmso.org/Projects/ModelEMSClinicalGuidelines/documents/National-Model-EMS-Clinical-Guidelines-23Oct2014.pdf>

ideas can be rapidly tested and the best ones can disseminate to provide the greatest help to our patients.

Draft 5

Who are the relevant actors?

We organized the recommendations in this document to be applicable at the local, state and national levels. We use this format, rather than naming specific groups of stakeholders, to acknowledge the diverse ways in which EMS systems operate and are regulated at the state and local level in the United States. For example, in one community for a given issue, the relevant state EMS authority might be the State Office of EMS, however in another community, the authority for the specific issues lies with the State Office of Education, the State Medical Board or with the legislature. Because of this, we use the labels of local agencies / authorities, state authorities / associations, and national associations / organizations to encompass all stakeholders that work at the local, state, and national levels, including providers, payers, and government agencies. The exact details and relationships between stakeholders may vary, but we encourage all users of this document to be flexible in their interpretation of the relevant actor, and to consider the recommendations addressed to their level of geographic involvement.

The term national associations could include, but is not limited to, organizations or associations representing the following stakeholders at the national level:

- EMS Agencies or any of their leaders or providers
- Credentialing bodies
- Advocacy groups
- Advisory Groups
- Non-Governmental Organizations
- Payers
- Other national-level associations outside of the EMS industry engaged in:
 - Healthcare
 - Public Health
 - Public Safety

While we recognize Congress and Federal agencies have an important role to play in promoting EMS innovation, this document focuses its recommendations on what these actors can achieve in the absence of Federal action.

The term state authorities could include, but are not limited to, the following stakeholders:

- State legislators
- Departments of Health
- State Offices of EMS
- Offices of Education and accreditation bodies
- State EMS Directors
- State EMS Medical Directors
- State EMS Councils
- State EMS Associations

- Labor Groups
- Insurance regulators
- State Medicaid Committees

Local EMS agencies / authorities can include a large variety of actors including types of EMS agencies, components of most EMS agencies, that vary by location including, but not limited to, the following actors:

- Commercial EMS agencies
- Fire departments
- Volunteer EMS
- Hospital-based EMS
- Individual EMS providers
- Labor Groups
- EMS administrators
- Regional EMS Committees
- Education/Training Programs
 - Academic Institutions
 - Government sponsored Training Programs
 - EMS educators
- Physicians & Medical Directors
- Allied Health Providers
- Local Hospitals and health systems
- Payers (Large Self-Insured Employers)
- Local Public health resources

We encourage the reader to apply these recommendations to the relevant actors in their communities with the ability to achieve the desired results. In this document, we define the term regional to be between the local community and state-level (e.g. hospital catchment area, neighboring counties, etc.).

PROMOTING INNOVATION IN EMERGENCY MEDICAL SERVICES

Chapter 2: Legal & Regulatory Challenges & Recommendations

Draft 5



Legal and Regulatory

Legal & Regulatory Barriers to EMS Innovation

Limited to Emergencies Only

Legal barriers to EMS innovation vary from outright prohibition of non-traditional uses of EMS to the more common situation of incomplete, outdated, or conflicting laws that fail to address or allow for new technologies, care pathways, or new roles such as community paramedicine or mobile integrated healthcare. Many state governments and state EMS offices seem to have taken the position that if it is not explicitly authorized, it is prohibited. There is little to no case law testing this assumption with regards to EMS programs, leaving most EMS innovators in an uncomfortable position of uncertainty. Similarly, where there is no legislation, there is rarely regulation either allowing or prohibiting expanded roles for EMS providers or systems.

Scope of Practice

While the National EMS Scope of Practice Model (2007) sought to establish *minimum* competencies that should be constantly reviewed and revised as new evidence emerges, it is often misused as a ceiling for the scope of practice of EMS professionals and, in some cases, state laws and/or regulations codify which skills, treatments, or assessments may be performed by the providers. As a result, changing EMS protocols or adding new technologies or skills to keep pace with evidence may be hindered. Furthermore, the ability to test new ideas in order to establish evidence may be impaired. Particular scope of practice issues that seem to be most affected by local statutes include the ability to transport to Alternative Destinations, to treat without transport, and non-emergency visits.

Burdensome Processes to Approve Pilot Programs

Many of these new or expanded roles for EMS providers have the potential to be very beneficial to patients, as well as to primary care physicians, emergency medicine specialists and others. In order to test their efficacy, a number of pilot programs have been initiated. Unfortunately, the process by which many of these pilots were initiated proved to be overly burdensome, and in some cases, pilot programs required legislative action. The ability for EMS to innovate, including developing, experimenting, and testing of new ideas, is greatly diminished by the amount of time and effort needed to obtain legislative approval of a pilot program.

Lack of Liability Protections

Once approved, these programs are further inhibited by a lack of liability protections and inadequate protection of quality assurance activities. Further, for successful programs, there is not necessarily a clear process to change their status from pilot to permanent. Thus, states need to develop methods of approving pilots in a more streamlined fashion with a greater degree of protection, while still ensuring the safety of the public who depend on quality emergency care services.

Portability of Certification

An issue related to scope of practice is the lack of portability of licensure and/or certification. The lack of standardization of education, licensure, and protocols across jurisdictions makes it difficult for EMS providers to migrate across borders during large-scale events. Independent of the interstate variations, there seems to be excessive bureaucratic hurdles and insufficient planning on the part of many localities to consider how to rapidly integrate EMS providers across regions within the same state or across state borders. Although the EMAC (Emergency Management Assistance Compact) addresses this hurdle, it only applies to disasters that reach the level of the governor declaring a state of emergency.

In addition, there are frequently restrictions on the application of a provider's skills based on the setting of care. For example, in some states, an EMS provider may not

perform certain skills inside a hospital that they are authorized to perform outside of a healthcare facility. This adversely impacts a community's ability to maneuver healthcare resources and to care for patients as they move between settings.

Federal Statutes With Far-Reaching Implications

While primarily an issue related to data sharing and communication, the Health Insurance Portability and Accountability Act (HIPAA) is often misunderstood and used as a reason for hospitals and health information exchanges to be unwilling to exchange data with EMS systems. This occurs despite the existence of a HHS-ASPR-produced clarification document on this issue in 2012.¹⁵ Another federal regulation, the Emergency Medical Treatment and Active Labor Act (EMTALA), also presents some barriers to EMS innovation. EMS systems that are hospital-operated are required to function within a framework that was not designed for out-of-hospital patient care settings.

Strategies to Create a More Favorable Regulatory Landscape

Promotion of an Innovation-Friendly Legal Environment

As the traditional role of EMS providers evolves to meet the needs of local communities and the changes required by healthcare reform, legislative and regulatory barriers can prevent or delay the adoption of promising models of care delivery. While innovation can and often does occur despite these limitations, the EMS community should seek to establish a more favorable legal and regulatory environment that enables and encourages both new innovation as well as implementation of new treatments and care models that have been proven elsewhere, all while maintaining the state's duty to protect the public.

Certainly, EMS agencies are encouraged to consider pursuing innovation within the realm of acute care services that are less likely to run afoul of current statute and

¹⁵ Obtained from: Lurie, Nicole, MD, MSPH. "Sharing Patient Health Outcome Information between Hospitals and EMS Agencies for Quality Improvement." Letter to Dia Gainor. 13 Aug. 2012. MS. Assistant Secretary for Preparedness & Response, Department of Health & Human Services, Washington, D.C.

regulation, and to think creatively about ways to implement new models of care into existing frameworks. For inspiration or scientific evidence, one might look to academic journals, trade magazines, regional and national conferences, etc. For assistance on understanding the limits of what is authorized in their state, one might refer to the HHS-ASPR sponsored study entitled “Expanding the Roles of Emergency Medical Services Providers: A Legal Analysis,” or to their state Office of EMS, or seek a determination from their Office of the Attorney General.

However, if EMS is to be fully embraced by other healthcare stakeholders and move forward into a brave new era of innovation and collaboration, the PIE Steering Committee recommends that states take action to review, modify or update their legislative and regulatory framework to be consistent with a set of principles that will enable rather than inhibit innovation. It is the hope of the committee that readers may use these guiding principles and key points to create legislation that both enables early adoption of evidence-based best practices and promotion of innovative practices in EMS that are right for their state. Local EMS agencies, providers, collaborators, and other stakeholders are encouraged to be active advocates for the creation of sound EMS regulatory policies.

An Essential Service

The first of these principles, is that states should consider defining EMS as an “essential service.”¹⁶ While it may seem fundamental, in most states this is not the case. Therefore there is no requirement for any political subdivision to plan for or ensure sustainable EMS systems. This hurts innovation as there is no incentive for municipalities to consider new delivery methods. It has hurt EMS since its inception and is a significant factor in our over-dependence on volunteer providers.

Right Place, Right Time

¹⁶ Van Milligan M, Mitchell III JP, Tucker J, Arkedis J, Carvalho D. An Analysis of Prehospital Emergency Medical Services as an Essential Service and as a Public Good in Economic Theory. (Report No. DOT HS 811 999a). Washington, DC: National Highway Traffic Safety Administration; May 2014.

The second of these principles is that state statutes and regulations should be silent about the practice locations and transport destinations of patients assessed and managed by EMS providers (EMTs, AEMTs and paramedics). Many states limit the role of EMS to certain practice settings such as the out-of-hospital environment or, more commonly, to the initial treatment and stabilization of patients during an emergency. This has the unfavorable effect of potentially (depending on interpretation) preventing EMS from providing follow up care after an emergency or hospitalization, proactively engaging patients who are at high risk or have a record of high rates of utilization of emergency services, or from caring for patients and providing support services within critical access hospitals.

Rather than placing firm restrictions on the scope of EMS practice, legislative and regulatory bodies should ensure that EMS agencies have the freedom to work with other public health and public safety authorities to maximize the health of their communities, while maintaining appropriate guidance to protect patient and provider safety. In particular, laws and regulations should be drafted or amended to consider provision of care at and in transport to destinations other than Emergency Departments. Alternate transport could be considered in circumstances where typical transport resources are unavailable.

Pennsylvania Overcomes Legal Barriers to EMS Public Health Innovations

In the early 2000's, Pennsylvania EMS leaders looked into using paramedics to distribute vaccines to the public. Intramuscular injections had been within the paramedic scope of practice since the 1985 EMS Act, and these leaders saw EMS as a very effective potential distribution system. Compared to Departments of Health, EMS has access to the necessary manpower and can organize vaccination drives relatively easily. Like Departments of Health, they also know their communities well.

Unfortunately, the Pennsylvania EMS Act did not include vaccinations on the list of medications EMS providers were permitted to administer, and EMS could not distribute vaccines under the EMS Act unless the Secretary of Health declared a mass immunization emergency. In response, EMS leaders found that under the Medical Practice Act, physicians can designate technicians as extensions of their medical practices. EMS medical directors were able to designate off-duty EMS providers to distribute immunizations, and a paramedic-led pneumovax drive showed that these drives could effectively distribute vaccines to communities.

The success of this proof-of-concept was useful during the response to the H1N1 influenza epidemic. The Secretary of Health declared a mass immunization emergency, and EMS partnered with the Department of Health to distribute seven million vaccines. Paramedics were trained with a statewide online module on administering H1N1 vaccinations and the plan for distributing the vaccines around the state. The state government then approached local EMS chiefs to organize the distribution to their local communities. EMS chiefs were able to identify buildings that would support a vaccination drive, provide the staffing, and raise interest in the community.

Pennsylvania rewrote the EMS Act in 2009 to allow paramedics to give vaccines. The act also defined the role of EMS more broadly as an essential public service with responsibilities beyond emergency response and transport. The efforts of EMS leaders to move Pennsylvania towards using EMS to distribute vaccines provide an example of how seemingly impossible legal barriers to innovation can be overcome to allow EMS to better serve communities.

Practitioner Levels & Scope of Practice

The third principle is that “scope of practice” ought not be strictly defined in statute so as to preserve flexibility of regulatory entities responding to emerging needs of the population being served. By placing it in regulation, or tied to education, it becomes inherently more flexible and adaptive to changing community needs, changes in

technology, or the availability of new medications and treatments. Where scope of practice is already strictly defined, legislative and regulatory bodies should examine and address obstacles to innovation or unmet societal needs that result from current policy.

While establishing practitioner levels or delineating the services they provide, states should recognize the floors set by nationally recognized minimal standards for EMS.¹⁷ However, state regulatory bodies may build upon that floor while considering the unique needs of their patient population with respect to the burden of disease and access to healthcare and transportation; the degree of physician oversight available; patient safety considerations; and whether they wish to support a higher standard of care.

Enabling Rapid Cycle Innovation

The fourth principle is that States should adopt a regulatory model that also allows communities to approve and conduct pilots quickly and evaluate the success of innovations that stem from grassroots initiatives. States should empower their regulators with the appropriate flexibility to investigate promising innovations while balancing the need to protect the public's safety and ensuring a viable emergency medical service system.

Useful examples can be provided by the recent experience of several states trying to pilot community paramedicine (CP) programs. In California, it was determined that CP programs were not authorized under existing statute. Fortunately, they were able to make use of an existing waiver provision to allow up to 12 pilot programs. Unfortunately, in order to become permanent, the California legislature will have to review the results of the pilot program and take action to either enable CP or somehow extend or make permanent the pilots. In Maine, the legislature had to pass a bill in order to authorize up to 12 CP pilot programs. While this should certainly be heralded as a success for the EMS community, the difficult task of passing legislation is

¹⁷ National EMS Scope of Practice Model.

Driving Quality Improvement:



The Emergency Medical Error Reduction Group (EMERG) is a Patient Safety Organization (PSO) that demonstrates that coordination can drive quality improvement across agencies. Many EMS agencies are small or under-resourced, and they find robust quality improvement processes difficult to maintain. EMERG seeks to fill that gap by providing personalized and coordinated quality improvement counseling to its members.

By specializing in quality improvement and serving multiple agencies at once, EMERG is able to provide a higher quality service at a lower cost than most agencies would be able to provide on their own. EMERG also condenses safety and incident data from across states and regions to identify trends in patient and provider safety and keep state EMS directors informed. Part of this data gathering system includes a free reporting site for any providers who wish to report a safety incident. The EMERG model also shows that innovation does not always have to come from EMS agencies themselves, but can be driven by enterprising individuals who find and build new services that help agencies provide value to their local communities.

too high a bar to merely test a new idea. The pace of innovation will be greatly improved if the process of launching a pilot program could be streamlined from a regulatory standpoint. Furthermore, a pathway to long term authorization without legislative action should be established.

One potential methodology for achieving this would be to place greater authority in the State Office of EMS.

Protecting Quality Assurance Communications

Finally, the fifth principle is that quality assurance activities and related communications, for both standard EMS activities, and pilot programs, should be protected from liability proceedings. In addition to including this within explicit legislation, a high degree of protection can be obtained by participating in a patient safety organization.

Flexible Reimbursement Models

One of the most fundamental barriers to innovation is the requirement of transportation, often to an ED, for an EMS claim to be paid. This financial barrier, discussed in greater detail in the financial section, may in fact require a legal or regulatory solution. At the federal level, CMS currently does not authorize payment due to language in Title 18 of the Social Services Act that describes an ambulance service benefit “where the use of other methods of

transportation is contraindicated by the individual’s condition.” This has been

narrowly interpreted and codified in federal regulation 410.40. Although Medicaid is administered by the states and have a great degree of flexibility, especially through the 1115 waiver process, states are not able to circumvent this narrow interpretation. However, states that recognize that new and future EMS models may consist of both medical transportation *and* healthcare delivery services should seek to support a more favorable and flexible reimbursement model.

Besides changing federal law, there may be other actions state and local actors can take to unleash innovation.

First, in the state's power to regulate insurers, states should consider methods of promoting reimbursement for innovative models of EMS care. As one example, health plans might be required to cover EMS assessment and treatment regardless of whether the patient is transported. Regulators could require reimbursement for specific services such as paramedic home visits for specific types of patients. The state could also use its convening power and bring health plans and EMS agencies together on a periodic basis to either exchange data or explore new service offerings.

Second, payment and reimbursement could be addressed in new or revised legislation as this will address revenue streams and sustainability. One potential avenue is to alter the definition of EMS providers to dissociate their services from the "ambulance" or the "transportation benefit", which may make them eligible for reimbursement from Medicaid.

Third, it is important to consider increasing the authority (and possibly budgets) of State EMS offices to enable them to play a more active role in the encouragement, vetting, authorization and direct funding of pilot programs. Most state EMS Offices are not currently in a position to regulate healthcare payers nor to self-propose legislation for payment practices that embrace innovation. While states have an obligation to protect the public, they also have a responsibility to assure that public funds are expended wisely. By empowering these public officers, it would allow for both more rapid testing of Innovations and an enhanced ability to protect both public health and public funds.

Innovating While Complying with EMTALA

In some states, it is fairly common to see EMS agencies that are owned and/or operated by hospital systems. For these agencies, the ambulance is considered part of the hospital, and EMTALA provisions attach when the personnel of such an ambulance make patient contact. Facilitating innovations that involve concepts including treat and refer/release or alternative destinations may place the hospital at risk of breaching EMTALA unless the patient is deemed to have received a medical screening examination and appropriate stabilizing treatment. Allowing EMS personnel on these units to be appropriately trained and deemed “qualified medical personnel” capable of performing a standard medical screening exam, possibly in conjunction with online medical direction, will be needed to allow these agencies to successfully innovate with these concepts while maintaining compliance with EMTALA.¹⁸

Another approach that avoids liability for hospital based EMS agencies and providers is to ensure that they are following regional (community-wide) protocols. If regional or state protocols direct EMS to transport a patient to a location other than an emergency department based on clinical criteria, the agency would be shielded from EMTALA violations. Of course, no evidence-based criteria have yet been established for safe triage of patients to alternative destinations, so medical control contact may be required. This can help from a protocol perspective, but might also serve to meet EMTALA if a physician can remotely evaluate the patient and determine that there is not an emergency medical condition.

Portability of EMS Personnel

During large-scale emergency situations, there is often a need to move emergency personnel resources from one state to another (or one jurisdiction to another) quickly. As a consequence of our lack of standardization of education, licensure, and protocols across jurisdictions, it is difficult for EMS providers to migrate across borders.

¹⁸ <https://www.cms.gov/Regulations-and-Guidance/Guidance/Transmittals/downloads/R60SOMA.pdf>

Independent of the between-state variations, there seem to be excessive bureaucratic hurdles and insufficient planning on the part of many localities to consider how to rapidly integrate EMS providers across regions within the same state or across state borders. All of this limits the flexibility of EMS resources both during disasters, as well as for more routine purposes such as maintaining the fluidity of our industry's labor resources.

It would therefore be prudent for states to take action to enable greater portability of EMS licensure. One such action being promoted by the National Association of State EMS Officials (NASEMSO) involves model compact legislation known as REPLICA (Recognition of EMS Personnel Licensure Interstate Compact). By adopting this legislation, states can take a significant step forward to overcome this barrier to providing good quality care in times of crisis. Of note, this requires the use of the National Registry of Emergency Medical Technicians examination as a condition of issuing initial licenses at the EMT and Paramedic levels. While there is current legislation that allows for some cross-state EMS work during large-scale emergencies – most notably the Emergency Management Assistance Compact (EMAC) – this does not apply for routine operations.

As a means to growing and retaining a strong EMS workforce that self-identifies and is externally recognized as a profession, it may be valuable for state and national leaders in EMS to improve the portability of licensure for provider relocation purposes as well.

Flexibility of Certificate of Need Policies

To our knowledge, approximately 12 states require a certificate of need (or similar) to provide EMS services, and a number of smaller jurisdictions designate a primary service area in which other EMS services may not enter or care for patients. While this can be an important tool for accountability and protection of the public, it can also be a barrier to new entrants into a given market, which thus has a negative impact on innovation. By transforming to a model where the primary service has a “right of first

refusal,” new entrants can potentially offer new services, such as non-emergent visits, telemedicine, or services integrated with home care, hospice care, and others when the established service is not willing or lacks the capability. While a new entrant would face efficiency barriers by not being able to flex resources, it would create some pressure on stagnant agencies to consider new collaborations or explore innovative models of care to meet changing community needs.

United Advocacy

To effectively innovate, EMS agencies must be allowed to provide safe, appropriate patient care within the carefully considered boundaries of legislation and regulations that are constructed with innovation in mind and with the assistance of EMS experts.

In order to overcome some of these legal and regulatory hurdles, it is critical that EMS as an industry, along with its partners in healthcare, be able to advocate for its needs with a unified voice. This has heretofore proved difficult, and many efforts at improving the landscape for EMS fail due to disagreements within the EMS community. Often these disagreements stem from the competing priorities and intersecting roles of EMS along the three domains of public health, public safety, and healthcare. There is no regulatory solution to this internal division, but this division must be overcome in order for EMS to advance.

The partners of EMS in the healthcare community have the potential to greatly enable innovation by advocating alongside us for a more favorable EMS regulatory framework. Finding ways to effectively communicate and collaborate with all stakeholder groups is critical to being able to find and implement new ways to improve patient health outcomes.

RECOMMENDATIONS

1. Creating an ideal flexible legislative and regulatory environment

- a. Local EMS agencies and EMS providers should:
 - i. Be active advocates for the formation of sound EMS policy at the county, state and federal level.
- b. State EMS authorities should craft legislation or policy that adheres to the following principles:
 - i. The provision of emergency medical response is an “essential service,” but states should be careful not to overly limit the providers or agencies providing that service.
 - ii. State statutes and regulations should not place limitations on the practice locations where EMS may provide care and the transport destinations of patients assessed and managed by EMS providers (EMTs, AEMTs and paramedics).
 - iii. Scope of Practice ought not be strictly defined in statute so as to preserve flexibility of regulatory entities responding to emerging needs of the population being served.
 - 1. Where scope of practice is already strictly defined, legislative and regulatory bodies should examine and address obstacles to innovation or unmet societal needs that result from current policy.
 - iv. States should adopt a regulatory model that also allows communities to pilot and evaluate the success of innovations that stem from grassroots initiatives. States should empower their regulators with the appropriate flexibility to investigate promising innovations.
 - v. Quality assurance activities and related communications should be protected from evidentiary discovery and liability proceedings.
- c. National EMS Associations should:
 - i. Provide support to state and local EMS leaders seeking to create a regulatory environment more favorable toward innovation.
 - ii. Advocate for federal leadership and sound national policy that promotes EMS innovation.

2. Support favorable reimbursement practices

- a. Local EMS Agencies should:
 - i. Explore partnership for cost sharing models through Accountable Care Organizations and Accountable Care Community models
- b. State EMS Authorities should:
 - i. Continue to support and advocate for flexibility in EMS reimbursement.
 - ii. Convene payer groups and EMS agency representatives periodically to encourage data exchange and explore new service offerings that might be reimbursable.
- c. Private and Public Payers should:
 - i. Reimburse EMS for assessment and treatment independent of whether a patient is transported.

- ii. Encourage and fund pilot programs to test new payment models.
- d. State Insurance Regulators should:
 - i. Consider requirements for health plans to cover EMS assessment and treatment independent of whether a patient is transported.
- e. State Legislatures should:
 - i. Revise legislation that affects the way Medicaid or private payers can or should reimburse EMS.
 - ii. Increase the authority and funding support for State EMS Offices so they may play an active role in the encouragement, approval, evaluation, and funding of pilot programs.
- f. National EMS Associations should:
 - i. Advocate for reform of reimbursement policies at the national level
 - ii. Support state and local efforts and spread awareness of successful strategies.

3. Innovate While Complying with EMTALA

- a. Local EMS Agencies should:
 - i. Work with jurisdictional authorities or protocol committees to consider developing protocols that guide the transport of appropriate patients to locations other than emergency departments
 - ii. Collect data and perform research to further the science to support such protocols.
- b. Local EMS Authorities should:
 - i. Consider developing protocols that guide the transport of appropriate patients without emergency medical conditions to locations other than an emergency department.
- c. Hospitals should:
 - i. Consider amending their bylaws to authorize EMS personnel in the field to perform or facilitate the necessary medical screening examination to comply with EMTALA and thereby enable alternative destination or treat and refer protocols.
 - ii. Use their convening power to bring multiple EMS agencies together to support jurisdictional amendments to protocols.
- d. State EMS authorities should:
 - i. Consider developing statewide policies or protocols that authorize or direct the transport of patients without an emergency medical condition to locations other than an emergency department.
 - ii. Facilitate knowledge transfer about best practices and EMTALA compliance.
- e. National EMS Associations should:
 - i. Encourage research to further the science around criteria for transport to alternate destinations.

- ii. Gather and disseminate best practices around protocol development and EMTALA compliance.

4. Enabling Portability of Licensure

- a. Local EMS Agencies should:
 - i. Ensure that initial and continuing paramedic education is provided that meets the minimum standards established by national guidelines.
- b. State EMS Authorities should:
 - i. Evaluate the credentialing processes for neighboring jurisdictions to establish expedited processes that will allow for rapid, safe reassignment of EMS providers across state lines during emergencies.
 - ii. Evaluate the training and credentialing provided by military branches to expedite the entry of skilled military EMS personnel into civilian EMS agencies.
- c. National EMS Associations should:
 - i. Advocate for more inclusive, standardized training and credentialing processes that enhance the portability of EMS providers, both during routine work and during regional or national emergencies.

5. Relaxing Certificate of Need Policies

- a. Local EMS Agencies should:
 - i. Clearly define which EMS services are provided by their agency.
 - ii. Be mindful of their overall capabilities, and provide accurate assessments of these capabilities to local, state, and regional EMS authorities as requested.
- b. State EMS Authorities should:
 - i. Maintain an accurate accounting of EMS agency capabilities and service provision to facilitate consideration of “certificate of need” or “right of first refusal” issues.
 - ii. Encourage local EMS agencies to meet unmet community EMS needs when identified through this accounting process.
 - iii. Assist local EMS agencies, in an unbiased fashion, with managing resources to meet community needs without fragmentation or inappropriate redundancy.
- c. National EMS Associations should:
 - i. Meet with other national stakeholder groups to provide resource typing guidelines that state EMS authorities and local EMS agencies can use when describing capabilities and services provided, while maintaining flexibility to include new capabilities and services not yet implemented or imagined.

PROMOTING INNOVATION IN EMERGENCY MEDICAL SERVICES

Chapter 3: Financial Sustainability Challenges & Recommendations

Draft 5



Financial Sustainability

Barriers to Financial Sustainability

EMS Reimbursement Policy

EMS agencies across the nation face misaligned incentives. CMS and most payers do reimburse EMS at various levels according to the care provided; however those payments are predicated on the provision of transportation.¹⁹ Medical management of a patient may require the application of many skills and consume significant EMS resources, yet if it results in no transportation, there would be no reimbursement.

Multiple articles^{20,21} and several influential federal documents including the EMS Agenda for the Future (1996), the Institute of Medicine Report (2007), and the HHS Draft White Paper on Opportunities for Innovation in EMS (2012)²² have cited the need for EMS payment to be disconnected from transportation and better aligned with improved health and better healthcare value. As the proverb says, “you get what you pay for.” Currently, we pay for transportation, so we get plenty of transportation. Although there are many things EMS may be capable of, an agency is unlikely to do so as long as payment is linked to mandatory transport. Under the current payment model, the financial sustainability of any innovative program that might potentially reduce the number of transports to the ED is severely limited.

There is value to patients, hospitals, and payers for the competent medical care provided by EMS independent of transportation, and thus reimbursement policies should reflect that. If CMS and other payers paid for the successful outcome of the patient, the patient would be more likely to experience improved outcomes and avoid

¹⁹ Ambulance Billing Guide. NHIC, Center for Medicare & Medicaid Services; 2010.

²⁰ Munjal K, Carr B. Realigning reimbursement policy and financial incentives to support patient-centered out-of-hospital care. *Jama* 2013;309:667-8.

²¹ Morganti KG, Alpert A, Margolis G, Wasserman J, Kellermann AL. Should payment policy be changed to allow a wider range of EMS transport options? *Annals of emergency medicine* 2014;63:615-26 e5.

²² Innovation Opportunities for Emergency Medical Services: A Draft White Paper from the National Highway Traffic Safety Administration (DOT) Office of the Assistant Secretary for Preparedness and Response (HHS) and Health Resources and Services Administration (HHS). http://www.ems.gov/pdf/2013/EMS_Innovation_White_Paper-draft.pdf.2013.

unnecessary ED visits. The classic example of the misaligned incentive is the case of a 911 call for a diabetic patient suffering from hypoglycemia. In many cases, EMS can very easily correct the urgent hypoglycemia event and could triage out a portion of patients who would not benefit from being taken to the ED.²³ Potentially, they could coordinate care for the patient with their PCP or endocrinologist, without the need for an ED visit. However, because EMS is only paid if the patient is transported, EMS agencies generally transport such patients to an ED triggering both the EMS payment and the downstream ED costs.

Difficulty Demonstrating Value And Outcomes

While the issue of payment reform is paramount, there are several important obstacles to achieving reform. One of those is the difficulty for most EMS agencies to demonstrate the financial value and healthcare outcomes of providing treatment independent of the transportation function.²⁴ Doing so would require several key components including access to the necessary data, and the measurement and analytical skills to turn that data into information.

Due to the frequent inability to obtain data from hospitals, as discussed at length in the Data Chapter, it often is difficult if not impossible to connect an individual EMS agencies practices to the patient level outcomes or to the patients' clinical or administrative information related to utilization before and after an EMS encounter. However, within the EMS agency lies all the necessary information to analyze cost. And yet, most agencies lack a sophisticated understanding of their internal costs, miss opportunities to achieve greater efficiency, and have difficulty understanding the impact of new models of care on their cost structure.

²³ Lerner EB, Billittier AJ, Lance DR, Janicke DM, Teuscher JA. Can paramedics safely treat and discharge hypoglycemic patients in the field? The American journal of emergency medicine 2003;21:115-20.

²⁴ Munk MD. Value generation and health reform in emergency medical services. Prehospital and disaster medicine 2012;27:111-4.

Whereas the current mainstays of EMS quality measurement are response time fractiles and protocol compliance metrics, the basis of bundled payment and pay for performance initiatives rests on proven outcomes while improving patient satisfaction and reducing cost. Even the EMS Compass project is “prioritizing measures that can be calculated with data already collected by EMS agencies” over those that require outcome data from hospitals due to the practical realities of our industry.²⁵ Until EMS can accurately report outcome data in a compatible way with health plans and hospitals, it will be very difficult to negotiate payment contracts for innovative models of EMS.

Lack of Business Acumen

Often, EMS managers and leaders rise to their position through seniority. They may or may not have had previous training in management, finance, leadership, or understand the complexities of the healthcare business. As a result, the overwhelming majority of local EMS agencies lack the necessary business acumen or entrepreneurial spirit to be successful when it comes to EMS innovation. Likewise, most agencies lack the resources needed to apply for (or be competitive for) grants that seek to promote innovation in healthcare, public safety, or public health.

We must acknowledge that our industry needs more trained leaders. Despite the efforts of many national organizations to cultivate leadership skills and elevate the importance of higher education, there remains a knowledge gap. Thus, even after we overcome some of the challenges to obtaining meaningful outcome data and other clinical or administrative information, it is likely that EMS agencies will not have the critical measurement skills or resources necessary to perform accurate modeling and/or economic analyses of effectiveness. Since partnerships will often need to be driven by local EMS agencies, they require both adequate business knowledge and entrepreneurial spirit.

²⁵ <http://emscompass.org/ems-compass-is-is-not/>

Should an agency be in possession of all the aforementioned resources and skills, they may still face financial challenges to innovation due to the fact that other partners in the healthcare system, including hospitals, physicians, and other care providers, and third party payers may still be operating in a fee-for-service environment fraught with perverse financial incentives.

A Few Bad Apples

Another barrier to economic innovation is the perceived prevalence of fraud and abuse in the ambulance industry. A September 2015 Office of Inspector General (OIG) report²⁶ documents that Medicare paid \$24 million for ambulance transports that did not meet certain Medicare requirements justifying payment and paid \$30 million for potentially inappropriate ambulance transports for which the beneficiary did not receive Medicare services at any origin or destination. While the findings in the report may involve only a handful of ambulance suppliers from the major metropolitan areas of Philadelphia, Houston, Los Angeles and New York, it casts a shadow over all ambulance providers making it difficult for some payers to trust EMS agencies enough to test alternate economic models.

The American Ambulance Association (AAA) and likely others have made efforts to combat this serious problem for some time. They offer education, training and compliance programs to their members to support proper adherence to Medicare regulations. They disseminate best practices and have worked with Congress on concerns related to non-emergency dialysis transports. However, until this issue is more definitively resolved from either within the industry or through regulation or enforcement action, it will continue to be a major barrier to EMS innovation.

Strategies for Overcoming Financial Barriers to Innovation

²⁶ Office of Inspector General. "Inappropriate Payments And Questionable Billing For Medicare Part B Ambulance Transports." September 2015. Available at: <https://oig.hhs.gov/oei/reports/oei-09-12-00351.asp>

Decoupling Payment from Transportation

Solving the fundamental structural challenge of the link between EMS reimbursement and transportation will require a sustained effort on the part of national advocates for, and potential collaborators with, EMS working at the federal level. However, a number of steps can be taken at a variety of levels to begin to unravel this inhibiting finance structure.

Pay for Performance

With 80% of CMS payments planned to be tied to value by 2018, the time when pay for performance arrives in EMS is close at hand. EMS agencies should be envisioning the structural and process changes necessary to succeed in that environment today. Reflecting on whether an agency would receive high ratings from your patients might inspire retraining of providers, or brainstorming new ideas to improve the patient experience. Reflecting on the quality of clinical care might inspire new investments in quality assurance staff or tools. By preparing for a future in which pay for performance is the norm, EMS agencies will organically be transforming their agencies into one that is more likely to be able to innovate. Perhaps the movement towards value based purchasing will create the environment needed for small fragmented EMS agencies in the same market or in nearby jurisdictions to collaborate in order to meet data reporting and quality assurance requirements.

Clinical bundles of care have been developed for acute conditions such as STEMI, Stroke, Trauma, Asthma, and Hypoglycemia.²⁷ Compliance with these clinical bundles, or clinical processes of care, have been proven to improve patient outcomes and speed appropriate medical care. EMS agencies not already incorporating these bundles into internal quality improvement programs or reporting them externally should begin doing so. Meanwhile, National Associations have been and should continue to work with CMS and other payers to design payment models that reward compliance with

²⁷ El Sayed MJ. Measuring quality in emergency medical services: a review of clinical performance indicators. *Emergency medicine international* 2012;2012:161630.

EMS & Hospice

MedStar Mobile Healthcare in Texas has partnered with a VITAS, a national hospice agency with a presence in Fort Worth, TX, to help prevent unnecessary emergency department trips. Patients with high risk for revoking their hospice care plan are referred to MedStar. If one of those patients calls 911, MedStar is able to identify the patient by their address and send a hospice trained mobile health paramedic to the scene. On scene the paramedic assesses the patient to determine if the issue is in line with their disease, gives medication from their 'comfort pack' if needed and contacts their hospice nurse. The mobile health paramedic waits on scene until the hospice nurse arrives.

This program completely prevents patients from unnecessarily going to the hospital and possibly revoking their hospice plan. It has resulted in a 54% reduction in hospice revocation and a savings of \$1,075 per enrolled patient.

these clinical bundles to improve patient care and patient outcomes, independent of transportation. CMS set a precedent for this model decades ago when they agreed to pay for response and treatment of cardiac arrest victims, regardless of ambulance transport. This was most likely done to reduce the perverse incentive of the ambulance provider to transport patients who were clearly non-survivable simply to get paid for the response.

Community Stakeholder Engagement

Within each community, there are likely numerous opportunities for EMS to bring value to other stakeholders. Although discussed in the interdisciplinary chapter at length, there is a strong economic argument for collaboration. There are often positive or negative externalities

that affect other entities that are NOT currently bearing the expense or in control of a process. For example, whereas EMS might find it prudent and reimbursable to transport a patient on hospice to the ED when a caregiver becomes anxious close to the end of life, the hospice agency experiences a significant cost associated with that transport in the form of lost revenue and poor quality metrics and patient satisfaction. This negative externality on hospice and palliative care is occurring in most communities.

¹<http://www.medstar911.org/mobile-healthcare-programs>

However, as is quite often the case with opportunities related to EMS innovation, this adverse effect that EMS is having on the hospice agency can be turned into a positive one. If EMS takes on additional costs in the form of additional training and medical oversight, as well as longer scene times to

coordinate care with the hospice agency, and lost revenue due to not being able to bill for transport, they can keep that patient in their home which positively impacts the finances and quality metrics of the hospice agency. By agreeing to share some of that positive effect back with the EMS agency, both parties can benefit.

Another example might be a new EMS initiative that navigates a patient to mental health services thereby accruing benefits to patients via quality, EDs via decreased crowding, the criminal justice system via decreased recidivism, and to society via increased workplace productivity. From the State/Taxpayer perspective, they should support such because it would lower societal costs overall.

Thus, the goal of community level engagement is to allow various societal stakeholders including nonprofits, criminal justice, government agencies, healthcare and social services organizations to discuss the positive benefits that EMS currently provides or could provide that do not have a funding stream. Once these externalities have been identified, stakeholders can use their creativity to connect the dots so that beneficiaries might contribute to offset the cost of a program. Community and civic leaders should thus be convening meetings, facilitating conversations and fostering partnerships between EMS with other public health, public safety, and community healthcare stakeholders.

One of the issues a community wide approach such as this might address is how to generate a multi-payer

**Wake County EMS:
Alternative Destinations for Mental
Health Patients**

The Wake County EMS Alternative Destination program is designed for patients who suffer from substance abuse or mental health issues. Upon receiving dispatch of a psychiatric or drug related emergency an Advanced Practice Paramedic (APP) is dispatched along with a regular paramedic unit. Once on scene they go through a screening evaluation algorithm to assess if they can be transported somewhere other than the emergency department. The algorithm includes assessing whether the patient is combative, agitated or requires sedation.

If the patient meets pre-determined screening criteria, the APP calls one of four potential facilities and discusses whether the patient is a candidate for transport to their facility. If the facility accepts, transportation is arranged by the APP, which provide report upon arrival. This avoids unnecessary utilization of ED resources and properly directs patients to a more appropriate facility.

[2http://www.emsworld.com/article/11289649/advanced-practice-paramedics-and-alternative-destinations](http://www.emsworld.com/article/11289649/advanced-practice-paramedics-and-alternative-destinations)

solution for EMS. It is unrealistic for EMS to arrive at a unique payment agreement for EACH possible downstream group, since there are so many potential beneficiaries.

State Medicaid Initiatives

Many States have established, or are seeking to establish, Medicaid reimbursement and reform committees or other health insurance policy committees. EMS advocates need to push for representation on these committees while State authorities should themselves be seeking to have EMS representation on those committees. By being included in high level reform and innovation conversations, a state is more likely to direct resources and funding toward testing new payment models or new delivery pathways for EMS that help support the rest of an integrated healthcare system.

Where there is no representation, EMS agencies and their partners should still engage State Medicaid leadership to seek reimbursement for innovative care models through the Medicaid Waiver process. While the State Medicaid program may not be able to directly reimburse EMS for non-transports due to the regulations on Medicare, it may be able to wrap EMS services into bundles of care or other innovative payment mechanisms that effectively enable EMS to participate in services not directly linked to transportation.

Some states such as Texas have been successful at obtaining funding for EMS care outside of traditional payment mechanisms through the Medicaid Waiver process.²⁸

Medicaid Section 1115 (Waiver) Programs:

As of March 1, 2015, eight states are participating in the Medicaid Section 1115 Delivery System Reform Incentive Payment Programs (DSRIP).

California	Texas
Massachusetts	New Mexico
New Jersey	Kansas
Oregon	New York

These programs can provide states with significant federal funding to support health care transformation. State EMS leaders should be vocal about their challenges, opportunities, and proposed pilots from the beginning of the application process through project implementation.

²⁸ National Governor's Association. "Designing and Implementing Medicaid Section 1115 Delivery System Reform Incentive Payment Programs. <http://www.nga.org/files/live/sites/NGA/files/pdf/2015/DesigningandImplementingMedicaidSection1115DeliverySystem.pdf>

Using templates or provisions from other states may facilitate more rapid inclusion of EMS innovations in Medicaid Waiver applications from the state to the Center for Medicare and Medicaid Services. (A sample of the Texas application is provided in the appendices).

Minnesota has engaged Quality Improvement Organizations (QIO's), groups of health quality experts, clinicians, and consumers working under the care of CMS to improve the care delivered to Medicare beneficiaries,²⁹ in the development and evaluation of their community paramedicine and mobile integrated healthcare programs. Other QIO's should recognize the critical role EMS play in the emergency care system and wishes to play in other areas such as population health and include EMS representation on those committees.

Transforming to EMS 3.0

At the national level, EMS associations should help EMS make the transition to a new era of healthcare. In the emerging concept of Healthcare 3.0, the patient becomes the center of healthcare commercial models and information becomes more available and optimized for both the patient's and the provider's ease of use.³⁰ EMS as an industry needs to come together and advocate in a unified way to be given the tools to transition EMS to it's own 3.0.³¹

EMS leaders should continue to passionately articulate the need to decouple reimbursement from transportation across all public and private payers in order to achieve the very goals our partners in healthcare and public policy are seeking. They should continue to educate and engage payers about what EMS offers and can bring to the unmet

²⁹ <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityImprovementOrgs/index.html?redirect=/qualityimprovementorgs/>

³⁰ Deloitte. Healthcare 3.0: Healthcare for the new normal. Available at: <http://www2.deloitte.com/content/dam/Deloitte/sg/Documents/risk/risk-sea-healthcare-3.0-healthcare-for-the-new-normal.pdf>. Accessed 7/31/2016.

³¹ <https://www.nasemso.org/Projects/MobileIntegratedHealth/documents/EMS-3.0-Initiative-Paper-Final-for-Association-Endorsement-and-Leadership-Participation-19Ap.pdf>

needs of their patients. Since multiple groups of providers may possess overlapping competencies, payers could choose to reimburse for those competencies and skills independent of the licensure of the provider. In many cases, payments for services within the EMS scope of practice are being paid to other provider groups through billing codes and mechanisms already in existence, but EMS is considered ineligible for that reimbursement.

In part, this may be because many outside of our industry don't understand EMS licensure and credentialing models. We have done a poor job representing ourselves to the rest of healthcare and even to other stakeholders in public health or public safety. As discussed in other chapters, the lack of standardization of provider types, educational standards and even authorized scope of practice make it difficult for entities with a broad scope, like payers, to engage with EMS on reimbursing for services other than transportation. We need to take steps to increase awareness of EMS among these groups and promote aggressive involvement of EMS with them.

Meanwhile, folks within EMS should become more familiar with quality initiatives in the healthcare sphere. An example is the National Committee for Quality Assurance (NCQA), one of the leading organizations in the development of healthcare quality measurement. NCQA are the stewards of the Healthcare Effectiveness Data and Information Set (HEDIS) measures, one of the most widely used sets of measures in the United States. The EMS Compass Project as well as the MIH-CP measures project are seeking to follow the example of NCQA in their measurement development efforts. By improving our measurement of evidence based clinical processes and outcomes, it is possible that it will lay the foundation for payers to base their reimbursement models on something other than transportation.

Reimbursement Through Telemedicine

An opportunity to find a new source of revenue for EMS agencies may be to harness the opportunity presented by telemedicine or telehealth. As EMS considers new initiatives to bring value to patients, it sometimes becomes useful to connect the care happening in the field in real-time to an emergency medicine physician or perhaps

a primary care physician or other specialist. Although reimbursement for telemedicine services, in general, lags behind reimbursement for traditionally delivered healthcare services, there are many states where payers are required to reimburse and sometimes at equal rates with an in-person visit. Perhaps, EMS agencies that employ physicians could utilize this mechanism to bill for non-transport encounters.

Currently, reimbursement for telemedicine services within EMS is nearly non-existent. In some jurisdictions, telemedicine is only reimbursed if initiated from within a “healthcare facility.” For billing purposes, the interior of an ambulance, and/or the location of care being attended to in the field by a trained healthcare provider (e.g. paramedic) should be considered a qualifying healthcare facility. EMS advocates need to make this situation known to legislative and regulatory authorities in their state. Payers might choose to separate EMS telemedicine from other types of telemedicine in which they are reimbursing the physician only. Perhaps they would consider reimbursing EMS for “delivering” a patient to definitive care, which might include a telemedicine encounter with a physician. Or they may prefer to develop a code modifier for EMS encounters that include on-line medical control via telemedicine. Ideally, the reimbursement sought should be uniform across all payer platforms, governmental, commercial and private, in order to make it feasible for EMS to provide the same standard of care to all patients, regardless of payer type or the ability to pay.

Improving EMS Business Capabilities

EMS needs to acquire the business acumen to be able to evolve with the changing environment around them. Having a strong grasp and control of EMS system finances, on both the revenue and expense side, will provide for the strong foundation necessary from which grassroots innovation can emerge. It will further be invaluable when attempting to negotiate financially sustainable payment contracts with payers or others for a new innovative service.

Specifically, EMS agencies should retain or internally develop leaders with the business acumen offer and education necessary to create a sound financial structure for the management of the financial health and wellbeing of the agency. Agencies must

dissect their finances until every component of the EMS response, every clinical or administrative process is understood from a cost perspective.

Industry leaders and national associations need to develop key performance indicators (KPI's), benchmarks for financial data, and share best practices. Perhaps the industry can develop better cost-reporting tools or a standardized industry specific accounting approach so that a common financial language can be garnered and leveraged within the industry. Business leaders and others also need to find ways to align their financial measurement strategy with future reimbursement reform and emerging pay for performance payment schemes, even before the exact arrangements becomes certain.

Finally, EMS agencies might pursue new delivery models through internal funding mechanisms or through “selling” their idea to local stakeholders such as overcrowded ED's, health plans, or risk-bearing accountable care organizations, who hope to gain from the innovation. However, “selling” the innovation and potential return-on-investment (ROI), or creating the business case may require developing additional business acumen and communication skills not often found in local EMS agencies.

Grant Support

One strategy, which is often easier said than done, to overcome the challenges associated with launching and evaluating a pilot program might be to seek academic, governmental, or foundational grant support. This has certainly worked for a few agencies to get pilots off the ground. However, for most agencies, even knowing about which grants they might be eligible for is an overwhelming hurdle. A few categories worth pursuing are:

Academic Grants – the most prestigious of these are often available through the National Institutes of Health³² and require significant research expertise. However, any EMS agency working with a nearby academic medical center should consider

³² <https://www.nih.gov/>

developing relationships with the emergency department's research division and its researchers. Inexperienced researchers should consider reaching out to the Office of Emergency Care Research³³ for guidance and assistance on how to successfully apply.

Hospital Preparedness Grants – Through the Department of Health and Human Services – Assistant Secretary for Preparedness and Response, EMS initiatives that help improve a hospital's preparedness can qualify for grant support.³⁴ Perhaps improving the prehospital notification process or efforts aimed at reducing ED diversion such as alternative destination program could qualify.

Highway Safety Grant Programs – Through the National Highway Traffic Safety Administration, efforts aimed at reducing traffic injuries and fatalities would qualify.³⁵ This might be ideal for EMS initiatives to support trauma system development, piloting new clinical modalities for trauma patients or ambulance and patient safety initiatives.

Assistance to Firefighters Grants – This program, through the Federal Emergency Management Agency, is open to fire suppression and EMS organizations (whether fire-based or non-affiliated) for equipment and training, new operational and interoperability initiatives, and to support community resilience.³⁶ Many EMS innovative models could in part or in full qualify for this funding mechanism.

Once an appropriate grant mechanism has been identified, developing a successful application can be overwhelming without experienced grant writers, or samples of successful applications. States and national EMS associations should try to provide technical assistance for EMS agencies pursuing these programs. It's also true that not every innovation needs to be scientifically or otherwise proven to be valuable before being piloted in the marketplace. Even within healthcare, many care coordination efforts, clinical innovations, and educational initiatives are pursued by

³³ <https://www.nigms.nih.gov/About/Overview/OECR/Pages/default.aspx>

³⁴ <http://www.phe.gov/Preparedness/planning/hpp/Pages/funding.aspx>

³⁵ <http://www.nhtsa.gov/About+NHTSA/Highway+Safety+Grant+Programs>

³⁶ <https://www.fema.gov/welcome-assistance-firefighters-grant-program>

organizations large and small without external funding. EMS agencies should consider internally funding pilots that are likely to have little immediate detrimental financial impact.

Combating Fraud & Abuse

EMS leaders should take more aggressive action to reduce or eliminate fraud within the industry thereby improving allocation of precious resources and enabling innovation. EMS agencies both large and small could possibly work to improve compliance with documentation and billing practices. Maybe state EMS authorities could provide assistance and guidance. Perhaps major industry organizations such as the AAA and NAEMT could partner with CMS, and America's Health Insurance Plans (AHIP) and other federal authorities to form a task force to design and implement anti-fraud and abuse initiatives. Together, they may also be able to determine economic models for testing that alleviates the perverse incentive for payment based on transport, to a model that rewards quality service and program integrity. Undertaking this challenge would communicate the industry's willingness to work collaboratively to combat the fraud and abuse issues in the ambulance industry.

RECOMMENDATIONS

1. **Decoupling Payment from Transportation**
 - a. Local EMS authorities / agencies should:
 - i. Begin to envision the structural and process changes necessary to be successful in a value based payment system.
 - ii. Consider collaborative relationships with other community healthcare stakeholders.
 - iii. Modify protocols or policies that require transport to the emergency department.
 - b. Community & Civic leaders should:
 - i. Convene discussions and foster collaborations between EMS and other public health, public safety, and community healthcare stakeholders.
 - ii. Support the piloting of resulting innovative programs.

- c. State EMS authorities should:
 - i. Modify protocols or policies that require transport to the emergency department.
 - ii. Advocate for EMS representation on state committees related to healthcare finance and reimbursement.
- d. State Medicaid Committees should:
 - i. Include EMS Representation
 - ii. Allow for EMS reimbursement for response and treatment, independent from transportation.
 - iii. Involve EMS in Quality Improvement Organization (QIO) activities.
- e. National EMS Associations should
 - i. Continue to advocate in a unified way for the decoupling of reimbursement from transportation across all public and private payers.
 - ii. Advocate for payments based on medically appropriate services provided regardless of whether or not the patient is transported to an emergency department
- f. Payers should:
 - i. Reimburse EMS for the successful performance of evidence-based clinical processes proven to improve patient outcomes

2. Reimbursement Through Telemedicine

- a. EMS Agencies Should:
 - i. Develop the capabilities to transmit real-time video and audio from the field to a physician or other clinical provider for both routine online medical control and potentially reimbursable telemedicine encounters.
- b. State Legislatures & Medicaid Committees should:
 - i. Amend laws and/or policies to allow for reimbursement for telemedicine encounters that originate in the ambulance or in the field facilitated by EMS providers.
- c. Payers Should:
 - i. Reimburse EMS providers for arranging, coordinating, and/or participating in telemedicine enhanced clinical care in the field, independent of transportation.

3. Improving Business & Technical Capabilities

- a. Local EMS Agencies should:
 - i. Cultivate greater business and management skills

- i. Clearly define expectations for EMS service billing.
 - ii. Provide expert guidance, when needed, regarding billing for innovative services.
- c. National EMS Associations should:
 - i. Advocate for clear, freely available national guidance on compliance with federal regulations regarding Medicare and other federal EMS-related finance rules.
 - ii. Partner with CMS, and AHIP and other federal authorities to form a task force to design and implement anti-fraud and abuse initiatives.

Draft 5

PROMOTING INNOVATION IN EMERGENCY MEDICAL SERVICES

Chapter 4: Education Challenges & Recommendations

Draft 5



Education

As the nation's healthcare system quickly evolves, it's essential to ask how EMS should educate its next generation of prehospital providers. What are the competencies to which EMS providers should be trained? How will they be taught and by whom? Ultimately, where on the spectrum of healthcare educational requirements will EMS providers be represented along with medical assistants, technicians, nurses, pharmacists, physician assistants, therapists, nurse practitioners, physicians and others?

History and Current progress

It's important to recall that the U.S. has a long history of pursuing solutions to EMS education. The National Registry of EMTs (NREMT) was created in 1970 in response to a recommendation by President Johnson's Committee on Highway Traffic Safety that the U.S. establish uniform standards for training and examination of personnel active in the delivery of emergency ambulance service. In 2000, the *EMS Education Agenda for the Future: A Systems Approach*³⁷ proposed the creation of a national strategy to maximize efficiency, develop consistent instructional quality, and enhance student competence. Five essential education components were identified: a national core content, a scope of practice model, educational standards, a process of program accreditation, and EMS certification.

Significant progress has occurred on all fronts. In 2005, the National Core Content was released³⁸, and in 2006 the National Scope of Practice Model³⁹ defined four nationally recognized levels of EMS providers (emergency medical responder, EMT, advanced EMT and paramedic) along with their respective minimum entry-level knowledge and skills. In 2009, the National EMS Curriculum Standards⁴⁰ were published, which defined competencies, clinical behaviors and judgments required for entry-level EMS personnel. In 2013, the National Registry of EMTs announced that paramedic applicants would henceforth be required to graduate from nationally accredited education programs. Further, states and territories that use the NREMT paramedic assessment exam for licensure were required to commit to implementing the

³⁷ <http://www.nhtsa.gov/people/injury/ems/EdAgenda/final/>

³⁸ <http://www.ems.gov/education/EMSCoreContent.pdf>

³⁹ <https://www.nremt.org/nremt/downloads/Scope%20of%20Practice.pdf>

⁴⁰ <http://www.ems.gov/pdf/811077a.pdf>

national EMS program accreditation requirement by 2018 in order to retain access to the exam. In 2014, the NASEMSO National Model EMS Clinical Guidelines⁴¹ were released by the National Association of State EMS Officials (NASEMSO) Medical Directors Council. These guidelines will assist state and local EMS systems to ensure a more standardized approach to prehospital care by integrating contemporary knowledge and evidence-based guidelines.

Challenges to Innovation

Education Requirements

One of the most common issues raised by EMS stakeholders during surveys and focus groups concerned whether it is time for EMS to raise the educational bar for its providers. Our current curricula are too narrowly focused on life-threatening emergencies and do not match the distribution of medical complaints and other issues that EMS routinely encounters where a lot of innovation could occur. The sort of learning outcomes that paramedics are now routinely expected to convert to their clinical practice, particularly in terms of decision-making, are graduate level. Meanwhile, their education is often not even recognized at the associate's level. The US now has a plethora of paramedic programs either rooted in a college or university, or in programs articulated with a college or university. Current research (Phelps, 2015) reveals that some colleges are providing enough credits or hours to actually confer at least an associate's degree, but the colleges aren't providing the degree option to the student.

As many EMS agencies seek to integrate more with healthcare and explore new services, they often run up against a barrier due to unrecognized or poorly understood education models. Hospitals, payers, other healthcare professionals are unable or unwilling to partner with EMS without proof of critical thinking skills or credentialing that approaches an independent licensed practitioner. Thus, many now believe that the U.S. should require an associate's or baccalaureate education as a requirement to function as a paramedic. There is concern that a high school diploma is no longer sufficient to be recognized by other healthcare professionals.

England, Canada, South Africa, New Zealand and Australia are all redefining the training requirements for paramedics. The National Health Service now requires that British paramedic

⁴¹ <https://nasemso.org/Projects/ModelEMSClinicalGuidelines/documents/National-Model-EMS-Clinical-Guidelines-23Oct2014.pdf>

candidates either complete a four-year university paramedicine science curriculum or become a student paramedic and study while working for an ambulance company.⁴² At the University of Sheffield, nursing, paramedic and physician students share a common curriculum during the first two years of training, fostering a rich inter-disciplinary experience.

Funding Education

Unlike other healthcare professions, it is unusual for the employers of EMS providers (EMS agencies) to incentivize providers to pursue higher education. Legitimate concerns exist over whether providers could reasonably be expected to earn more if they got higher degrees. Hospitals and similar healthcare organizations have little incentive to support EMS education as the end-product of EMS education (EMTs and paramedics) have little perceived benefit to hospitals directly. Only when economic and policy impacts are realized from prehospital services to hospital systems will their value be greater to support expanded (or even any) clinical education.

Measuring Competence

Another educational challenge to EMS innovation has been the persistent difficulty defining and measuring provider competency. Rather than number of hours, education level should reflect competencies required for each service level and educators should look to the scientific literature to find the best way to teach Paramedics. Established best practices include problem based learning and virtual reality.

While true for all healthcare disciplines, some specialties have moved more quickly than others to refine training and accreditation requirements, often in response to the public's demand for reductions in preventable error⁴³. EMS has yet to undergo such a level of scrutiny, but as prehospital care becomes bundled and reimbursed with that of others there is little doubt that greater accountability is coming.

Instructor Quality

⁴² <https://www.healthcareers.nhs.uk/explore-roles/allied-health-professionals/paramedic/entry-requirements-and-training-paramedic>

⁴³

<https://www.nationalacademies.org/hmd/~media/Files/Report%20Files/1999/To-Err-is-Human/To%20Err%20is%20Human%201999%20%20report%20brief.pdf>

A third challenge to EMS education concerns the difficulty of assuring consistent quality instruction. Stakeholders cite a lack of training center oversight, teacher credentialing, physician involvement and a shortage of funds to attract qualified educators. Stakeholders have identified the need to develop higher standards for instructors as well as field preceptors. Currently, many EMS educators lack formal training in adult learning principles and the completion of even brief workshops can serve as evidence of competency. EMS education would be enhanced if faculty were academically better prepared, as is the case with other allied health professions.

High Variability in Pass Rates

Training centers currently vary widely in student first-time pass rates on the NREMT certification exam. The cause of such variance is unknown, and likely reflects a combination of candidate selection and training center competency.

A corollary concern is reflected by comments that NREMT certification does not equate with competency. Despite NREMT certification and demonstration of knowledge of local policies of local EMS system, EMS employers have noted a growing need to screen and remediate prospective new providers.

Lack of Clinical Feedback

One of the primary structural deficiencies of the EMS educational process over the past forty years has been the lack of clinical feedback from hospitals to EMS personnel. HIPAA has often been incorrectly cited as justification for not informing EMS providers of their patient's outcomes, which limits their ability to improve based off of experience.

High Demand Can Reduce Quality

PLACEHOLDER:

Vignette on Kansas requirement on obtaining a degree in order to be a paramedic

A further challenge to EMS education comes from the increased demand for paramedics over the past decade. In some communities, the establishment of multiple community college training centers has resulted in the closure of well-established university-based programs. Further, new on-line training programs have created a generation of virtually-trained students as well as generating debate about the effectiveness of some forms of “distributive education”⁴⁴. This growing demand for paramedics has also led to new questions about the proper duration (and cost) of field training, particularly for new graduates. Many believe that the number of calls to which a medic has responded bears only superficial relation to his/her competency. How then should EMS educators define when a new candidate is competent to operate independently? How should all personnel be assessed for their ability to manage infrequent events and rarely-performed skills?

Strategies

Raising the Bar on Education Requirements

It is not difficult to envision how EMS could benefit from advanced training in EMS education, information technology, data management, public health, chronic disease management, business, leadership and research. While the exact effects of higher education standards may not be known and some have called for additional research, from the innovation perspective, raising the bar is imperative to fostering a culture that promotes EMS quality and spurs innovation.

The NREMP currently lists 20 EMS baccalaureate-degree programs⁴⁵. For example, the Oregon Tech - Oregon Health Sciences University Paramedic Education Program⁴⁶ offers a bachelor’s degree in EMS Management with courses in critical care and community care paramedic medicine. In 2014, the California legislature established (through the Community

⁴⁴ https://www.nremt.org/nremt/EMTServices/rr_faq.asp#10

⁴⁵ <http://www.oit.edu/wilsonville/academics/degrees/paramedic-program>

⁴⁶ <http://www.oit.edu/wilsonville/academics/degrees/paramedic-program>

PLACEHOLDER

*Vignette on Incentives to Pursue
Higher Education*

College Professional Development Program, AB 2558⁴⁷) a pilot 4-year baccalaureate program in EMS that will be offered at a community college.

A baseline of education for paramedics would open up new opportunities for research and academic careers following further postgraduate education. It would also provide for paramedics to lead the research affecting the paramedic profession and the patients that paramedics treat. Higher educational requirements will also help EMS providers break down silos and collaborate effectively with other disciplines. Initial and ongoing training for prehospital providers that includes integrated, team-based experiences with other health care, public health, and public safety disciplines can enable EMS innovation.

More education requirements would also give providers exposure to, and a chance to specialize in, rapidly evolving fields of EMS, such as population health, informatics, and mental health. Recent experience with community paramedicine has shown that added training in longitudinal care is important for providers previously accustomed to event-based medicine. As a component of

its 2-year Community Paramedicine Pilot Project, California EMSA developed a 200 hour curriculum for participating pilot sites⁴⁸ using a spoke-and-hub distance training model with on-sight local medical supervision.

Supporting Paramedic Higher Education

To replicate the career ladders and practice opportunities available in other healthcare disciplines, EMS would benefit from reward systems that encourage the pursuit of advanced education. EMS agencies, providers, and educational facilities should explore a variety of funding opportunities as well as innovative incentive schemes both within and outside of

⁴⁷ http://www.leginfo.ca.gov/pub/13-14/bill/asm/ab_2551-2600/ab_2558_bill_20140919_chaptered.pdf

⁴⁸ <http://www.emsa.ca.gov/Community Paramedicine>

traditional EMS systems to encourage more providers to pursue a college degree. Such incentives may, or may not, be financial.

Meanwhile, national EMS associations should advocate for federal funding streams to develop national educational standards that incorporate a broader curriculum to better prepare and integrate EMS into the healthcare system at every EMS role and level (providers, educators, etc.)

Measuring Competence

EMS would benefit from optimizing instructional models that encourage competency-based education and allows students to advance based upon their ability to master cognitive, affective and psychomotor goals. Further, to the extent possible, EMS education and practice needs to be based upon scientific evidence, although it must be accepted that currently there is insufficient literature to implement this concept in all domains of learning.

Instructor Quality

High quality instructors are invaluable for individual agencies and for the industry as a whole. EMS education programs should strive to support EMS instructor development through rigorous hiring, quality improvement, formal education, experience, and mentorship. Agencies should include teaching and mentorship in performance reviews and enhance salaries for exceptional educators.

The Health Resources and Services Administration (HRSA) Bureau of Health Professions serves to improve the health of underserved and vulnerable populations by strengthening the nation's health workforce and connecting skilled professionals to communities in need. HRSA could be engaged to identify resources to address the training and workforce issues that challenge EMS as a health profession.

It has been suggested that the U.S. also define advanced academic requirements for educators and other EMS subspecialties in order to support career paths that will require advanced knowledge and problem-solving skills.

High Variability in Pass Rates

State and national average pass rates could be utilized to benchmark instructional performance and identify best practices. Federal agencies could then allocate resources to states and programs with the greatest need for improvement. State agencies should also incentivize and support innovative training methods.

Lack of Clinical Feedback

Fortunately this situation is beginning to be addressed. The role of EMS as a HIPAA-covered entity is clarified (see LEGAL and DATA) just as the value of bi-directional EMS-hospital information exchange. EMS education will benefit enormously once patient electronic health records are reconciled, providing discrete outcomes data for EMS personnel. Medics will no longer be left to wonder whether their patient actually had a pulmonary embolus as their cause of syncope. This dramatic HIT advance will allow EMS to consolidate its understanding of disease and injury and plug a critical defect in the current process of continuing education.

High Demand Can Reduce Quality

EMS leaders could seek regional funding to provide simulation-based training for all public safety personnel. These facilities could be augmented with standard certification curricula being developed for an expanding array of EMS subspecialties including tactical medicine, critical care, aeromedicine and community paramedicine.

RECOMMENDATIONS

1. EMS professionals should be held to higher educational standards
 - a. Local EMS agencies should:
 - i. Survey local EMS training centers for recommendations
 - ii. Explore funding opportunities to encourage EMS providers, specifically Paramedics, to obtain academic degrees
 - iii. Support, incentivize, and establish the requirement of a degree for paramedics by the year 2025
 - iv. Expand education of providers, educators, managers, and medical directors to harness potential of EMS data and informatics
 - b. State EMS authorities should:

- i. Review current requirements for EMS students and educators
 - ii. Conduct EMS workforce needs assessments
 - iii. Analyze impact of existing 4-year training programs
 - iv. Survey college and university interest in expanded training
 - v. Survey current educational standards of training centers
- c. National EMS **associations** should:
- i. Enlist assistance of HRSA Bureau of Health Professions
 - 1. Analyze current educational standards
 - 2. Define optimal EMS workforce
 - 3. Analyze implications of enhanced educational requirements
 - ii. Set national educational timeline
 - iii. Include exposure to and training in population health and non-emergent patient care initiatives in the core content and fellowship experience for EMS physicians

2. EMS Education Methods and Technology should be enhanced

- a. Local EMS agencies should:
- i. Enhance salaries for exceptional educators
 - ii. Strive to support EMS instructor development through rigorous hiring, quality improvement, supporting credentialing, formal education, experience, and mentorship
 - iii. Create and use evidence-based practices to teach evidence-based medicine
 - iv. Include opportunities for integrated, team-based experiences with other health care, human services, and public safety disciplines in the patient care continuum
- b. State EMS authorities should:
- i. Hire EMS-trained professionals in leadership roles
 - ii. Promote EMS-affiliated graduate training opportunities
 - iii. Refine metrics of local training centers
 - iv. Benchmark EMS training center 1st-time pass rates
 - v. Incentivize innovative training
- c. National EMS Associations should:
- i. Identify best educational practices including
 - 1. Problem and team-based learning, distance learning, simulation, use of standardized patients, virtual reality
 - ii. Encourage use of national standards and best practices
 - iii. Sponsor educational internships

- iv. Enhance standards for EMS educators
- v. Define clinical competency
- vi. Revise current CE requirements
- vii. Incorporate population and community-based and HIT training
- viii. Promote the role of EMS educators
- ix. Expand career opportunities for veterans
- x. Define the role of EMS in the future workforce
- xi. Review requirements for medical oversight
- xii. Identify causes of variance in current training success
- xiii. Fund innovative EMS training grants
- xiv. Expand the role of EMS leaders in national decision-making roles
- xv. Encourage EMS-interdisciplinary undergraduate-graduate training
- xvi. Advocate for federal funding streams to develop national educational standards that incorporate a broader curriculum to better prepare and integrate EMS into the healthcare system at every EMS role and level (providers, educators, etc.)

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PROMOTING INNOVATION IN EMERGENCY MEDICAL SERVICES

Chapter 5: Regional Coordination Challenges & Recommendations

Draft 5



Regional Coordination within EMS

Barriers to Regional Coordination

Significant Variations in System Design and Clinical Practice

It has often been said that “if you’ve seen one EMS system, you’ve only seen one EMS system.” This quip alludes to the fact that there are often significant differences in system design between EMS systems in different jurisdictions. However, the truth is that there are even significant differences in training, technology, policies, protocols, medical oversight, and perspectives of different agencies operating in the same geographic area and serving the same patients. Unwarranted variations in care in medicine have been associated with inefficient utilization of resources and lower health care quality.⁴⁹

Fragmentation of EMS at every level

At the local level, the hyper-fragmentation of EMS service results in inadequate harmonization of patient care practices and operations between different agencies in the same or in nearby jurisdictions. In many communities, it is not uncommon to have dozens of small EMS agencies bringing patients to the same hospital. If the EMS agencies in that market are unable to collaborate, it becomes difficult to expect the hospital to be able to participate in innovations in the EMS arena.

Likewise, at a state or regional level (multiple counties that are served by the same hospital or healthcare resources), health plans and other healthcare stakeholders need to consider initiatives that serve their customers, and if no single or coordinated EMS system serves that market, EMS is likely to be ineffective in its effort to participate in creative health care solutions. This is primarily due to the fact that most EMS agencies

⁴⁹ Wennberg JE. [Forty years of unwarranted variation--and still counting](https://doi.org/10.1016/j.healthpol.2013.11.010). Health Policy. 2014 Jan;114(1):1-2. doi: 10.1016/j.healthpol.2013.11.010.

serve a defined geopolitical area that is often incongruent with the medical trade area focus of the rest of the health care system.

Within the industry, EMS stakeholders at a local, state or national level, tend to be significantly divided across multiple planes. There are often separate labor unions for different levels of providers or officers; there are separate professional societies for EMS educators, managers, physicians, and providers; and there are separate lobbying groups based on the type of EMS organization. Perspectives offered to external stakeholders can vary dramatically between commercial, hospital-based, fire-based, public-utility, non-profit, and volunteer EMS agencies. The political infighting between these groups is often a barrier to regional coordination, interdisciplinary collaboration, and ultimately to innovation itself.

Tension Between Autonomy & Standardization

There are of course significant tensions between local autonomy and statewide efforts to bring standardization. While operating under the same protocols and procedures across a state or large region may reduce variation and therefore improve quality while making it easier for other stakeholders to understand EMS, it might in turn become more difficult to accommodate local innovations including new treatment protocols and new collaborative care models. For example, Texas is the only true delegated practice state in which local agency medical directors have a broad range of authority to establish protocols and set policies. As a result, several EMS agencies in that state have become well known in the industry as being centers of innovation. On the other hand, Pennsylvania and a few other states (see Figure X) have established statewide protocols and have experienced significant improvements in the consistency of data reporting and preliminary indications of improved quality.

This tension between local autonomy and statewide or other efforts around standardization are not limited to treatment protocols, but are also found in EMS education, policies around state designation of specialty care receiving centers, and

regulatory regimes which might differ based on EMS agency type. Often local government has a great deal of autonomy over fire services while the state often is the regulator of hospitals which may have implications for the hospital based EMS services.

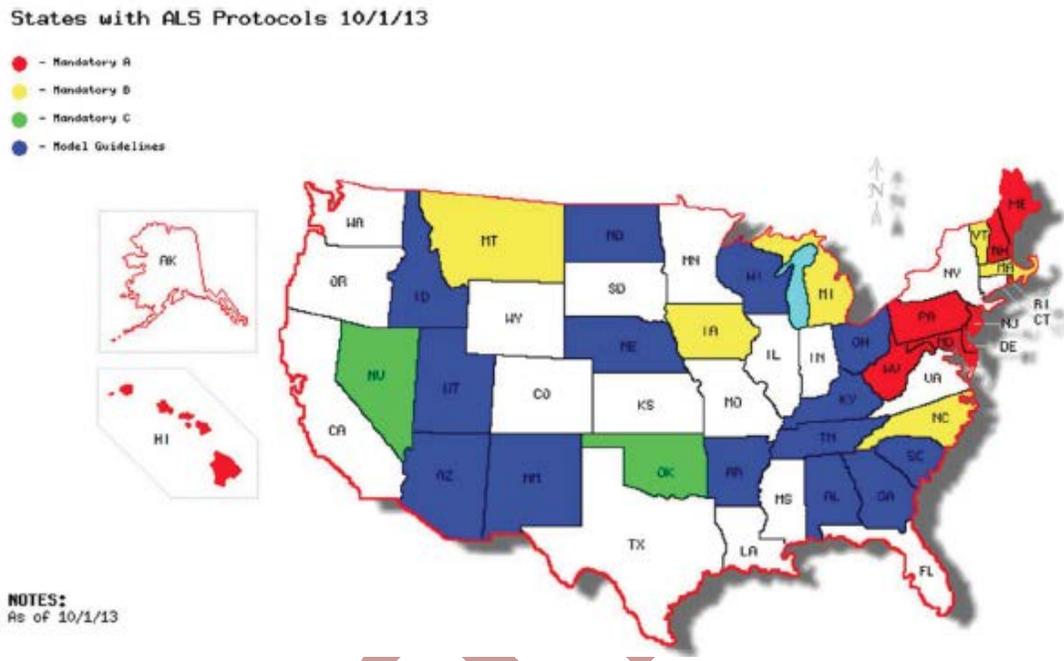


Figure X: States with mandatory statewide ALS protocols as of October 1, 2013. Types of protocols used by each state are indicated by colors (see key). Mandatory A protocols must be used by all EMS providers within the state. Mandatory B protocols are similar but there is a process for services to petition the state to alter some of the protocols. Mandatory C protocols are similar but there is a process for services to petition the state to develop and use their own protocols.

Reprinted with Permission: Kupas DF, Schenk E, Sholl JM, Kamin R. Characteristics of statewide protocols for emergency medical services in the United States. *Prehospital emergency care : official journal of the National Association of EMS Physicians and the National Association of State EMS Directors* 2015;19:292-301.

Strategies for Improvement of Regional Coordination

In order to promote greater innovation in EMS, it is ideal that EMS agencies improve their ability to work together, across jurisdictional lines or across agency, between transporting and non-transporting providers, between 911 and interfacility EMS units. While it is true that our lack of regional coordination is a major impediment to many of

our aspirations for greater quality and integration, we find a compelling argument to be that it is only by concentrating our efforts on achieving these very same quality goals, that we have the power to overcome our fragmentation challenges. It is our sincere hope that by setting high expectations for collecting and sharing data, for measuring and reporting on quality, and for protecting patients and providers, that we will produce the conditions necessary for EMS to improve coordination at the local level, reduce variation at the state level, and to unify the industry at the national level.

Focusing on the Core Mission

While much of the current discussion on innovation centers around integrating EMS into prevention and chronic care efforts, the core mission of EMS remains its rapid treatment and transport of acute conditions such as stroke, myocardial infarction, cardiac arrest and trauma. Even in this domain, there are many opportunities for improvement. Many regions are not meeting goals for first medical contact (FMC) to Balloon times for STEMI, or FMC to needle times for stroke. There are huge variations in cardiac arrest survival rates. Esophageal intubations are still occurring. New technologies and evidence-based tools exist to facilitate data collection and sharing, telecommunication, training, quality assurance, and more. However, few EMS organizations (or regional systems) have taken advantage of these new approaches in large part due to the aforementioned barriers.

By focusing on acute care conditions, patient outcomes are generally prioritized over provider-centric concerns. This may enable better cooperation amongst internal EMS stakeholders in the interest of our patients and communities. In addition, such a focus can enable mobilization of external resources (e.g. organizations interested in stroke outcomes or trauma outcomes) to facilitate transformation of EMS into a more integrated, higher quality system.

By achieving higher quality in the core emergency response focus of EMS, it will have the added benefit of making EMS a more attractive partner to health systems and other stakeholders seeking innovative partnership opportunities.

Moving beyond our differences

EMS systems are community health resources and the public's safety net for emergent and chronic health conditions. Whether an EMS organization is owned and operated by a hospital, a fire department, or any other entity, the mission of an EMS system and the type of care and services it provides, ought to be similar and tailored to the needs of the community. Thus EMS should support public health, disaster preparedness and population health efforts independent and irrespective of the nature or ownership of the agency.

When we try to define EMS by who we are rather than what we are doing, the differences in the type of EMS organization gets in the way of collaboration with other providers and between EMS organizations. Whereas a municipal third service might view themselves as public health providers, a fire department is more likely to view themselves as public safety officers. While a commercial agency or hospital-based service is more likely to identify as healthcare providers, a volunteer agency may be more likely to identify as community advocates. Focused on the politics of identity, it becomes hard to agree on mission, vision, values, and ultimately the type of services an agency is willing to provide. However, patients are indifferent to the type of agency an EMS provider belongs to and is simply focused on receiving care. While the medical needs of populations of patients may vary, it is more often the variability in resources of a community that drive the need or opportunity for EMS to provide innovative programs.

It may seem reasonable for certain types of EMS agencies to decide that innovating to meet the needs or fill the gaps in a community is optional. It is not! It should not be optional for any EMS agency to strive to improve patient outcomes for cardiac arrest,

STEMI, stroke, COPD, asthma or any other condition. It should not be optional for any EMS agency to improve its notification process or its transmission of prehospital information to the hospital or coordination of care with the patient's primary care physician. It should not be optional for a any EMS agency to improve a community's resilience to disaster. If the "what we do" is not different, then EMS should be able to speak with a unified voice focused on patients and populations.

Pooling Data to Care For Populations

Innovation is often stymied where EMS systems are hyper-fragmented. There are simply too many stakeholders and too much variation in protocol, technologies, and operational logistics to implement a lot of system wide changes. Meanwhile, our current approach is to focus on each incident and each patient counter as unique, without considering either the longitudinal care of the individual patient, or the cross-sectional evaluation of what is occurring across a population at any given point in time. One step communities faced with hyper-fragmentation can take to seek improved quality and a greater environment for innovation in EMS would be to demand the sharing of information between EMS agencies, and with the local hospitals and local government to enable more coordinated care for individuals and a population based approach to healthcare.

Multiple agencies working in the same county, city, or community each possess important subsets of the information needed to understand the care being provided by EMS to the population in a given geographical area. However, individually, none of them would have enough of the picture to understand all that is occurring, and would be hard pressed to address those issues unilaterally. By combining their data, the EMS community along with local governments and healthcare partners would be able to improve a region's syndromic surveillance and situational awareness. Through better alignment of multi-agency EMS systems with their corresponding medical trade area (regional) partners, we could expect to improve operational efficiencies across a region, reduce duplication of services and unwarranted variation in care, and develop a greater

ability to measure outcomes and effects of new interventions. Administration and medical oversight over EMS in a given area could be better coordinated. As a byproduct, there may be increased willingness of other healthcare stakeholders to collaborate with EMS on population health initiatives.

Exchanging Data to Care for Patients

In addition to looking at data in aggregate, EMS agencies should make an effort to more efficiently exchange data. For example, nearly all EMS agencies print or fax their patient care information to the hospital rather than via a more direct electronic transfer of data.⁵⁰ This is despite much of the technical groundwork for interoperability already having been laid through the creation of the National EMS Information Standard (NEMSIS) and the creation of a standardized HL7 Clinical Document Architecture (CDA). Multiple ePCR companies and other health information companies now boast of their ability to translate EMS data, usually in XML format, into HL7 data compatible with hospital record systems and regional health information exchanges⁵¹.

The remaining barriers around data sharing are now primarily related to an EMS agency's ability to influence the hospital's workflows and information technology investments. Influencing the relatively larger entity requires making a case for efficiency gains and a return on investment. This is once again a harder conversation if the EMS system is fragmented. However, a properly motivated EMS community with collaboration across multiple agencies could choose to work with a limited number of vendors and fund the appropriate interfaces to improve the efficiency of data transfers. In the long run, this would likely improve EMS workflows, data collection, the quality of

⁵⁰ California Emergency Medical Services Authority. Health Information Exchange Readiness Assessment / Survey. Published By: Lumetra Healthcare Solutions, San Francisco, CA. 2013 Available at: <http://www.emsa.ca.gov/Media/Default/PDF/EMS%20Project%20Full%20Report%20FINAL%2012-19-13%20REVISED.pdf>

⁵¹ Zavadsky, M. Golden Age of Data Modern Approaches to Health Information Exchange. Published in: *Journal of Emergency Medical Services*. May 2015 Supplement, p 12-16. Available at: <http://www.jems.com/content/dam/jems/PDFs/1505JEMSup-OnTheLeadingEdge.pdf>

care for patients, and perhaps even make future EMS innovation in that community more likely.

Measuring & Reporting on Quality

Early evidence suggests that emergency medical services contribute substantially to improvements in patient outcomes and financial savings to the health care system in certain circumstances where data is available.⁵² The health care reforms brought about by the Patient Protection and Affordable Care Act (PPACA) present the potential for a significant shift for EMS toward primary health care provision, and how EMS is reimbursed for services. For example, Accountable Care Organizations (ACOs) will create new partnerships between local and regional health care stakeholders with the goal of maintaining or improving the quality of care while reducing the overall cost to the population served. EMS is exploring ways to accomplish these goals by expanding the scope of paramedics to provide out-of-hospital health care services, and advocating for changes to the current reimbursement model to incentivize such care. As patients are increasingly moved to managed systems, quality and performance metrics need to be developed to ensure good patient care and the financial viable EMS systems.

Performance measures must be an integral part of a patient-centered quality management process. Properly designed and validated performance measures ensure that patients receive the best care based on best scientific evidence, communities receive high-quality service, and payers receive the best value for their health care dollar. There is currently a NHTSA sponsored effort to develop meaningful EMS quality measures known as the EMS Compass project.⁵³ To ensure that EMS can continue to provide the highest level of care, national EMS associations should work with CMS, NHTSA Office of EMS, U.S. Health and Human Services, the Department of Homeland

⁵² National EMS Advisory Council. (2009). *EMS Makes a Difference: Improved clinical outcomes and downstream healthcare savings*. Retrieved from <http://www.ems.gov/pdf/nemsac-dec2009.pdf>

⁵³ *EMS Compass: Improving patient care through meaningful measures*. (2015). Retrieved from <http://www.emscompass.org>

Security, the National Quality Forum, the Agency for Healthcare Research and Quality and other national health care stakeholders to support initiatives like the Compass project to develop and continually evaluate performance measures for both traditional EMS and future EMS-based innovative health care delivery services.

State and local EMS leaders seeking to promote quality and improved regional coordination could employ a range of incentives and/or penalties but ultimately must find a way to achieve compliance with the reporting of validated quality measures.

Fostering a Culture of Safety

As a critical component of the nation's public safety, public health, and health care systems, EMS providers In the course of their duties may find themselves exposed to a myriad of risks such as infectious diseases, emotional stress, fatigue, physical violence, vehicle crashes, environmental hazards, and personal liability. Each provider, regardless of the type of agency he or she works for, or the community or state in which they practice, deserves to be protected. Likewise, the patients we serve deserve the very best care with the minimum risk of additional harm that we can provide.

The primary objective of the *National EMS Culture of Safety* was to develop a strategy for a robust culture of safety within the EMS profession.⁵⁴ The strategy acknowledges the unique and varied nature of EMS provider agencies throughout the United States, as well as a number of cultural influencers that are believed to be relevant to the success of the strategy. It provides a framework with which to create measurable outcomes that improve the effectiveness and safety of prehospital health care for responders, patients, and the public. Having been developed in response to a recommendation from the National Emergency Medical Services Advisory Council (NEMSAC), and with consultation from a broad array of internal and external, it is time

⁵⁴ National EMS Advisory Council. (2012). *Strategy for a National EMS Culture of Safety*. Retrieved from http://www.ems.gov/pdf/nemsac/may2012/ems_culture_of_safety-draft_3-1_05162012.pdf

for the *National EMS Culture of Safety* (Strategy) to be widely disseminated and implemented at the local level. The Strategy stems from a recommendation.

While the strategy necessitates that each organization's core values imbue principles relevant to responder and patient safety, the culture must transcend the level of the organization. In a multi-agency community, a region within a state, or even at the statewide level, the culture of EMS is a fragile communal asset that must be constantly nurtured. It has the power to influence our providers' shared beliefs, practices, rituals, norms and behaviors related to safety. A positive safety culture is associated with fewer errors, adverse events and other negative outcomes. Perhaps most importantly, it fosters integration of EMS into healthcare and supports innovation.

By pursuing the above strategies, the EMS industry is likely to achieve better quality and greater harmonization of care, all while better enabling us to speak with one voice.

RECOMMENDATIONS

1. **Regionalization of Care For Time-Critical Conditions**

- a. Local EMS authorities / agencies should:
 - i. Work collaboratively with other EMS agencies serving a community to improve the care they collectively provide for time critical and sensitive injuries and illnesses such as stroke, myocardial infarction, cardiac arrest and trauma. Efforts may include:
 1. Developing regional protocols around treatment and transport destinations
 2. Agree on common data definitions, terminology, and metrics
 - ii. Work with regional healthcare partners (e.g. hospitals) to develop effective, comprehensive, integrated, and collaborative population-based strategies to improve care
- b. State EMS authorities should:
 - i. Engage local EMS representatives in discussions around statewide protocols to reduce unwarranted variation in care.

- ii. Consider recognition of specialty receiving centers for time sensitive conditions.
 - iii. Require EMS agencies operating in the same jurisdiction to exchange clinical data
 - c. National EMS associations should:
 - i. Highlight the evidence that supports regionalization of care
 - ii. Advocate for funding to support regionalization initiatives
 - iii. Develop toolkits for the transition to regionalized care
 - iv. Work with national representatives of hospital associations and other stakeholder groups to provide guidance on best practices
- 2. Work Toward a Common Purpose**
 - a. Local EMS Authorities / Agencies should:
 - i. Embrace a common mission to improve community health and safety and implement evidence based models of care
 - ii. Make innovation a part of a continuous quality improvement strategy to solve the community's healthcare needs.
 - iii. Measuring and reporting on quality and outcomes at the population level
 - b. State EMS authorities should:
 - i. Enable consistent licensing and credentialing procedures
 - ii. Implement operational and clinical performance standards to which all agencies are held accountable.
 - c. Hospitals / Health Systems / Health plans should:
 - i. Encourage collaboration across agencies within their catchment areas by:
 - 1. Holding joint QA/QI meetings
 - 2. Requesting regular reporting of performance metrics in a standardized fashion.
 - d. National EMS associations should:
 - i. Advocate for the creation of grants and funding opportunities specifically for groups of EMS agencies collaborating in the same market.
- 3. Sharing & Utilizing Data**
 - a. Local EMS authorities / agencies should:
 - i. Seek to share epidemiologic data with other agencies operating in the same geographic area.
 - ii. Enable access to patient clinical information for other EMS agencies and other healthcare stakeholders caring for specific patients with appropriate permissions.
 - b. State EMS authorities should:

- i. Require EMS agencies operating within the same trade area or geographical region to share both patient level clinical data and population level aggregate data.
 - ii. Set progressive and flexible policies around the exchange of information between EMS agencies and between EMS and other community health providers.
 - iii. Facilitate data sharing through policy development that encourage interoperability.
 - c. National EMS associations should:
 - i. Promote the exchange of healthcare information at the community level.
 - ii. Facilitate data sharing through advocacy for interoperability standards.
 - iii. Advocate for the creation of incentives for the meaningful use of data.

4. Reporting on Quality

- a. Local EMS authorities / agencies should:
 - i. Emphasize the importance of data collection amongst their providers.
 - ii. Adhere to national guidelines on process measures such as time to EKG for suspected myocardial infarction and prehospital notification for suspected stroke.
- b. State EMS authorities should:
 - i. Require the reporting of measures endorsed by national guidelines
 - ii. Encourage the reporting of additional measures either endorsed by national guidelines, supported by literature, or developed in collaboration with local EMS authorities, agencies, and stakeholders.
 - iii. Facilitate the reporting of outcomes through policy development that encourages clinical feedback to EMS agencies from downstream providers such as hospitals.
- c. National EMS associations should:
 - i. Fund the research and development of EMS quality metrics.
 - ii. Engage national quality organizations such as the National Quality Forum (NQF) and the Agency for Healthcare Research and Quality (AHRQ) in the ongoing development of quality metrics
 - iii. Advocate for the creation of incentives for reporting on industry supported quality measures.

5. **Emphasize Patient and Provider Safety**

- a. Local EMS authorities / agencies should:
 - i. Promote a culture of safety in which providers feel protected from retribution for raising safety concerns. (similar to the values in a school of thought known as “Just Culture”)
 - ii. Establish policies that encourage reporting incidents and protocols for investigating those incidents utilizing a root cause analysis approach.
 - iii. Educate providers about the the importance of patient safety, provider safety and reporting incidents, including “near misses.”
- b. State EMS authorities should:
 - i. Promulgate standards related to vehicles, equipment and training that protect the EMS provider and patients being cared for in the prehospital setting.
- c. National EMS associations should:
 - i. Advocate for a national data system for reporting and tracking responder safety and patient safety in EMS
 - ii. Embed the culture of safety into national educational guidelines.

PROMOTING INNOVATION IN EMERGENCY MEDICAL SERVICES

Chapter 6: Interdisciplinary Collaboration Challenges & Recommendations

Draft 5



Interdisciplinary Collaboration

Challenges to Interdisciplinary Collaboration

Relative Isolation & Fragmentation

Historically, EMS has operated in relative isolation from other allied health professionals. Likewise, most provider groups and clinical practices have generally operated within their own silos. As healthcare transforms itself from a fragmented system to one that is more integrated, new opportunities for innovation emerge. To realize the opportunities however, EMS innovators first need to open the lines of communication between themselves and their partners in care across the continuum.

A challenge for EMS agencies to open these lines of communication is the general lack of knowledge among other healthcare stakeholders about both traditional EMS as well as newer models of care that include EMS in the coordinated healthcare enterprise. In addition, the wide diversity of EMS policies and protocols across jurisdictions adds to the confusion on the part of potential partners about what EMS as a system can and can't do. In addition, the lack of standardization of EMS levels of certification contributes to the confusion about what any given provider can do. Finally, EMS often does not have a seat at the table when health policy and innovative collaborations are being discussed, simply as a function of not being identified by healthcare providers as an important stakeholder in a new integrated health care world.

Opposing Groups

In a more ideal healthcare environment, different types of providers work together and support each other for the benefit of the patient and community. For example, there are great examples of collaboration between EMS and other health professionals within the context of patient-centered medical homes (and in particular home-based primary care practices) and "hospital at home" programs. Where protectionist turf wars and provider-centric issues dominate the conversation, patients and providers of all stripes are likely to suffer. Thus, a major potential barrier to innovation is opposition from other groups of providers that function in the out-of-hospital environment.

In communities where the providers have been less successful at breaking down the silos, one commonly cited concern is whether novel EMS initiatives would undermine existing regulatory frameworks and criteria by which other provider types meet qualification for reimbursement. A potential community healthcare partner can quickly become apprehensive and competitive if concerns about overlapping roles and reimbursement are not addressed.

Potential collaborators may have regulatory, safety or quality concerns. New roles for EMS might require regulatory change that could threaten the protected status of a partnering healthcare profession. Without a strong evidence base and quality measures still in development, agencies need to be ready to both articulate and find data to support their proposals. Would a certificate of need be required for certain activities? Collaborators often need to learn about the level of training and education an EMT or paramedic would receive to safely perform new duties. Another concern is to what degree and by what mechanisms a novel EMS initiative be coordinated with the primary care team.

Finally, the threat of lost revenue motivates some potential partners to oppose integrating EMS into community healthcare initiatives. The fear that innovative EMS programs might steer some low acuity patients away from the Emergency Department, for example, has generated opposition from some hospital and emergency care groups who worry about their income while also citing their concerns over patient safety and overall quality.

Strategies to Improve Interdisciplinary Collaboration

Joining the Conversation

The role EMS plays today, by default, and the value EMS could provide in the future, by design, in chronic care and as part of the health care safety net is not broadly recognized. Important reform and innovation initiatives, whether they are in the

healthcare, public health, or public safety space should be inclusive of emergency medical services. Local, state and national EMS leaders should actively participate in conversations about collaboration across health care sectors with the aim to improve patient-centered outcomes and the health status of the population. Representatives of EMS need to be politically savvy in order to ensure the prehospital perspective has a seat at the table.

By being present when problems and potential solutions are being discussed, it is far more probable that EMS, with its unique skills and access, might contribute to new innovative solutions. Home health agencies, hospital at home groups, home-based primary care groups, hospice agencies, public health and other providers of home and community services are likely to benefit from collaboration with EMS. Together, they can better identify and understand the needs of patient populations traditionally served by each segment, avoid unnecessary duplication of services and contribute to improved health outcomes at the community level.

Rather than being on the sidelines as other stakeholders engage in discussions about public safety, community health and preventing emergency visits, EMS needs to take the initiative to drive those conversations, and build the right sets of relationships to ensure its voice is heard. Engaging primary and acute care providers as well as payers can also improve patient outcomes, risk management, population health services and information exchange. Enabling and facilitating cross-provider dialogue can ensure clarity of role, expand opportunities and improve support for patients and family caregivers.

Partnering for Innovation

EMS has a unique role in a healthcare reform environment that has started to focus on value and out-of-hospital care. Agencies with the desire and capability to improve out of hospital care should take advantage of their position to partner with community healthcare stakeholders and fill the gaps of the current system.

EMS provider agencies that have expanded their care delivery options beyond the traditional 9-1-1 response and transport of patients, should seek to partner or collaborate with other provider groups or agencies within a healthcare coalition including hospitals, healthcare systems, ACOs, payer groups, home health agencies, hospice groups, public health agencies, social services, home based primary care groups, hospital at home groups with similar geographic service areas. Partnerships should be considered with both public and private entities along the continuum of care. These collaborations could be approached as a way for each group to offer the services for which they have a comparative advantage in value, quality, or cost saving while providing the patient with the best overall care.

Ohio's "FIRST" Program

The First in Response to Seniors Team (FIRST) program in Delaware County, Ohio, is a model of how EMS and community organizations can collaborate to provide new services to their communities.

The City of Delaware Fire Department and SourcePoint, a senior services organization, recognized that there were high rates of utilization among its growing population of senior citizens. To address this problem, they partnered to launch FIRST in 2012, which was "designed to keep seniors at home and independent."

As part of FIRST, SourcePoint provided a service coordinator to the fire station, which allowed intensive collaboration between social work and EMS. The service coordinator would reach out to seniors after 911 calls and help coordinate home visits, safety checks for senior patients and make referrals to resources such as Meals-on-Wheels. Over time, EMS providers became more familiar with the non-medical needs of senior citizens while service coordinators gained access to hard to reach populations and learn about the challenges EMS providers face while caring for patients.

FIRST has helped reduce the number of non-emergent EMS calls and helped patients stay independent and out of the hospital while getting better service from more appropriate resources. A 2014 survey found that every patient served by the program was satisfied with the experience. The fire department has also benefited by receiving fewer sub-acute EMS calls, allowing them to spend resources on other services.

<http://www.emsworld.com/article/12166308/social-workers-at-the-station>

Partnerships may initially take the form of data sharing, referral programs, or shared quality improvement initiatives. They may progress to consider financial partnerships, joint ventures or mergers that take advantage of new healthcare incentive programs, such as the Bundled Payments for Care Improvement or the Medicare Readmissions Reduction Program, to enable improved coordination of community health services ranging from social services integration, to chronic health management,

Chandler Fire, Health & Medical Department Partners with the VA

The Chandler Fire, Health & Medical Department (CFHM) partnered with the Phoenix VA to provide tailored community paramedicine services to VA patients in a six-month pilot program. This pilot program is an example of how fire departments and EMS agencies can partner with larger systems to provide the services that they are particularly well-placed to provide. CFHM already had a community paramedicine program in place, and by seeking out new partners for its services, it was able to expand its services and collaborate with new systems.

The CFHM pilot program offers the following services to the VA:

- **Complex Patient Management:** CFHM identifies high utilizing patients, and community paramedics visit them at home to better coordinate care along with physicians through telemedicine services.
- **Treat and Refer Follow-Up Program:** Community Paramedics treat patients at home and help them navigate the healthcare system by referring them to the most appropriate resource, rather than only transporting to the emergency department. Community Paramedics conduct follow up calls or visits to ensure patients were able to complete referrals.
- **Community Outreach:** CFHM staffs a local clinic and partners with other local agencies to improve community outreach.
- **VA Program Benefits:** CFHM identifies veterans during emergency 911 calls and connects them with VA benefits for which they are eligible and telemedicine services they may need.

The pilot program is due for an 18-month extension of its MOU to gather more data, then continue the partnership if it proves to be effective. The CFHM program demonstrates that innovative agencies can often find partners who want to use their services. EMS agencies are encouraged to build services that compliment the work of other disciplines and provide value to patients, and build partnerships to make these services sustainable.

to acute stabilization and/or transport.

Location is Everything

As discussed in the Regional Coordination chapter, potential partners in healthcare may serve geographical areas incongruent with a single EMS agency's jurisdiction. Thus, many small EMS agencies that can come together to achieve regional standardization or merging of some administrative functions may make seem more attractive as potential partners on population health initiatives by other large healthcare stakeholders.

Creating a Common Vision

While much of the work of interdisciplinary collaboration must be local, there is a clear need for industry leaders of the various disciplines involved in community health to convene at the state and national level to discuss a common vision for the future. Complex issues that would benefit from state and national national consensus include workforce development, scope of practice, financial sustainability, interoperability of health information technology, as well as best practices for care coordination and population health initiatives. A state or national population health stakeholder panel might be a venue for each discipline to provide updates on transformative service delivery models and serve as a forum to discuss opportunities for efficient integration as well as concerns among the stakeholders. The "Promoting Innovation in EMS" project steering committee perhaps represents a good example of the spectrum of stakeholders that would participate in the roundtable.

RECOMMENDATIONS

- 1. Facilitate & improve communication between EMS and other stakeholders**
 - a. Organizations providing services in the home or community should:

- i. Include EMS agencies in discussions about meeting the needs of patient populations and the community to improve program alignment and enable optimal use of all community-based resources.
 - ii. Partner with EMS to pursue patient-centered and population health management approaches to meet quality goals and address priorities across care settings.
 - b. Local authorities / EMS agencies should:
 - i. Actively engage organizations providing services in the home or community in their discussions to enable optimal use of all community-based resources.
 - ii. Convene discussions with hospitals, primary care providers, payers and other community health professionals to pursue patient-centered and population health management approaches to meet quality goals and address priorities across care settings.
 - iii. Engage their workforce in discussions around communication and collaboration and evolving roles of EMS providers.
 - c. State policymakers should:
 - i. Ensure that EMS perspectives are consistently included on new healthcare, public health or public safety initiatives
 - ii. Ensure representation of EMS on Medicaid Committees
 - iii. Ensure EMS voices are heard during Emergency Preparedness planning.
 - iv. Periodically review state statutes to ensure laws facilitate innovation and partnerships with ems agencies for public health care initiatives.
 - d. State EMS authorities should:
 - i. Advocate for EMS perspectives to be consistently included on new healthcare, public health or public safety initiatives
 - ii. Ensure representation of EMS on Medicaid Committees
 - iii. Ensure EMS voices are heard during Emergency Preparedness planning.
 - iv. Advocate for EMS during review of state education policies
 - v. Represent EMS interests across all other state agencies
 - e. National EMS associations should:
 - i.** Advocate for EMS representation within all relevant state and local committees and agencies.
 - ii.** Open discussions about standardization of EMS roles, job descriptions, education, performance improvement.

2. Develop a common vision for interdisciplinary collaboration

- a. Local EMS authorities / agencies should:
 - i. Actively seek opportunities to meet with other community health and public safety stakeholders to facilitate collaboration.
 - ii. Establish partnerships with local community healthcare stakeholders around unmet patient and community needs to enable customization and coordination of community health services
 - iii. Engage the workforce to develop strategies to facilitate collaboration among stakeholders and coordinate care across the con
- b. State Trade Associations and Labor Unions
 - i. Should meet regularly with State and local EMS authorities to develop mutually supportive workforce strategies to achieve common goals.
 - ii. Facilitate local EMS agency collaborations with other allied health organizations.
- c. State EMS authorities should:
 - i. Work with other regulatory authorities that oversee other workforce groups to develop a regulatory framework that accommodates that vision
 - ii. Facilitate EMS collaboration with other allied health organizations.
- d. National EMS stakeholders & associations should:
 - i. Meet regularly with national organizations representing other community stakeholder groups and ...
 - ii. Establish a *National Population Health Stakeholder Roundtable* to discuss integration, cooperation, and collaboration among healthcare system providers and payers.
 1. An example of representative stakeholders that could comprise the Roundtable, include, **but are not limited to:**
 - a. Homecare
 - b. Hospice
 - c. Hospitals
 - d. Health Insurance Plans
 - e. Emergency Planners
 - f. Emergency Nurses
 - g. Visiting Nurses
 - h. Emergency Physicians
 - i. Primary Care Physicians
 - j. Home Based Primary Care

- k. Hospital at Home
- l. Nursing Homes
- m. Social Workers
- n. Patient Advocates

3. Create EMS multi-agency collaboratives to match geographic territory of key stakeholders

- a. Local EMS authorities / agencies should:
 - i. Consider financial or other partnerships to enable improved coordination of community healthcare services across geographies that better match the catchment areas of hospitals or other key community healthcare stakeholders
 - ii. Engage in discussions around standardization/harmonization of terminology, services and offerings to enable interdisciplinary collaborations.
- b. State EMS authorities should:
 - i. Act as a convener for local EMS agencies to facilitate conversations around coordinating across a region for the purpose of enabling collaboration with other disciplines
- c. National EMS associations should:
 - i. Provide expertise and guidance to local EMS agencies and authorities seeking to better understand the benefits of multi-agency collaborations and examples of policies and written agreements.

PROMOTING INNOVATION IN EMERGENCY MEDICAL SERVICES

Chapter 7: Medical Direction Challenges & Recommendations

Draft 5



UC San Diego
HEALTH SYSTEM

Medical Direction and Oversight

History and Current Progress

In 1996 the *EMS Agenda for the Future* projected new roles and responsibilities to enhance community healthcare in the 21st century. To accomplish the *Agenda*, three strategies would need to be implemented, including creating: (1) new bridges between EMS and other components of the community health care system; (2) infrastructure to support streamlined public access and rapid delivery of emergency care, and (3) new tools and resources. Communities would need to integrate EMS, hospitals, physicians and clinics with researchers, legislators, educators, finance, prevention, communication and other stakeholders. It was understood that EMS medical directors would be essential to implement the *Agenda*⁵⁵.

In 2000, Dr. Mohammad Akhter, former EMS Medical Director of Michigan and then Executive Director of the American Public Health Association, challenged the National Association of EMS Physicians to work more closely with the public health community. Soon, the EMS and Public Health Roundtable brought together leaders and practitioners in prehospital care and public health to begin this process⁵⁶. In the years that followed countless examples of the enhanced roles of EMS Medical Directors have appeared, ranging from guiding communities through natural disasters to championing the development of systems of care for STEMI, stroke, cardiac arrest, trauma and pediatrics. Each success has enhanced the role of the EMS medical director.

For the past two decades, professional organizations have attempted to define the roles and responsibilities of the EMS medical director^{57,58,59,60}. In 2010, EMS became the

⁵⁵ Delbridge TR, Bailey B, Chew JL Jr, Conn AK, Krakeel JJ, Manz D, Miller DR, O'Malley PJ, Ryan SD, Spaite DW, Stewart RD, Suter RE, Wilson EM: EMS agenda for the future: Where we are ... where we want to be. *EMS Agenda for the Future Steering Committee. Ann Emerg Med* 1998;31:251-263

⁵⁶ National Highway Traffic Safety Administration. *EMS and Public Health Bulletin*. Washington, DC; 2000–2001.

⁵⁷ <https://www.acep.org/clinical---practice-management/role-of-the-state-ems-medical-director/>

⁵⁸ <https://www.iafc.org/emsMedicalDirectors>

sixth subspecialty available to diplomates of the American Board of Emergency Medicine (ABEM) following approval by the American Board of Medical Specialties. The following year, the National EMS Assessment⁶¹ determined that there were nearly 21,000 licensed local EMS agencies operating in the U.S. and that 8,459 physicians served in some EMS medical director capacity.

The recent recognition of EMS as a subspecialty serves a fitting reminder of the rapid evolution of the EMS in American medicine - consider that medical direction was not even mentioned an essential component of EMS in the 1973 landmark Emergency Medical Services Act.⁶² EMS certification now has standardized physician training and the qualifications for future EMS practitioners.⁶³

Challenges to Innovation

A Good Medical Director is Hard to Find (or Afford)

With the creation of the EMS subspecialty, it is becoming increasingly recognized that EMS medical direction requires a body of healthcare, public health, and public safety knowledge that is not typically within the normal educational scope of medicine. In October 2013, 203 physicians passed the first offering of the EMS subspecialty examination. However, it will take some time for there to be an adequate number of credentialed EMS physicians. Meanwhile, there is a maldistribution of qualified medical directors such that there are many agencies that find it difficult to find one, while in other communities, EMS specialist physicians struggle to find a compensated position.

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[http://www.naemsp.org/Documents/Position%20Papers/POSITION%20PhysicianMedicalDir.pdf](http://www.naemsp.org/Documents/Position%20Papers/POSITION%20PhysicianMedicalDirector.pdf)

⁶⁰ <http://www.emscnrc.org/emsc-resources/toolboxes/medical-direction-toolbox>

⁶¹ Federal Interagency Committee on Emergency Medical Services. 2011 National EMS Assessment. U.S. Department of Transportation, National Highway Traffic Safety Administration, DOT HS 811 723, Washington, DC, 2012. Available at www.ems.gov

⁶² Harvey JC. The Emergency Medical Service Systems Act of 1973. *JAMA*. 1974;230(8):1139-1140.

⁶³ <https://www.abem.org/public/subspecialty-certification/emergency-medical-services/ems-overview>

Indeed, the National EMS Assessment⁶⁴ found that in 31 of 49 states, the majority of their local EMS Medical Directors served in volunteer, uncompensated roles. Meanwhile, only 8 (16%) of States had requirements for continuing medical education specific to local EMS medical directors.

These key challenges to effective EMS medical direction - recognition, authority, independence, resources, compensation, education and responsibility - were repeatedly identified by stakeholders participating in surveys and focus groups conducted by the PIE project team. The absence of these basic ingredients makes successful innovation unlikely.

Thus, the field of EMS needs to remain flexible to retain the talent and experience of the many (often-times volunteer) physicians who have made major contributions to this field while being creative in finding ways to support the career pathway of new physicians being trained.

Out of the Loop

In as much as EMS does interface with many disparate systems, it is a logical nexus for community team-building. The EMS medical director is often uniquely positioned to lead the transformation of prehospital emergency medical services from its more traditional and limited role in public safety into a larger and more coherent framework from which to address the entire spectrum of out-of-hospital health care. Unfortunately, it is often the case that the medical director is inadequately resourced and lacks sufficient integration into the decision making processes of the EMS agency such that they are unable to participate meaningfully in policy development and strategic planning. Similarly, many medical directors are left out of the loop when an EMS agency might have discussions internally or with external stakeholders about integration, modernization, or new models of care. The healthcare and public safety systems lose valuable opportunities when they don't work closely with EMS medical directors.

⁶⁴ Ibid. 7

Population Health Requires a New Set of Skills

EMS and the rest of the healthcare system are moving to a further emphasis on population health, yet current medical direction education and practice continue to be limited to emergency care. Medical Directors need to be comfortable collaborating across a spectrum of other physician and non-physician specialists on both acute care issues as well as community-based health management initiatives. They may need to solicit greater input from primary care and mental health physicians and possibly involve them in aspects of both direct and indirect medical oversight as EMS adapts to provide new and innovative services. Yet, this may add a layer of complexity to the medical oversight of an EMS system that perhaps not all medical directors will be able to adapt to.

Inconsistent Roles of State EMS Directors

The role of the State Medical Director can be particularly important for innovation in EMS. This individual serves as a critical link between agency medical directors and the State EMS office, and can be an important advocate for local EMS medical directors. Despite the importance of this position, the 2011 National EMS Assessment found: (1) only 37 states had a designated State EMS Medical Director, and (2) of those states with an EMS Medical Director, half served in advisory roles while the remainder had defined roles in State law, and (3) only 80% of State EMS Medical Directors were board-certified in EM. Whether or not there is an officially designated state EMS Medical Director is secondary to the wide variation in the roles and responsibilities. These range from serving as a State liaison at public meetings (94.4%) to participating in the education of EMS administrators stroke systems, STEMI systems or statewide pediatric systems (only 5.6%). Over 50% of the State EMS offices indicated that they maintained a separate director for disaster preparedness and some identified separate specialty medical direction for pediatrics, trauma, STEMI, and stroke.

In our focus groups, the State EMS Medical Director was often, but not always, seen as an asset, and their authority or efforts on innovation was often limited.

Strategies

Developing and Supporting EMS Medical Directors

The National Association of EMS Physicians takes the position that “EMS is the practice of medicine.”⁶⁵ As such, we should endeavor for all patients cared for by EMS to be under the meaningful oversight of a physician. To that end, National EMS associations should develop programs to attract physicians to EMS, while local agencies should seek to more effectively engage EMS-trained medical directors. Non-EMS trained physicians who are currently serving as medical directors should seek further EMS-specific education.

EMS agencies should provide their medical director with dedicated time, sufficient resources, and well-delineated authority and responsibility. Effective and innovative emergency medical services depend on meaningful integration of a well-trained medical director into all aspects of policy development and service delivery - including operations, finance, quality assurance, training and education. The decision-making team in any EMS agency needs to include the Medical Director.

In order to support the role of an EMS medical director, all members of the EMS community should advocate for reimbursement for either oversight, or for online medical control activities, or for telemedicine. In addition, as the drivers of quality improvement in many EMS organizations, efforts to move toward pay for performance should make the return on investment of physician compensation more favorable.

Emphasizing Quality

It is the responsibility of the medical director to commit to improving patient care at their agencies. Medical directors should seek out continued education in EMS, and states should require EMS-specific continuing medical education for EMS medical directors. While local protocols should be tailored to specific needs, the adoption of

⁶⁵ <http://www.naemsp.org/pages/history.aspx>

national evidence-based and consensus-based guidelines⁶⁶ and quality measures offers the best opportunity for high quality care. To achieve minimum acceptable standards of care of all, EMS Medical Directors should first align their system protocols with national best practices and comply with NEMSIS-compliant quality improvement reporting requirements. Only after having accomplished a firm foundation in quality care should agencies test innovative models of improved care.

This role should be reinforced in EMS fellowships by appropriate mentors. EMS-trained physicians should be facile at incorporating feedback and input from an array of stakeholders in order to develop optimal policies and procedures.

It should be recognized that EMS Medical Directors may need to recuse themselves from conflict and that it is now common for EMS physicians to file annual Statements of Economic Interest no different than other influential community leaders. Conversely, EMS Medical Directors must be sufficiently protected to permit them to fulfill their professional duty to serve as the patient's advocate.

Closing the Loop

Once the physician is adequately resourced, he or she may more easily be involved with discussions within and beyond the EMS agency. To address the need to communicate more effectively with the broader healthcare environment, EMS physicians are increasingly seeking training in public health, business, policy, information technology and other related post-graduate work. The training affords valuable skills and inter-personal connections for the increasingly complex landscape associated with medical direction of complex EMS systems creating community paramedicine and mobile integrated healthcare systems. It is not unusual for EMS physicians to collaborate with insurers, hospital executives, an array of medical specialties and novel providers. The lines of authority for supervision of EMS providers

⁶⁶ National Association of State EMS Offices. National Model EMS Clinical Guidelines. Available at: <http://nasemso.org/Projects/ModelEMSClinicalGuidelines/documents/National-Model-EMS-Clinical-Guidelines-23Oct2014.pdf>

in non-traditional roles require careful oversight – it is important that EMS Medical Directors articulate to those unfamiliar with EMS the laws and policies governing the direction of EMS personnel.

Local and state agencies should complement this education by encouraging collaboration between local medical directors and community stakeholders. This can encourage partnerships and innovations that would not otherwise happen. Medical directors should communicate often with local hospitals, health plans, and allied providers, and should invite participation from other specialties on protocol development.

Medical Direction in a Population-Based Health Environment

Medicine today requires much more interdisciplinary collaboration than in the past. Because of this, EMS agencies will rely more on input from other specialties in both direct and indirect oversight roles. Medical directors should work with physicians from other specialties when designing protocols for severe traumatic injuries, acute time sensitive medical conditions such as stroke or myocardial infarction, as well as community paramedicine and primary care protocols.

Importantly, state and federal authorities should define a framework for EMS medical direction in the case of community paramedicine and mobile integrated healthcare. Many of these programs involve primary care and mental health in addition to emergency medicine, and patients can benefit from more involvement from these specialties in medical control functions and protocol development.

Inconsistent Roles of State EMS Directors

Selection of a State or even a local EMS Medical Director should require an open, competitive process. As the position is of significant importance to the public, hiring practices should be transparent and well-documented.

The role of the state EMS director should be clarified in law. In every state, a State Office of the EMS Medical Director should be given the funding and authority necessary

to encourage collaboration, innovation, and regulation. Beyond their formal authority, the State EMS Medical Director should be selected for their ability to communicate effectively to a multitude of stakeholders, and to utilize informal networks of influence to breakdown silos.

State EMS Medical Directors (along with State EMS offices) should function as facilitators of collaboration with the capacity to engage the machinery of government to authorize new programs and sustain others that show success, rather than as bureaucratic entities or simple regulatory bodies. State EMS Medical Directors are in a position to be drivers of innovation; they should take advantage of this role to shape the future of EMS in their state. They should act as a critical link between agency medical directors and the State EMS Office and advocate for EMS medical directors, providers, and patients on a state and federal level.

RECOMMENDATIONS

- 1. Assure EMS medical directors have sufficient resources to execute their duties**
 - a. Local EMS authorities should:
 - i. Require EMS participation in regional healthcare planning
 - ii. Offer salary and support sufficient to attract qualified physicians
 - iii. Preferentially recruit EMS-trained physicians
 - iv. Provide novel learning labs that introduce EMS medical directors to leaders of other related disciplines
 - v. Provide their medical director with dedicated time, sufficient resources, and well-delineated authority.
 - vi. Meaningfully integrate medical directors into all aspects of policy development and service delivery - including operations, finance, quality assurance, training and education
 - b. State EMS authorities should:

- i. Include EMS medical directors in State level committees discussing healthcare, public health and public safety.
 - ii. Convene EMS medical directors to discuss evidence and share best practices
 - c. National EMS organizations should:
 - i. Advocate for competitive salaries for EMS medical direction
 - ii. Develop relevant continuing education for EMS medical directors
 - iii. Endeavor to have EMS representation at key leadership conferences and healthcare committees
 - iv. Refine fellowship curricula to provide population health and non-emergency knowledge and skills
 - v. Develop programs that attract physicians to EMS
 - vi. Support the availability of EMS medical director toolkits
 - vii. Advocate for telemedicine and online medical control reimbursement

2. Expand opportunities for EMS medical directors to engage in multi-disciplinary teams

- a. Local EMS authorities should:
 - i. Foster discussion with medical leadership of hospitals, clinics, payers
 - ii. Invite participation of non-EMS specialties in protocol development
 - iii. Encourage collaboration and coordination with a multidisciplinary team of experts and specialists in both indirect and direct medical oversight
- b. State EMS authorities should:
 - i. Facilitate collaboration between state EMS and Medicaid medical directors
 - ii. Define medical direction for community paramedicine and mobile integrated healthcare involving non-EMS physicians
 - iii. Remove barriers, facilitate innovative processes and sustainment of successful efforts among high performing EMS systems within the state
- c. National EMS organizations should:
 - i. Meet with leaders of cardiology, diabetes, cancer and others to design and test novel care pathways
 - ii. Host forums to illustrate best-practice teams
 - iii. Seek opportunities for EMS representation

- iv. Expand input from EMS physicians in healthcare reform

3. Reduce variation in EMS medical direction

- a. Local EMS authorities should:
 - i. Champion quality improvement efforts
 - ii. Adopt “open data” policies to share outcomes
 - iii. Incorporate evidence-based consensus guidelines and best practices into EMS system protocols.
 - iv. Ensure that the medical director’s role in fostering innovative EMS is patient-centered and not based on conflicting interest of a hospital, health plan, or an EMS agency
- b. State EMS authorities should:
 - i. Define outcome measures
 - ii. Defining reporting requirements
- c. National EMS organizations should:
 - i. Promote evidence-based guidelines and best practices
 - ii. Advance the use of NEMSIS-based outcome measures
 - iii. Seek federal incentives for the use of NEMSIS-based outcome measures

4. Optimize the role of State EMS Medical Directors

- a. Local EMS agencies should:
 - i. Take advantage of the support and guidance offered by their state EMS Medical Director.
 - ii. Expect their state EMS Medical Director to be an advocate and facilitator for EMS innovation.
- b. State EMS authorities should:
 - i. Define the role and responsibilities of the EMS medical director in law
 - ii. Fund a State Office of the EMS Medical Director
 - iii. Provide adequate authority to achieve the designated responsibilities
- c. National EMS Associations should:
 - i. Support the appointment of EMS medical directors in all states
 - ii. Develop model criteria for the selection of a state EMS medical director.

PROMOTING INNOVATION IN EMERGENCY MEDICAL SERVICES

Chapter 8: Data & Telecommunication Challenges & Recommendations

Draft 5



Data & Telecommunication

Challenges to Innovation

Inadequate Data Collection

The benefits of harnessing EMS data and telecommunications are well known and long-sought. As early as 1966 the National Academy of Sciences' *Accidental Death and Disability: The Neglected Disease of Modern Society*⁶⁷ identified a lack of [EMS] data as a core deficiency. Yet even today, there are still many EMS agencies that have not yet made the transition from paper to electronic patient care reports (ePCR).

The information that we currently collect is somehow simultaneously too burdensome and frustratingly limited. EMS agencies are often required to submit subsets of data to multiple different local and state authorities, and possibly national level data collection efforts on specific conditions. Some of these datasets including NEMSIS, is of only marginal utility because it is organized by incidents, not patients, and is not linked to hospital data or claims data. Yet, much of the value EMS could bring by assessing a patient's environment and social conditions in the home and in the community is not captured. EMS systems could be a valuable source of information on individual and community non-medical factors which could provide greater insight to the continuum of care.

Incident-Based Reporting

Traditional EMS data systems are based on individual incidents. However, it is often not clear whether any patient involved in a specific incident has previously been attended to. Unlike the familiar "medical record number" that stays with a patient across multiple encounters, patients who encounter the same EMS agency twice will have two different incident ID numbers that usually will not be linked in

⁶⁷ <http://www.ems.gov/pdf/1997-Reproduction-AccidentalDeathDissability.pdf>

any meaningful way. Consequently, patients with multiple calls for assistance, special resource needs, complicated medical histories, or other historical factors that could affect their current call for help may not be promptly recognized. Perhaps the most challenging of all issues is accurate patient matching - consider the fact that Houston, TX (population 3.4 million) has nearly 70,000 individuals who share the same first name, last name and birthday.

Inability to exchange information

Whether or not patients can be linked across incidents, it is very rare for an EMS agency to be able to collect data on patient outcomes, either in the short term (What happened in the ED after a patient was dropped off? Was the patient admitted?) or in the long term (Did the patient survive? Did they recover?). This is because there is an almost universal lack of integration between prehospital and in-hospital electronic medical record systems.

This has important implications for quality assurance and improvement initiatives. In the era of value based purchasing, EMS agencies need to understand if their actions have an effect on a patient's healthcare utilization downstream, and ultimately the cost of care. This will be essential information in order to enter into risk-based contract agreements for new or existing services.

Data Security & Privacy Concerns

Of course patient information needs to be protected, and the risk to that protection increases the more we try to share or exchange information. Data breach is an increasingly common occurrence in the financial world and is just starting to gain attention in the healthcare

Behavioral Health Patients Present Even Greater Challenges

Perhaps the most challenging issue confronting HIE relates to the management of individuals with substance abuse and behavior health conditions. More than any other population, the proper integration of physical and behavioral health information is essential. Due to laws governing such highly sensitive PHI, the Substance Abuse and Mental Health Services Administration (SAMHSA) has identified a "digital divide" separating behavioral health, substance abuse¹ and physical health data exchange¹. Trust networks are required to facilitate such complex data sharing. In the interval, it is clear that obtaining patient informed consent (when feasible) remains the surest means of effecting such optimal care plans.

1. http://www.integration.samhsa.gov/operations-administration/HIE_paper_FINAL.pdf

world. Currently, many EMS agencies lack the technical knowledge or capabilities to securely share electronic health information. While the ePCR vendors sometimes can fill this role, ultimate responsibility usually lies with the agency. Many entities therefore run into roadblocks around privacy concerns and compliance issues attributed to the Health Insurance Portability and Accountability Act (HIPAA), to a large degree because they remain unclear as to the specifics of exactly what is or is not prohibited with new technologies, roles and collaborations.

Though largely erroneous, some hospitals and other entities claim that they are unable to share outcome data (or allow real-time access to data) with EMS due to HIPAA. As discussed in the legal/regulatory section, this issue has been addressed by NHTSA and an information sheet providing clarification has been disseminated.

Keeping up with Changes in Telecommunications

Technology is rapidly reshaping the telecommunications equipment essential to EMS. Today over 70% of 9-1-1 requests for emergency service originate from personal cell phones, yet the current 9-1-1 system technology cannot handle text, data, images, or video. There are also challenges to accurate caller geolocation and call routing. With few exceptions, primary service answering points (PSAP) are unable to transfer calls from one center to another when volume exceeds the available resources.

Limited Data Management Capability

If some of the barriers mentioned above were to be overcome, the EMS industry would need to develop the skills to transform the data now available into worthwhile information that can be used to demonstrate the value of EMS care. Furthermore, if individual providers had real-time information to hospital data, it is important to ensure that the information is packaged in a usable form appropriate to the experience and training of the EMS provider, so that it can best be synthesized into improved clinical decision making in the field.

Strategies to Promote Innovation & Current Progress

Data Standardization and Collection

To address some of these challenges, in 2001 the federal government funded the National Association of State EMS Officials (NASEMSO) to develop a National EMS Information System (NEMSIS). Since 2005, the National Highway Traffic Safety Administration (NHTSA), the Health Resources and Services Administration (HRSA), and the Centers for Disease Control (CDC) have funded a NEMSIS Technical Assistance Center (TAC) at the University of Utah to support the 50 states and 6 territories. It is hoped that NEMSIS will one-day provide a sophisticated, data-driven platform that improves patient care, workforce safety, training, and fully integrates EMS into emerging healthcare systems.

In January 2013, the National EMS Advisory Council (NEMSAC) published *NEMSIS: Achieving its Full Potential for Advancing Healthcare*⁶⁸, which underscored national EMS goals and acknowledged barriers to innovation. It stated that the “vision has not been fully realized nor have the necessary supporting mechanisms been available at the national, state, and local levels for EMS stakeholders to achieve the full potential of NEMSIS to improve healthcare quality.” To help realize the vision, the collective EMS industry should think more strategically about what questions need to be answered by the data and work to improve the dataset until it becomes a better source of information to inform decision making, policy, and research.

State governments and EMS agency leadership have a role to play here as well. They can require or encourage uniform standards compliant with or even expand upon those in the NEMSIS platform. They can require or encourage collection of standardized information that would facilitate inclusion in national data efforts such as the Cardiac Arrest Registry to Enhance Survival (CARES). The States could provide logistical and technical support to EMS Agencies through the development

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<http://www.emsa.ca.gov/Media/Default/PDF/NEMSAC%20Final%20Advisory%20on%20NEMSIS.pdf>

of Technical Assistance Centers (TACs). These TACs could periodically issue reports on the progress of data systems enhancements, to advise EMS agencies, State and Federal legislators, hospitals, social services providers, and other stakeholders on the progress, barriers, and needed next steps to achieve full implementation of these enhancements.

Longitudinal Record Keeping

The ability to track and identify patients over multiple encounters would facilitate integration with hospitals, primary care groups, health information exchanges, and possibly between EMS agencies. Further, improved data integration would benefit patients in the form of improved quality and patient safety, and benefit the providers through efficiency gains.

In 2009, the Indiana Network for Patient Care was the first HIE to provide preexisting patient data to an EMS agency (Indianapolis EMS). This early experience demonstrated the importance of accurate patient matching⁶⁹. It also informed the need for longitudinal patient-oriented record-keeping instead of

limiting data collection in EMS to incident-based collection and reporting.

⁶⁹ Park SC, Finnell JT. Indianapolis Emergency Medical Service and the Indiana Network for Patient Care: Evaluating the Patient Match Algorithm. *AMIA Annual Symposium Proceedings*. 2012;2012:1221-1228.

Incentivizing & Facilitating the Exchange Of Information

The Office of the National Coordinator for Health Information Technology (ONC) directs the federal effort in support of the adoption of HIT and the development of a nationwide health information exchange (HIE)⁷⁰. Beginning in 2011, physicians and hospitals who could attest to *meaningful use* (MU) of electronic health records (EHRs) qualified for incentive payment. MU requires that the use of data improves healthcare quality, safety, efficiency, health disparity, patient engagement, care coordination or population health⁷¹. While EMS was not included in MU funding, ONC does recognize the value of EMS data as demonstrated by its recent awarding of the California EMS Authority to develop increased utility of information from several health information exchanges. (see boxed insert on left)

To unlock the potential of EMS-HIE exchange, states may want to craft enabling legislation. Effective September 2015, California (CA) AB 503 authorizes health facilities to release patient-identifiable medical information to a defined EMS provider, a local EMS agency, and the authority “... to the extent specific data elements are requested for quality assessment and improvement purposes”. The bill also authorized the State to develop minimum standards for the implementation of data collection. Effective January

Improving End-of-Life Care

The role of EMS HIE to improve end-of-life care is receiving increasing attention. Currently Oregon, Idaho, New York, West Virginia and Utah maintain statewide registries for Physicians Orders for Life-Sustaining Treatment (POLST)¹. In October 2015, California SB 19 (Wolk) authorized a pilot test for an electronic registry (POLST eRegistry), mandating that providers in the pilot locations submit completed forms to this registry and identifying the CA EMSA as the lead agency for the pilot. In June 2016, the California HealthCare Foundation, in collaboration with the EMSA and the Coalition of Compassionate Care in California awarded Alameda County, San Diego Health Connect and vendor Vynca a \$350,000 grant to develop a pilot, cloud-based ePOLST registry¹.

<http://www.chcf.org/projects/2016/polst-registry>

⁷⁰ <https://www.healthit.gov/>

⁷¹ <https://www.healthit.gov/providers-professionals/meaningful-use-definition-objectives>

2016, AB 1129⁷² amended the CA Health and Safety Code to require that LEMSA use the most current version of NEMSIS and that they submit data to the CA EMS Information System (CEMSIS). The CA EMS Authority now hosts annual EMS-HIE summits to explore topics ranging from national HIT interoperability and Medi-Cal funding to the use of stroke registries linked to RHIE to improve population health⁷³.

Other state and regional HIEs have initiated EMS data exchange as well. In 2010, the Rochester Regional Health Information Organization began integrating EMS data to improve care coordination. Today, eighteen regional EMS services provide data to the Rochester RHIO⁷⁴. South Metro Fire Rescue Authority joined the Colorado HIE, CORHIO, to enable paramedics to receive real-time hospital and lab information via a Web portal⁷⁵, permitting query for patient information at dispatch and patient record access and data transmission to hospitals in route. In 2015, MedStar (the Metropolitan Ambulance Authority that serves Fort Worth and 14 other cities in the north Texas) adopted a cloud-based health-care integration engine called *Infor Cloverleaf* to exchange ePCR data with emergency departments. *Cloverleaf* will convert EMS data (XML format) to a hospital-compatible (HL7) format for delivery to hospital EMRs with the eventual goal of bi-directional data exchange.

Valuable use-cases for EMS-HIE exchange include examples of improving regional preparedness for disasters. For example, based upon an ONC-sponsored analysis of need the CA EMSA is developing PULSE (Patient Unified Lookup System for Emergencies) to support mobile field hospitals care sites where EHR may not be immediately available. In addition, web-based technology will provide rapid

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https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160AB1129

⁷³ <https://hieinemsinca.com/2016/04/05/3rd-california-hie-in-ems-summit-agenda/>

⁷⁴ <http://providerportal.grrhio.org/Data%20Providers.aspx>

⁷⁵ <http://www.corhio.org/services/health-information-exchange-services/for-emergency-responders>

authentication of credentials for CA health-care volunteers who need rapid access to patient records during disasters.

Secure Access to Data

The Office of Science and Technology Policy oversees the federal *My Data Initiative* to provide secure access to personal data and increase the ability to access one's own data. Blue Button⁷⁶, developed in 2010 by the Department of Veterans Affairs, currently provides this capability to Departments of Defense, Health and Human Services, and Veterans Affairs beneficiaries and numerous health plans and personal health record vendors are expected to join. The ICEBlueButton app allows EMS personnel and physicians to download personal health information⁷⁷.

Transforming Data into Meaningful Information

To complement technology, EMS must steward the development and adoption of meaningful measures of quality. In this respect, the EMS COMPASS Initiative⁷⁸ is vital, as it seeks to define EMS measures relevant to agencies, regulators, and patients. More broadly, EMS leaders should advocate for incentivization of the meaningful use of EMS data. Whether that be through state or federal governmental programs, or by working with health plans and potential beneficiaries of the information that might be gleaned by analyzing, connecting, and reporting EMS data.

The power of EMS data to augment population-based health analysis and intervention is just being unlocked. Within the storage centers of emergency communication centers reside terabytes of valuable data. Recent studies have begun to demonstrate that geocoded, atomic clock-synchronized fire and EMS data can inform on better approaches to the management of sudden cardiac arrest⁷⁹, major

⁷⁶ <https://www.healthit.gov/patients-families/your-health-data>

⁷⁷ <http://www.icebluebutton.com/>

⁷⁸ <http://www.emscompass.org/>

⁷⁹ Lam SS, Zhang J, Zhang ZC, Oh HC, Overton J, Ng YY, Ong ME. Dynamic ambulance reallocation for the reduction of ambulance response times using system status management. *Am J Emerg Med.* 2015 Feb;33(2):159-66.

trauma, substance abuse⁸⁰, diabetes, STEMI and a range of other health issues. For example, when EMS data were explored with GIS analytic tools, it became evident that socioeconomic variables within communities significantly influence the performance of bystander CPR, providing opportunities to address unrecognized barriers to survival⁸¹.

EMS data are now being searched and surveilled to identify and address high-cost, high-needs individuals. In such ways, EMS provides essential elements of the CDC Vision of Public Health Surveillance in the 21st century⁸², including the ability to perform real-time analytics, alert and intervene at a population level. To harness the power of EMS-HIE data exchange, consider the benefits of regional Admission-Discharge-Transfer (ADT)⁸³ alerting. EMS could rapidly alert care coordinators throughout a community when patients at risk of 30-day readmissions were being transported to area hospitals (In San Diego, one-third of 30-day readmissions occur at a facility different than the original). Simply put, EMS HIT has the capability to rapidly identify and address issues that conventional systems cannot even detect.

⁸⁰ Seaman EL, Levy MJ, Jenkins JL, Godar CC, Seaman KG. Assessing pediatric and young adult substance use through analysis of prehospital data. *Prehosp Disaster Med.* 2014 Oct;29(5):468-72.

⁸¹ King R, Heisler M, Sayre MR, Colbert SH, Bond-Zielinski C, Rabe M, Eigel B, Sasson C. Identification of factors integral to designing community-based CPR interventions for high-risk neighborhood residents. *Prehosp Emerg Care.* 2015 Apr-Jun;19(2):308-12

⁸² <http://www.cdc.gov/mmwr/pdf/other/su6103.pdf>

⁸³ <https://catalyze.io/learn/hl7-201-the-admission-discharge-transfer-adt-message>

There is no longer any question that social and behavioral determinants of health dictate outcome. The CMS “Accountable Health Communities Model”⁸⁴ recognizes that addressing health-related social needs (food insecurity, housing, etc.) through enhanced clinical-community linkages can improve health outcomes and reduce costs. To address the need to incorporate such data into care plans, the Institute of Medicine (IOM) identified necessary social and behavioral domains and measures⁸⁵. The source of much of these data may well derive from external sources including public health and community agencies. However, it is also possible that EMS will serve as a source of reliable patient and family-centered in-home data given appropriate measurement tools⁸⁶. This issue is especially important since CMS intends to expand incentives to achieve person-centered measures of quality. ONC is conducting hearings to ensure that HIT supports new outcomes-focused models of health care delivery and value-based payment models through the availability

⁸⁴ <https://innovation.cms.gov/initiatives/AHCM>

⁸⁵ <http://www.nap.edu/catalog/18951/capturing-social-and-behavioral-domains-and-measures-in-electronic-health-records>

⁸⁶ http://www.qualityforum.org/About_NQF/

of data and population-management tools⁸⁷.

One example of the use of EMS data to inform community-based providers is the San Diego Community Information Exchange (CIE). In this social data exchange, certain demographic EMS data (ex., numbers of EMS transports) are confidentially shared with participating community-based organizations (CBO)⁸⁸. Early results demonstrate that when housing providers were able to see their clients' frequency of EMS use, they modified their approach to case management and achieved more stable housing outcomes. The CIE currently confidentially shares a discrete set of RAP community paramedic data regarding common clients with 10 CBO's, 2 hospitals and the local Meals-on-Wheels.

EMS data can be used to assess outcomes for a variety of other complex challenges. For example, the number of EMS transports is an accepted metric to assess interventions for serial inebriates⁸⁹, chronically homeless^{90,91} and other frequent users⁹². In May 2016, California AB 2256 (Maienschein) was introduced. This bill would require that homeless service providers submit to the California Health and Human Services Agency on an annual basis a report of the number of ambulance transports, ED visits, hospital days and days of incarceration for all homeless children, youth and adults.⁹³ On a population health level one can envision the creation of incentives that reward EMS system performance. Currently, there is no financial incentive for communities to implement systems of care for sudden

⁸⁷ <https://www.healthit.gov/facas/health-it-policy-committee/hitpc-workgroups/advanced-health-models-and-meaningful-use-workgroup>

⁸⁸ <http://ciesandiego.org>

⁸⁹ Dunford JV, Castillo E, Chan TC, Vilke G, Jenson P, Lindsay S. Impact of the San Diego Serial Inebriate Program (SIP) on use of emergency medical resources. *Ann Emerg Med.* 2006;47(4):328-336.

⁹⁰ Larimer ME, Malone DK, Garner MD, et al. Health Care and Public Service Use and Costs Before and after provision of housing for chronically homeless persons with severe alcohol problems. *JAMA.* 2009;301(13):1349-1357.

⁹¹ <http://my.neighbor.org/united-ways-homeless-initiative-project-25-saves-lives-3-5-million/>

⁹² Tadros AS, Castillo EM, Chan TC, Patel E, Watts K, Jensen AM, Dunford JV. Effects of an emergency medical services-based resource access program (RAP) on frequent users of health services *Prehosp Emerg Care* 2012 Oct;16(4):541-7.

⁹³

https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160AB2256

cardiac arrest, STEMI, stroke or major trauma even though we know that they reduce cost, preventable death and disability. It seems intuitive that CMS will create value-based care incentives to states or communities that implement high-performance EMS systems.

Advances in EMS Communication

The Department of Transportation has designed a transition plan for a next-generation 9-1-1 (NG9-1-1) system termed the NG9-1-1 Initiative⁹⁴, which establishes the foundation for public emergency communications services in a digital, internet-based society. There are other promising advances based upon wireless 9-1-1. A recent report from Stockholm demonstrated that a mobile-phone positioning system that dispatched CPR-trained lay volunteers was associated with significantly increased rates of bystander-initiated CPR⁹⁵. Similar benefits are expected from PulsePoint, a U.S. cellphone app that locates layperson rescuers as well as proximate AEDs though early results were hampered by a lack of specificity⁹⁶. The Singapore Heart Foundation, in collaboration with the Singapore Civil Defence Force, recently introduced a similar app called R-AEDi⁹⁷. The location and mapping of AEDs is also being supported through innovative crowd-sourcing techniques⁹⁸, and not surprisingly there is enormous interest in making these life-saving devices more available. The Defibrillator Design Challenge asked volunteers to vote for AED designs and share designs on social media, attracting 119 submissions that were shared over 48,000 times on Facebook and Twitter⁹⁹. There

⁹⁴ <http://www.911.gov/911-issues/standards.html>

⁹⁵ Ringh M, Rosenqvist M, Hollenberg J, et al. Mobile-Phone Dispatch of Laypersons for CPR in Out-of-Hospital Cardiac Arrest. *N Engl J Med* 2015; 372:2316-2325

⁹⁶ Brooks SC, Simmons G, Worthington H, Bobrow BJ, Morrison LJ. The PulsePoint Respond mobile device application to crowdsource basic life support for patients with out-of-hospital cardiac arrest: Challenges for optimal implementation. *Resuscitation*. 2016 Jan;98:20-6.

⁹⁷ <https://www.raedi.sg/>

⁹⁸ Merchant RM, Asch DA, Hershey JC, Griffis HM, Hill S, Saynisch O, Leung AC, Asch JM, Lozada K, Nadkarni LD, Kilaru A, Branas CC, Stone EM, Starr L, Shofer F, Nichol G, Becker LB. A crowdsourcing innovation challenge to locate and map automated external defibrillators. *Circ Cardiovasc Qual Outcomes*. 2013 Mar 1;6(2):229-36.

⁹⁹ Merchant RM, Griffis HM, Ha YP, Kilaru AS, Sellers AM, Hershey JC, Hill SS, Kramer-Golinkoff E, Nadkarni L, Debski MM, et al. *Am J Public Health*. 2014 Dec; 104(12):2306-12.

is little doubt that mobile applications and social media will play an increasingly valuable role in the early care of time-critical conditions.

Draft 5

FirstNet: A Platform for Innovative Information Sharing Will Change How EMS is Practiced

As spectacularly as EMS has blossomed as a medical and operational public service in the past 50 years, we have not substantially progressed in the way that we share information. The VHF/UHF/ 800 trunked and other radios we used, and still use, to get dispatch information while speeding to a call, are *narrow-band* communications. These land mobile radio (LMR) systems are great for voice communications, but send data as slowly as dial-up internet access *20 years ago!* That is insufficient to support text, picture, video, imaging and most other data communications.

With the right equipment, connections and *broadband* communications, EMS capabilities and practice itself would change. We could, for example:

- Be notified of a vehicle crash, exact location, and likelihood of severe injuries seconds after it occurs in a rural location instead of forty minutes to hours later (by the time it is discovered to have occurred and had a reliable responder assess it);
- Use video transmission, voice to text transmission, biotelemetry transmission, and access to/transmission of emergency health data from HIEs, to populate a patient-incident data base for access by all involved responders and hospital team members sixty seconds after arrival on scene, rather than 10 minutes or more for each patient involved; and
- Train basic personnel in rural areas to use a portable ultrasound probe with trauma patients who have signs/symptoms of possibly life-threatening injuries. Transmitting these images for remote interpretation may enable responders to transport the patient for further assessment at a local hospital rather than an expensive and unnecessary helicopter/trauma center experience.

Prehospital professionals are now using commercial wireless broadband access (e.g. Verizon, AT&T) today to send various types of data, mostly for administrative purposes. Some are piloting telemedicine and other patient-support uses in real-time on calls. This exhibits positive attitude toward adoption of innovative technology, and experimentation is encouraged, but also a significant red-flag:

- *Commercial wireless broadband is not an adequate platform for mission-critical/patient-critical purposes.* It lacks the reliability and resilience of public safety grade LMR systems, is not adequately cyber-secure, and has no ability to offer EMS or other public safety providers priority or preemptive use. In short, it is susceptible to the same dropped calls, diminished data rates, and network failures as are regularly experienced by public customers. During local emergencies, when the public is communicating the most (texting, you-tubing, and the like), responders have their worst access.

The First Responder Network Authority (“FirstNet”) was signed into law in 2012 as the nationwide wireless broadband network dedicated to public safety (www.Firstnet.gov). It will provide virtually limitless broadband “pipe” for EMS and other responders, as well as for hospital EMS support services. Some early-builder sites already exist in New Jersey, New Mexico, Colorado, California, and Texas, and the nationwide network link is expected to be established in the next five years. It will serve as a platform for application innovation and is already seeing an explosion of EMS, police and firefighting applications being developed (e.g. <http://appcomm.org/>).

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FirstNet EMS Board Member

independent authority within the National Telecommunications and Information Administration. The purpose of FirstNet is to establish, operate, and maintain an interoperable public safety-grade broadband network. Congress has allotted \$7 billion and 20 MHz of valuable radio spectrum to build the network. Each state must have a Radio Access Network (RAN) to connect to the FirstNet network core. To achieve rapid improvements, local and state governments could improve the environment for innovation by investing in wireless broadband for EMS providers on public, commercial carrier, and government (Wi-Fi, LTE & FirstNet) networks. Unfortunately, while such networks provide exceptional service for general use by the public, their ability to perform mission-critical, patient-critical tasks during large scale events when the communications system is severely stressed is considered inadequate.

Telemedicine

Telemedicine promises to dramatically expand on-line expert medical control for both acute and chronic EMS conditions. Local and state governments could dramatically improve the environment for innovation across a variety of sectors by enabling direct mobile telemedicine in the form of voice, text, data, pictures, video clips and live video, between EMS providers, physicians and hospitals. For example, the Houston Fire Department has partnered with their local Health and Safety Agency to develop Project Ethan¹⁰⁰. Houston firefighters establish direct mobile teleconferences between patients and dedicated emergency physicians to make more informed determinations regarding the need for ambulance transport. There are many other examples how HIT will be employed to augment EMS care. For example, it is feasible that real-time ultrasound images can be transmitted to stroke neurologists to diagnose and perhaps even treat acute stroke¹⁰¹. Further, immersive

¹⁰⁰ <http://www.emsworld.com/video/12178910/project-ethan-reducing-ed-transport-in-houston>

¹⁰¹ Hölscher T, Dunford JV, Schlachetzki F, Boy S, Hemmen T, Meyer BC, Serra J, Powers J, Voie A. Prehospital stroke diagnosis and treatment in ambulances and helicopters – a concept paper. Am J Emerg Med. 2013 Apr;31(4):743-7.

technologies including virtual reality and augmented reality promise remarkable training and support for EMS in the near future¹⁰².

In summary, the barriers to harnessing EMS data and HIT are real but eminently solvable and worth the effort. To achieve these ends, the following recommendations have been developed for consideration by local, state and federal EMS partners and stakeholders.

RECOMMENDATIONS

1. Incentivize the meaningful use of EMS data

- a. Local EMS agencies should:
 - i. Support provider adoption of ePCR
 - ii. Create (open-access) performance dashboards
 - iii. Employ hot-spotter data to target community planning
 - iv. Reward EMS innovation, ex., alerting for care coordination
- b. State EMS authorities should:
 - i. Require EMS-HIE “SAFR” exchange
 - ii. Define standards for EMS data exchange
 - iii. Promote use of EMS data in Medicaid “waivers”, ex., frequent users
 - iv. Promote use of EMS data in analysis of impact of homelessness
 - v. Create (open-access) performance dashboards
 - vi. Define EMS performance metrics for use by Public Health, ex., CARES
 - vii. Support adoption by rural and frontier regions
 - viii. Establish ePOLST registries with community partners, ex., Coalition for Compassionate Care, foundations
- c. National EMS associations should:
 - i. Request ONC for HIT create incentives for meaningful use of EMS data
 - ii. Encourage expanded funding for EMS-HIE pilot programs
 - iii. Steward development/harmonization of EMS performance measures

¹⁰² <https://www.youtube.com/watch?v=Ufo68NxLvq4&feature=youtu.be>

- iv. Assist in disseminating results and recommendations of EMS COMPASS
- v. Promote education among EMS providers regarding use of EMS data
- vi. Require that EMS fellowships incorporate HIT curriculum
- vii. Encourage awareness of emerging social media technologies
- viii. Engage international EMS societies to share HIT advances
- ix. Clarify the authority of EMS providers to exchange PHI with HIE
- x. Support the implementation of a secure unique patient identifier
- xi. Encourage EMS-HIE SAFR data exchange, ex., CMMI grants
- xii. Continue to support NEMSIS and expand role of TAC
- xiii. Create (open-access) performance dashboards
- xiv. Recognize EMS innovation, ex., AHRQ Healthcare Innovation Exchange
- xv. Define deadline for states to begin participating in NEMSIS
- xvi. Require EMS data for national goals, ex., Healthy People 2020
- xvii. Fund pilots to test capacity of EMS-HIE to augment preparedness and response for disasters, ex., CDC
- xviii. Reward development that supports EMS use of “My Data” initiatives
- xix. Reward “Accountable Healthcare Communities” use of EMS data for population health

2. Support secure health-social data exchange

- a. Local EMS agencies should:
 - i. Conduct analysis of local healthcare gaps and opportunities
 - ii. Explore community pilot programs
- b. State EMS authorities should:
 - i. Incentivize the use of social data in pilot programs, ex., Medicaid waivers
 - ii. Clarify role of patient consent
- c. National EMS associations should:
 - i. Engage housing, law, mental health to identify gaps/opportunities
 - ii. Champion the role of EMS in mobile-integrated healthcare
 - iii. Support the development of HIE-social information exchange
 - iv. Continue to support the development of trust networks necessary to integrate behavioral and physical health data

- v. Clarify the authority of health providers to exchange with social providers
- vi. Encourage development of EMS measures of quality care

3. Improve public safety IT infrastructure

- a. Local EMS agencies should:
 - i. Anticipate NG 911 in CAD updates
 - ii. Provide open access to data re: 9-1-1 performance
- b. State EMS authorities should:
 - i. Assure access to performance of existing systems ex., “911-PSAP”
 - ii. Assure adequate funding for NG911
 - iii. Explore low-cost ubiquitous coverage access for EMS
 - iv. Provide open access to data re: 9-1-1 performance
- c. National EMS associations should:
 - i. Champion funding
 - ii. Encourage research
 - iii. Advocate for supporting development of interoperable broadband Internet, Wi-Fi, and telecommunications platforms
 - iv. Encourage investment in free public broadband Internet and Wi-Fi
 - v. Advocate for enhanced security of public safety infrastructure
 - vi. Promote exchange of biometric, video, telemetry, HIE data
 - vii. Encourage development of telemedicine platforms for all providers

4. Employ EMS data to improve population health

- a. Local EMS agencies should:
 - i. Enable local HIT research
- b. State EMS authorities should:
 - i. Create EMS registries for research
 - ii. Assure EMS representation on State HIE
 - iii. Provide technical assistance to TAC
 - iv. Provide periodic reports
- c. National EMS associations should:
 - i. Champion value of EMS data for national healthcare outcomes, ex., CPR, CARES, STEMI, Stroke, Trauma
 - ii. Nominate representatives to State HIE
 - iii. Advocate for the adoption of CARES for Public Health reporting
 - iv. Advocate for greater funding of research in EMS HIT

5. Assure Technical Assistance Centers (TAC) support adoption of EMS HIT

- a. Local EMS agencies should:
 - i. Support local provider access to TAC
- b. State EMS authorities should:
 - i. Support TAC
 - ii. Issue reports to LEMSA
- c. National EMS associations should:
 - i. Promote awareness of resources, ex., NEMSIS
 - ii. Showcase best practices

Draft 5

Conclusion

The history of EMS in the United States is often told through the story of landmark documents. The NTHSA report *Accidental Death and Disability: The Neglected Disease of Modern Society* (1966) launched the development of a national EMS system, after which the *EMS Agenda for the Future* (1996), and the Institute of Medicine's *Future of Emergency Care* series (2007), among others, laid out the challenges faced by the industry and showed clear paths to improving the way Americans receive emergency medical care.

Though this framework for Promoting Innovation in EMS is by nature a forward-looking document, it is instructive to compare the recommendations made in this document with those made in previous documents. Commonalities highlight areas where perhaps insufficient progress has been made since these older documents were published. As shown in the Figure, our recommendations often echo those that were offered by the previous documents of national scope.

At the same time, each document was shaped by the healthcare environment in which it was created. *EMS Agenda for the Future* was influenced by the increasing use of managed care in the 1990's, and the *Future of Emergency Care* series in the 2000's proposed a future of EMS incorporation into a wider system of community health. This framework was developed in the current healthcare environment, largely influenced by the Patient Protection and Affordable Care Act, and the information revolution, in part supported by the 2009 HITECH Act which facilitated the widespread implementation of electronic health records. This document seeks to build on previous contributions, while exploring the current landscape of innovation and healthcare reform to present a vision of EMS as part of an integrated community healthcare system.

EMS Agenda for the Future - 1996

Integration of Health Services

- Expand the role of EMS in public health (Intro)
- Involve EMS in community health monitoring activities (Data 4)
- Integrate EMS with other health care providers and provider networks (IC 2)
- Incorporate EMS within health care networks' structure to deliver quality care (IC 2)
- Be cognizant of the special needs of the entire population (Intro)

Education Systems

- Incorporate research, quality improvement, and management learning objectives in higher level EMS education (Ed 2)
- Commission the development of national core contents to replace EMS program curricula (Ed 2)
- Conduct EMS education with medical direction (Ed 2)
- Seek accreditation for EMS education programs (Ed 1)
- Establish innovative and collaborative relationships between EMS education programs and academic institutions (Ed 2)
- Recognize EMS education as an academic achievement (Ed 1)
- Develop bridging and transition programs (Ed 2)

Human Resources

- Adopt the principles of the national EMS Education and Practice Blueprint (Ed 1)
- Develop a system for reciprocity of EMS provider credentials (L 4)
- Develop collaborative relationships between EMS systems and academic institutions (F 4)
- Conduct EMS occupational health research (RC 5)
- Provide a system for critical incident stress management (RC 5)

Medical Direction

- Formalize relationships between all EMS systems and medical directors (MD 1)
- Appropriate sufficient resources for EMS medical direction (MD 1)
- Require appropriate credentials for all those who provide on-line medical direction (MD 3)
- Develop EMS as a physician and nurse subspecialty certification (MD 3)
- Appoint state EMS medical directors (MD 4)

EMS Research

- Develop information systems that provide linkage between various public safety services and other health care providers (Data 3)
- Include research related objectives in the education processes of EMS providers and managers (Ed 2)
- Develop collaborative relationships between EMS systems, medical schools, other academic institutions, and private foundations (F 4)

Prevention

- Collaborate with community agencies and health care providers with expertise and interest in illness and injury prevention (Intro)

Legislation and Regulation

- Pass and periodically review EMS enabling legislation in all states that supports innovation and integration, and establishes and sufficiently funds a EMS lead agency (L 1)
- Enhance the abilities of state EMS lead agencies to provide technical assistance (Intro)
- Establish and fund the position of State EMS Medical Director in each state. (MD 4)
- Implement laws that provide protection from liability for EMS field and medical direction personnel when dealing with unusual situations (L 1)

Evaluation

- Develop valid models for EMS evaluations (RC 4)
- Evaluate EMS effects for multiple medical conditions (RC 4)
- Determine EMS effects for multiple outcome categories (RC 4)
- Determine EMS cost-effectiveness (F 3)

Information Systems

- Adopt uniform data elements and definitions and incorporate them into information systems (Data 1)
- Develop mechanisms to generate and transmit data that are valid, reliable, and accurate (Data 1)
- Develop integrated information systems with other health care providers, public safety agencies, and community resources (Data 2)

Clinical Care

- Subject EMS clinical care to ongoing evaluation to determine its impact on patient outcomes (RC4)
- Employ new care techniques and technology only after shown to be effective (Intro)
- Eliminate patient transport as a criterion for compensating EMS systems (F 1)
- Establish proactive relationships between EMS and other health care providers (IC 1)

Communications Systems

- Develop cooperative ventures between communications centers and health providers to integrate communications processes and enable rapid patient-related information exchange (Data 1)
- Determine the benefits of real-time patient data transfer (Data 1)

System Finance

- Collaborate with other health care providers and insurers to enhance patient care efficiency (IC 3)
- Develop proactive financial relationships between EMS, other health care providers, and health care insurers/provider organizations (IC 3)
- Compensate EMS on the basis of a preparedness-based model, reducing volume-related incentives and realizing the cost of an emergency safety net (F 2)
- Address EMS relevant issues within governmental health care finance policy (F 1)

Emergency Medical Service at the Crossroads – 2007

Chapter 3: Building a 21st-Century Emergency Care System

3.3 The Department of Health and Human Services should convene a panel of individuals with emergency and trauma care expertise to develop evidence-based indicators of emergency care system performance. (RC 4)

3.4 Congress should establish a demonstration program, administered by Health Resources and Services Administration, to promote regionalized, coordinated, and accountable emergency care systems throughout the country, and appropriate \$88 million over 5 years to this program. (RC 2)

3.5 Congress should establish a lead agency for emergency and trauma care within 2 years of the publication of this report. This lead agency should be housed in the Department of Health and Human Services, and should have primary programmatic responsibility for the full continuum of EMS, emergency and trauma care for adults and children, including medical 9-1-1 and emergency medical dispatch, prehospital EMS (both ground and air), hospital-based emergency and trauma care, and medical-related disaster preparedness. Congress should establish a working group to make recommendations regarding the structure, funding, and responsibilities of the new agency, and develop and monitor the transition. The working group should have representation from federal and state agencies and professional disciplines involved in emergency and trauma care. (L 1)

3.6 The Department of Health and Human Services should adopt rule changes to the Emergency Medical Treatment and Active Labor Act (EMTALA) and the Health Insurance Portability and Accountability Act (HIPAA) so that the original goals of the laws are preserved but integrated systems may further develop. (L 3)

3.7 CMS should convene an ad hoc work group with expertise in emergency care, trauma, and EMS systems to evaluate the reimbursement of EMS and make recommendations regarding inclusion of readiness costs and permitting payment without transport. (F 1)

Chapter 4: Supporting a High Quality EMS Workforce

4.1 State governments should adopt a common scope of practice for EMS personnel, with state licensing reciprocity. (L 4)

4.2 States should require national accreditation of paramedic education programs. (Ed 1)

4.3 States should accept national certification as a prerequisite for state licensure and local credentialing of EMS providers. (Ed 1)

4.4 The American Board of Emergency Medicine should create a subspecialty certification in EMS. (MD 3)

Chapter 5: Advancing System Infrastructure

5.1 States should assume regulatory oversight of the medical aspects of air medical services, including communications, dispatch, and transport protocols. (L 1)

5.2 Hospitals, trauma centers, EMS agencies, public safety departments, emergency management offices, and public health agencies should develop integrated and interoperable communications and data systems. (Data 1)

5.3 The Department of Health and Human Services should fully involve prehospital EMS leadership in discussions about the design, deployment, and financing of the National Health Information Infrastructure (NHII). (Data 1)

Chapter 6: Preparing for Disasters

6.3 Professional training, continuing education, and credentialing and certification programs of all the relevant EMS professional categories, should incorporate disaster preparedness training into their curricula, and require the maintenance of competency in these skills. (Ed 2)

Chapter 7: Optimizing Prehospital Care through Research

7.1 Federal agencies that fund emergency and trauma care research should target additional funding at prehospital EMS research, with an emphasis on systems and outcomes research. (F 4)

Exactly 20 years since the publication of the first EMS Agenda for the Future, the National Highway Traffic Safety Administration is considering commissioning a revision. We hope that this new Agenda incorporates some of the recommendations produced collaboratively by the PIE project team and steering committee with the EMS community and presented in this Promoting Innovation in EMS National Framework Document.