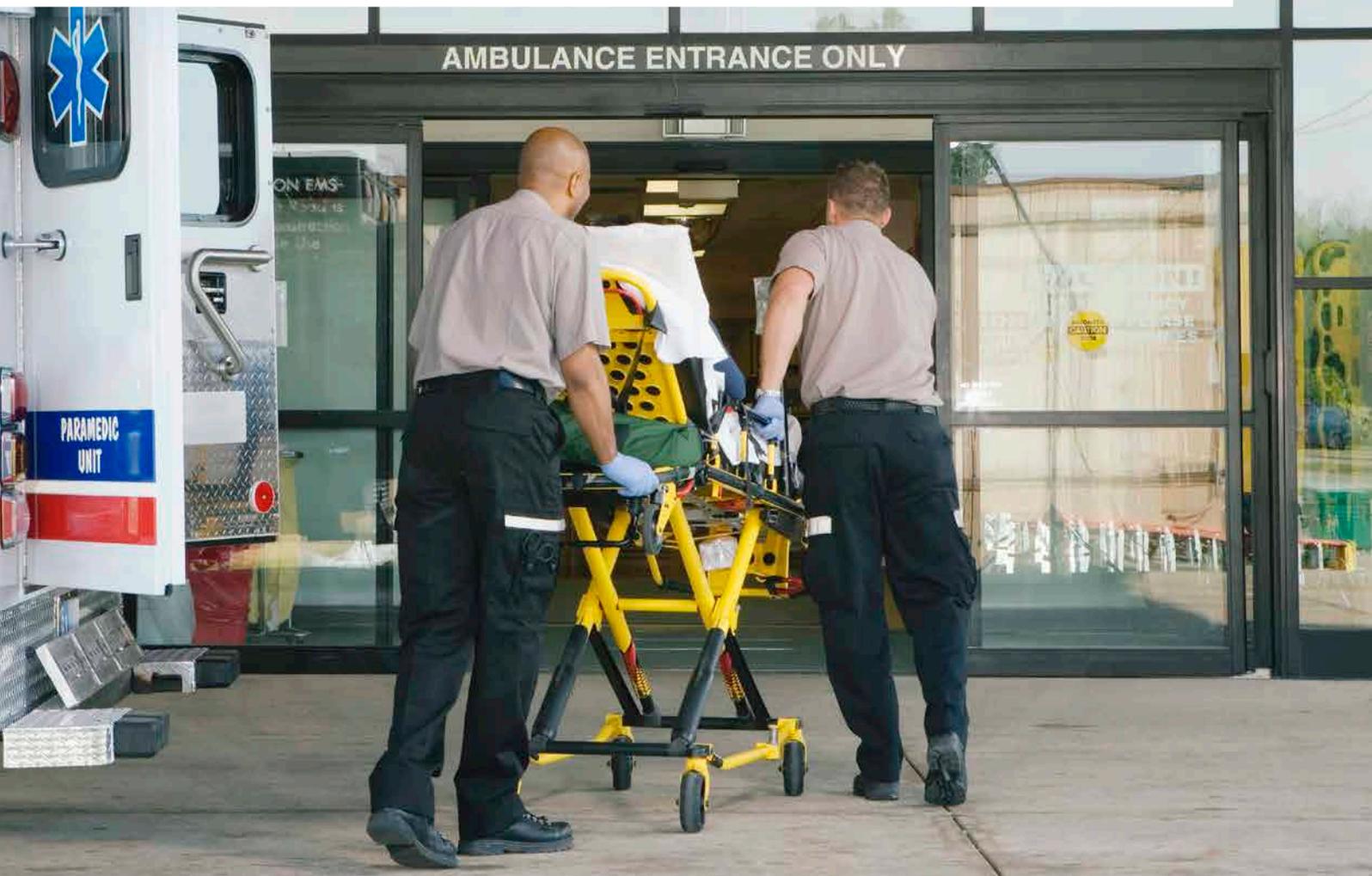


2017 EMS Trend Report

Revealing changes in clinical care, finance and use of technology



In partnership with the

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Editor's Note

We are in the midst of a transformative period for prehospital health care. The only thing we can be sure of in the months and years ahead is change and uncertainty. Is your agency an industry leader, even with the pack or on the verge of irrelevance?

The second year of the EMS Trend Report continues the effort of EMS1, Fitch & Associates and the National EMS Management Association to assess and monitor changes in the EMS profession. We surveyed a cohort of EMS agencies – representative of different service models and geography – about clinical care, operations and the future of the EMS profession.

Use the report findings comparing 2016 to 2017 to see where your agency stands amongst the EMS Trend Cohort and get a glimpse into how those agencies are changing. In addition, we examine the critical need for fatigue management to reduce risks to patients and providers, as well as the importance of adopting a consistent identity for the profession. A panel of EMS physicians and leaders discusses the most interesting findings of the 2017 EMS Trend Report, how those findings might be best applied and what we might expect to see in future years.

Share this report with other paramedicine leaders. Discuss the findings and send us your thoughts at editor@ems1.com.

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HOW IS EMS CHANGING

In its second year, the EMS Trend Report describes revealing changes in clinical care, finance and the use of technology in EMS

By Fitch & Associates

To an outsider, EMS probably looks pretty similar today to how it did decades ago. Call 911, and an ambulance arrives and takes you to the hospital – simple. Yet we know that while progress can sometimes feel slow, in other ways the profession might be going through its most transformative era.

Whether it's a call to change "EMS" to "paramedicine," a push to reform reimbursement models or the increasing use of data and information technology, the industry will be making decisions in the next few years that might significantly impact how patients are treated and what it's like to be an EMS provider in the future.

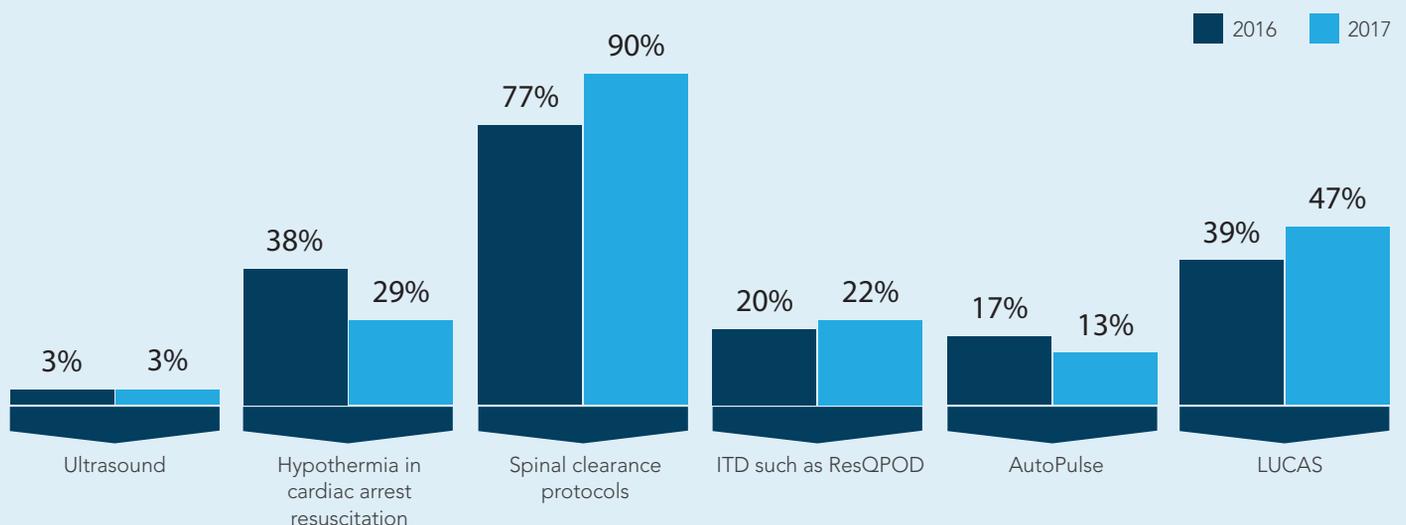
The 2017 EMS Trend Report reveals the current state of the profession and where we are headed. Now in its second year, the report is based on an extensive survey of the EMS Trend Report Cohort – nearly 100 EMS agencies of different sizes and service models across the United States.

The long-term goal of the EMS Trend Report is to monitor movement on key clinical, operational and administrative dimensions among a select group of representative EMS agencies over a multi-year period. In future years, the EMS Trend Report will have even more value in describing how the profession is evolving over time. But now, in its second year, the 2017 EMS Trend Report can for the first time describe some revealing changes in areas such as clinical care, finance and the use of technology.

CLINICAL CARE

At the core of every EMS service is clinical care – the protocols, medications and equipment that support patient assessment, treatment and transport. Despite efforts at the national level to create evidence-based guidelines and model protocols, there are still a wide range of procedures being used and devices being carried.

Which therapies, procedures and devices are used/permitted in your system?



Certain trends predicted in last year's report have continued. In 2016, we saw that fewer than half the agencies in the EMS Trend Report Cohort were including therapeutic hypothermia as part of their cardiac arrest resuscitation protocols. While it was the first year of the report and previous data were not available, we concluded that the percentage had probably been higher until recent studies and American Heart Association guidelines questioned the evidence supporting prehospital cooling.

In this year's report, we see a compelling decrease, as only 29 percent of agencies report using hypothermia in cardiac arrest patient care; of the subset of agencies that fully responded in both 2016 and 2017, there was a 32 percent decrease. One responding agency, however, did report the use of hypothermia for patients with potential spinal cord injuries.

The use of mechanical compression devices and impedance threshold devices remains relatively constant, with just over half the responding agencies using a mechanical chest compression device. Less than one in four use an ITD. As more evidence is reported about the impact of these devices on patient survival-to-discharge, we can expect utilization to change.

Certain treatments and diagnostic tests continue to be rare. Prehospital ultrasound remains uncommon among cohort agencies, with only 3 percent reporting its use. A small number of agencies now report allowing administration of thrombolytics in the field for myocardial infarction, with one also administering a clot-busting medication for possible stroke patients.

This year, the EMS Trend Survey included the addition of some relatively new procedures in an effort to start tracking their adoption. One of those is lactate testing, which has gained favor in recent years as a method of confirming sepsis – 12 percent of respondents have lactate testing capability. At the same time, it is possible that many agencies are hesitant to purchase lactate monitors due to cost or other factors.

PERFORMANCE MEASUREMENT

Regularly examining data is considered critically important to evaluating an organization's performance and improving operations, efficiency and clinical care. Most agencies report reviewing information on response time, call volume, compliance with clinical protocols, collection rates and overtime hours on a monthly basis. Some agencies report this information daily.

The vast majority of respondents (81 percent) still do not regularly review hospital discharge information, reflecting a continued struggle in EMS agencies' ability to access the data they need.

CLINICAL MEASURES OF TIME-SENSITIVE CONDITIONS

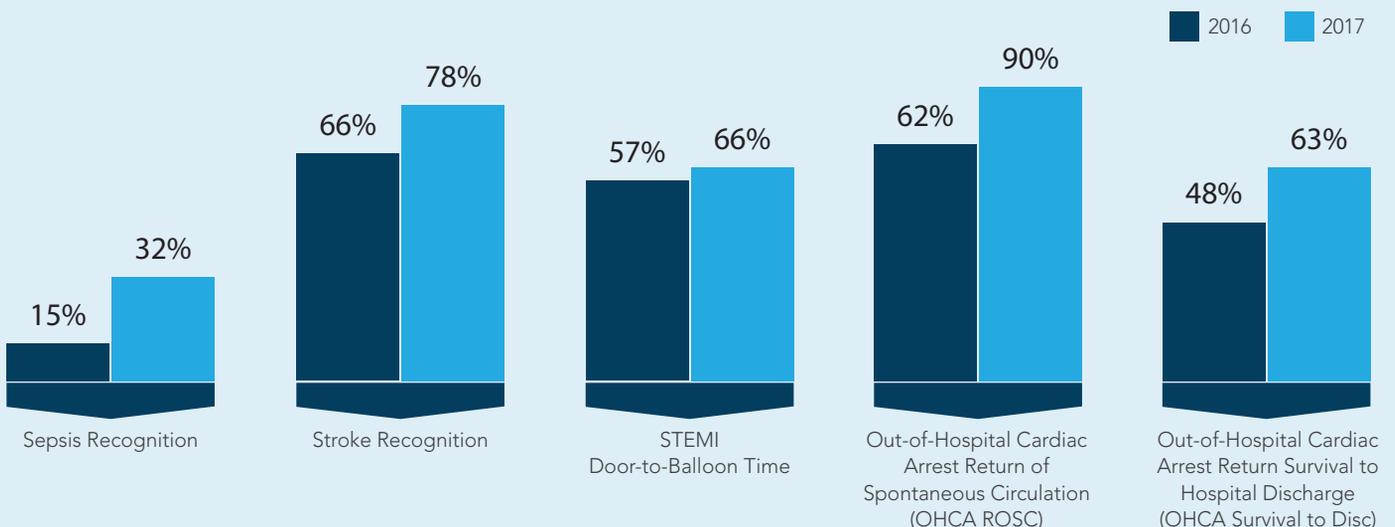
In almost all cases, the reported use of clinical data to measure performance is increasing. Among agencies that participated in both years of the survey, twice as many are now measuring their providers' ability to recognize sepsis. With sepsis now often included alongside trauma, STEMI and stroke as a time-sensitive condition, this trend is not a surprise. Overall, however, sepsis recognition remains a much less used measure than STEMI and stroke recognition, which nearly 80 percent of agencies report tracking.

At the same time, it is clear that some changes are slow to take hold. Only two-thirds (63 percent) of respondents are measuring survival-to-discharge for cardiac arrest.

Agencies are measuring skills, like IV success rates (74 percent), as well as completion of a package of assessment, such as time-to-EKG (71 percent) or door-to-balloon times (66 percent). Although all measurement can have value, focusing on the easy-to-measure completion of tasks might not be as closely linked to patient outcomes as a bundle of condition-specific assessments and treatments.

Measuring skill success rates or assessments performed, though, is often easier because of access to the data and ease of interpretation. For example, a little more than half

For what clinical indicators do you regularly measure performance?



of agencies (53 percent) measure administration of pain medication, a 33 percent increase from 2016 by the agencies that fully responded to both surveys. Whether or not the use of those measures changes in the future will be something to look for in future editions of the EMS Trend Report.

EMS COMPASS

Although the [EMS Compass initiative](#) did not formally adopt any performance measures, the project did develop several measures through a rigorous scientific process and released them for testing. From the survey results, it appears that most EMS leaders are aware of the measures, and many are planning on using them to assess and improve performance.

Of the 39 agencies (43 percent) that said they definitely will use some of the EMS Compass performance measures, more than three-fourths plan to implement the CPR, STEMI, CVA or trauma measures.

PATIENT SATISFACTION

Approximately 80 percent of agencies surveyed measured patient satisfaction. There is a wide variation in the methods used by different organizations to collect patient satisfaction data. Two-thirds report measuring patient satisfaction using in-house resources. However, since 2016 there has been a shift toward the use of external vendors. Eighty percent of the public utility agencies partner with outside organizations to assess patient satisfaction.

Patient experience and satisfaction is part of the U.S. Centers for Medicare and Medicaid Services value-based purchasing reimbursement model and therefore should be on every EMS agency's radar, even if they do not currently measure it.

Patient experience and satisfaction is part of the U.S. Centers for Medicare and Medicaid Services value-based purchasing reimbursement model

Of those agencies measuring patient satisfaction, nearly one-third only evaluate complaints and compliments (30 percent). The vast majority of the remaining agencies use paper-based (44 percent) or phone surveys (18 percent). Of note is the small number of agencies (8 percent) who use an electronic experience survey. Electronic satisfaction surveys are exceptionally common for air travelers, hotel guests and online shoppers. The reasons for slow adoption of electronic satisfaction surveys in EMS are not known and an opportunity for additional research.

Although not explicitly measured, a number of agencies independently noted that they do not evaluate patient satisfaction on every call, but rather distribute surveys to a random sampling of patients within a short time after their transport. This mirrors how patient satisfaction is measured in other health care settings.

HUMAN RESOURCES

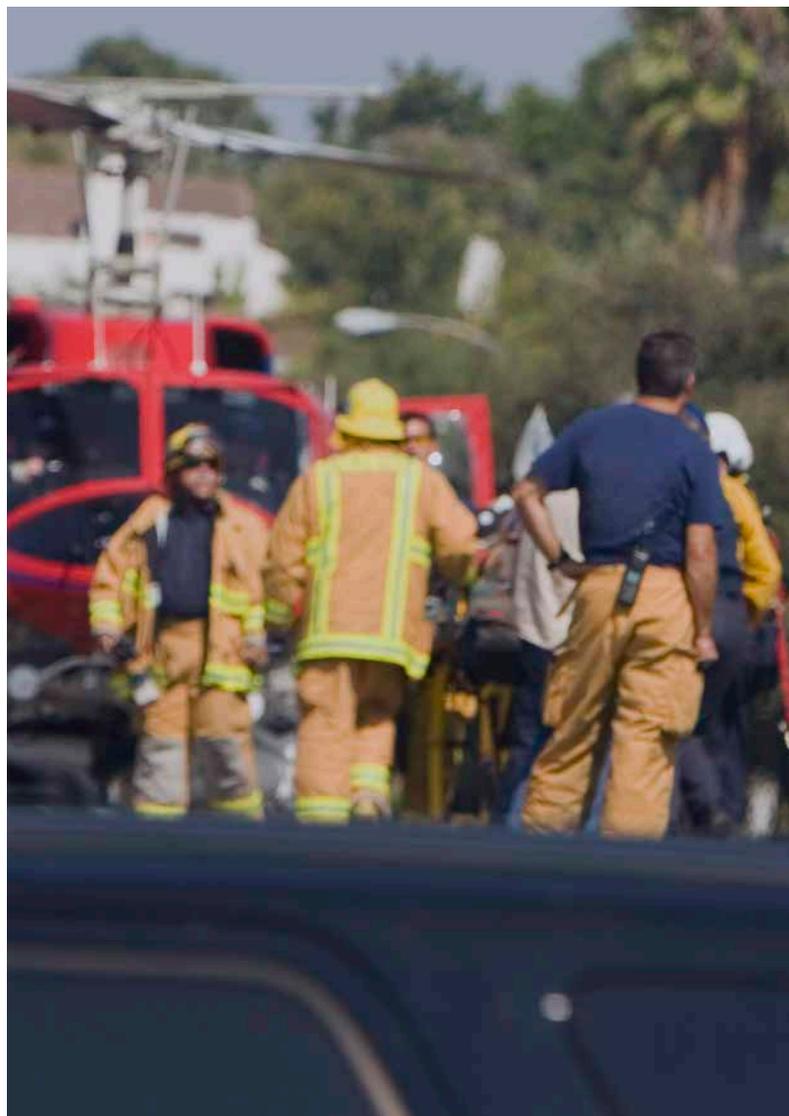
MEDICAL DIRECTION

Having an active, engaged and qualified medical director is critical to the appropriate oversight of an EMS agency. Although one of the primary missions of the EMS Trend Report participants is delivering medical care – and many agencies treat tens of thousands of patients each year – most still work with a part-time medical director. In fact, 62 percent report that their medical directors work less than 20 hours per week in the position.

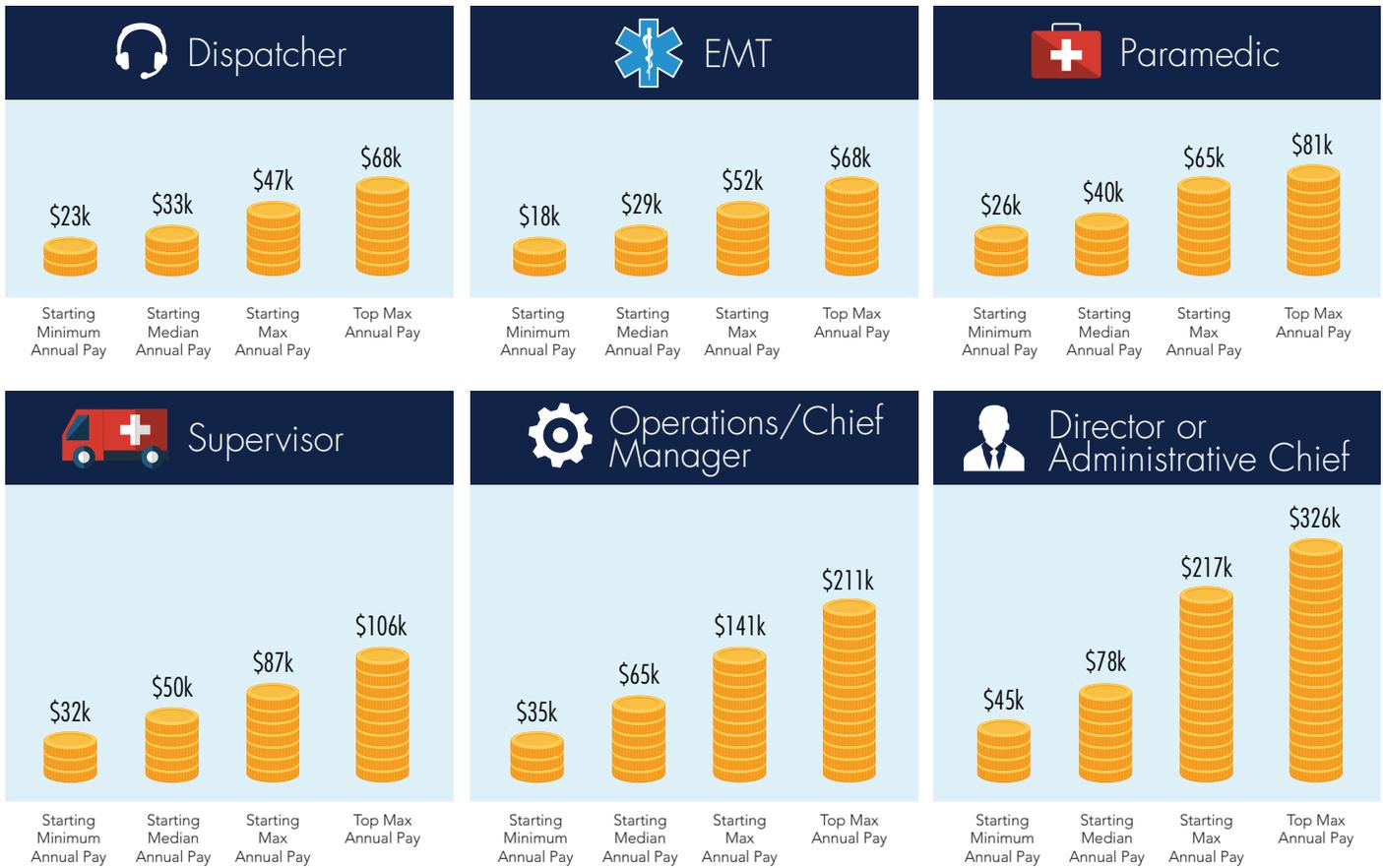
SHIFT LENGTH

Half of agencies staff units using 12-hour shifts (49 percent). The majority of the remaining agencies use a 24-hour model (37 percent), with just six agencies using 48-hour work periods.

Fire departments are more likely than other types of agencies to have 24- and 48-hour shifts. Private nonprofit and public utility model services are most likely to work 12-hour shifts, while hospital-based EMS and private for-profit agencies are the only types of organizations reporting other shift lengths. These unique shift configurations appear most often to be a combination of traditional staffing with supplemental 10-, 14- and 16-hour shifts scheduled at peak times.



What is the annual starting/minimum salary?



PAY AND BENEFITS

Salary ranges remain similar to last year, with wide variation between agencies. For example, the median minimum base salary for paramedics across all agencies surveyed is \$40,505; however, in fire-based services this salary is \$48,750, while private for-profit agencies reported a median minimum base paramedic salary of \$34,600.

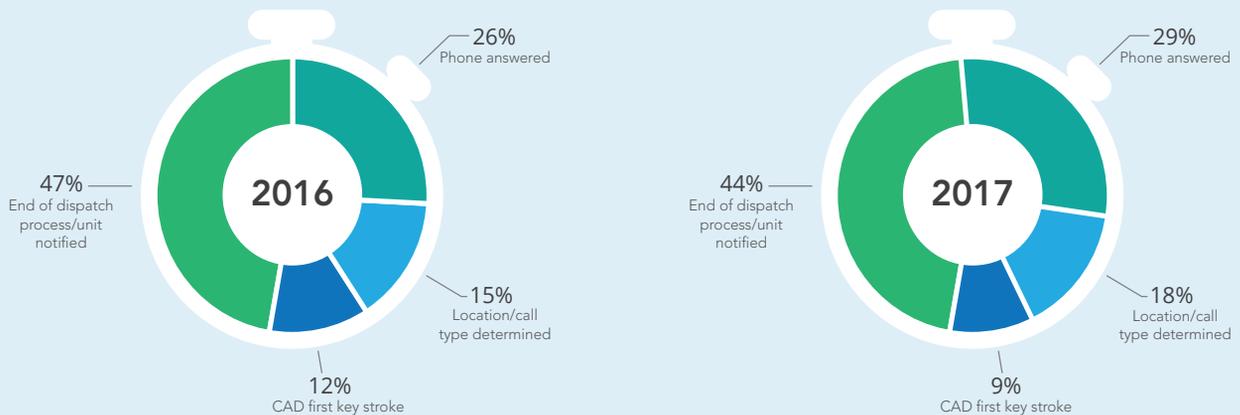
Most agencies reported no decrease in the benefits they offered employees. Fourteen percent of respondents, however, did reduce benefits, with most of that reduction in health insurance benefits, which is consistent with the trend among employers in all industries as health care costs rise.

OPERATIONS

RESPONSE TIME

The definition of response time continues to differ across the profession, something that can be problematic when agencies benchmark themselves against other services or discuss standards with municipal officials and communities. Almost half of agencies report starting the response time clock at dispatch, rather than when the call is initiated. A patient-centered approach to measuring response time includes the seconds or minutes it takes to answer and process the call and dispatch units, as well as the travel time of the responding vehicles. The profession should continue

When does the clock for response time start?



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What are the minimum, average and maximum charges for each type of call by each year?

2016 2017



to work toward a consensus on terminology and methods for evaluating response time standards in order to ensure consistency and clarity in communication.

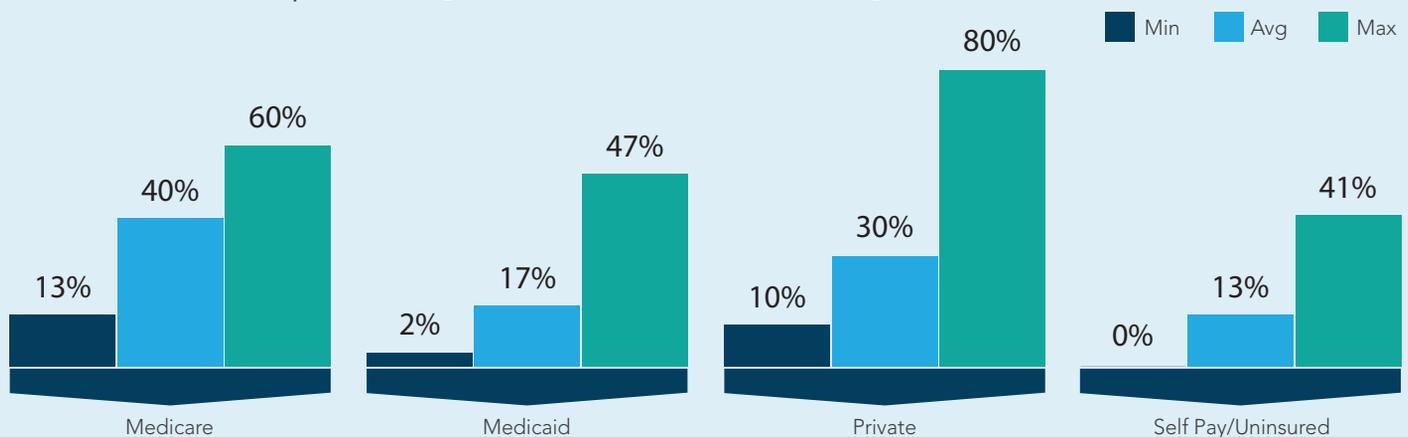
Despite widespread use of 90th percentile fractiles when discussing response time standards, many agencies continue to report averages. Not surprisingly, the use of average rather than 90th percentile measurements is much more common among agencies that begin the clock at dispatch.

FINANCE

BUDGET

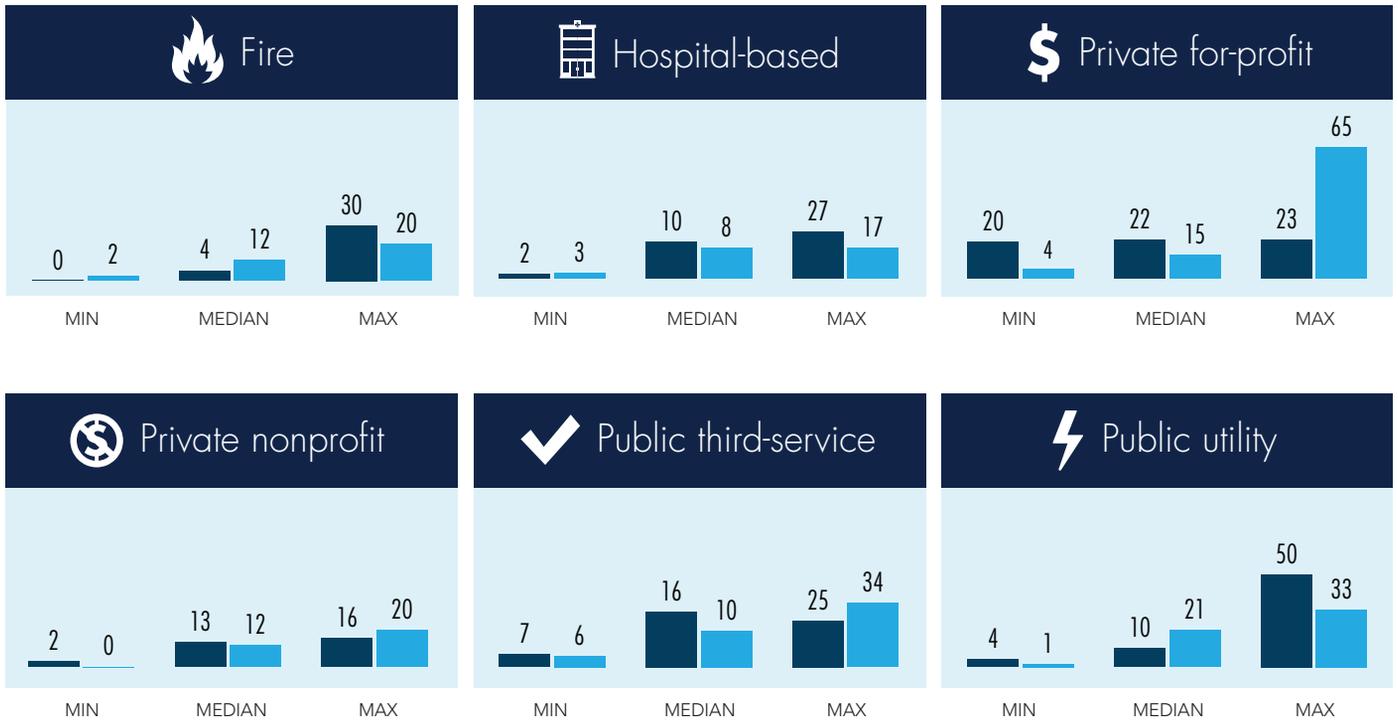
About half of surveyed agencies reported a budget increase in the past year, with an average bump of 4.7 percent. Only a handful of agencies reported a budget decrease. Not surprisingly, the majority of agencies' budgets – about 70 percent on average – go toward personnel costs.

What is the total percentage (%) of ambulance billing from:



What are the minimum, median and maximum turnover rates for each type of organization by each year?

2016 2017



CHARGES FOR SERVICE

Charges for care and transport vary greatly across the country and between service models. For example, hospital-based EMS services have the highest average charge for ALS 911 transports – \$1,571 – in the cohort, while public, third-service agencies reported average charges of \$765 for ALS 911 service. It's important to note that these are charges, not actual costs or fees collected, which can also vary widely based on several factors, including the payer mix.

As in most of the health care sector, charges appear to be rising, with changes in average charges from 2016 to 2017 ranging from a 1.2 percent decrease for non-emergency ALS transports to a 14.4 percent increase for specialty care transports.

EMPLOYEE ENGAGEMENT AND SATISFACTION

While the IHI Triple Aim has become widely accepted across health care, the last few years have seen the addition of a fourth goal. In addition to improving population health, decreasing costs and increasing patient satisfaction, many experts have proposed a Quadruple Aim that includes improving the caregiver experience.

To assess the provider experience, many health care organizations have turned to regular surveys and other tools. EMS is following the trend, as evidenced by an increase in the number of agencies tracking employee engagement. It's clear that EMS leaders are finally recognizing that employee satisfaction is important to the health of an organization and not something to be taken for granted.

This year, less than 60 percent of respondents stated that they measure employee engagement and satisfaction. Just over half of those organizations say that employee satisfaction has been increasing, while most of the remaining report no change.

TURNOVER

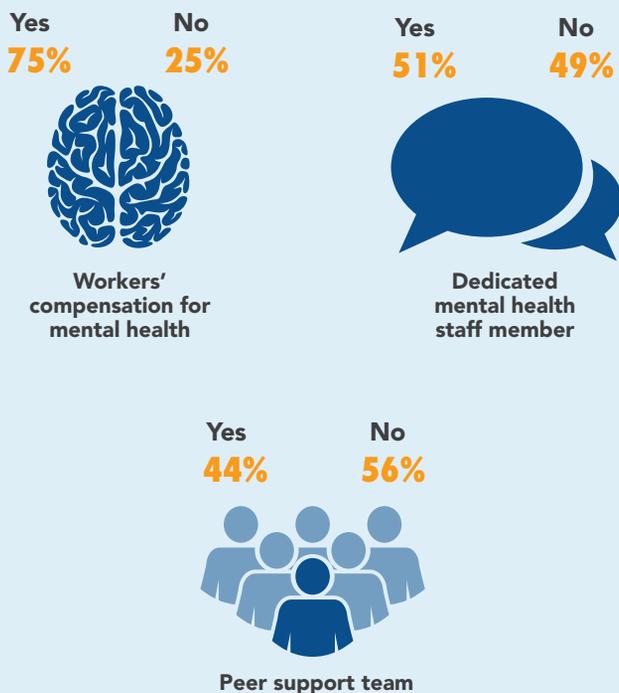
Turnover increased slightly between 2016 and 2017, but which types of organizations saw higher turnover than others remained constant. While fire departments and third-service agencies see a very low turnover, private for-profit and public utility agencies see a higher rate of turnover than their governmental counterparts.

New national evidence-based guidelines for addressing fatigue in EMS have been developed by a group of experts with funding from the National Highway Traffic Safety Administration

EMPLOYEE MENTAL HEALTH

Seventy-five percent of EMS Trend Report Cohort agencies have mental health coverage under workers' compensation, and just over half report having a dedicated staff member to address the mental health of employees. Fourteen percent rely on a licensed social worker, 29 percent use a psychologist and 46 percent use a counselor. Only one agency reported having a chaplain.

Interestingly, 32 agencies stated that they have a peer-support program in place, but only two listed it when asked how their mental health services were staffed. While this variation could be in part due to the wording of the individual questions, it may also have to do with how services offered to employees are categorized.



EMPLOYEE WELLNESS AND INJURY PREVENTION

Nearly 50 percent of the agencies have a formal employee wellness program. Most of those programs include a health screening and assessment, and more than half the agencies with a wellness program incentivize employees to enroll.

Of note, although the dangers of fatigue for EMS providers have been widely documented, only seven agencies said they had instituted a fatigue management program. New national evidence-based guidelines for addressing fatigue in EMS have been developed by a group of experts with funding from the National Highway Traffic Safety Administration. Whether those are adopted or lead to an increase in fatigue management programs remains to be seen.

BODY ARMOR

As systems change their response models to active shooter incidents and others are simply worried about the direct threat of violence against public safety personnel, many EMS agencies are evaluating the need for body armor in the prehospital setting.

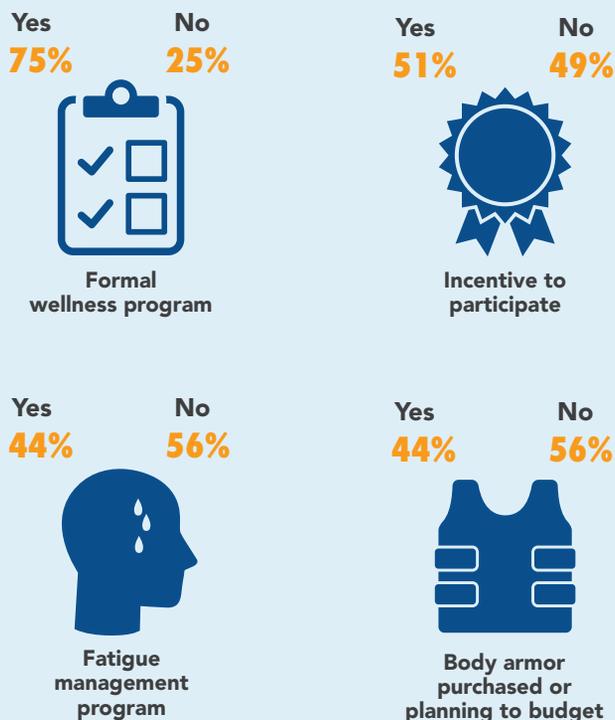
Of those surveyed, 26 percent currently issue body armor and another 16 percent are hoping to include funds for body armor in their next budget. Another 18 percent of survey respondents don't believe that body armor is needed for their personnel.

FUTURE OF EMS

The EMS leaders participating in the 2017 EMS Trend Report shared their thoughts on several questions pertaining to the future of the EMS profession, touching on such controversial matters as education requirements for paramedics and whether "EMS" is even the right term to describe the field.

ACCREDITATION

Accreditation is becoming more common throughout health care, and it's quite possible that its importance will grow in EMS as communities and payers demand proof of quality and value. This year saw no significant change, with 34 percent of responding agencies saying they have received accreditation from either the Commission on Accreditation of Ambulance Services, the Commission on Fire Accreditation International or the Commission on the Accreditation of Medical Transport Services. Two agencies were accredited by more than one accrediting organization.



PARAMEDIC EDUCATION

Discussions at the national level have questioned whether current education requirements for paramedics are sufficient. The need for formal higher education in EMS is still a hotly debated topic, as is clear by this year's results – only five responding agencies (7 percent) require paramedics to have an associate's degree or higher, but 64 percent of the EMS leaders surveyed think that an associate's degree should become a minimum requirement.

These results are similar to last year's, demonstrating the obstacles the profession might be facing in turning a desire for increased education into a reality.

COMMUNITY PARAMEDICINE

The growth of mobile integrated health care and community paramedicine programs continues, with more than 32 percent of agencies reporting an active program and another 39 percent in the planning stages. Although agencies across all service models reported programs, MIH-CP efforts appear to be more common in hospital-based, government third-service and public utility model organizations.

INTEGRATING EMS INTO HEALTH CARE

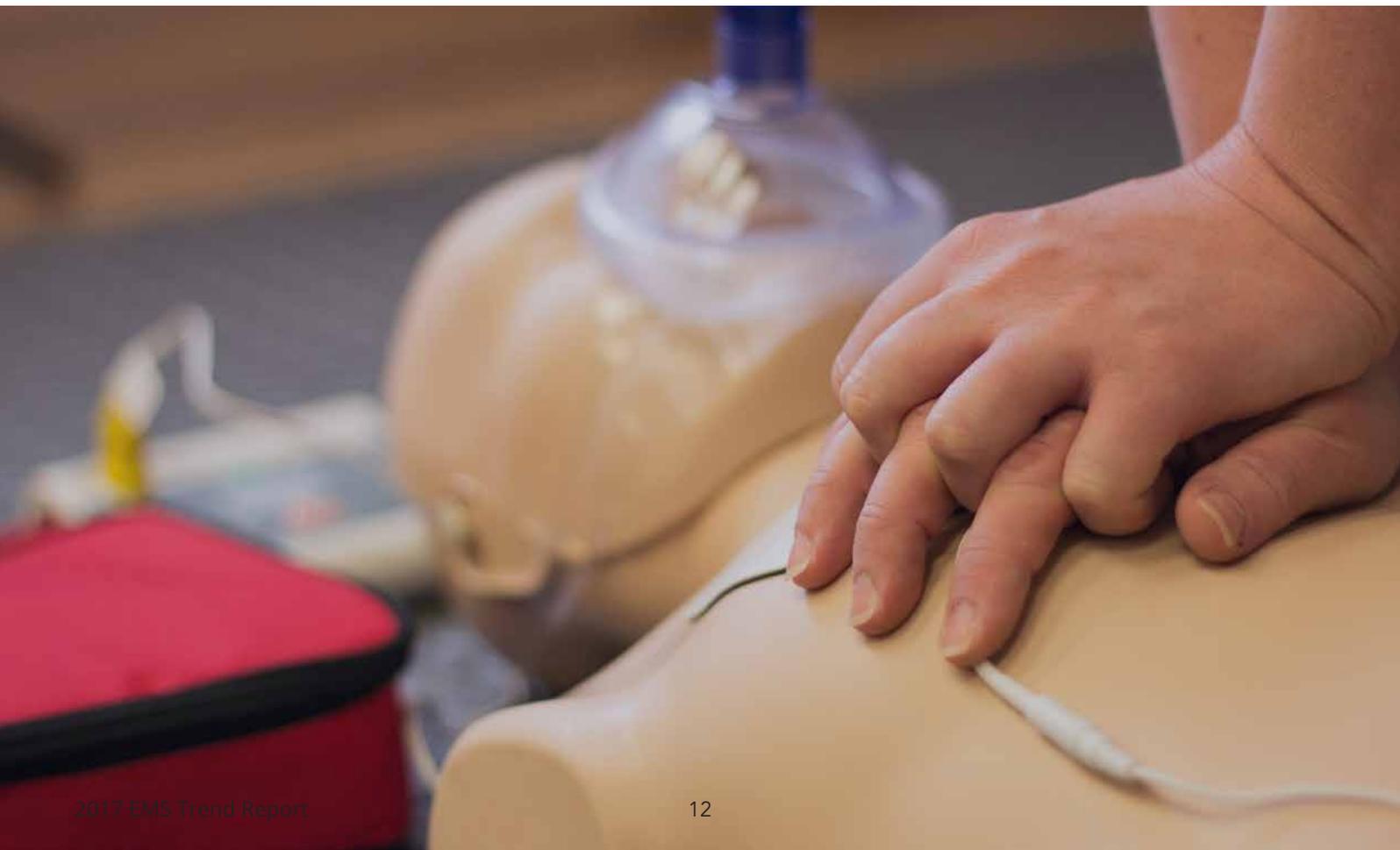
EMS leaders' opinions on whether or not EMS as an industry is becoming integrated within the larger health care marketplace have not shifted significantly over the past year. Overall, most agree that integration is increasing – however, 14 percent disagree.

EMS NOMENCLATURE

The National EMS Management Association recently issued a [position paper](#) on the importance of developing a common language for EMS across the country. The participating EMS leaders were surveyed prior to the release of this report, but their responses reflect the growing debate over the most appropriate way to refer to the profession.

Many leaders prefer to stick with terms commonly used now, including "EMS" and "prehospital care," but "mobile integrated health care" or MIH was equally popular. Several who responded "other" said they prefer "paramedicine," the term recently endorsed by NEMSMA.

The National EMS Management Association recently issued a position paper on the importance of developing a common language for EMS across the country.



CONCLUSION

The 2017 EMS Trend Report offers a revealing look at the current state of EMS in the United States. It is another step toward looking internally at our profession to get a better understanding of where we are, where we are headed and where we need to be.

ACKNOWLEDGEMENTS

Fitch & Associates, EMS1 and NEMSMA thank each organization that volunteered to participate in this effort. Without their willingness to share information, this project would not have been possible.

Fitch & Associates is grateful to Catherine R. Counts, MHA, Ph.D., for overseeing the data analysis and compilation of the 2017 EMS Trend Report. Any large-scale effort like this has many contributors behind the scenes, including the individuals at each agency who provided the detailed responses to the survey; the administrative team at Fitch & Associates who worked with the agencies to complete the survey; Michael Gerber, MPH, and his colleagues at the RedFlash Group for editorial support; and the graphics and editorial team at EMS1.

ABOUT THE AUTHORS

For more than three decades, the Fitch & Associates team of consultants has provided customized solutions to the complex challenges faced by public safety organizations of all types and sizes. From system design and competitive procurements to technology upgrades and comprehensive consulting services, Fitch & Associates helps communities ensure their emergency services are both effective and sustainable. For ideas to help your agency improve performance in the face of rising costs, call 888-431-2600 or visit www.fitchassoc.com.

METHODS AND SAMPLING

Ninety agencies participated in the 2017 EMS Trend Report survey, two-thirds of which had also participated in the survey for the previous year's report. Of the 90 agencies, 72 completed the entire survey, with the remaining 18 providing partial responses.

While the majority of data presented in this report uses responses from all 90 agencies, in situations when an agency didn't complete a survey question, they were excluded from the analysis on that topic.

The full cohort of responses from both years were used whenever possible when comparing 2016 and 2017 data. However, in certain analyses it was determined that the most accurate presentation of data required using a limited dataset of the 43 agencies that completed both the 2016 and 2017 surveys in their entirety. The decision to use this limited dataset was not made lightly, but for some questions the most appropriate way to make an accurate comparison across years was to ensure that organizations were being compared to themselves.



How do we refer to our profession?

7%



Ambulance Service

4%



Medical Transportation

25%



Prehospital Care

35%



EMS

35%



Mobile Integrated Health Care

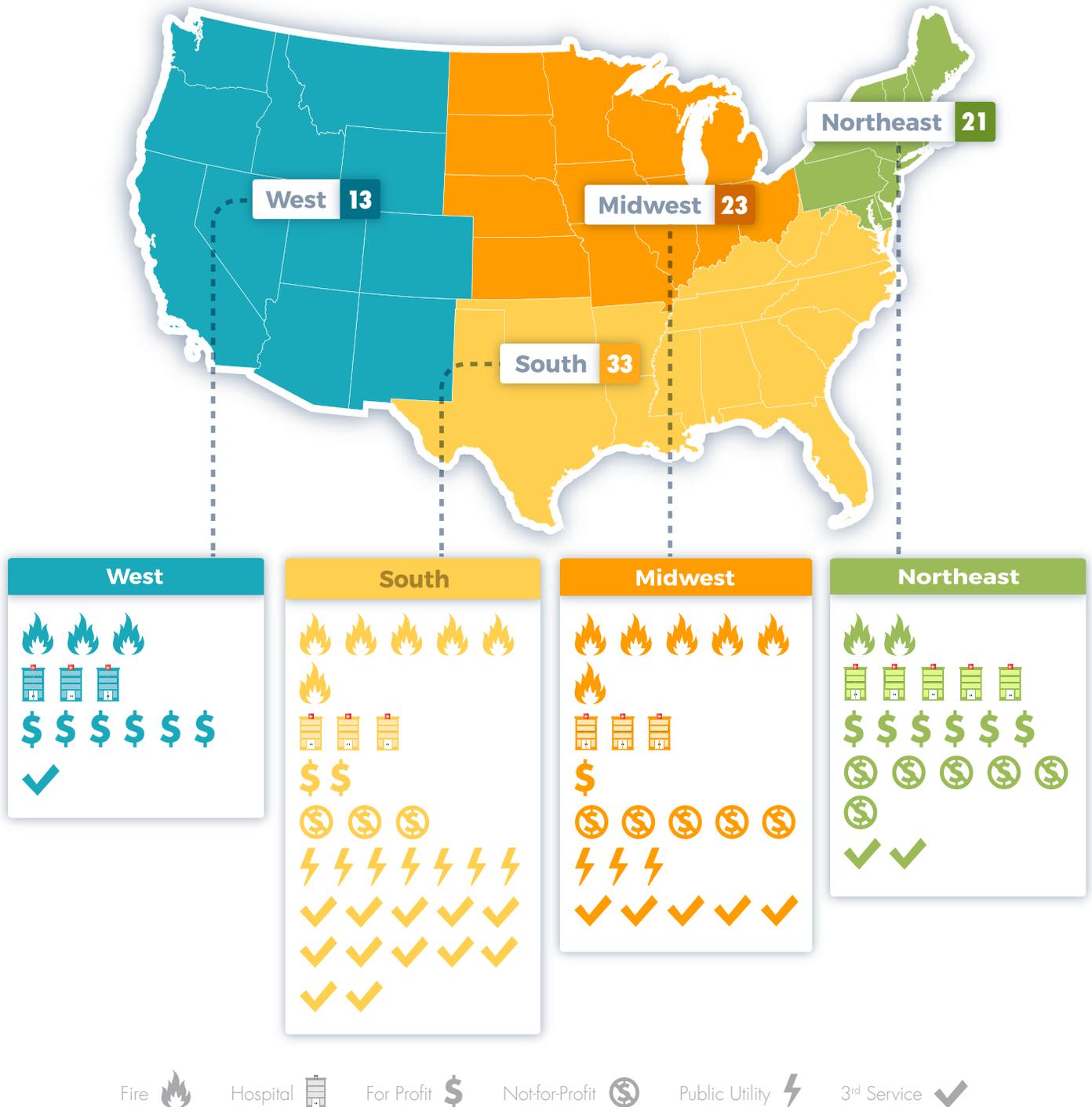
13%



Other

COHORT DEMOGRAPHICS

Surveys were sent to 90 agencies around the United States. More than three-fourths (72) of the agencies provided complete information, and another 18 agencies provided partial information in varying degrees of completeness.





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WHY A CONSISTENT IDENTITY MATTERS FOR EMS

It's time for EMS providers to adopt the label by which the public already knows us: paramedics

By Art Hsieh

We name everything around us so we can categorize, organize and make sense of everything from inanimate objects to conceptual ideas to people. Identifying the person or thing in front of us provides a sense of familiarity.

Society uses common names to group similar objects together in order to simplify retention. Most of us don't look at a stretch of rocky beach and call it a "mixture of igneous, metamorphic or sedimentary stones." We simply call them rocks.

The same thing happens in health care. There are registered nurses, licensed practical or vocational nurses, clinical nurse specialists, critical care nurses, hospice nurses, nurse practitioners and so forth. None of this really matters to those outside the industry. A layperson who doesn't feel well simply wants a nurse who is compassionate and competent.

We group public safety providers as well. Does it matter who drives the fire engine or who rides shotgun? Or the name of

the backseat riders? All of them are known as firefighters when they are operating on the scene. Law enforcement officers might be known as sheriffs' deputies or police officers, but colloquially they are cops.

CALL FOR COMMON NOMENCLATURE

Somehow, EMS providers struggle to brand ourselves in the same way the community sees us. Most of my non-EMS friends call us "medics" or "paramedics." They don't really care about the differences between EMTs, AEMTs, EMT-IIs, paramedics or any of the other 37 labels we use across the United States to describe who we are.

A National EMS Management Association position paper, released in early May, [calls for a standard nomenclature](#) for EMS providers that the community can identify with easily. NEMSMA recommends the term "paramedicine" be used to describe the discipline and profession and "paramedic" be used to reference all individual providers.

The word “paramedic” has been in the American lexicon since the early 1970s and is used fairly universally across the North American continent. Canada has been actively promoting the brand name for quite some time now.

While this might seem trivial, a consistent name is significant. It allows the media to not stumble over what we are or what we do when reporting on incidents. It aligns what people think we do with media portrayals (which, as we know, doesn’t often match real life, but that’s an entirely different column).

Perhaps most importantly, a consistent name unifies our industry when we go before our local, state and federal legislators by reducing the need to explain every piece of minutia about our levels of training, certification and licensure.

TIME TO MAKE THE CHANGE

Honestly, what has held us back this long on such a simple change is our longstanding stubbornness to de-label ourselves. Frankly, I don’t care if my partner is an EMT, advanced EMT or paramedic – we are a team, and we work together to provide compassionate, competent care and safe transportation of an injured or ill patient.

Indeed, the 2017 EMS Trend Report verifies this barrier – the majority of 2017 survey respondents did not agree on the best label to describe what we do. EMS? Mobile Intensive Health Care? Prehospital Care?

To the public eye, does it really matter? This is really an academic argument only.

We introduce ourselves to our patients by our names, not by our titles. I don’t try to correct the patient calling us both medics. It simply doesn’t matter.

Behind the scenes, the profession can – and should – continue to label specific levels of providers accurately for common internal recognition. The labels could be changed to reflect those levels, like Paramedic Level I, II, III, or primary care paramedic or advanced care paramedic.

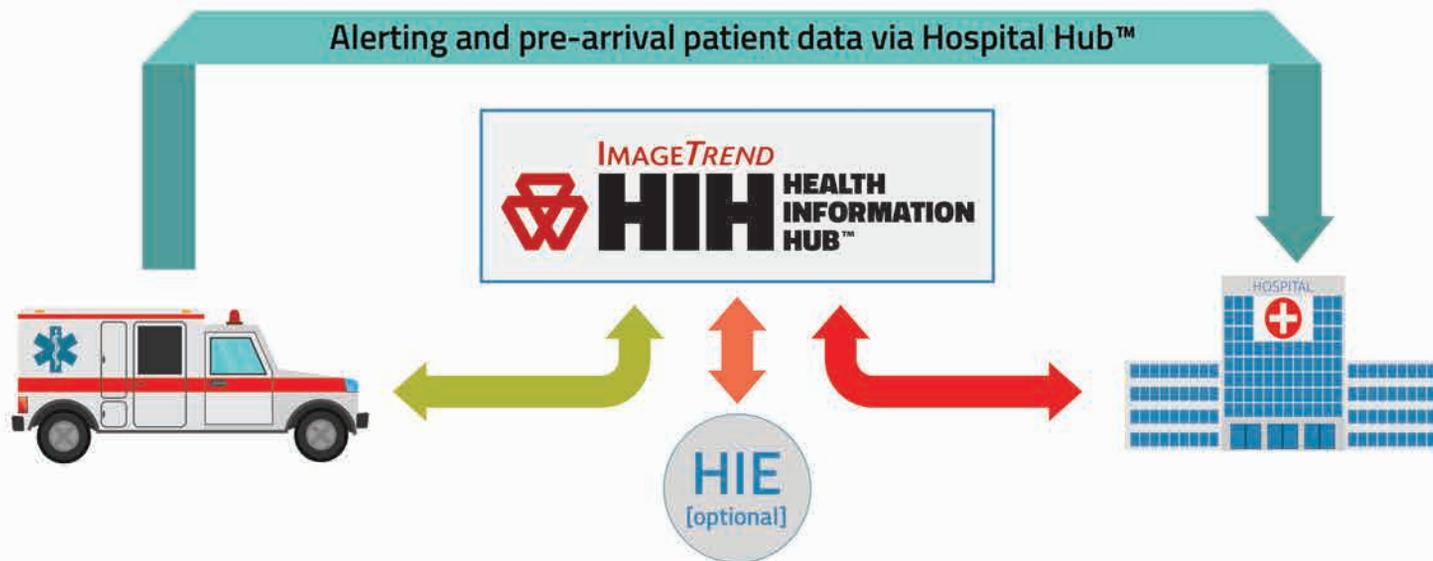
But when we’re operating on the stage – in front of the public, policymakers and the media – let’s call ourselves what the rest of society calls us and stop trying to needlessly confuse them.

ABOUT THE AUTHOR

Art Hsieh, MA, NRP teaches in Northern California at the Public Safety Training Center, Santa Rosa Junior College in the Emergency Care Program. An EMS provider since 1982, Art has served as a line medic, supervisor and chief officer in the private, third service and fire-based EMS. He has directed both primary and EMS continuing education programs. Art is a textbook writer, author of “EMT Exam for Dummies,” has presented at conferences nationwide and continues to provide direct patient care regularly. Art is a member of the EMS1 Editorial Advisory Board.



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FATIGUE, SCHEDULING ARE CRITICAL EMS CHALLENGES

EMS Trend Report 2017 findings highlight the importance of fatigue management as a safety issue for both caregivers and patients

By Jay Fitch, Ph.D.

Caregiver fatigue and increasing negative performance associated with longer shifts are often the underlying reasons for changing schedules that we hear from clients and colleagues. More than 50 percent of the agencies in the EMS Trend Report Cohort operate with 12-hour shifts, rather than the 16- or 24-hour shifts used in the past and still used by many services.

EMS leaders have been slow to accept the fact that [fatigue impacts caregiver performance](#). According to the Joint Commission, a substantial number of studies indicate that the practice of extended work hours contributes to high levels of worker fatigue and reduced productivity. These studies and others show that fatigue increases the risk of adverse events, compromises patient safety and increases risk to personal safety and well-being [1].

Taking a page from other industries that staff around the clock, health care researchers have been studying the effects of caregiver fatigue as both a patient safety and employee health issue. There is an increase in awareness that fatigue impairs performance. Studies have shown that 17 hours of sustained wakefulness is equivalent to a blood alcohol level of 0.05 percent and that after 24 hours, it is equivalent to 0.10 percent – more than the legal limit for driving [2].

A 2015 study found that EMTs and paramedics who work longer shifts are [60 percent more likely to suffer injury and illness](#) (and to compromise the safety of their patients) than those who work eight- to 12-hour shifts. Researchers looked

at three years of shift schedules (totaling almost 1 million shifts and involving more than 4,000 employees) and 950 occupational health records for 14 large EMS agencies in the United States.

Shifts longer than 12 hours were associated with a 50 percent heightened risk of sustaining an injury when compared to shifts of less than 12 hours. This is after taking into account other relevant factors, such as employer type, night or day shift, employment status and how often the EMS crew had previously worked together. The risk associated with shifts lasting 16 to 24 hours was more than double that of shifts up to eight hours [3].

Despite the evidence, efforts to move to shorter shifts in EMS continue to face significant resistance: While 50 percent of this year's EMS Trend Report respondents use 12-hour shifts, the number of agencies using 24- and 48-hour shifts increased slightly as compared to the 2016 survey.

PATIENT, PROVIDER-CENTERED SOLUTIONS

Confronting scheduling preferences is difficult and involves many sensitive issues, including both employee satisfaction and lifestyle. However, in busier systems fatigue management must be considered first and foremost as a caregiver and patient safety issue.

Like so many things in EMS, what works well for one agency or community doesn't necessarily work for others. In rural systems, working a longer shift with few calls or post moves



may not have a significant impact on crew fatigue. However, even in rural systems where EMS workers run fewer calls, they will still occasionally have a shift where they get little rest, increasing the risk of adverse outcomes. This is an issue particularly if caregivers work back-to-back shifts with multiple employers.

Innovative agencies are addressing caregiver fatigue in different ways. For example, Austin-Travis County (Texas) EMS is reducing its longer shifts and tracking paramedic workloads in real time using FirstWatch. Austin-Travis County has added “[Safe Sleep Rooms](#)” to stations to give personnel the chance to sleep before driving home after a busy or sleepless shift.

Multnomah County, Oregon, which includes Portland, included a provision in its EMS contract requiring that its contractor maintain an average unit-hour utilization of less than .40 for each unit. This often results in crews being rotated between high-demand and lower call volume stations.

APPLYING RESEARCH TO IMPROVE SAFETY

Other systems are increasing caregiver education to encourage proper rest, exercise and nutrition prior to a long shift. Research has suggested that each of these factors reduces fatigue.

The EMS Trend Report will continue to monitor scheduling and fatigue across the profession. This year, the National Association of State EMS Officials is releasing evidence-based guidelines for managing fatigue in EMS, through an effort funded by the National Highway Traffic Safety Administration and led by EMS researcher Daniel Patterson, Ph.D.

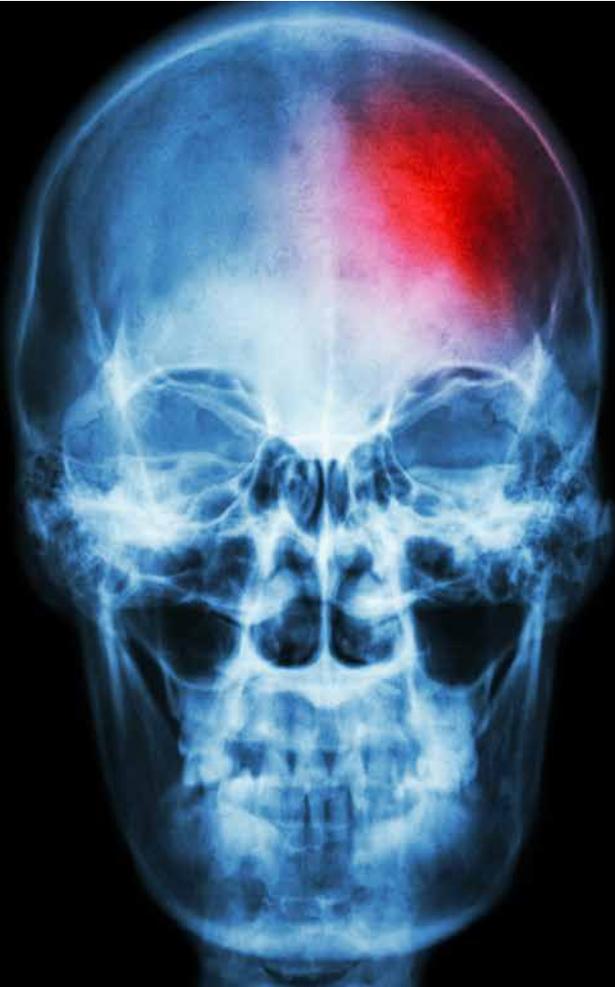
Whether the EMS community prioritizes patient and provider safety and begins making changes is up to us.

ABOUT THE AUTHOR

Jay Fitch, Ph.D. is a founding partner at Fitch & Associates, which has provided leadership development and consulting for emergency services for more than three decades.

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Improve time to treatment with EMS activation of stroke cases

Early activation of a mobile coordination platform in the field linked to expedited, more successful care process

A recent study shows that stroke patients received faster treatment when emergency medical services activated the stroke team from the field compared to patients whose stroke teams were activated upon arrival at the hospital.

The Duke University School of Medicine study, the first of its kind, included 2,589 unique stroke cases and found that those activated by EMS were significantly more likely to receive treatment within 60 minutes of hospital arrival than those whose cases were not activated by EMS. The researchers controlled for age, sex, stroke severity (NIHSS score) and time of day.

Using data from March 2013 to May 2016, they found that cases activated by EMS in the field resulted in significant reductions in door-to-CT scan and door-to-needle times, as well as an increased likelihood of meeting door-to-needle goals when compared to cases activated in the emergency department.

Several health care organizations around the country have found success in accord with the study's findings using an app called Pulsara. Pulsara links the entire emergency

response team together using a single platform to share patient information, benchmark times and records across multiple devices. Once activated from any mobile device, Pulsara alerts critical care team members down the line, ensuring that everyone remains updated in real time.

CHRISTUS GOOD SHEPHERD

Christus Good Shepherd, located in a rural area northeast Texas is one of only two primary stroke centers in the area.

After introducing Pulsara, door-to-needle times dropped dramatically. In 2014, 93 percent of Good Shepherd's stroke cases had a door-to-needle time of less than 60 minutes, with 52 percent of those cases coming in under 45 minutes.

From January to June 2015, 92 percent of stroke cases went from door to needle in under 60 minutes, and 75 percent of cases were below 45 minutes. As the hospital adapts to using Pulsara, their numbers continue to improve. In fact, the hospital set a new record door-to-needle time of 22 minutes in May 2015.

ST. DOMINIC HOSPITAL

St. Dominic Hospital is a 400-bed primary stroke center in Jackson, Mississippi. The soon-to-be comprehensive stroke center currently sees about 1,100 stroke patients per year from all over the state, from transfers to “drip-and-ships.” These patients are treated for a variety of strokes, including ischemic strokes, hemorrhagic strokes and TIAs.

Under the old system, the door-to-needle time hovered around 54 minutes. In the months following the implementation of Pulsara, that number has dropped to an impressive 44 minutes. For interventional stroke cases, the hospital's goal is to have a door-to-puncture time of less than 120 minutes at least 75 percent of the time. The average door-to-puncture time was 107 minutes. Prior to adopting Pulsara, St. Dominic was below the 120 minute threshold in 67.5 percent of cases. Once they adopted Pulsara, that number jumped to 86.6 percent, with an average door-to-puncture time of 98 minutes.

ST. ELIZABETH HEALTHCARE

St. Elizabeth Healthcare, based in Edgewood, Kentucky, serves a population of more than 400,000 across the Greater Cincinnati area, stretching from Northern Kentucky to Indiana and Ohio.

St. Elizabeth was invited to participate in a research study called Leadership Saves Lives, led by Yale Global Health Leadership Institute. The goal of the study was to reduce inpatient heart attack deaths by influencing organizational culture. One of the significant recommendations from the team was for St. Elizabeth to adopt the Pulsara app.

After adopting the recommended changes in the process of responding to heart attack patients from Leadership Saves Lives, including the implementation of Pulsara, the time from first medical contact to the moment of artery-opening treatment dropped by 30 percent. Average times dropped from 103 minutes in the first quarter of 2016 to just 72 minutes in January 2017.

BETTER TRACKING AND BETTER RESULTS

Beyond facilitating earlier activation, the app provides the ability to track the medical team's performance over time and to identify successes, areas of improvement and other trends that can positively impact door-to-needle times.

The combination of communication and reporting can lead to long-term improvements in processes and ultimately, better patient outcomes.



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ROUNDTABLE: EXPERTS REFLECT ON TRENDS, FINDINGS FROM THE 2017 EMS TREND REPORT

Our panel of EMS leaders discusses changes, both positive and alarming, and what the data means for growing and improving EMS

Now in its second year, the EMS Trend Report reflects changes in EMS care delivery and how those changes align with overarching health care trends.

We asked EMS1 editorial advisors and contributors to review the data and offer their reactions and insights into what changed and what didn't – and where EMS leaders go from here.

The panel includes:

- Chris Cebollero, EMS consultant
- Dr. Maia Dorsett, EMS physician
- Dr. James MacNeal, EMS physician

1

WHICH FINDING SURPRISED YOU MOST?

Chris Cebollero: One change that caught me by surprise was the change in dispatch/response. It was interesting to see the change in when the clock was started. There was a decrease in starting the clock at the end of the dispatch process, with a matching increase in starting the clock when the phone was answered. Though more research is needed on response times, it is good to see that dispatch is starting the clock as quickly as practical.

Maia Dorsett: I was not surprised, but definitely disappointed, to read that only 8 percent of agencies have instituted a fatigue management program. This is particularly disheartening given that 30 percent of agencies within the EMS Trend Report cohort work longer than 24-hour shifts.

THE PANEL

Chris Cebollero, EMS consultant

Chris Cebollero is a nationally recognized emergency medical services leader, author and advocate. He is a member of the John Maxwell Team and available for speaking, coaching and mentoring. Currently he is the senior partner for Cebollero & Associates, a medical consulting firm, assisting organizations in meeting the challenges of tomorrow. Cebollero is a member of the EMS1 Editorial Advisory Board.

Dr. Maia Dorsett, EMS physician

Maia Dorsett, MD, Ph.D., is an emergency and EMS physician in St. Louis. She completed her residency in emergency medicine at Barnes Jewish Hospital/ Washington University in St. Louis, where she stayed for an EMS fellowship. She has accepted a position as a faculty member in the Division of Prehospital Medicine at University of Rochester, New York.

Dr. James MacNeal, EMS physician

James MacNeal, MPH, DO, NRP, began his career in emergency medicine as a paramedic. He holds an American Board of Emergency Medicine/Emergency Medical Services certification and completed an EMS fellowship at Yale University. He is EMS medical director of the MercyRockford Health System.

We put our EMS providers and the public at risk by failing to address the impact of fatigue on EMS operations and care provided [1,2].

Moreover, while 75 percent of EMS agencies provide workers' compensation coverage for mental health, this means that a quarter do not. With a recipe like "fatigue + emotional calls + gaps in support," it is not surprising that there are increasing turnover rates and worsening stress levels.

2

HOW DO THE FINDINGS OF THE SECOND YEAR ALIGN WITH OTHER TRENDS IN EMS AND HEALTH CARE?

Chris Cebollero: Some changes reflect a need for adaptation, such as clinical indicators of time-sensitive conditions. We are also seeing a relative decrease or no change in selective therapies, such as ultrasound, hypothermia therapy and use of mechanical compression devices. There has only been limited research on the effectiveness of these therapies. We need to get to a point where our providers are using methods and equipment that are backed by EMS research.

Maia Dorsett: The findings demonstrate that EMS is aligning itself with larger health care initiatives:

- **Value-based health care:** With health care expenditures increasing at an unsustainable rate, reimbursement frameworks have moved toward provision of beneficial care at reduced overall cost. The proliferation of mobile integrated community paramedicine initiatives mirrors this trend.
- **Time-critical diagnoses:** The percentage of agencies measuring sepsis recognition doubled in a single year.
- **Evidence-based care:** There is an admirable move to eliminate interventions that lack benefit and may cause harm. It was refreshing to see that an increasing number of agencies (now 90 percent) have spinal clearance protocols, saving patients from back pain, pressure sores and subsequent unnecessary imaging inflicted by backboards.

James MacNeal: The patient satisfaction metric continues to grow and influence care practices within health care and within EMS. EMS providers will need to understand how to interpret and improve based on this information. I would imagine that at some point, EMS reimbursement will be tied more closely to quality, with patient satisfaction being a key metric.

3

WHAT ACTIONS DO YOU RECOMMEND TO EMS LEADERS BASED ON THE FINDINGS OF THE REPORT?

Chris Cebollero: Use this as a blueprint of what is happening within our field. If you are looking to add advanced therapy, consider what others are doing.

Many times as leaders we have to make the best decisions we can. This trend report allows us to make decisions that some of our peers in the field have already made, now with two years of supporting data.

Maia Dorsett: Educate and advocate. EMS leaders must educate the public, lawmakers and other health care professionals about EMS as a medical specialty.

EMS provides health care in a mobile environment rather than transportation in a health care environment. Appropriate measures of quality must go beyond transportation measures (response times) and focus on meaningful patient outcomes.

James MacNeal: As an EMS physician, I am a huge proponent of integrating the EMS medical director into field response. I also see EMS systems needing to branch out and work with non-traditional partners such as police, health departments, drug addiction coalitions and other community partners.

As future reimbursement is unpredictable, having partners that can work together for a common goal with limited funding will be increasingly important. Consolidated communications centers, regional medical direction and group purchasing will become a necessity.



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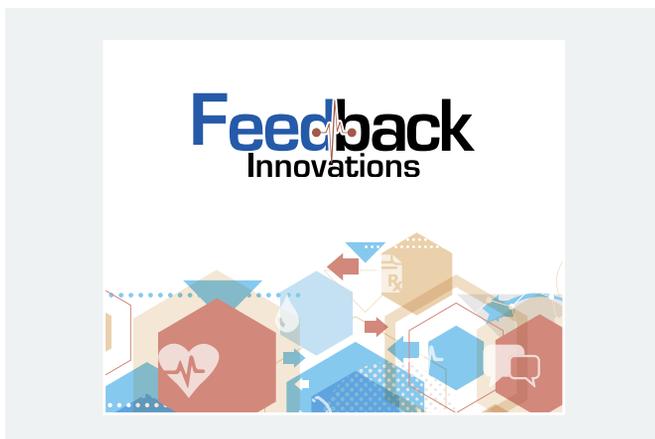


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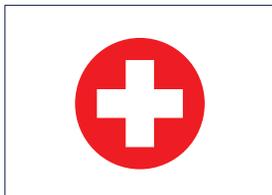


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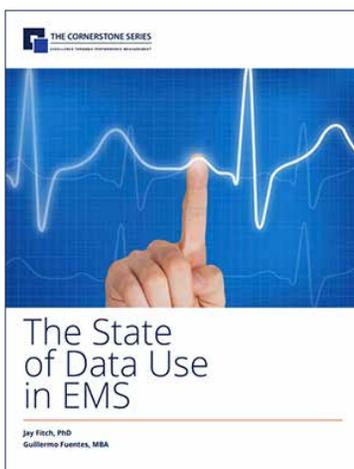


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