

3-6-2023 Public Safety
Committee Meeting Attachment 5



Combatting the EMS Shortage with Data

By **Martin Sellberg, MD** - 9.20.2022



Photo/Motient

Martin Sellberg, MD, explains how a deeper look into data around local emergency medical services leads to better EMS resource management.

Across the country, local emergency medical services operations are increasingly challenged to staff ambulances, leading to excessive wait times for patients in potentially life-threatening situations.

In Boston, [on-time response rates](#) reportedly declined to 58% in November 2021 after hovering around 80% for most of the earlier part of the year.¹ In Atlanta, city officials are planning to launch their own EMS service after becoming inundated with complaints about slow response times from one prominent EMS provider.² And in Northeast Ohio, EMS insiders openly lament that the industry is on the verge of collapse.³

Despite the geographic diversity of the EMS worker shortage problem, most of its causes are the same across the nation: low pay, stress and COVID-19 related burnout. Industry groups are lobbying Congress for additional funds to train and pay emergency medical providers, but the impact of these efforts will not be seen for years.

The workforce shortage also seems here to stay, at least in the short term. One focus for immediate relief is to practice strategic resource management to better utilize the existing EMS workforce. Patient movement data is central to this strategy. When EMS administrators have the data necessary to analyze and predict patient volumes, acuity, location, and demand peaks, they will be better equipped to appropriately match resources to service area needs.

At its highest level, an ultra-efficient EMS system is one in which local resources match patient needs not only according to geography and response and scene times, but also in relation to diagnoses and the standardized assessment of acuity. This requires looking at the patient's condition in more discrete terms than code green, yellow, or red, and tying that information to what matters most for time-critical patients: the time to definitive care.

A Deeper Look at the EMS Shortage

Although the COVID-19 pandemic increased demand for all EMS services and workers, the bulk of federal relief money was primarily distributed to hospitals and rural medical providers rather than to EMS services. [While the government did give a total of \\$1.83 billion directly to ambulance services, the American Ambulance Association reports that this amount fell far short of what was needed at this vital point of care.](#)⁴

[Now these funds have run dry, leaving many EMS providers in a pinch. This is especially the case in rural communities, where long transport times are a given, as EMS typically serves a large and sparsely populated geographic area. The number of hospitals over capacity during the pandemic forced rural hospitals to transfer emergent patients to facilities much further](#)

away, aggravating the increased demand by making ambulances unavailable for longer times.

High amounts of turnover and low pay have also contributed to the crisis. For EMTs and paramedics, turnover ranges from 20% to 30% annually, meaning that ambulance services should expect to replace their entire staff around every four years.⁵ Adding to the difficulty of EMT recruitment and retention is the pay scale range. In 2021, median pay for EMTs and paramedics was \$36,930 per year, or \$17.76 per hour, according to the U.S. Bureau of Labor Statistics (BLS).⁶

EMT \$16.94 START
EMT-P 22.34 START

EMS services will also need to replace the large number of workers who retire or leave the field for other occupations. EMT and paramedic employment is projected to grow 11% from 2020 to 2030, with an estimated 20,700 positions opening each year.⁷ Given the reality of turnover, attrition, and 11% growth, it seems unlikely that the industry can hire its way out of the EMS worker shortage.

Better Decisions through Better Data

Intelligent resource management and patient movement efficiency are our most attainable means of combatting the EMS worker shortage in the short term. One promising idea involves eliminating the arbitrarily drawn lines that serve as the borders of EMS service areas, and instead establishing "neighborhood EMS" services. Under the neighborhood model, counties and/or municipalities combine EMS services for a given geographic region, as opposed to maintaining separate services divided by state or county lines.

These arrangements take advantage of economies of scale to generate efficiencies and savings, enabling formerly disparate groups to share resources such as dispatchers, facilities, trainers, education sessions and supplies. Duplicative stations could also be eliminated, reducing costs. In rural Kansas, EMS services that have Advanced Life Support (ALS)-level capacity have entered mutual aid and assist agreements to provide ALS level of care support to surrounding counties that provide only a Basic Life Support (BLS) level of care, thus providing access to advanced care over a broader area. This is a substantive step to integrating a clinical resource throughout a larger EMS neighborhood.

Of course, the downside of a mature neighborhood EMS model is that it takes considerable work to standardize and combine fragmented systems. Revenue distribution is also a thorny issue, as the model must address how revenue is shared across county or city jurisdictions. The political process of justifying the consolidation requires finesse—and data, which brings us to the most important point.

Naturally, EMS agencies generate a higher volume of patient movement data than hospitals do. However, the specific data points that most services collect typically correspond with the performance priorities of their funding entities, such as counties or municipalities. Much of the information relates to 911 calls, and includes stats such as the time from dispatch call to enroute to arrival on scene, as well as the total time at scene.

EMS services tend to be very attentive to those types of procedural data streams, but there has traditionally been less attention to other data that could spur operational improvements—and lead to more funding from the county. These data points include elements such as the number of missed requests for nonemergent or for interfacility transfers, and the service's average response time to community hospitals searching for transport for those missions. Having an independent source provide this data can highlight an organization's capacity and operational maturity, while revealing areas of true need within the community.

When county commissioners are presented with data that tells a compelling story, analyzes missed opportunities, and proves the need for additional resources, they are more likely to act to rectify the situation. Most importantly, if an EMS organization can explain how many times they refused a hospital's request to leave the county and take an emergent patient to a receiving hospital—and then show the impact of that delay on the patient's outcome—they are more likely to receive additional funding.

On average, once a county EMS service turns down an interfacility transfer, it takes the hospital four times longer to safely transport a patient to a higher level of care. Delays have consequences. For example, at the height of the winter COVID surge, patient movement data showed that delays in patient transfer resulted in an increase in mortality in those waiting to be transferred.⁸ Although the delay was due to difficulty in patient placement as opposed to delay in the transport process, the value of timely transfer was emphasized in a most dramatic way. The impact of EMS's vital role in patient transfers must not be underestimated.

Armed with the right data, EMS administrators can make better decisions about how to best utilize their scarce resources. The EMS worker shortage is unlikely to ease any time soon, but with better data driving strategic resource management and more efficient patient movement, EMS providers can minimize its effects.

References

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8. Motient. Collective Mission Control data on interfacility transfers from November 1, 2021 to March 31, 2022, encompassing 127 origin facilities, 192 destination facilities and 2,394 completed patient transfers.

Related

- [Are Staffing Levels Seeming Pulseless? Let's Review the Hs and Ts](#)
- [Paramedic and EMT Staffing Crisis Prompts New Organizational Disciplines](#)
- [Critical Staffing Shortages](#)

We are asking for the county to amend the contract to allow AMR to have 2 dedicated ambulances instead of 3 for the next 90 days. Currently with three dedicated trucks to Franklin County 911, the business unit is in a position that is not financially sustainable.

How did we get here?

- 281% increase in employee cost per transport from 2013-2022 The shortage of employees starting in 2020 and the market dictated the salary increase.
- Less than 1% increase in volume from 2013-2022, we are not seeing volume growth as anticipated. Budgeted UHU of .158 and actual is .125. UHU is a measure of relative efficiency. We anticipate a certain number of transports per deployed unit hour. Our volume has been lower than anticipated while our unit hour deployment has stayed the same.
- In 2019 and 2020 we had negative growth in volume, across the nation we are not seeing the 911 volume return to pre covid numbers as anticipated.
- In 2020 and 2021 AMR had CARES Act dollars and FEMA dollars from deployments that helped sustain the operation, those dollars are gone.
- In 2022 when contract was signed, AMR added a fourth truck to try and gain additional volume outside of Franklin County to help support the Franklin Operation. The volume never materialized as anticipated.
- Increase in self-pay patients has decreased our reimbursement for the past two years. We have increased billed amount but are seeing less collected. Currently we are at 2019 reimbursement levels with 1865 less transports. Average Self pay is \$215
- We are deploying 7,877 hours more than in 2013. This equated to almost one additional truck 24 hours a day
- At the end of the day, we are price takers. 80% of our volume is Medicare and Medicaid. These pains are especially profound in smaller rural systems because those BUs (low volume) are so sensitive to cost fluctuations.

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Billed Volume	3,522	3,840	4,007	4,029	3,910	4,770	5,400	3,461	3,341	3,535
Salaries per Billed Transport	\$157	\$171	\$182	\$209	\$241	\$248	\$247	\$311	\$324	\$442
Cost percent increase		8%	6%	13%	14%	3%	0%	20%	4%	27%
		281% increase in salary per	Less than 1% call volume difference							

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