

*2022 ESO EMS INDEX:*

# INSIGHTS AND BEST PRACTICES FOR EMS AGENCIES

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**eso**

# CONTEXT AND OVERVIEW FOR THE INDEX

Despite our best hopes, 2021 brought a continuation of many of the challenges we faced with navigating the COVID-19 pandemic in 2020. However, 2021 also brought a glimpse of a return to normalcy, with EMS call volume returning to, if not surpassing, pre-pandemic rates after declining in 2020.

As we learn more about the effects of the pandemic on individual communities, the impact of disparities in healthcare has been magnified. The goal of every healthcare provider is to give patients the care they need when they need it. Nevertheless, a growing body of research indicates that there are differences in care received and patient outcomes that correlate with factors like patient gender, race, ethnicity, and socioeconomic status. It is important to acknowledge where disparities exist so we can identify ways to overcome them.



**IT IS IMPORTANT  
TO ACKNOWLEDGE  
WHERE DISPARITIES  
EXIST SO WE CAN  
IDENTIFY WAYS TO  
OVERCOME THEM.**

In our fifth full year of producing the ESO EMS Index, we are taking a more comprehensive look at EMS data by introducing insights related to equity in prehospital care for each measure where appropriate. In doing so, we hope to continue discussions that further quality improvement while inspiring additional conversations about what it means to deliver equitable healthcare to the communities we serve.

## INTENT

For the 2022 Index, we are revisiting a few key measures from the 2021 Index and adding some new measures. We are keeping stroke assessment performance, lights and siren use during transport, and non-transport dispositions. We are also examining ketamine administration with weight recorded again, and we're adding documentation of end-tidal carbon dioxide (EtCO<sub>2</sub>) with ketamine administration. This year, we are introducing a new measure that evaluates the rate of documented 12-lead EKGs for patients with emergency department-diagnosed ST Elevation Myocardial Infarction (STEMI) and Non-ST-Elevation Myocardial Infarction (NSTEMI). In addition to performance measures, we present surveillance measures each year. This year, we continue to monitor suspected drug overdoses as a percentage of all EMS encounters. We also evaluate the number of instances in which an EMS provider likely faced the difficult task of delivering a death notification pre-COVID vs. during COVID, especially in light of the surge in death rates we have seen both directly and indirectly resulting from the pandemic. We've rotated out COVID-19 and influenza-like illness (ILI) impressions.

As always, the appropriate metrics for evaluating the success of your EMS organization will vary depending upon several factors, including, but not limited to, the size of the population served and the geographic location. However, we believe an objective look at aggregate data across the United States can provide a starting point or benchmark that you can use to evaluate performance compared to your peers.

## PURPOSE

The purpose of this Index is to serve as a point of reference for EMS organizations to identify which areas are in alignment and which areas represent opportunity for improvement, more intensive local monitoring, or at least further assessment and evaluation. This quantitative approach to measuring performance gives EMS organizations a framework to continually refine tactics, improve efficiency and outcomes, and allocate resources appropriately. To that end, here are some of the questions we hope the 2022 ESO EMS Index will help you ask and investigate using your own data:



**Is my organization performing similarly to other organizations around the country when it comes to best practices surrounding certain clinical presentations, such as stroke identification and assessment?**

**Are we properly monitoring patients following our use of ketamine in emergent situations?**

**Are we practicing judicious use of lights and siren?**

**Are we above or below the national average when it comes to responding to overdose events?**

**What best practices can my organization implement to help measure and address disparities in prehospital care?**

**How can I help my organization support EMS clinicians with the knowledge and skills needed to deliver death notifications?**

**How do our responses ending in non-transport compare to the national average?**

**What are the best practices for each metric in this Index and how can I make sure we are following these at our organization?**

The Index uses data from the ESO Data Collaborative, comprised of more than 2,000 agencies and departments across the country, representing nearly 9.9 million EMS responses between January 1, 2021-December 31, 2021.



**9.9  
MILLION  
RECORDS**

## KEY METRICS



**STROKE ASSESSMENT PERFORMANCE**



**12-LEAD EKG FOR PATIENTS WITH ED-DIAGNOSED STEMI/NSTEMI**



**KETAMINE ADMINISTRATION WITH WEIGHT RECORDED AND EtCO<sub>2</sub> DOCUMENTED**



**TRANSPORTS WITHOUT LIGHTS AND SIRENS**



**NON-TRANSPORT DISPOSITIONS**



**PERCENT OF PATIENTS WITH SUSPECTED OVERDOSE**

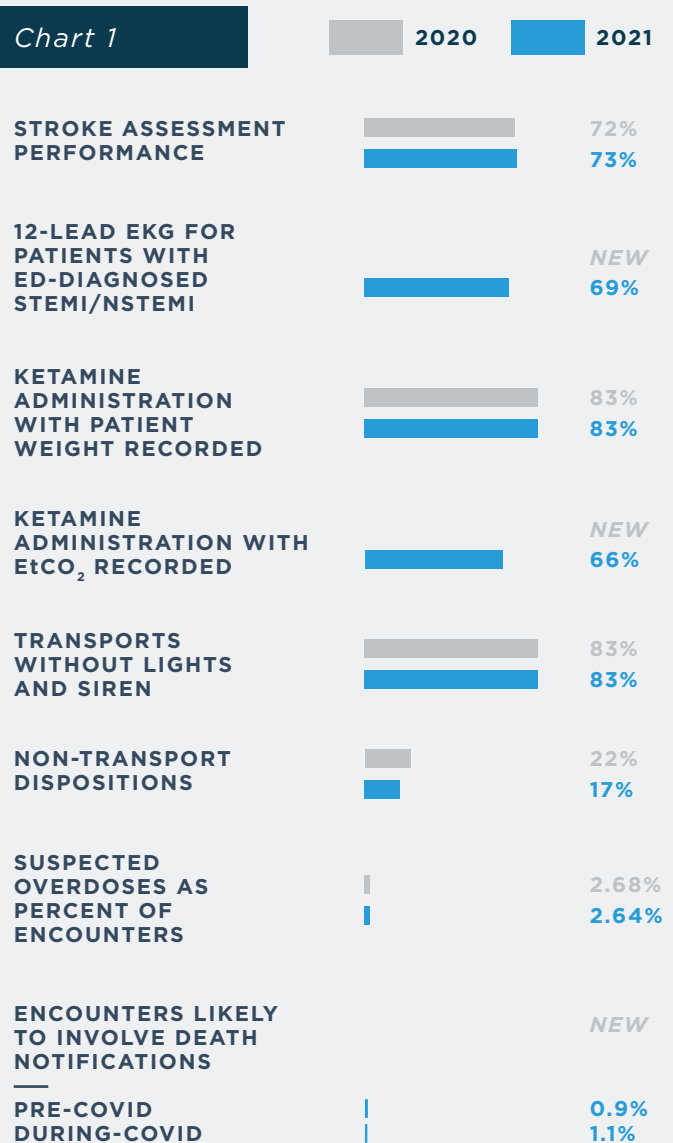


**ENCOUNTERS LIKELY TO INVOLVE DEATH NOTIFICATIONS BY EMS CLINICIANS**

## LIMITATIONS

This Index is retrospective and looks at aggregate data from 2021. There are no universal rules designed around these measures. The purpose of the Index is to be informative and directional, but it is not intended to be a scientific study, nor is it intended to be comprehensive in nature. We hope this document serves as a body of literature that adds to the discussion and conversation around best practices and quality improvement efforts to improve positive patient outcomes.

*Chart 1*



# KEY FINDINGS

The 2022 ESO EMS Index looks at 9.9 million EMS responses from January 1, 2021-December 31, 2021. At a macro level, the data revealed the following:

## 73%



### Stroke assessment

**performance:** We see a slight increase in the number of stroke assessments performed at 73%, up from 72% in 2020. However, when we break down stroke screening by patient race and ethnicity, we find variation in the rates of completed assessments. Ensuring that patients receive equitable care is essential to community health.

### 12-lead EKG for patients with ED-diagnosed

**STEMI/NSTEMI:** 69% of EMS patients who were diagnosed with a STEMI or NSTEMI in the emergency department had a documented 12-lead EKG. This indicates there is some room for improvement in prehospital STEMI/NSTEMI identification, which can have a profound impact on community health.

## 69%



## 83%



### Safety metrics related to ketamine administration:

The rate of patient weight documentation when administering ketamine has held steady at 83% compared to 2020. This year, we are adding documentation of EtCO<sub>2</sub>, an underused metric that can be an important indicator of a patient's status following ketamine administration.

**Transports without lights and siren:** The rate of transports without lights and siren also held steady at 83% compared to 2020. While it is good to see that this rate has not decreased, it also indicates that we need to do more to drive change in practice around judicious lights and siren use to improve the safety of our community



**Non-transport dispositions:** The number of encounters ending in non-transports decreased 6%, from 22% in 2020 to 17% in 2021. While many people were hesitant to seek medical care at a hospital in the early days of COVID in 2020, an increased proportion of patients were transported by EMS in 2021.

## 17%



### Percent of patients with suspected overdose:

## ↑ 67%



Overall we noted a slight decrease in the percentage of EMS calls related to suspected drug overdose (2.64% vs. 2.68% in 2020). However, in comparing on-scene death rates for patients with suspected drug overdose pre-COVID vs. during COVID, we see an alarming 67% increase from 2020 to 2021.

### Death notifications:

This new metric highlights the increase in the number of

## ↑ 47%

patients in whom resuscitation was not attempted, or resuscitation efforts were terminated on-scene. This substantial increase in on-scene deaths during COVID means that EMS clinicians likely delivered 47% more death notifications than pre-COVID.

# INDEX METRICS

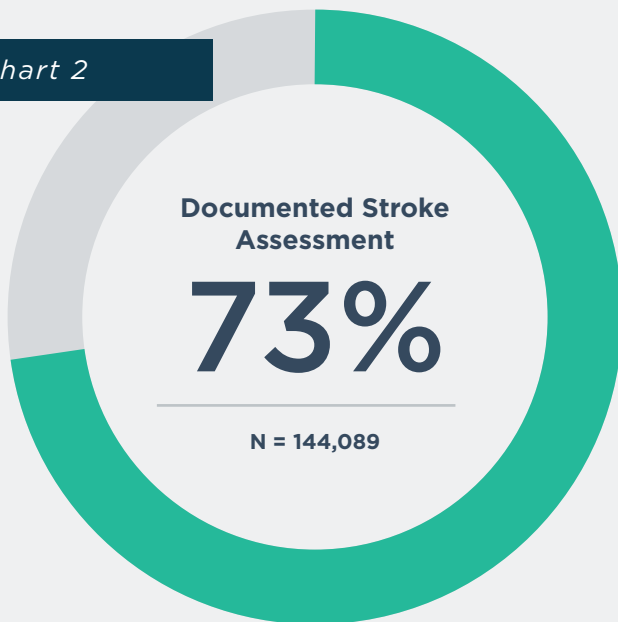


## STROKE ASSESSMENT

The stroke assessment performance metric looks at how many patients with an EMS primary impression of stroke received a formal, appropriately documented stroke assessment as part of a 911 call (not interfacility transfers and other types of encounters). Formal stroke assessments are crucial in determining the severity of a stroke. Determining stroke severity has important implications for treatment options and hospital destinations. Administering stroke assessments to all patients with a suspected stroke is therefore an important part of ensuring the best possible outcome.

Chart 2 below shows there were 144,089 calls where the EMS provider impression included stroke. Of those encounters, 106,625 had a stroke assessment documented – or 73%.

Chart 2



NO Assessment performed

37,464

Assessment performed

106,625

Chart 3 shows the breakdown of stroke assessment by patient gender and race. We see equal rates of documentation among male and female patients (73%), and slight variation in documented stroke assessment among patients by race.

Chart 3

### Documented Stroke Assessment by Gender

#### FEMALE

73%

#### MALE

73%

### Documented Stroke Assessment by Race/Ethnicity\*

#### AMERICAN INDIAN/ALASKA NATIVE

76%

#### ASIAN

79%

#### BLACK

76%

#### HISPANIC

72%

#### NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER

78%

#### WHITE

74%

\*Data for multiracial individuals are not included.

## BEST PRACTICES



Review your agency's protocols for assessing suspected stroke patients. The identification of a stroke in the prehospital setting leads to reduced time to CT and more rapid definitive care, which leads to a favorable patient outcome.<sup>1</sup>



Use a validated stroke scale to perform complete assessments of suspected stroke patients. There are several different stroke scales, but the most important consideration is not which scale is used, but that a complete stroke assessment is performed.<sup>2</sup> Recognition of stroke by prehospital providers is lower among Hispanic and Asian patients, so it is important to use your data to identify any disparities in care or outcomes to help design effective interventions.<sup>3</sup>



Ensure that "Last Known Well Time" or "Time of Onset" is accurately documented, as it plays an important role in determining treatment.



Consider outreach to communities that are disproportionately impacted by stroke to educate individuals on the importance of identifying stroke symptoms closer to onset.<sup>3</sup> Use patient education resources that are written in the predominant language of the community. For example, the ["AHORA" stroke screening tool](#) is a Spanish translation of the "BE-FAST" tool and was developed to improve awareness of stroke symptoms among Spanish-speaking communities.



"Nothing About Us Without Us": Don't guess what the barriers are for racial minorities in your community for calling 911 for a stroke. Form a community advisory board made up of racial minority community members who are compensated for their participation to help your agency understand the challenges and barriers they and their communities have when deciding to engage emergency medical services.



Language challenges may represent a barrier to EMS providers performing a stroke scale. Make sure your agency's language interpretation tools, interpreter policies (including issues of consent), charting standards, and quality assurance reporting is accounting for and tracking patients who may have limited English proficiency. An inability to communicate in English is not an acceptable reason to wait until you get to the hospital to have a stroke assessment performed.

# INDEX METRICS

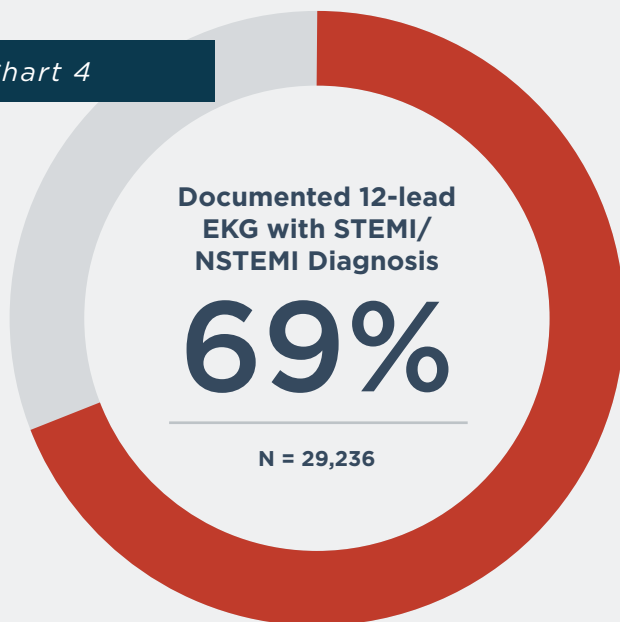


## 12-LEAD EKG FOR PATIENTS WITH ED-DIAGNOSED STEMI/NSTEMI

The 12-lead EKG for patients with ED-diagnosed STEMI/NSTEMI measure focuses on the number of patients who were diagnosed with STEMI/NSTEMI (ICD-10 Code: i23) and had a documented 12-lead EKG performed by EMS. The 12-lead EKG represents an essential tool for early identification of STEMI. Detecting a possible STEMI/NSTEMI in the prehospital setting can ensure that the catheterization laboratory is activated by the time the patient arrives, saving precious minutes that can lead to a better outcome.<sup>4-5</sup>

In Chart 4, we see that of the EMS patients diagnosed with STEMI/NSTEMI (29,236), 69% had a documented 12-lead EKG performed by EMS.

Chart 4



NO documented 12-lead  
9,063

Documented 12-lead  
20,173

Chart 5 shows the documented 12-lead EKG broken down by gender and race. We see a notable difference between males and females, and slight variation in the documentation of a 12-lead EKG by race.

Chart 5

### Documented 12-lead by Gender

#### FEMALE

66%

#### MALE

72%

### Documented 12-lead by Race/Ethnicity\*

#### AMERICAN INDIAN/ALASKA NATIVE

72%

#### ASIAN

66%

#### BLACK

68%

#### HISPANIC

76%

#### NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER

67%

#### WHITE

70%

\*Data for multiracial individuals are not included.



## BEST PRACTICES



Review your agency's protocols around 12-lead EKG use for patients with suspected STEMI/NSTEMI and update as needed to ensure EMS clinicians are empowered to use the 12-lead EKG as a diagnosis tool. Research indicates that the rate of false positive prehospital EKGs is low and that improved outcomes are possible if a STEMI/NSTEMI is identified before the patient arrives at the ED.<sup>5</sup>



Incorporate education on health risk factors associated with specific demographics such as gender, race, and ethnicity in EMS clinician training to help quickly identify potential time-sensitive conditions.



Prioritize hiring, investing in the development of, retaining, and promoting front-line employees, senior staff, and executive board members who reflect the demographics of the communities your agency serves.



Incorporating outcomes for all EMS patients who are diagnosed with STEMI/NSTEMI, not just feedback for EMS identified STEMI/NSTEMI, is needed to identify false negatives and improve care for all patients.



Conventional EMS education tends to center signs and symptoms of a STEMI/NSTEMI for males as "typical" and females as "atypical." This only serves to prioritize 12-leads in males and offers an excuse to be less vigilant in identifying acute myocardial infarction (AMI) symptoms in females. Instead, resist prioritizing one set of symptoms as "normal" over another and add them all to your mental frame of AMI symptoms as "normal" to improve your AMI recognition and 12-lead performance for all your patients.

*By Jamie Kennel, MS, NREMT-P  
Paramedic, Professor, and Department Chair of Emergency Medical Services,  
Oregon Health and Science University and Oregon Institute of Technology*



**“THERE ARE TWO TYPES OF EMS AGENCIES: THOSE THAT ARE IMPROVING THEIR RACIAL TREATMENT DISPARITIES AND THOSE THAT HAVEN’T LOOKED FOR RACIAL DISPARITIES IN THEIR DATA YET.”**

**-MIKE TAIGMAN**

Patients with different social characteristics (such as race, socioeconomic status, gender, and obesity) receive different qualities of treatment.<sup>6</sup> We know this through decades of research across a wide variety of medical spheres, including emergency departments. The evidence is clear and overwhelming, and it is true even when medical providers seek to provide equitable care.

Not surprisingly, over the last few years it has become apparent that these same social characteristics can influence the quality of EMS treatments.<sup>7-10</sup> In fact, research from social psychologists suggest that EMS scenes might be even more susceptible to providing disparate treatments, as we work in time-pressured situations with incomplete clinical information and often have high degrees of provider discretion to make diagnoses and treatment decisions.<sup>11-14</sup> In these situations, our brains are wired to be less able to resist stereotypes of our patients which are known to be laden with, often unintended and/or unconscious, bias.<sup>11</sup>

Through the leadership demonstrated by ESO, the 2022 EMS Index begins to expand our awareness into one of the most concerning areas of treatment differences: the trend for racial minority patients to receive a reduced quality of EMS treatment. This year the EMS Index stratifies stroke and 12-lead assessments by patient race. Even in these relatively simple medical decisions to perform a non-invasive assessment, we can start to see treatment differences by patient race where there should not be any. Prior research (noted above) indicates that additional racial/ethnic treatment disparities are likely to be more common and more severe as the level of EMS provider discretion increases (e.g., pain medications, use of restraints, level of patient advocacy around refusals).

A word of caution is needed: simply disaggregating EMS assessment or intervention performance levels by race can be misleading, as there are a host of interactions commonly found between social characteristics and a long list of other factors that need to be controlled for before results can be interpreted confidently. With the 2022 EMS Index, ESO is starting the process by which you can build the systems that will allow you to start to investigate your own agency’s data for evidence of varied treatment quality. If we allow ourselves to be fooled by our (sincere and deeply held) hopes that these challenges are not taking place at our agencies, we will be both blind to the racial treatment disparities taking place in our community, and we will not be able to take active and meaningful steps to address it.

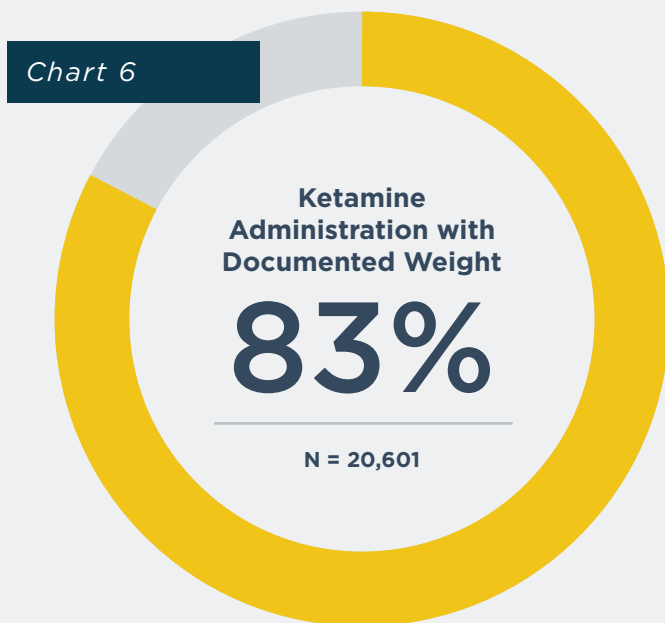
# INDEX METRICS



## KETAMINE ADMINISTRATION WITH DOCUMENTED PATIENT WEIGHT AND EtCO<sub>2</sub>

The historical ketamine metric reviewed ketamine administration and whether patient weight was documented in the out-of-hospital record. In this Index, we have added a new measure that indicates whether the patient's EtCO<sub>2</sub> was monitored and documented following ketamine administration.

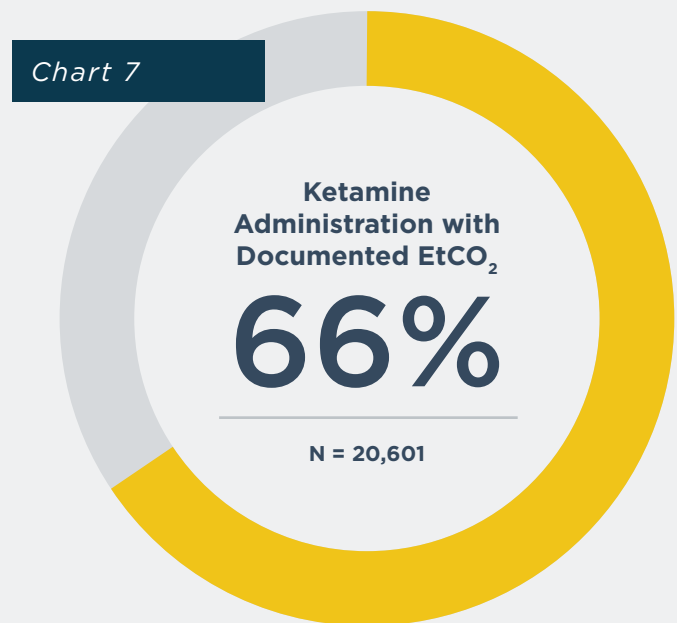
Chart 6 shows that of all patients who received ketamine, 83% had their weight documented in the EMS record.



NO Weight Documented  
**3,502**

Weight Documented  
**17,099**

In Chart 7, we see that just 66% of patients who received ketamine also had documented EtCO<sub>2</sub> monitoring.



NO EtCO<sub>2</sub> documented  
**7,004**

EtCO<sub>2</sub> documented  
**13,597**

*The ketamine administration with documented EtCO<sub>2</sub> metric does not change significantly when limited to doses beyond the analgesic range.*

## INSIGHT

Ketamine is a potent analgesic and sedative medication that has many favorable characteristics for use in the out-of-hospital setting. As an analgesic agent, ketamine is an important non-opioid medication. As a sedative agent, ketamine is used for patients presenting with severe agitation or combativeness that prevents safe assessment and treatment. Ketamine is also used in the prehospital setting to facilitate airway management. Like any medication, ketamine use is not without risk and requires close assessment and monitoring.



### KETAMINE ADMINISTRATION REQUIRES CLOSE ASSESSMENT AND MONITORING

Determining the patient's weight prior to medication administration is important for ensuring that an appropriate dose is administered based on the intended medication use (analgesia or sedation) and route. Documenting the patient's weight helps verify that the dose administered was appropriate for the intended indication. Following a sedation dose of ketamine, subsequently monitoring the patient's ventilatory status is critical in ensuring patient safety. Monitoring the patient's EtCO<sub>2</sub> in addition to their oxygen saturation (SPO<sub>2</sub>) provides rapid insight into changes in respiratory status. Having the ability to quickly identify changes in respiratory status alerts providers to intervene prior to more significant respiratory compromise, which can lead to hypoxia and hemodynamic instability. As the Index data indicate, there is opportunity for improvement in monitoring a patient's EtCO<sub>2</sub> following administration of ketamine.

Ketamine use in EMS has been a topic of interest in recent years due to patient safety concerns. As with any clinical intervention, selecting appropriate indications, dosage, and monitoring are foundational elements of patient safety. Recently, several national organizations have issued guidance as it relates to ketamine in particular, and out-of-hospital sedation more generally. Several national organizations released [joint guidance on ketamine administration](#) for trauma patients as a way to emphasize best practices in the way EMS agencies utilize ketamine.<sup>15</sup>

## BEST PRACTICES



Record accurate patient weight estimates to guide dosing and serve as supportive documentation after the EMS encounter.



Review national publications and ensure your agency's protocols are in alignment.



Monitor EtCO<sub>2</sub> as soon as practical after sedative-dose administration for a real-time view of changes in respiration and ventilation.

# INDEX METRICS



## TRANSPORTS WITHOUT LIGHTS AND SIRENS

The Lights and Sirens (L&S) metric examines whether patient transports from the scene to the hospital occurred without the use of L&S. The use of lights and sirens for transport is a safety measure defined by the National EMS Quality Alliance (NEMSQA). The NEMSQA measure uses standard scoring in which higher scores indicate better quality, so to align with that measure we are focusing on the percentage of calls in which lights and sirens were not used.

The [National Highway Traffic Safety Administration \(NHTSA\)](#) recommends using lights and sirens for less than 5% of transports.<sup>16</sup> There are several factors that affect the use of L&S, including rural versus urban settings, type of encounter, etc. Not surprisingly, L&S usage also varies across agencies nationally.

Chart 8 below shows there were 6,128,869 patient transports included in the analysis for this metric. There were 5,086,961 documented patient transports that did not use lights and sirens, or 83% of transports.

Chart 8



Transports Without Lights and Sirens

# 83%

N = 6,128,869

Lights and Sirens used

## 1,041,908

NO lights and sirens used

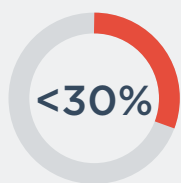
## 5,086,961

### INSIGHT

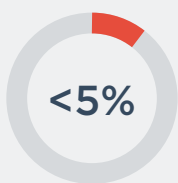
Historically in EMS, lights and sirens have been associated with getting patients to life-saving care as quickly as possible. However, a growing body of research, EMS media, and now even the [national news](#) are highlighting how the potential risks associated with lights and siren usage outweigh the time-saving benefits.

NEMSQA has spearheaded the development of industry metrics that support limiting the use of lights and sirens to protect patients, EMS providers, and the public. In February 2022, NEMSQA launched a first-of-its-kind [national performance improvement collaborative](#) to reduce lights and siren use in EMS. The goal of the collaborative is to work with participating agencies to safely reduce lights and siren use to less than 30% of responses and less than 5% of transports for 911 EMS calls.

### GOAL L&S USAGE



Responses



Transports

With ample evidence to support a reduction in the use of lights and siren during transport, it is time for the industry to adjust the perception of lights and siren as more than an operational consideration. Instead, lights and siren use should be considered with the same judicious process as a clinical procedure. Doing so will result in improved safety for our communities.

## BEST PRACTICES



While it is recognized that the use of lights and sirens can be determined by state or local legislation/ protocols, this metric is based on published guidance and national performance measures for safety with the intent to help drive data-informed improvement in this area.



Create policies and guidelines that empower EMS providers to make decisions on L&S use during patient transport based on the patient's medical condition and the potential time savings.



Target a usage rate of less than 5% for L&S during transport in accordance with NHTSA guidance.



Minimize L&S use to only critical situations where the estimated time saved may improve the patient's outcome.



Consider implementing mandatory L&S-specific EMS vehicle operator training and continuing education.

# INDEX METRICS



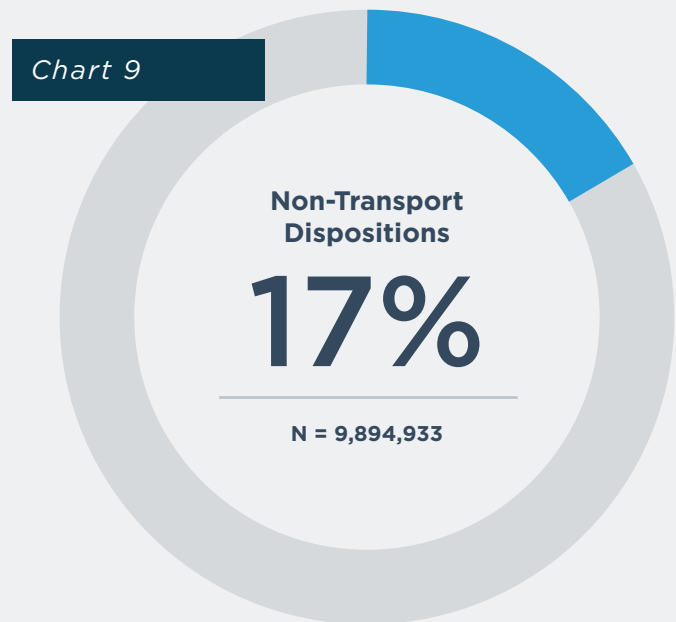
## NON-TRANSPORT DISPOSITIONS

The non-transport disposition metric looks at the number of patients not transported by EMS for a 911 call. In 2020 we observed an increase in the rate of non-transport dispositions, which was likely, in part, influenced by hesitation to visit healthcare facilities during the early days of the COVID-19 pandemic.

In 2021, we see a decrease in the rate of non-transport dispositions compared with 2020. Chart 9 shows that 1,667,093 EMS encounters out of 9,894,933 911 responses did not result in the patient being transported by EMS, or 17%.

Non-transport dispositions like assists, cancellations, patient dead on scene, patient treated and transferred, and standbys were excluded for the purpose of this measure.

Chart 9



### NON-TRANSPORT DISPOSITIONS INCLUDED THE FOLLOWING

- PATIENT EVALUATED, NO TREATMENT/TRANSPORT REQUIRED
- PATIENT REFUSED EVALUATION/CARE (WITHOUT TRANSPORT)
- PATIENT TREATED, RELEASED (AMA)
- PATIENT TREATED, RELEASED (PER PROTOCOL)
- PATIENT TREATED, TRANSPORTED BY PRIVATE VEHICLE

Transport	Non-Transport
8,227,840	1,667,093

## INSIGHT

When a prehospital patient needs to be transported, EMS clinicians must quickly choose the right facility for the patient based on their symptoms and the severity of their condition. The chosen destination can have an impact on the patient's outcome.



### GET PATIENTS TO THE BEST CARE POSSIBLE

Unfortunately, research suggests that a patient's race or ethnicity may be one of the determining factors in where a patient is transported for treatment. A [2019 study](#) evaluated the ED destinations of EMS patients living in the same ZIP codes and found that Black and Hispanic patients were less likely to be transported to the same hospitals as White patients living in the same area. Black and Hispanic patients were also more likely to be transported to a "safety net" facility that provides care for individuals regardless of whether they have health insurance.<sup>17</sup>

Ultimately the goal of every provider is to get patients the best care possible when they need it. Understanding and acknowledging the many variables that contribute to how we make clinical decisions, from past experience to implicit bias, helps ensure that healthcare providers are treating patients equitably. The importance of this issue will only amplify as we begin to offer enhanced alternative destinations such as telemedicine, urgent care, etc.

## BEST PRACTICES



Use objective criteria to risk stratify patients when making transport/alternative destination/non-transport decisions.



Review the demographic data in the communities your agency serves to identify possible implicit bias or other non-clinical factors that may be affecting non-transport patterns.



Invest in training to help your agency better recognize when implicit bias is playing a role in decision-making.



# INDEX METRICS



## PERCENT OF PATIENTS WITH SUSPECTED OVERDOSE

The overdose metric looks at the number of patients with an EMS provider impression related to overdose and patients with suspected overdose who died on-scene. This year, we have added a data point to compare the number of the patients with suspected overdose who died on-scene within the pre-COVID time frame (June 1, 2018 - March 15, 2020) vs. during COVID (March 16, 2020 - December 31, 2021).

Chart 10 reveals a startling observation that during nearly the same number of days in the pre-COVID era vs. during COVID, the rate of death on-scene in patients with suspected overdose rose 67%. This translates to a pre-COVID average of 6.9 deaths per day and an average of 11.5 deaths per day during COVID.

Chart 10

### Suspected Overdose and Death: Pre-COVID vs. During COVID

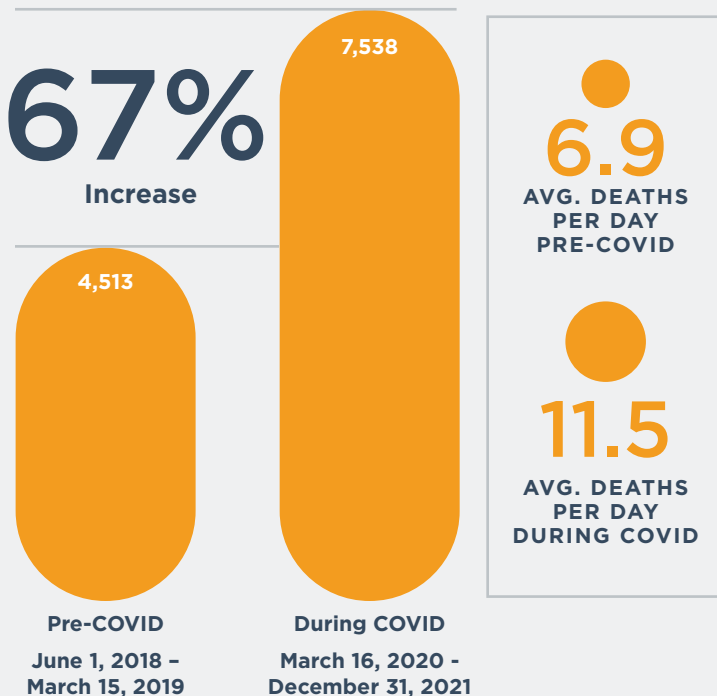
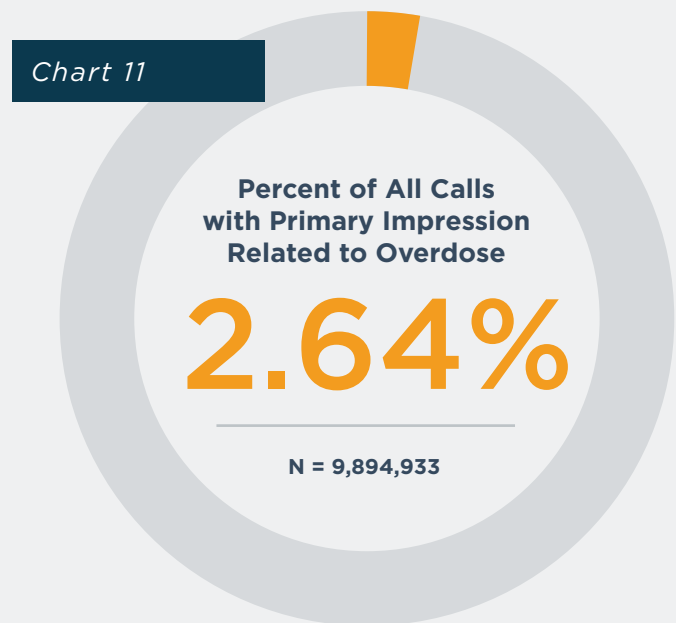


Chart 11 shows that of the 9.9 million 911 calls in our sample, 260,756 had a primary impression related to overdose (or 2.64%).

While EMS calls for suspected drug overdoses remained relatively consistent from 2020 to 2021, the dramatic rise in the number of on-scene deaths related to suspected drug overdose is evidence of the ongoing mental health effects of the COVID-19 pandemic.

Chart 11



Total # of Encounters	Suspected Overdose
9,894,933	260,756

## INSIGHT

Data from the [CDC](#) indicate that drug overdose deaths in the United States rose 28.5% during the 12-month period ending in April 2021 over the previous 12-month period.<sup>18</sup> The previous 12-month period, which ended in May 2020, marked the previous largest number of drug overdoses recorded in a 12-month period.<sup>19</sup> With these rapidly increasing drug overdose death rates, the United States is on a concerning trajectory.

**2020 - 2021**



**28%**

**DRUG OVERDOSE  
DEATHS IN THE  
UNITED STATES**

The hypothesis in current research on drug overdose is that despite relaxed regulation around telehealth during the pandemic, medication-assisted treatment (MAT) and other recovery resources were not accessed as frequently as they were pre-COVID. The findings in this Index suggest that more research is warranted in how assistance and resources are delivered to patients.

## BEST PRACTICES



Monitor incidents involving suspected overdose in your community and anticipate trends. Look for geographic hotspots in your community (based on data from your ePCR) to create preventative and harm reduction programs in areas with particularly dense activity.



Review current evidence-based recommendations for EMS administration of naloxone for patients with suspected opioid overdose.<sup>20</sup>



Review and update your agency's policies around the use of naloxone for patients with suspected opioid overdose as needed. Research indicates that the prehospital administration of naloxone titrated to effect may lead to improved patient outcomes.<sup>21-22</sup>



Invest in provider training and continuing education specific to EMS clinicians that focuses on death notifications to ensure providers are prepared to have difficult conversations.

# INDEX METRICS



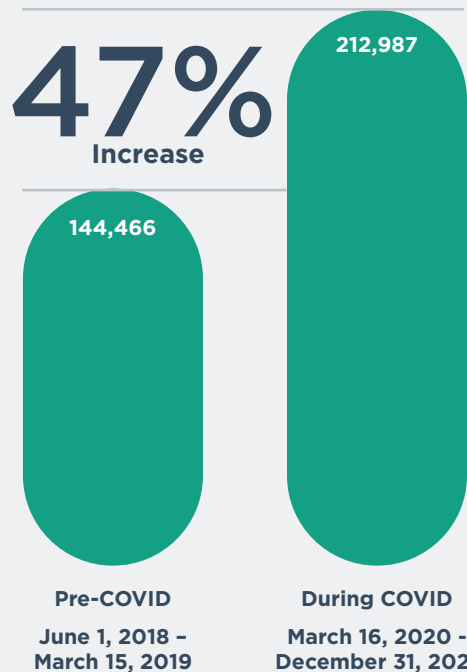
## DEATH NOTIFICATIONS

It goes without saying that the COVID-19 pandemic has led to an unprecedented number of deaths globally over the past two years. The medical community has observed a correlation between COVID rates and out of hospital cardiac arrests.<sup>23</sup> The increase in death rates has led to increased stress among the families and loved ones who experience loss, as well as among the EMS clinicians who must deliver the death notifications.

Chart 12 illustrates the difference in EMS encounters with a patient where no resuscitation was attempted, or resuscitation was attempted but the patient was pronounced dead on-scene and was not transported to a hospital in the pre-COVID time frame (June 1, 2018 – March 15, 2020) vs. during COVID (March 16, 2020 – December 31, 2021). There was a significant increase in the number of encounters where an EMS clinician would have likely had to deliver a death notification on-scene.

Chart 12

### EMS Cardiac Arrest Encounters with No Resuscitation or Attempted Resuscitation and Pronouncement of Death on Scene



### INSIGHT

Notifying a family of the death of a loved one can be a challenging and stressful task for providers, especially EMS clinicians who may have to deliver a death notification on-scene. EMS clinicians who experience the stress of giving death notifications frequently are more likely to experience burnout.<sup>24</sup>

Unfortunately, EMS clinicians typically receive little to no training on how to deliver death notifications, though they are likely to experience a situation in which a death notification will be needed. Even a small amount of training can help EMS clinicians feel more prepared to handle a death notification. One study showed that a 90-minute education session composed of a lecture, breakout sessions, and role-playing helped EMS providers increase their confidence and competency in delivering death notifications.<sup>24</sup>

### EVEN A SMALL AMOUNT OF APPROPRIATE TRAINING CAN HELP EMS CLINICIANS FEEL MORE PREPARED TO HANDLE A DEATH NOTIFICATION.

Preparing EMS clinicians through training can also help reduce burnout. Research shows that death notification training, especially when integrated into ongoing EMS education, reduces the odds of EMS clinician burnout.<sup>24</sup> By offering death notification training, agencies can play an integral role in helping EMS clinicians reduce burnout and feel more confident in their role.

## BEST PRACTICES



Invest in training and continuing education on delivering death notifications that is specific to EMS professionals. Delivering death notifications is linked to EMS clinician burnout, but appropriate ongoing training can help mitigate this effect.<sup>24</sup>



Ensure all levels of EMS clinicians receive training on delivering death notifications.<sup>24</sup>



Track the number of death notifications EMS clinicians have given. Develop protocols to ensure that EMS clinicians have access to resources and support to help them manage the emotional toll of delivering death notifications.



Foster a culture of support within your agency and actively work to remove the stigma that seeking help with mental health is a sign of weakness. Offer evidence-based counseling resources that are tailored to EMS and encourage providers to seek help when needed.

# CONCLUSION

## SO, WHAT DOES THIS MEAN?

The COVID-19 pandemic has, for better or for worse, changed the way we view the world. As we continue to adjust to this changing and evolving world, we will develop new perspectives and ways of operating.

The measures explored in this Index are a fraction of all the variables that contribute to providing the highest quality of care to all patients. Through research and data-driven discussions, we can continue to drive innovations in quality improvement and in delivering equitable healthcare.

### DOCUMENTATION OF STROKE ASSESSMENT demonstrated a small improvement

over the same metric in last year's Index. As with all of our interventions, adding evaluation metrics around race, ethnicity, gender, and socioeconomic status are fundamental to ensuring inequities in care are identified and remedied.

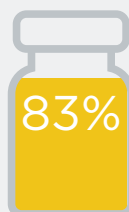
The new 12-lead EKG for patients with ED-diagnosed STEMI/NSTEMI measure shows that only

### 69% OF PATIENTS WITH A DIAGNOSED STEMI/NSTEMI HAD A DOCUMENTED 12-LEAD EKG.

The decrease in the use of 12-leads in female patients with ED-diagnosed STEMI/NSTEMI is an urgent call to action. Every second counts when it comes to a possible STEMI, so it is crucial to understand underlying factors to improve rates of STEMI recognition, particularly in groups where we see disparities.

### KETAMINE ADMINISTRATION WITH PATIENT WEIGHT RECORDED

held steady at 83%. The introduction of the EtCO<sub>2</sub> monitoring measure shows that there is room for improvement in ensuring patient safety when it comes to ketamine administration.



### LIGHTS AND SIREN USE



**DID NOT CHANGE FROM LAST YEAR'S INDEX.**

This indicates that more work needs to be done to educate EMS agencies (and the regulatory bodies that create policies for EMS agencies) on the benefits vs. risks of lights and siren use during transport.

### THE 6% reduction IN NON-TRANSPORTS FROM 2020 TO 2021

is a hopeful sign that patients who were reluctant to visit the ED for needed emergency care in 2020 due to uncertainty and fear around COVID are becoming more likely to agree to transport when needed.

When we look at the number of patients with suspected drug overdose who died on-scene pre-COVID vs. during COVID, we see a concerning

### 67% increase IN ON-SCENE DRUG OVERDOSE DEATHS DURING COVID.

This metric raises a flag for further study so we can better understand how to get recovery help and resources to people in need, especially in the communities that are disproportionately impacted by drug overdose deaths.



### 47% increase **IN DEATHS ON-SCENE PRE-COVID VS. DURING COVID**

is another cause for concern. Death notifications are linked to provider burnout, and at a time when EMS clinician burnout is at an all-time high, we need to put measures in place to support the health and well-being of the providers who are keeping our communities healthy and safe.

# METHODOLOGY

The dataset from the ESO Data Collaborative used for the ESO EMS Index is real-world, de-identified data, compiled and aggregated from 2,041 agencies across the United States that use ESO's products and services and agreed to have their data used for research purposes. These data are based on 9.9 million anonymized 911 calls between January 1, 2021 and December 31, 2021, representing a full calendar year.

**THERE IS A 95%  
CONFIDENCE LEVEL  
IN THE NUMBERS  
USED IN THIS  
REPORT WITHIN  
A 1% +/- RANGE.**

## OK, NOW WHAT?

Organizations should use this information to understand why metrics are important and which metrics and drivers can have the biggest effect on your organization and the patients you serve. With this Index as a foundation, you can do your own analysis to serve as the basis for other modeling and outcomes. The metrics shown in this Index are by no means exhaustive. Every organization is unique and has its own strengths, structure, and goals. Because of these attributes, results achieved by one organization may not be attainable by another for a variety of reasons. However, these metrics should provide a foundation to compare your measurements and outcomes to what we are seeing nationally.

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# ABOUT ESO

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