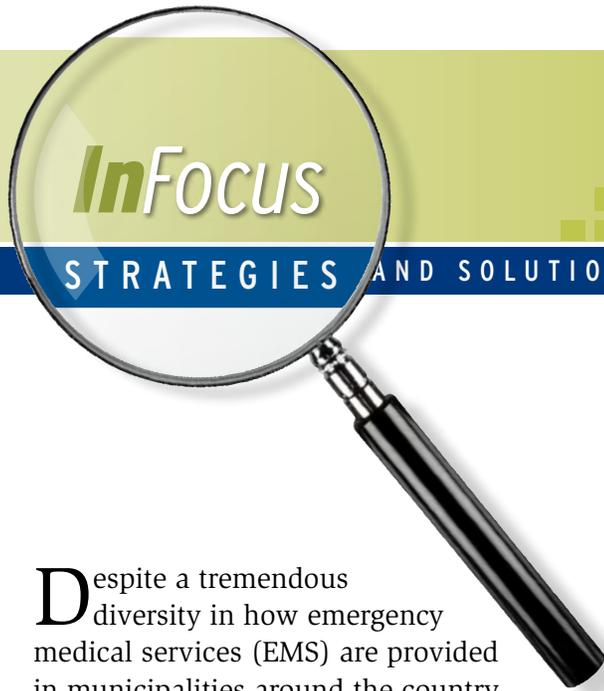


# The New EMS Imperative: Demonstrating Value



*InFocus*

STRATEGIES AND SOLUTIONS FOR LOCAL GOVERNMENT MANAGERS

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Despite a tremendous diversity in how emergency medical services (EMS) are provided in municipalities around the country, most U.S. EMS systems share one commonality: They remain primarily focused on responding quickly to serious accidents and critical emergencies even though patients increasingly call 911 for less severe or chronic health problems.

Simply put, the existing EMS response model has failed to evolve as community needs for emergent and nonemergent health care delivery have changed. Recent efforts in health care to improve quality and reduce costs, such as the Affordable Care Act, pose significant challenges to the existing EMS response model. Health care payers have become increasingly unwilling to reimburse for services that fail to prove their value. As a consequence, EMS agencies will soon

be required to demonstrate their worth like never before. At the same time, municipalities continue to confront the economic realities of stagnant and even shrinking budgets.

It's critical for city and county managers to know that despite these challenges, the changing health care landscape also presents opportunities for EMS systems to evolve from a reactive to a proactive model of health care delivery—one that better meets the needs of their communities by preventing unnecessary ambulance transports, reducing emergency department visits, and providing better care at a lower cost.

This *InFocus* is intended as a guide to identify challenges and opportunities, measure your efforts, and define success. This report explores how EMS systems can improve service in tough economic climates and navigate new challenges and opportunities presented by the Affordable Care Act.

## Current landscape in EMS

### EMS treatment and transport

The standard model for treatment and transport of sick and injured persons by EMS systems has changed very little since the 1960s, when growing pressure to reduce highway deaths and injuries prompted Congress to fund improvements in EMS systems across the country.

While several types of EMS systems exist (See Table 1), most follow the same basic response model. Call-takers and dispatchers obtain critical information and then summon emergency responders to the scene. First responders provide basic medical care until an ambulance arrives. Ambulance personnel then conduct a patient assessment and perform any necessary interventions before transporting the patient to the hospital. If the patient declines transport to the hospital, they are considered to have refused care against medical advice.

The EMS response model continues to emphasize emergency stabilization and rapid transport to the hospital as the primary role of the EMS system. This is true despite evidence that a significant proportion of 911 calls are for non-emergent medical conditions that do not require immediate care and transport.<sup>1,2</sup> And it ignores the fact that the hospital emergency department is often neither the most appropriate, nor the most cost-

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effective, destination for patients. This is especially true for patients who are only seeking routine medical care that would otherwise be provided in a physician’s office or other non-emergent setting.

For local governments, the growing mismatch between the capabilities of existing EMS systems and the demand from constituents for non-emergent but “unscheduled” medical care represents a failure in service delivery. It also poses a problem of resource utilization; EMS resources such as ambulances are increasingly unavailable for emergencies while they transport non-emergent patients to the hospital. Innovative approaches to EMS delivery are necessary to ensure that EMS systems remain aligned with community needs.

### Table 1: Types of EMS Systems

There are six common models for EMS delivery in the United States: fire service-based, public utility, third government service, private for-profit, private non-profit, and hospital-based.

Almost half of all EMS systems are based in fire departments. Depending on the system, Fire department ambulances are staffed by “single-role” civilian EMS providers or “dual-role” firefighter/EMTs, who also perform fire suppression functions.

The **public utility model** of EMS uses a separate governmental entity to manage emergency medical services in a community, either with a private contractor or by providing the service directly. Local government officials appoint leadership and also approve funding.

The **third-service model** provides for the delivery of EMS by a separate department within the existing local government structure. This department exists alongside other public safety departments (police and fire) and employs civilian EMS providers. Funding and day-to-day operations, including support functions, are under the direct control of the local government.

**Private for-profit** provision of EMS is characterized by the contracting-out or franchising of EMS to a for-profit provider. Service levels and performance can be specified in the contract but the private contractor often has total control of operations.

The **hospital-based model** of EMS delivery is also defined by a contractual relationship, in this case between a local government and a hospital (or a local entity associated with a hospital). The hospital-based entity is often a non-profit and may require a government subsidy. As in the private for-profit model, however, the local government has limited day-to-day influence over operations.

In the **private non-profit model**, community-based or volunteer agencies provide emergency medical services that are subsidized by a combination of government funding, donations, or user fees. These organizations are self-governing and exercise complete control over day-to-day operations. They may use volunteers, paid personnel, or a combination of the two to staff ambulances.

### Funding

EMS systems (whether public or private) receive very little in the way of federal or state subsidies. Consequently, most EMS systems seek to offset a portion of their operating costs by billing patients for transport to the hospital.<sup>3</sup> This “fee-for-transport” funding

scheme is based on the federal government's reimbursement model for Medicare and Medicaid patients, which has also been adopted by most private payers.

Unfortunately, seeking reimbursement for transport to the hospital has proven insufficient to cover the costs associated with EMS delivery. Reimbursement rates for ambulance transport of Medicare and Medicaid patients (who account for approximately 60% of patients transported by EMS agencies) have consistently failed to match the cost of service.<sup>4</sup> The resulting shortfalls have been only partially subsidized by reimbursements from private payers, as patients with private insurance account for less than a quarter of patients transported to the hospital by EMS agencies.<sup>5</sup>

The current fee-for-transport model of EMS funding also does not adequately account for the non-transport costs of EMS delivery, including the cost of medical care rendered to patients by EMS providers, the cost of caring for patients who ultimately decline ambulance transport to the hospital, and the "cost of readiness" associated with maintaining the capability to quickly respond to medical emergencies on a 24/7 basis. The result is that EMS agencies have a financial incentive to transport all patients to the hospital regardless of medical necessity—even if only to recoup a small portion of the overall costs associated with providing emergency medical services.

As a consequence, most local governments find themselves in the position of having to directly subsidize their EMS system. This is the case even in communities where ambulance transport is provided by private contractor. For local governments then, especially those still grappling with revenue shortfalls, the EMS system is yet another significant cost to be managed—one that must be carefully aligned with the particular priorities and needs of each community.

## Challenges

### How to demonstrate cost-effectiveness

**Response times.** EMS systems have often sought to demonstrate their effectiveness by measuring the time it takes for a responding unit to arrive at the scene of an emergency. Specifically, most urban systems have adopted a goal of 4 minutes for a basic life support (BLS) unit to arrive at the scene and 8 minutes for an advanced life support (ALS) unit to arrive.<sup>6</sup>

The origins of these response time goals can be found in early research on out-of-hospital cardiac arrest, which showed an improvement in patient outcomes if CPR was initiated within 4 minutes and defibrillation was delivered within 8 minutes.<sup>7</sup> More recent research, however, has called into question the value of using response times to measure EMS system performance. Very short response times (4-5 minutes) may increase survival for certain life-threatening conditions (such as cardiac arrest and allergic reactions), but other differences in responses time (e.g., the difference between 6 and 10 minutes) likely do not result in better patient outcomes.<sup>8</sup> Consequently, each community's response time standards goals should reflect a careful balancing of medical necessity and community expectations on the one hand, and community resources and attributes (e.g., urban vs. rural) on the other.<sup>9</sup>

Two strategies for safely increasing response time standards in a community include:

- Allowing for longer ambulance response times if a first responder (often a basic life support unit staffed by the fire department) is able to arrive within the first several minutes and provide initial management and stabilization of a patient.
- Establishing different response time standards depending on the nature of the medical emergency or the severity of the patient's medical condition.

**Unit hour utilization.** EMS systems have also looked to measure productivity as a proxy for system efficiency. One commonly used measure is unit hour utilization (UHU), a ratio that is typically calculated by dividing the number of transports by the number of unit hours.<sup>10</sup> In other words, an ambulance that performs four transports in a 12-hour shift has a UHU of 4/12, or 33%. However, some agencies will calculate UHU by using the total number of hours that EMS units are engaged on calls by the total number of hours that those units are staffed and fully-equipped. Neither method is right or wrong, and each has advantages—an agency worried about recouping costs might want to focus on transports, while an agency more concerned with staff performance and preparedness levels would be more concerned with the percentage of time ambulances are available.

Unit hour utilization varies greatly among EMS systems, and there is no generally-accepted consensus regarding the ideal ratio. EMS agencies responding solely to 911 calls typically target a lower unit hour utilization (between 0.30 and 0.50 UHU) than non-emergency ambulance transport providers—in order to ensure that a sufficient number of units remain available to respond to emergency calls. Agencies whose providers work longer shifts, such as 24 hours, also often aim for lower UHUs due to concerns over fatigue and safety.

It is important to note that unit hour utilization traditionally does not capture productivity outside of responding to emergency calls, such as the completion of required documentation and training. Moreover, if unit hour utilization is measured simply on the basis of the number of patient transports during a specified period, the resultant UHU will also fail to capture the time spent responding to emergency calls that do not result in patient transports. Finally, increased unit hour utilization can result in provider fatigue and medical errors, especially in EMS systems that have 24-hour shifts.

**Shift schedules.** Personnel costs account for the majority of an EMS system's budget. Accordingly, the staffing model employed by a system is a key factor. Several different models have been adopted by EMS agencies across the country, each reflecting the unique needs and priorities of particular EMS systems. However, four staffing models predominate.

Twenty-four-hour shifts are most prevalent in fire-based EMS systems. The 24-hour shift model allows for the easiest integration between fire and EMS shifts and is best-suited for low-volume systems that prioritize reliable response times.<sup>11</sup>

The 12-hour shift is most frequently the choice of private or third-service EMS systems, particularly those that serve large cities. This model allows for increased productivity (in order to meet the demands of high-volume systems) while taking into consideration the provider fatigue that is associated with longer work hours.<sup>12,13</sup>

Lastly, 8-hour and 10-hour shift staffing models have been adopted by several high-volume EMS systems. These models allow for the highest level of productivity during each shift in addition to providing the greatest flexibility for dynamic and peak-time deployment of EMS units.<sup>14</sup> However, they require more staffed positions than the other models and have been associated with higher employee turnover and possibly increased overtime costs due to the greater number of shift changes each day.

### Health care reform

**Triple Aim.** Over the last decade, economists and policymakers have largely abandoned the belief that better health outcomes could only be achieved through increased spending. Instead, many changes to the health care system, including some of those created by the Affordable Care Act, are now based on the “Triple Aim,” which states that it is possible to simultaneously improve the patient experience, reduce health care costs, and improve the population's health.<sup>15</sup>

Proponents of the Triple Aim argue that by reducing inefficiencies, coordinating services, and providing evidence-based, patient-centered care, costs can be reduced by eliminating redundancies and avoiding unnecessary tests, procedures, and other health care spending. This model also shifts the focus of health care to prevention and education, with the belief that spending money to prevent injury, illness, and chronic disease will decrease the high costs associated with treating those problems once they occur.

**Fee for quality vs. fee for service and value-based payments.** Concerns over the fee-for-service model and its incentives have given rise to value-based reimbursements and the fee-for-quality model. While these changes have yet to impact EMS directly, hospitals and other health care providers are already seeing changes to how they are reimbursed by the Centers for Medicare & Medicaid Services, and many EMS leaders across the country have predicted that within a few years, these changes will directly impact EMS payments as well.<sup>16</sup>

### Affordable Care Act

The Affordable Care Act, in addition to its efforts to expand insurance coverage, also included some changes to the Centers for Medicare & Medicaid Services reimbursement system that follow the Triple Aim model. In general, the goal is to incentivize hospitals and physicians to keep patients healthier by no longer rewarding providers for ordering more tests and procedures and keeping patients in the hospital longer. The Affordable Care Act does not discuss emergency care or EMS at length. However, the law still presents challenges and opportunities for the emergency health care system, including emergency medical services.

### Medicare reimbursement

While Medicare patients only make up a small percentage of the population, they comprise a large percentage of those who are hospitalized and make up a significant chunk of total spending on health care in the United States. So when the federal government changes Medicare reimbursement policies, the effect is typically seen across the entire health care system.

As part of the Affordable Care Act, Medicare has changed how it reimburses hospitals. One of the most significant changes is that hospitals now receive penalties for high rates of readmission for certain conditions. In the past, when a pneumonia patient who was sent home from the hospital returned two weeks later, the hospital could bill twice for the patient. Now, in an effort to encourage hospitals to ensure the patient is able to remain healthy once they leave the building, that return visit will result in a penalty. The hope is that hospitals will now spend more time making sure that patients are prepared to go home, by providing adequate discharge instructions and ensuring proper follow-up care (such as doctor's visits, prescription medications, rehab, and home health).

### Accountable Care Organizations

The ACA also promoted the formation of Accountable Care Organizations. ACOs are networks of providers, such as doctors and hospitals, that work together to treat a specific group of Medicare patients, similar to HMOs. However, unlike HMOs, patients are not restricted to seeing only providers within the network. Also, ACOs are held accountable to certain benchmarks and quality measures. The goal is that rather than saving money by denying care that will help a patient, ACOs will save money by coordinating care to keep patients healthier and avoid duplication of efforts. Under the ACA, an ACO that demonstrates a certain amount of savings is then eligible to retain some of the savings among the providers and hospitals.

In the past, health care worked like a restaurant menu: The more you ordered, the more you (or your insurer) paid. Unlike a restaurant, however, consumers often didn't know whether the services were any good, rarely knew the costs, and sometimes didn't know if they had other options. So if they were treated but got sick again a few days later, their physician or the hospital would treat them a second time and charge for the second visit—in some ways, making more money because their initial efforts were unsuccessful, whether that was preventable or not.

In the fee-for-quality model, the goal is to reward providers and hospitals who keep patients healthy and treat problems efficiently and effectively. There are many different combinations of these two models, and the current health care system still relies heavily on fee-for-service. However, accountable care organizations are an example of the growing move toward fee for quality, as are Medicare reimbursement penalties (see “Affordable Care Act” sidebar).

In the long run, the hope is that fee-for-quality will produce more savings, as providers try to avoid hospitalizations, ER visits, and severe illnesses, because of their high costs, by focusing on prevention and earlier, less costly interventions. While how these changes will impact EMS remains unclear, what is obvious is that EMS agencies that want to provide high-quality care and want to be reimbursed for that care will have to demonstrate value and prove they enhance the patient experience and improve the population's health.

## Solutions

### Becoming more cost-effective

**Strategic prioritization and deployment.** The reality of limited funding and competing priorities requires that local governments think strategically about how best to deploy resources and personnel. This is especially true when it comes to the fire department, whose primary mission has been overtaken by the growing demand for emergency medical services. EMS calls now account for almost 70 percent of all calls for fire department service, while less than 5 percent are due to actual fires.<sup>17</sup> As a result, the fire service has increasingly sought to emphasize its role in EMS delivery, in order to both justify continued funding and ensure its future relevance.

Fire departments are arguably well-positioned to deliver emergency medical services. The distribution of fire stations across most communities allows for relatively quick response times. Many fire departments also provide an “all-hazards” capability (including expertise in rescue, extrication, and hazardous materials) that complements the needs of an EMS system. Most importantly, the decline in the number of fires (relative to the population) over the past 30 years has resulted in excess capacity within the fire department that can be re-tasked to provide EMS.<sup>18</sup>

However, the use of fire apparatus to transport dual-role firefighters to the scene of a medical emergency is not very cost-effective in terms of maintenance and fuel costs. Neither is upgrading fire apparatus to be advanced-life-support capable, which also requires the addition of ALS personnel and equipment. Consequently, fire-based EMS systems have begun to explore new deployment models.

Two other deployment options that may increase cost-effectiveness include:

- Adjusting the number of ambulances placed in service during specific time periods to match anticipated changes in the level of demand during a 24-hour period
- Changing the geographic deployment of ambulances over the course of a shift to match anticipated changes in the location of calls for service.

### **Advanced life support versus basic life support**

In recent years, discussions regarding the cost-effectiveness of an EMS system have increasingly focused on its ability to deliver advanced life support (ALS) care to the community. ALS providers (paramedics and certain intermediate-level providers) are trained to provide advanced emergency care including high-level assessment, complex invasive skills, and a wide range of pharmacological interventions. By contrast, basic life support (BLS) providers (emergency medical technicians and first responders) are trained to provide preliminary management of emergent patients including basic assessment, non-invasive skills, and a limited set of pharmacological interventions.

Over the past decade, many communities have sought to expand their ALS service, usually by increasing the number of ALS-capable units in the EMS system. In fire-based EMS systems, this has been accomplished by “upgrading” fire apparatus (which formerly served a BLS first-response role) and staffing them with ALS personnel and equipment.

The primary justification for this shift toward ALS first-response has been to reduce the time it takes for an ALS-capable unit to respond to the scene of a call. However, less than half of all EMS calls actually require ALS care and many of the time-critical interventions that were once the domain of ALS providers can now be performed by BLS providers.<sup>19</sup> These now-BLS interventions include defibrillation for cardiac arrest, which was the original impetus for measuring ALS response times but is now routinely delivered by BLS providers and even untrained bystanders.

None of this is to say that ALS providers are not an important part of an EMS system. Certain conditions benefit greatly from ALS care, such as calls for breathing problems.<sup>20</sup> Also, as EMS systems evolve beyond simply providing treatment and transport to the hospital emergency department, the ability of ALS providers to provide advanced assessment and clinical judgment may increase their value on non-critical calls as well.

Increasing the number of ALS providers in an EMS system, however, may actually result in worse quality of care—by reducing each individual provider’s exposure to truly critical patients and limiting opportunities to maintain proficiency through the regular performance of advanced interventions.<sup>21</sup>

A cost-effective EMS system will have a mix of ALS and BLS resources and reserve limited (and expensive) ALS resources for those patients who stand to benefit most from ALS care. Other factors such as dispatch center capabilities, area geography, call acuity, training resources, community expectations, and political and financial constraints must also be considered when determining the best allocation of ALS and BLS resources in each EMS system.

**Performance measures.** One of the first steps toward ensuring cost-effectiveness in any EMS system is to measure its performance. Unfortunately, EMS has historically suffered from a lack of generally-accepted clinical performance measures.<sup>22</sup> This has made it difficult for EMS systems to evaluate and benchmark the quality of care that they deliver.

In 2007, a group of EMS physicians proposed a set of clinical performance benchmarks.<sup>23</sup> They focused on specific interventions (such as the administration of aspirin for heart attacks) that have been shown to improve patient outcomes for certain conditions. Since then, other organizations have published broader performance measures for EMS systems.<sup>24,25</sup> The National Association of State EMS Officials (NASEMSO), in partnership with National Highway Traffic Safety Administration (NHTSA), has recently launched an effort to create a new set of evidence-based EMS performance measures that will be completed in 2016.

Use of performance measures in emergency medical services can be problematic, however. Efficiency and output goals, such as response times and unit hour utilization,

can fail to provide an accurate representation of EMS system performance. In addition, very few outcome goals exist (“survival to hospital discharge” after a cardiac arrest being one example). Nevertheless, performance measures can still provide valuable information regarding an EMS system’s success in meeting established objectives and goals and inform decisions regarding staffing levels and deployment models.

**Data analysis.** In order to make the most effective use of performance measures, many EMS systems now use commercial data-analysis systems to capture and analyze information on system performance. These systems can access data from several sources including dispatch software, electronic patient care reports, and hospital databases, and then display key performance indicators on data “dashboards”—often in real-time.

As EMS systems evolve, data analysis based on operational and clinical performance measures will become critical. Hospital systems and physicians have already seen reimbursement tied to performance, and many EMS experts suggest a similar model will be applied to EMS payments in the near future. Additionally, for reasons ranging from potential liability to patient and community satisfaction to, ultimately, the quality of patient care, agencies need to have a robust continuous quality improvement (CQI) program that relies on data analysis, sentinel case reviews, and education.

One crucial aspect of any CQI program will be bi-directional sharing of information between EMS agencies and the hospitals (or other health care providers) with which they interact. For example, in Sedgwick County, Kansas, the EMS system has access to a dashboard that pulls information from both the EMS dispatch and patient care reports as well as the hospital medical records, so EMS agency leaders can correlate treatments and assessments performed by prehospital personnel with the ultimate diagnosis and disposition of the patient after delivery to an emergency department.<sup>26</sup>

**Evidence-based guidelines.** Another way that EMS systems can ensure cost-effectiveness is to focus on delivering clinical interventions that have been proven to work. The field of emergency medical services, however, has long-suffered from a lack of evidence-based guidelines. Instead, much of EMS practice has been based on limited (and often anecdotal) evidence and an overreliance on expert opinion.<sup>27</sup>

In response to this problem, the federal government has developed a model process for the creation of nationally accepted evidence-based guidelines for emergency medical services.<sup>28</sup> This model has now been applied to develop evidence-based guidelines for several conditions including pediatric seizures, pain management, and severe bleeding. In addition, the National Association of State EMS Officials has recently released national “model” EMS guidelines, which include both evidence-based and consensus-based clinical guidelines.<sup>29</sup>

EMS systems are free to adopt or ignore these new guidelines as they see fit. At the very least, however, EMS systems should review the guidelines in order to inform their own protocols. Interventions that are supported by clinical evidence should be prioritized over those that are not, while still keeping in mind the specific needs and resources of a particular community.

**Medical oversight.** An EMS system is unlikely to be very effective in the absence of strong medical oversight. Securing the services of a qualified medical director—one who is actively engaged in the EMS system—can be difficult, however. In some communities, physicians who are willing to take on the role of EMS medical director may be in short supply. In others, cost may be a significant obstacle.

Thankfully, an increasing number of emergency physicians interested in the role of medical director are completing fellowship programs in EMS. In 2010, EMS was accepted

as a board-certified subspecialty for physicians with experience or training in EMS medical direction. The first certifications were bestowed in 2014.

If cost is a factor, a local government may seek to contract for specific medical direction services. The National Association of EMS Physicians has adopted a set of recommended qualifications and responsibilities for EMS medical directors, and these may be narrowed down and prioritized as necessary to meet budgetary constraints.<sup>30</sup>

**Regionalization.** Adopting a regional approach has the potential to significantly improve the cost-effectiveness of EMS systems. Currently, a high level of fragmentation exists, which often results in poor coordination between EMS agencies.<sup>31</sup> This problem of fragmentation is often compounded by incompatible communications systems and inter-agency rivalries. The end result is that neighboring systems may duplicate service, especially in large urban centers, or fail to provide effective service in rural areas.

Local governments should increase the regionalization of EMS delivery wherever possible. Mutual-aid agreements can effectively address both duplication and service shortfalls. Co-locating or consolidating dispatch centers can improve coordination and also generate significant efficiencies. Finally, establishing a regional EMS entity can provide a foundation for increased collaboration between neighboring EMS agencies (including with respect to funding and resource deployment) and possibly even their eventual consolidation.

**Call-taking, dispatch, and triage.** The performance of an EMS system is closely tied to the performance of its 911 call center, also known as a public safety answering point (PSAP). Delays in answering, processing, and dispatching EMS calls at a PSAP result in downstream delays in response times, scene times, and transport times—and possibly contribute to worse patient outcomes. Improving the performance of the community PSAPs is another way to increase the cost-effectiveness of EMS systems.

Technological advancements over the past two decades have revolutionized 911 call-taking and dispatch. Most PSAPs now use enhanced 911 (E911) systems, which automatically identify the telephone number and address of 911 callers.<sup>32</sup> In the past several years, E911 systems have been upgraded to include wireless phones in addition to landlines. Efforts are currently underway to expand the E911 system capabilities to also include callers using voice-over-IP services such as Skype and text messaging. Other advanced technologies, such as computer-aided dispatch and automatic vehicle location, have further enhanced the capabilities of PSAPs.

However, it is estimated that almost a quarter of 911 calls are for medical care that does not require emergent transport to the hospital.<sup>33</sup> These calls unnecessarily occupy 911 call takers and emergency dispatchers, and have the potential to delay the dispatch of EMS units to true medical emergencies.

Public education efforts have done little to stem the growing tide of 911 calls for non-emergent medical conditions.<sup>34</sup> Some communities are now piloting programs that will allow PSAPs to more effectively manage the increasing volume of calls for both emergency and nonemergency medical services. One example is the use of nurses at a PSAP to provide advanced medical triage.

Employing nurses to triage nonemergency medical calls can free up call takers and dispatchers to focus on calls for emergency service. PSAP nurses can refer nonemergency callers to more appropriate health care resources (e.g., an urgent care center or clinic) and also improve EMS system efficiency by allowing dispatchers to prioritize calls for service based on medical urgency and potentially even schedule an ambulance to respond during periods of lower demand.

### Taking advantage of opportunities: Mobile integrated health care and community paramedicine

The concept of community paramedics—EMS providers who provide a broader array of services and focus on prevention and primary care—is not a new one, but it has gained renewed focus in recent years, thanks in large part to the advent of the Triple Aim philosophy and the ACA.<sup>35</sup>

Community paramedicine means different things to different people within the EMS community. In more rural locations, community paramedicine initially developed as a way to provide basic primary care services in areas with limited medical resources and to avoid long, expensive trips to distant hospitals for minor problems. In this setting, community paramedics often had a scope of practice beyond that of most other paramedics, which might include wound care, suturing, and even antibiotic administration.

Urban and suburban communities, realizing that it is in the best interest of both patients and community health to prevent illnesses and hospitalizations whenever possible, have begun to experiment with a new type of community paramedicine, which some are now calling “mobile integrated health care.”

Mobile integrated health care (MIH) is broader than community paramedicine in that it contemplates using providers and organizations of all types to provide the best care in the home and other nonclinical environments.<sup>36</sup> Accordingly, most community paramedicine programs can fall under the umbrella of mobile integrated health care, but not all MIH programs necessarily use the community paramedic model.

MIH programs often employ EMS providers who receive advanced training on topics such as chronic disease management and mental health issues, but whose technical and medical scope of practice remains unchanged.

The passage of the Affordable Care Act has contributed to a significant increase in the number of EMS agencies providing MIH services across the country. Some have been subsidized by EMS agencies and fire departments that hope to decrease the demand on emergency services. Others have attempted to capitalize on changes to the Medicare reimbursement model and have partnered with hospitals to reduce readmissions, hoping hospitals will want to pay for the service in order to avoid Medicare penalties.

Among some EMS leaders, there is a concern that EMS agencies are diving headfirst into MIH without a clear path to sustainability. At the same time, however, there is also growing agreement that the current EMS response and funding model is not sustainable. Local government should therefore assess the available resources and the financial, political, and regulatory climate before deciding which type of MIH program, if any, is appropriate in their particular communities. In any case, MIH programs will not eliminate the need for emergency response or the use of EMS as a safety net by some members of the community.

**Typology of MIH programs.** Much like EMS systems, almost no two MIH programs look exactly alike (Table 2 includes examples of MIH programs from across the United States). However, there are several categories of services that generally encompass the bulk of MIH activities:

*Physician extender.* These programs place EMTs, paramedics, or mid-level practitioners (e.g., nurse practitioners, physician assistants) in the community to provide medical services that do not require hospitalization. This could include treating minor injuries with suturing or evaluating minor illnesses and providing medications.

*Adjunctive mobile care.* Programs that are created to fill gaps in the community—often to avoid unnecessary hospital visits—include re-admission avoidance, hospice revocation avoidance, and post-discharge care. Typically, these programs involve a home visit by the EMS provider, who reviews discharge instructions, does an in-home assessment, recon-

ciles medication lists, and ensures patients are following up with a primary care provider or appropriate specialist.

*Patient triage and navigation.* Traditionally, EMS systems have provided patients with two options—either a transport to the emergency room, or nothing. Several agencies are now exploring other options, both to improve the patient experience and to decrease the burden on emergency medical resources. These programs include connecting 911 call centers to nurse help lines for low-acuity illnesses and injuries; allowing EMS responders to treat and release patients on scene or transport them to facilities other than hospitals, such as behavioral health facilities, urgent care clinics, or detox centers; and addressing frequent EMS users through education, linkage to other resources, and other interventions.

*Occupational and community health services.* These programs may include education and outreach efforts, such as fall prevention education for elderly members of the community; on-site injury assessment at workplaces to avoid unnecessary trips to the emergency department and associated costs; and immunizations.

**Table 2: Examples of community paramedicine/mobile integrated health care practice programs**

**MedStar (Fort Worth, Texas)**

**[www.medstar911.org](http://www.medstar911.org)**

In 2013, MedStar EMS, the sole provider of nonemergency and emergency ambulance services in Fort Worth and 14 other surrounding cities, changed its name to MedStar Mobile Healthcare. The new moniker reflects a realization in the EMS community that even many 911 calls do not result in “emergency care” so much as “unscheduled health care.”

MedStar has been one of the most aggressive innovators in the realm of mobile integrated health. As a public utility system, MedStar has a government-mandated monopoly on services but also the flexibility to adapt. MedStar has launched several community health programs in recent years, many of which highlight the importance of partnerships to ensuring positive patient outcomes and fiscal sustainability.

SSpecially trained mobile health paramedics, who use vehicles that are not equipped to respond to emergencies, perform in-home visits with frequent 911 callers, recently discharged Medicare patients, and others who may be at risk of becoming an EMS or emergency department patient in the future. The agency has also partnered with local hospice and home health agencies as well as insurers and hospitals. These partners pay MedStar to provide these mobile health services in order to prevent patients from having further hospitalizations.

**Mesa Fire and Medical (Mesa, Arizona)**

**[www.mesaaz.gov/fire](http://www.mesaaz.gov/fire)**

Like MedStar, the Mesa Fire Department recently acknowledged the shifting priorities of the fire service by changing its name to the Mesa Fire and Medical Department. The department also received a \$12.5 million Center for Medicare and Medicaid Innovation (CMMI) grant to expand its Community Care Units program, which partners paramedics with other health care providers to provide appropriate care to patients and free-up other resources to respond to emergency calls.

The department’s Community Care Units look like ambulances, but each varies in how it is staffed. One unit partners a paramedic with a nurse practitioner or physician assistant, who is employed by Mountain Vista Medical Center. That mid-level practitioner can often handle low-acuity emergencies by prescribing a medication, treating someone’s pain, or

*(continued)*

**Table 2: Examples of CP/MIHP programs (continued)**

even suturing a wound in the field, preventing an unnecessary ambulance ride and emergency department visit.

A second unit partners a paramedic with a crisis counselor to respond to behavioral emergencies and determine if the patient might be better served at a psychiatric facility rather than the emergency room. Partnering with these other health care providers has allowed the department to expand the scope of services it can provide in the field.

**REMSA (Reno, Nevada)**

**[www.remsa-cf.com](http://www.remsa-cf.com)**

Before Mesa received its federal grant, REMSA was the recipient of the largest CMMI award to an EMS agency. REMSA, a public utility EMS agency in Reno and surrounding Washoe County, Nevada, launched a nurse health line, a community paramedic program, and an alternative destination program, all funded by the CMMI grant.

REMSA felt its patients often had a simple question or problem but turned to 911 because they did not know who else to call. And public safety dispatch centers were designed to handle emergencies, so the response was always the same: dispatch EMS. REMSA established a nurse health line for people to call, regardless of their insurance status or provider. The nurses were trained to provide advice over the phone and to recognize serious emergencies. Unlike other nurse hotlines, REMSA's is directly tied to the EMS dispatch center, so calls can be seamlessly referred between the two. Calls coming into 911 for very low-acuity issues are transferred to a nurse, often eliminating the need for EMS response.

The alternative destination program allows REMSA's EMS providers to take patients to destinations other than emergency departments, such as urgent care clinics. Many of the patients have minor illnesses and injuries that can be handled by these clinics, decreasing the cost of care and relieving stress on the emergency system.

**Wake County EMS (Raleigh, North Carolina)**

**[www.wakegov.com/ems](http://www.wakegov.com/ems)**

In Wake County, North Carolina, the public "third service" agency that provides 911 EMS response and transport added a new level of provider: the advanced practice paramedic (APP). These APPs receive additional training and supplement the emergency response system, ensuring the presence of an additional, experienced paramedic on critical incidents. But the main success of the program has been when the APPs conduct in-home visits with frequent callers and patients who are referred by other EMS providers who feel the patient needs additional services.

In addition, Wake's advanced practice paramedics are able to medically clear intoxicated patients so they can be taken directly to a detox facility, preventing the utilization of an ambulance and hospital bed for a person without a medical need for either. Similarly, they can evaluate psychiatric patients in the field in order to determine the most appropriate destination and get those patients the services they need in a more timely and cost-effective manner.

**Other Considerations**

**Workforce**

The EMS workforce is a critical component of any EMS system, and also a large part of the overall cost of any EMS system. Because EMS delivery models can vary greatly, however, EMS workforces also often differ in terms of required qualifications, promotional opportunities, and labor representation.

Fire-based EMS systems typically have the highest personnel costs, due to higher salaries, generous pensions, and 24-hour shift schedules for dual-role firefighters. EMS systems that employ single-role EMTs and paramedics often pay smaller salaries but also generally experience high turnover rates.

Organized labor is more prominent in fire-based systems, as the International Association of Fire Fighters (IAFF) has become one of the nation's largest and most politically active unions. Civilian EMS providers who are unionized are represented by a wide range of different labor groups across the country.

Maintaining a dialogue with the workforce—whether organized or not—is critical for local governments seeking to make changes to their EMS systems. Strong opposition from labor can sink proposed changes before they are even proposed. This is especially true for changes to pay levels or shift schedules, as was evident when the (now former) fire chief in Washington, D.C., proposed switching from 24-hour shifts to shorter work periods as a potential cost-saving measure.<sup>37</sup>

### Community needs assessment

Whether considering a new mobile integrated health program or simply trying to improve upon existing EMS services, it is critical that municipalities and EMS agencies evaluate and assess the community's needs first.<sup>38</sup> Programs that are created simply to increase revenue or copy another community's model may not be appropriate and are likely to struggle or fail. The process of conducting a needs assessment will vary depending on the size of the community, the available resources, and the types of changes being considered, but every needs assessment should include dialogue with community stakeholders in order to determine what service gaps exist.

Without assessing community needs, it is quite likely that a community will establish a program that is redundant or unnecessary. As noted earlier, several EMS agencies across the country have established programs to address frequent users of 911 services. In San Diego, an analysis of those users determined that many of them had alcohol or substance abuse problems in addition to being chronically ill and sometimes homeless. In McKinney, Texas, however, the local EMS agency found that most of its frequent callers were elderly and had chronic conditions, but very few had substance abuse problems and almost none were homeless.<sup>39</sup> The resources needed to address the problems in these two cities are vastly different, and only through assessing the problem and the existing resources were the two cities able to establish programs.

### Regulatory environment

As EMS agencies look for ways to improve service and adapt to a new health care environment, states have struggled to keep pace with the changes happening at the local level. Because many state EMS regulations limit paramedics' and EMTs' scopes of practice to "emergency situations," some programs aimed at prevention and patient navigation have stalled. States with a less stringent EMS regulatory structure, such as Texas, have seen a rapid growth in these programs; other states have taken a slower approach, as in California, where EMS regulators plan to dip their toes in the water with a handful of state-approved pilot programs.<sup>40</sup>

In Minnesota, a lobbying effort led to legislative recognition of community paramedics and the services they provide in 2011. Minnesota remains the only state where community paramedic services are specifically recognized and reimbursed by the state's Medicaid system. Most states still lack a regulatory definition of a community paramedic or an advanced practice paramedic, and prehospital providers filling these roles are certified at the EMT or paramedic level with no state-recognized expanded scope of practice.<sup>41</sup>

While responsibility for regulation of EMS lies with the states, federal agencies have shown support of innovative EMS programs. The Center for Medicare and Medicaid Innovation (CMMI), created by the Affordable Care Act, has awarded several multi-million-dollar grants to support EMS agencies' community health programs. The three agencies most involved in EMS issues also published a draft white paper entitled "Innovation Opportunities for Emergency Medical Services," in which they suggest that EMS could play a major role in improving the effectiveness and efficiency of the health care system by considering alternatives to the traditional model of transporting every patient to the emergency department.<sup>42</sup>

### Potential partners

**Payers.** Private payers for health care services have an obvious incentive to partner with EMS systems that are able to provide cost-effective health care services under the umbrella of community paramedicine. EMS systems that offer preventive health services, mobile care (such as home visits to patients with chronic conditions), and patient navigation (such as transport to a local clinic) may also find that insurance companies are willing to subsidize their services.

**Hospitals.** Hospitals have a particular incentive to partner with EMS systems that offer services aimed at reducing hospital readmissions. Since October 2012, the federal government has imposed financial penalties on hospitals with "excessive" readmissions for certain conditions.<sup>43</sup> In order to avoid such penalties, hospitals may be willing to pay EMS systems to provide post-discharge follow-up to their patients.

**Home health care and hospice agencies.** Home health care and hospice agencies may also have incentives to partner with EMS systems, but only if community paramedicine programs seek to complement rather than compete with their own services. For example, home health care and hospice agencies may be willing to compensate EMS systems for triaging and providing care to their patients who call outside of their normal operating hours.

### Funding models

**Public and private subsidy.** Community paramedicine programs are unlikely to be entirely self-sustaining. Their true worth, however, should be judged in terms of their impact on the cost-effectiveness of the overall EMS system. If such programs are able to help EMS systems more efficiently manage the ever-increasing demand for emergency medical services, then a certain level of local government funding may be appropriate. This is also true for community paramedicine programs that are successful in addressing currently unmet community health care needs.

It is likely that public health care payers at the state and federal levels (e.g., Medicare and Medicaid) may eventually offer some level of public subsidy for community paramedicine services. Thus far, however, they have focused their efforts on grant funding for pilot projects.

Private health care payers, hospitals, and certain private health care providers may also directly subsidize certain community paramedicine services provided by EMS agencies.

**Fee for service.** It will be difficult for community paramedicine programs to seek direct reimbursement from health care payers on a fee-for-service basis. Existing billing codes simply do not contemplate the provision of health care services by EMS providers. Efforts to expand their scope to include community paramedicine services have met with very limited success.

**Shared savings and capitated payment.** The shared savings model offers the greatest potential for private funding of community paramedicine services. EMS systems that are able to demonstrate cost savings to private health care payers or hospital systems (e.g., reduced health care costs from patient navigation or reductions in financial penalties due to readmission avoidance efforts) may be able to enter into an arrangement whereby they share in those cost savings. The shared savings model is likely to become more appealing as the health care system moves away from fee-for-service reimbursement toward population-based payment models.

## Conclusion

In health care and government, providing high-quality service and being cost-effective are no longer thought to be mutually exclusive. Emergency medical services in the United States are at a crucial juncture, as the public continues to demand prompt, effective response; municipal budgets are strained; and ambulance reimbursements decrease. EMS systems must prepare for a future when simply responding to every call with lights and sirens and transporting every patient to the hospital emergency department is no longer a sustainable model. While the path forward is still not entirely clear, systems that adopt an evidence-based and patient-centered approach, consider innovative ways of providing traditional 911 EMS service, and take advantage of new opportunities to provide appropriate nonemergency services to their communities will be well-positioned to effectively—and efficiently—respond to the changes coming to health care and EMS in the United States.

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