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EMS and 911 COVID-19 Response White Paper

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16. Abstract

This white paper was developed by the Federal Interagency Committee on Emergency Medical Services (FICEMS) and its partners to summarize for the EMS and 911 community the challenges faced by the community during the COVID-19 pandemic and associated potential solutions to those challenges. This white paper was developed primarily based on discussions with the EMS and 911 community during listening sessions hosted by FICEMS across a range of COVID-19 response topics. The target audience includes EMS and 911 organizations, policymakers, agencies, and practitioners interested in understanding the general struggles, difficulties, and successes of the EMS and 911 response to the COVID-19 pandemic, and perspectives on how the EMS and 911 community may be better prepared for future healthcare crises. FICEMS recognizes that this pandemic response review is also being conducted by other entities and organizations. This white paper is not intended to interfere with or contradict those activities in any way, and FICEMS intends for these similar initiatives to support and complement each other. Strict sequential reading of the white paper is not necessary. Readers may find particular sections more relevant to their interests. However, a general progression through the chapters will give an overall perspective on EMS and 911 COVID-19 response challenges and solutions. Appendices provide additional details relevant to the white paper and are referred to when appropriate. Across the eight listening sessions hosted by FICEMS for this project, stakeholders from the EMS/911 community frequently returned to discussions that became common themes regarding the challenges and solutions of the community's response to the pandemic. Four crosscutting themes permeated the listening session discussions: codifying EMS and 911 as essential services, improving integration of EMS and 911 with local level organizations, enhancing awareness and information-sharing regarding EMS and 911 needs, and supporting EMS and 911 capabilities to leverage practical adaptations

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Table of Contents

1. Executive Summary 1
    Purpose of This White Paper 1
    EMS and 911 Response Crosscutting Themes 1
    Key Roles for Implementation of Solutions 2
2. Introduction 3
    About This Project 3
    Recommendations From the EMS Industry 4
3. Crosscutting Themes 5
    Codifying EMS and 911 as Essential Services 5
    Improving Integration of EMS and 911 With Local Level Organizations 5
    Enhancing Awareness and Information-Sharing Regarding EMS and 911 Needs 5
    Supporting EMS and 911 Capabilities to Leverage Practical Adaptations 5
4. Listening Sessions 6
    1. Workforce 7
    2. Supply Chain 12
    3. Data and Information 17
    4. Education 22
    5. Coordination and Collaboration 26
    6. Funding and Business Continuity 30
    7. Operational Countermeasures 37
    8. Vaccines and Testing 42
Appendix A. References 47
Appendix B. Methodology 51

NPD-220927-001

Abbreviations

ASC	ambulatory surgery center
ASPR	Administration for Strategic Preparedness and Response
CAH	critical access hospital
CCHP	Center for Connected Health Policy
CMHC	community mental health center
CMMI	Center for Medicare and Medicaid Innovation
CMS	Centers for Medicare and Medicaid Services
CPR	Center for Preparedness and Response
EHR	electronic health record
EMR	emergency medical responder
EMS	emergency medical services
EMT	emergency medical technician
ePCR	electronic patient care record
ESF	emergency support function
ESRD	end-stage renal disease
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
NRF	National Response Framework
OEMS	Office of Emergency Management Services
OMB	Office of Management and Budget
ONC	Office of the National Coordinator for Health Information Technology
OSHA	Occupational Safety and Health Administration
PCP	primary care physician
PFS	physician fee schedule
PPE	personal protective equipment
PSAP	public safety answering point
QA/QI	quality assurance and improvement
FQHC	Federally qualified health center
HHS	U.S. Department of Health and Human Services
HIE	health information exchange
HIPAA	Health Insurance Portability and Accountability Act
HPH	healthcare and public health
HRSA	Health Resources and Services Administration
ICS	Incident Command System
IHI	Institute of Healthcare Improvement
ISP	internet service provider
KPI	key performance indicator
NEMSAC	National Emergency Medical Services Advisory Council
NEMSIS	National Emergency Medical Services Information System
NFIRS	National Fire Incident Reporting System
NFPA	National Fire Protection Association
NIMS	National Incident Management System
NIOSH	National Institute for Occupational Safety and Health
NOFO	notice of funding opportunity
RHC	rural health clinic
RPM	remote patient monitoring
SAMHSA	Substance Abuse and Mental Health Services Administration
SLTT	State, local, tribal, and territorial
SNF	skilled nursing facility
SPC	statistical process control
TIP	treatment in place
TQM	total quality management
USFA	U.S. Fire Administration
WHO	World Health Organization

1. Executive Summary

Purpose of This White Paper

This White Paper has been developed by the Federal Interagency Committee on Emergency Medical Services (FICEMS) and its partners to summarize for the EMS and 911 community the challenges faced during the COVID-19 pandemic and potential solutions to those challenges. This white paper was developed primarily based on discussions with the EMS and 911 community during listening sessions hosted by FICEMS across a range of COVID-19 response topics.

EMS and 911 COVID-19 Response Listening Sessions	
Workforce	Coordination and Collaboration
Supply Chain	Funding and Business Continuity
Data and Information	Operational Countermeasures
Education	Vaccines and Testing

This white paper does not list operational directives or specific requirements of agencies. However, readers will find perspectives and context surrounding challenges faced by the EMS and 911 community, as well as suggested solutions to address those challenges that may be implemented at various levels. The information provided in this White Paper is the result of discussions with EMS and 911 stakeholders and does not represent official positions of FICEMS or its member agencies.

The target audience for this white paper includes EMS and 911 organizations, policymakers, agencies, and practitioners interested in understanding the general struggles, difficulties, and successes of the EMS and 911 response to the COVID-19 pandemic, and perspectives on how the EMS and 911 community may be better prepared for future healthcare crises.

FICEMS recognizes that this sort of pandemic response review is also being conducted by other entities and organizations. This white paper is not intended to interfere with or contradict those activities in any way, and FICEMS intends for these similar initiatives to support and complement each other.

Strict sequential reading of the white paper is not necessary. Readers may find particular sections more relevant to their interests. However, a general progression through the chapters will give an overall perspective on EMS and 911 COVID-19 response challenges and solutions. Appendixes provide additional details relevant to the white paper and are referred to when appropriate.

EMS and 911 Response Crosscutting Themes

Across the eight listening sessions hosted by FICEMS for this project, stakeholders from the EMS/911 community frequently returned to discussions that became common themes regarding the challenges and solutions of the community's response to the pandemic. Four crosscutting themes permeated the listening session discussions.

NPD-220927-001

EMS and 911 COVID-19 Response Crosscutting Themes
for Challenges and Solutions

- ✓ Codifying EMS and 911 as **essential services**
- ✓ **Improving integration of EMS and 911** with local level organizations
- ✓ Enhancing awareness and information-sharing regarding **EMS and 911 needs**
- ✓ Supporting EMS and 911 capabilities to **leverage practical adaptations**

Key Roles for Implementation of Solutions

In addition to these common themes across the challenges and solutions discussed in listening sessions, participants frequently suggested ideas for how the solutions could be implemented. For each listening session topic, participants offered suggestions as to the roles and responsibilities for implementing the solutions, as well as candidates for those roles. Chapter 4 lists key participants for solution implementation for each listening session topic, as well as the Solutions Roadmap sections for roles at several levels. The following is a consolidated summary of those lead implementation roles.

- **Federal Government:** establishes central EMS/911 guidance and support for unifying standards while supporting prioritization for EMS/911 during public health emergencies
- **National organizations:** provide support to EMS/911 with templates and guidance specific to State partners based on the central guidance from the Federal Government and unifying standards
- **State governments and organizations:** establish relationships and coordination among State frontline practitioners
- **Local governments and organizations:** specify incoming support (templates, education) for community-level stakeholders and coordinate among local frontline practitioners

NPD-220927-001

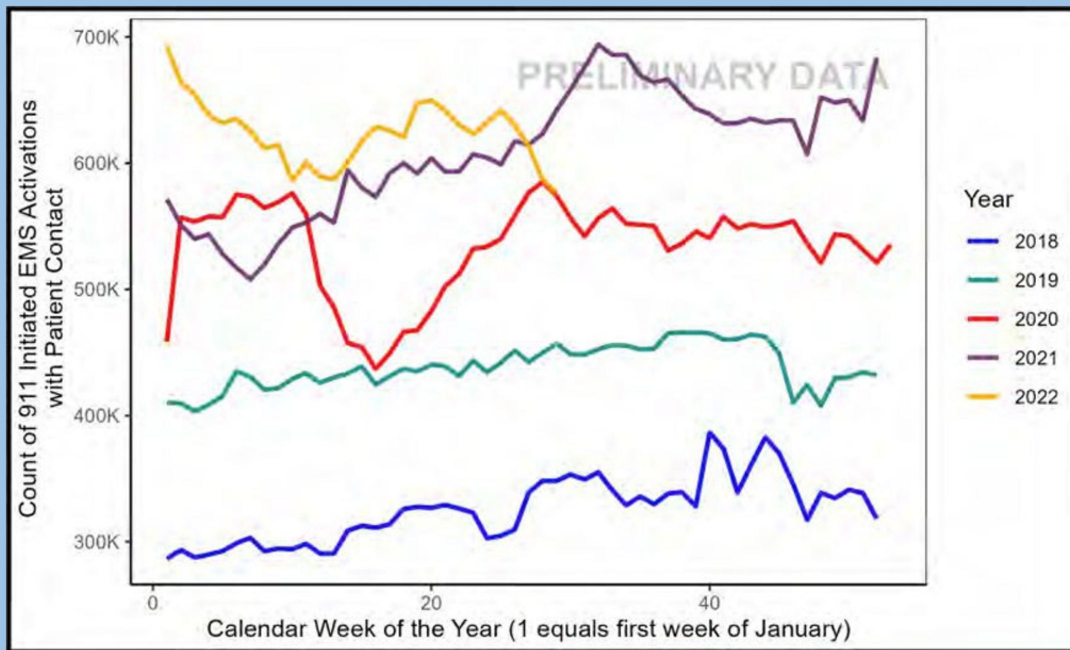
2. Introduction

The COVID-19 pandemic has challenged the very foundations of our Nation's public health emergency response capabilities and highlighted the need for innovative solutions to difficult problems. The EMS/911 community—the frontline responders to any such crisis—has continuously faced immense challenges throughout the pandemic.

Unprecedented numbers of EMS/911 activations have occurred during the pandemic, as well as drastic changes in those numbers in short amounts of time. As shown by the National EMS Information System EMS By the Numbers data, EMS/911 activations during the pandemic spiked many times, leading to and complicating the challenges described in this white paper about meeting demands to respond. There have also been precipitous drops in activations during heightened periods of COVID-19 lockdown, which made worse financial challenges for many EMS organizations.

Throughout such complications and struggles, the EMS/911 community has striven to adapt and continue providing effective emergency care, developing novel and even unique approaches to solve problems.

Count of EMS Activations 2018–2022
Source: NHTSA Office of EMS



About This Project

FICEMS established this project to accomplish two major goals.

1. **Examine EMS and 911 issues** associated with the EMS/911 community's ongoing response to the COVID-19 pandemic, including challenges, how organizations have addressed challenges, what has worked, and what has not worked.

2. **Identify planning and response activities** in cooperation with the EMS/911 community to enhance the ongoing response and better prepare the community for the future.

FICEMS gathered pertinent open-source research and reference material to support the effort, but the main source of input for this white paper is the series of listening sessions FICEMS conducted with the EMS and 911 community to discuss critical issues, challenges, and potential solutions for the ongoing pandemic response.

Each listening session was tailored to a specific topic as it relates to the EMS and 911 pandemic response.

- Workforce
- Supply Chain
- Data and Information
- Education
- Collaboration and Coordination
- Funding and Business Continuity
- Operational Countermeasures
- Vaccines and Testing

The first listening session was held in October 2021, and the last session was conducted in March 2022.

Participants included representatives from Federal agencies; State, local, tribal, and Territorial government; EMS/911 agencies; national and international associations; nonprofit organizations; and private industry.

Additional information on how this project was conducted is included in Appendix B.

Recommendations from the EMS Industry

The National Emergency Medical Services Advisory Council is a Federal Advisory Council of non- Federal EMS experts created in 2007 to advise FICEMS and the Secretary of Transportation on matters related to EMS. NEM-SAC issued recommendations to FICEMS in 2020 regarding EMS workforce issues. This white paper represents a step forward in addressing those recommendations from NEMSAC, especially addressing mental health and wellness issues for EMS and public safety and establishing a central repository for EMS safety and wellness data.

3. Crosscutting Themes

Across the eight listening sessions hosted by FICEMS for this project, stakeholders from the EMS/911 community frequently returned to discussions that became common themes regarding the challenges and solutions of the community's response to the pandemic. The four crosscutting themes that permeated the listening session discussions are described below.

Codifying EMS and 911 as Essential Services

Many EMS/911 stakeholders voiced their perspectives on the lack of and the need for establishing EMS and 911 as essential services across all jurisdictional levels. In concert with essential service designation, having "a seat at the table" is imperative for effective planning and decision-making, as well as expanding awareness of EMS and 911 as critical components of healthcare, public health, emergency response, and preparedness. Establishing formal recognition for EMS/911 commensurate with their value and importance could mitigate some of the challenges described in the white paper.

Improving Integration of EMS and 911 With Local Level Organizations

Similarly, a common theme has been improving the integration of EMS/911 with other organizations critical to response at the local level. Increased awareness and coordination among the disciplines of 911, EMS, fire, healthcare, public health, public safety, and emergency management will go a long way to addressing the major challenges faced by the EMS and 911 community.

Enhancing Awareness and Information-Sharing Regarding EMS and 911 Needs

The third common theme that emerged from the listening sessions involves enhancing awareness and information-sharing surrounding EMS/911 needs (staffing, equipment, education, etc.) across the many different topics discussed in the sessions. This has been a major challenge throughout the pandemic for EMS/911 organizations and practitioners, as there have been disparities and problems with EMS/911 needs being accurately and adequately recognized and addressed.

Supporting EMS and 911 Capabilities to Leverage Practical Adaptations

The fourth theme frequently discussed during the listening sessions involves supporting the EMS/911 community in developing their capabilities to enact practical adaptations to challenges faced during the pandemic. Across the three themes outlined above, practical solutions that have had success need to be shared and supported throughout the community.

NPD-220927-001

4. Listening Sessions

FICEMS hosted eight listening sessions as the major sources of input and perspectives for this white paper.

Each listening session included 40 to 50 participants from across healthcare, public health, emergency management and emergency response disciplines. Representatives from Federal agencies, SLTT government, national and international associations, individual EMS/911 organizations, nonprofit organizations, and private industry attended and participated. The listening sessions were conducted virtually and facilitated by neutral third parties.

During the listening sessions, participants discussed major challenges facing the EMS and 911 community per the overall topic and offered their perspectives on potential solutions to address those challenges.

Additional information on how the listening sessions were conducted is included in Appendix B.

The following sections of this chapter contain—per listening session topic—a summary page of challenges, potential solutions at appropriate levels, and key participants for solution implementation, followed by additional context on those summary concepts.

Topic	Date
Workforce	Oct. 27, 2021
Supply Chain	Nov. 10, 2021
Data and Information	Dec. 1, 2021
Education	Dec. 15, 2021
Collaboration and Coordination	Jan. 12, 2022
Funding and Business Continuity	Feb. 2, 2022
Operational Countermeasures	Mar. 1, 2022
Vaccines and Testing	Mar. 30, 2022

Challenges

Staffing Shortages

- Delays in COVID-19 testing and lengthy quarantines
- Heightened call volume
- Time-consuming 911 dispatcher training due to advanced technology
- Lack of recognition and respect from the community at all levels
- Poor working conditions – funding, schedules, personnel support

Provider Wellness

- Provider burnout
- Limited access to PPE

Recruitment and Retention

- Higher wages and better working conditions offered at hospitals and healthcare settings

Education Pipeline

- Lack of clinical training opportunities
- Exam delivery hampered by gathering restrictions

Solutions

Federal

- ✓ Support EMS and 911 designation as essential services
- ✓ Integrate EMS into preexisting programs that fund career pathways
- ✓ Support research on staffing models

National

- ✓ Develop standards for collection and management of State EMS personnel data
- ✓ Develop model language for rules that allow appropriate simulation training
- ✓ Create detailed safety officer programs
- ✓ Support community paramedicine programs that help address workforce burnout

State

- ✓ Create tax breaks for EMS work
- ✓ Change certification requirements to support surge needs
- ✓ Develop model recruitment and retention programs

Local

- ✓ Develop toolkits for best practices on engaging the EMS and 911 workforce

Lead Roles for Implementation of Solutions

CDC NIOSH

HHS ASPR and SAMHSA

FEMA USFA

NHTSA OEMS

FICEMS and NEMSAC

National and International Associations

State EMS Medical Directors

State Public Health Departments

State EMS Offices

NPD-220927-001

EMS and 911 organizations faced many workforce challenges during the COVID-19 pandemic, spanning the topics of staffing shortages, provider wellness, recruiting and retention of staff, and the education pipeline. Several of the challenges were preexisting and have been exacerbated by the COVID-19 response. Others were new, exposing additional gaps in the preparation for and response to large-scale events. Examples of these challenges are detailed below, but the list is not exhaustive.

Also featured below are existing practices useful in responding to the EMS and 911 workforce challenges during COVID-19, as well as potential solutions that can be implemented at various levels to improve the ongoing pandemic response and better prepare for future events.

Workforce Challenges

Staffing Shortages

During the pandemic a combination of several factors strained the EMS and 911 workforce and contributed to staffing shortages. The lack of State and local designation of EMS and 911 personnel as essential workers meant that staff were not prioritized for COVID-19 testing, vaccination, or PPE. Early in the pandemic, delays in testing and lengthy quarantines after exposure to the virus culminated in longer staffing gaps and increased (often mandatory) overtime for remaining staff. There often were not enough staffed units to adequately handle the increased call volume.

Due to the advanced technology used in the 911 call centers, becoming a dispatcher requires a minimum of 4 to 6 months of training. This meant that when staff fell ill or had to quarantine for lengthy periods of time, 911 centers could not bring in police officers, firefighters, or other untrained personnel to quickly remedy staffing shortages.

Provider Wellness

Mental health issues were, and remain, a significant challenge to the wellness of the EMS and 911 workforce. Managing a high expectation of service and being supportive of difficult individual circumstances (i.e., family deaths, personal illness, and financial hardships) while struggling through staffing shortages, conflicting information, and fear for personal safety contributed to provider stress and burnout. This physical, emotional, and psychological exhaustion was made worse by issues such as lack of PPE, misinformation, fear of taking COVID home to one’s family, and inability to perform routine treatment to patients due to pandemic restrictions. Outcomes of burnout included staff taking more time off, picking up fewer overtime hours, and changing careers or dropping out of the workforce entirely.

Unfortunately, the stigma of reporting mental health issues (e.g., stress, burnout, depression, suicidal thoughts, sleep disorders, substance abuse) within the EMS and 911 professions remains. The 911 telecommunicators and EMS practitioners are trained to provide care to others and often feel less comfortable about receiving care themselves. Similar to law enforcement and the fire service, there is an expectation that these professionals should be "tough enough" to absorb all the pain and suffering that they witness on the job.

Recruitment and Retention

On top of the staffing challenges detailed above, EMS organizations had to contend with recruiting and retention issues. To fill gaps during nursing shortages, hospitals offered higher pay and better working conditions to paramedics than EMS agencies could match. Testing and vaccination sites also offered higher wages, drawing EMS personnel away from their roles. Unfortunately, EMS agencies—frequently funded by municipalities—cannot automatically adjust pay rates or benefits, or offer signing bonuses, to recruit staff. Recruiting and retaining EMS volunteers was also difficult due to limited access to PPE, lack of staff capacity for training new volunteers, and people's fear of taking the virus home to their families. Many volunteers' primary employment prohibited them from volunteering due to potential exposure. EMS students could not be relied on to volunteer consistently either, because of their class schedules.

Education Pipeline

Limited access to PPE and restrictions on in-person gatherings during the pandemic resulted in disruptions to the education pipeline. Field personnel were often prioritized over instructors and students for receiving PPE, impeding access to the necessary resources for holding in-person education and training. Many education programs use field providers as instructors, so they also frequently lost access to instructors. Exam delivery and clinical training opportunities were similarly limited because of social distancing and PPE measures, reducing the quantity and quality of EMS graduates. EMS students who did graduate typically lacked hands-on experience and needed more extensive on-the-job training, adding further stress to the current workforce.

Economic challenges in the education pipeline overlap with staffing issues. For example, paramedic education programs rival nursing programs in cost, but prepare students for lower-wage jobs and are often not eligible for student loans. For many EMTs, the cost of paramedic education is out of reach. In addition, the semester-based paramedic education structure inhibits EMTs from attending class, as EMS agencies do not have the workforce needed to back-fill ambulance crews to allow their personnel to attend school. This has resulted in fewer paramedic graduates joining the workforce. Also, some working students were unable to maintain their class schedules during the pandemic due to local demand. These students were forced to prioritize work over finishing school, delaying their career advancement in the EMS field.

Workforce Solutions

Federal Level Agencies

The Federal Government should support the designation of EMS and 911 by State and local government as essential services regardless of agency type, and 911 telecommunicators and non-emergency medical transport personnel should be designated as emergency first responders. Classifying these professionals within the Protective Services Category of FEMA's Security Operations Center would help to ensure that they all receive the same priority, information, and support during a future pandemic.

NPD-220927-001

EMS could also be further integrated into preexisting Federal programs that fund career pathways, such as Teach America, funding for technical colleges, and loan forgiveness initiatives (if the educational programs are eligible for student loans, though many are not). New Federal programs that incentivize first responder career paths could also be created, such as a "Medic Corps," which could offer payment for an associate's, bachelor's, master's, doctorate, or nursing degree after 5 years of service, for example. Additionally, Federal agencies should support research that validates staffing models that send the optimal number of staff to specific types of calls. This research could provide evidence-based guidance to reduce instances of dispatching more staff than necessary.

National and International Associations)

National associations are critical for helping address workforce challenges and can help EMS become recognized as part of the larger healthcare, public health, public safety, and emergency management fields. National associations should develop standards for State EMS office data collection and information management to allow for interstate comparison of EMS personnel data. They should also develop model language from which States can develop statutes and rules that allow appropriate simulation training as a substitution to in-person clinical instruction to keep the education pipeline functional. To address the high injury rate within the EMS industry, national associations could develop detailed safety officer and mental health resilience officer programs and create, as well as promote, these positions.

> **EMS Mental Health Support**
>
> Virginia's Office of EMS established an awareness campaign in 2020 to "End the Stigma" surrounding EMS practitioner mental health issues. The campaign provided compelling statistics on practitioners' experiences of negative mental health outcomes and promoted free and confidential help available. National associations can support State EMS/911 offices to develop similar campaigns regarding the mental health of EMS practitioners and 911 telecommunicators.

Regarding recruitment and retention issues, national associations can help the EMS industry better define career paths to reduce the high levels of career ambiguity in this field. A national multimedia public awareness campaign about career options may help attract new and more diverse people who otherwise might not have considered joining the EMS field. Furthermore, national associations can lead high-level conversations about diversity, equity, and inclusion in the EMS and 911 workforce. There is a need to better engage community members and have the workforce accurately reflect the communities it serves. Finally, EMS and 911 training should be expanded to include topics of financial and mental health to prepare students more holistically for careers in the EMS field.

State Governments and Associations

Several existing practices at the State level were useful for combating workforce challenges during the pandemic. State waivers were obtained so that emergency medical responders could be dispatched for low acuity calls, allowing more EMTs to respond to higher-level calls. Online education that existed pre-COVID was able to be scaled up to maintain the education pipeline in some jurisdictions. Existing programs that include travel vouchers, daycare, and per diems to reduce barriers of entry to the EMS field allowed people who may not have otherwise considered a career in EMS to pursue one. And interim certifications and temporary extensions of certifications and licenses helped retain staffing impacted.

Other solutions that would help ameliorate staffing shortages in the future include incentivizing EMS work with meaningful tax breaks at the State level. Certification requirements could also be changed so that people do not need to be certified EMTs before training and becoming certified as paramedics.

States should use EMS licensee and 911 telecommunicator data to develop model recruitment and retention programs for EMS and telecommunications workers that include ways to increase diversity among the workforces. Data should also be collected to monitor the number of licensees that are leaving the EMS field or not renewing their licenses. Identifying ways to collect data for the 911 workforce is critical to improve retention. Standardized leadership development platforms focusing on EMS/911 strategy, culture, stakeholder awareness, resource availability, and data collection and analysis could also help improve workplace culture, and in turn employee recruiting and retention.

Local Government and Organizations

Existing practices at the local level that worked well during the pandemic included regular and mandatory overtime, shift bonuses, and improved call screening that allowed basic life support ambulances to transport patients and reserve Advanced Life Support ambulances for higher-level calls. Agencies that had continuity-of-operations plans in place were better able to deal with staffing shortages, as they knew which positions could be combined and how to lessen workloads when fewer staff were available than normal. Health and wellness initiatives that were in place prior to the onset of the COVID-19 pandemic created opportunities for relationships between employees and their counseling resources, building trust and making it less intimidating to reach out when professionals felt isolated or challenged by current events.

In the future, local governments and organizations should develop toolkits for best practices on engaging the EMS and 911 workforce. These could be used as guides on offering intangible benefits around company culture to attract and retain workforce.

Solutions Roadmap

- **The Federal Government** focuses on supporting the establishment of EMS and 911 organizations as a priority group during emergencies through coordination on the FEMA community lifelines and emergency support functions and convening stakeholders to raise awareness on workforce issues (e.g., an EMS/911 workforce health and wellness summit).
- **National organizations** develop standards for personnel data collection and for model regulatory language that allows simulation training to track workforce retention and keep the education pipeline functional.
- **State government and organizations** offer flexible and scalable practices, such as adaptable dispatch protocols, innovative integration of nurse triage and community paramedic programs at 911 centers, and online education, that allow for quick adaptation during emergency health scenarios.
- **Local government and organizations** plan ahead with continuity of operations plans and implementing health and wellness initiatives.

Challenges	Solutions
PPE shortages ▪ Lack of domestic/local supply ▪ Lack of access to primary distributors ▪ Longer lead times ▪ Lack of prioritization for EMS/911 **Counterfeit and uncertified supplies** ▪ Significant influx of counterfeit PPE ▪ Lack of time to certify supplies **Issues obtaining typical supplies** ▪ Challenges obtaining supplies across the board from clinical drugs to cleaning supplies ▪ Suppliers rationing supplies ▪ Snowball effect delaying operations (equipment repair, transportation disruptions, etc.)	**Federal** ✓ Update Emergency Support Functions and FEMA Lifelines ✓ Improve coordination among regional Federal entities **National** ✓ Support the reduction of HPH bureaucracy for EMS and 911 **State** ✓ Create co-ops to include equipment needs and distribution plans that support local communities ✓ Coordinate local frontline organizations to establish large contracts for more buying power **Local** ✓ Establish best practices for relationship building with suppliers to standardize orders and establish priority

Lead Roles for Implementation of Solutions

FEMA USFA	**National and International Associations**
HHS ASPR	**State and Local Emergency Managers**
NHTSA OEMS	**State Health Departments**
FICEMS and NEMSAC	**Healthcare Distributors**

EMS and 911 organizations were not spared the supply chain challenges that much of the world faced during the COVID-19 pandemic, and supply shortages came with more severe consequences for the sector. While lack of PPE made it more difficult and less safe for EMS and 911 workers to do their jobs, the shortages brought unexpected challenges in the form of counterfeit and uncertified PPE. And while obtaining PPE was the most significant supply chain hurdle EMS and 911 organizations faced during the pandemic, they also struggled to keep more typical supplies such as cleaning and sterilizing supplies in stock during a period of enormous demand.

Potential solutions to these and other supply chain challenges can be implemented at the Federal, national, State, and local levels to enhance the ongoing pandemic response and better prepare for future crises. The solutions described below are key examples and not an exhaustive list.

Supply Chain Challenges

PPE Shortages

Unfortunately, EMS and 911 organizations were often not prioritized for PPE and other important safety equipment during the COVID-19 pandemic. Without a position in the front of the distribution line, EMS/911 personnel dealt with the same issues as many people during the pandemic: lack of local and domestic PPE supply to meet incredible demand, causing significantly longer procurement lead times. The strain of the pandemic led distributors to focus on larger healthcare clients rather than the secondary distributors that are often the only distributors with which EMS/911 can engage. Without access to primary distributors and having to rely on State or local distribution of resources within emergency management and public health channels, EMS/911 were at a severe disadvantage. When coupled with a lack of supplies, this resulted in serious implications for public safety agencies like EMS and 911. While supply of PPE was an issue, public safety agencies were also not fully prepared for a health emergency of this magnitude. On-demand ordering became common among first responder organizations more than 10 years ago, and as a result the more traditional buffers of supplies were not available.

Counterfeit and Uncertified Supplies

While EMS distributors worked their typical channels to procure items like PPE, supplies were often limited. This led to the entry of opportunistic players selling counterfeit PPE that did not meet the required standards for EMS and 911 workers. Counterfeit PPE is challenging to identify, and due to the incredible constraints on both time and personnel during the COVID-19 pandemic, public safety organizations like EMS and 911 were not able to certify all incoming supplies. The lack of access to PPE and the influx of imposter supplies made it harder to operate in safe conditions during this pandemic. When Federal entities stopped counterfeit PPE entering through customs, this raised frustrations for people trying to get supplies as there was no clear realization of the magnitude of counterfeit PPE being shipped to the United States.

Issues Obtaining Typical Supplies

While EMS and 911 organizations had focus on overcoming PPE supply chain challenges, there were other noteworthy procurement issues when obtaining other important safety supplies (e.g., intravenous solutions, oxygen delivery devices), as well as services in general. From clinical drugs to cleaning and sanitizing supplies, EMS and 911 faced challenges to keep their work environments safe beyond access to PPE. Some agencies worked with

NPD-220927-001

suppliers who needed to ration products because of the significant demand. While obtaining typical supplies was made harder due to the pandemic, the circumstances also heightened existing supply chain issues that affected things like equipment repair and ambulance orders. The supply chain challenges facing EMS and 911 organizations came together in a significant snowball effect that made the work environment very difficult.

Difficulties Obtaining Supplies

- Long lead times
- High shipping costs
- Inaccurate and inadequately updated electronic inventories
- Orders diverted to higher bids or prioritized customers
- Orders placed that secondary or tertiary suppliers could not fill
- FEMA Lifelines reporting errors (e.g., continually displaying EMS PPE needs as green rather than red)

Supply Chain Solutions

Federal Government Agencies

As one of the crosscutting themes heard throughout the workshop during this project, EMS and 911 organizations would benefit from recognition as priority organizations during public health emergencies. One method that could help reflect the critical role of EMS and 911 in emergency response planning is an update of the emergency response plans at the Federal level, including the FEMA Lifelines, and the emergency support functions. Using these updated Federal plans will not only give EMS and 911 organizations more recognition and representation in terms of emergency planning but also afford more opportunities to have their needs such as PPE and other supply procurement heard during times of emergency to meet supply chain issues proactively. Such Federal policy and planning updates should include provisions to improve information-sharing and collaboration among regional Federal emergency management and public health representatives regarding EMS/911 supply chains, especially for FEMA and ASPR.

While updating these Federal emergency response plans can have a strong impact, the process requires significant coordination. With targets including the FEMA Lifelines and ESFs, starting the discussion at a summit that includes Federal participation (such as the International Association of Emergency Managers Annual Conference) would be ideal to lay out a strategy for these updates. Establishing a Federally based stand-alone working group in an organization like FICEMS will help the effort move forward in a coordinated fashion to achieve buy-in from Federal agencies. Special attention should be paid to work with FEMA Preparedness to add an EMS/911-specific ESF to the National Response Framework, or to establish appropriate EMS staffing in ESF #8, the Public Health and Medical Services function. Through a thoughtfully coordinated effort, change at the Federal level can pay dividends for how EMS and 911 organizations prepare for and operate during healthcare emergencies, especially when meeting supply chain challenges.

National and International Associations

While levels of effort will be required at the local level, national effort to help reduce healthcare and public health bureaucracy pertaining to supplies and equipment for EMS and 911 organizations would benefit these groups across the country. As EMS and 911 typically do not have the same access to supply

chain systems as hospitals and nursing homes, this solution would require relationship-building between EMS/911, State/local health departments, and emergency management departments. Mutual education between EMS/911, State/local health departments, and emergency management departments would provide baselines of comfort communicating with each other to identify and resolve supply chain challenges. A nationally developed template for doing so can help EMS and 911 organizations work with their respective health departments to better understand supply chain challenges EMS/911 face, and the specific services EMS/911 provide (and the equipment needed to provide it) during a healthcare emergency like a pandemic. This process should include not only education on EMS/911 services and needs but also advocation with public safety response partners.

The development of a toolkit at the national level to facilitate conversations between EMS/911 leaders and local public health agencies would need to lay out a strategy to encourage local public health agency officials to meet with their counterparts in the EMS systems. These discussions should focus on EMS preparedness plans, defining and aligning data availability on the EMS side, as well as data reporting requirements to the HPH side, to meet supply chain challenges head on. In addition, a national program that incorporates information about EMS in accredited courses for public health education could help produce more impactful conversations between HPH and EMS/911.

State Government and Associations

Additional collaboration should be established at the State level to further develop EMS and 911 supply chain solutions, with some focus on the creation of co-ops with other agencies and/or local hospital systems. These co-ops can help ensure all elements of an emergency and public safety response are working together, establish consistent preparedness practices between partners, as well as methods for potentially sharing resources. A co-op that includes equipment needs and distribution plans specific for communities while defining continuity plans and mitigation efforts can help EMS/911 ensure sufficient inventory of necessary PPE and/or cleaning supplies when facing future health emergencies. State-level caches or emergency stockpiles should be considered in conjunction with the co-ops.

Through the co-op, it will be necessary to establish a list of State and local contracts for manufacturers and distributors of items like PPE, as well as vetted backup contracts and vendors. While the co-op will help EMS/911 gain access to supplies with increased buying power as part of a group, EMS and 911 organizations should understand up front what overall percentage of supplies would be dedicated to EMS, especially during an emergency. A Federal effort to prioritize EMS/911 as essential personnel, as noted through this white paper and this chapter, would aid in establishing a seat at the table for EMS/911 within co-ops. As an additional redundancy layer, it also may be advantageous for State level EMS/911 organizations to build relationships and partnerships with individual larger healthcare entities in the State with access to primary distributors.

Continuing the national solutions above, State government agencies and associations should leverage the toolkits for improved communication and collaboration among EMS/911 with State and regional emergency management, healthcare, and public health organizations.

Local Government and Organizations

In concert with the other solutions discussed in this chapter, local activity to build relationships with suppliers to standardize orders and establish priority during health emergencies can help set the groundwork for overcoming supply chain challenges. By prioritizing relationships with vetted and trusted suppliers, EMS and 911

NPD-220927-001

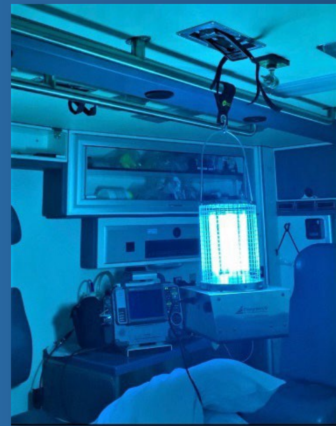
organizations can not only establish trust, but also understand the various processes for working with these resources. As part of this process, lessons learned, and best practices can be shared between vendors and EMS/911 from the current pandemic to make future events more manageable from a supply perspective.

Solutions Roadmap

- **The Federal Government** focuses on supporting EMS and 911 organizations as priority groups during emergencies through coordination on the FEMA lifelines and ESFs (including staffing response "desks" with EMS/911 subject matter experts).
- **National organizations** provide the framework for bringing EMS and 911 organizations to the table with public healthcare agencies and health departments to provide education on EMS/911 activity and ensure supplies for serious healthcare events.
- **State government and organizations** serve as conveners, establishing co-ops (and potentially stockpiles) to include all frontline practitioners such as EMS/911 to build buying power during emergency health scenarios.
- **Local government and organizations** build relationships with suppliers to ensure community readiness for future major healthcare events.

INNOVATIVE SOLUTIONS FOR CRISES

Faced with difficult supply chain disruptions brought about by the pandemic, some EMS agencies adapted their ambulance decontamination protocols to include ultraviolet germicidal irradiation (UVGI).
Combining UVGI with traditional decontamination practices allowed these agencies to reduce the burn rate of traditional decontamination supplies and reduce the staff hours required for manual decontamination.



NPD-220927-001

Challenges

Resources (e.g., funding, personnel, time)

- Timing and staffing constraints
- Available training
- Increased costs (e.g., new equipment/software, training requirements)

Sources of Truth (e.g., trusted sources)

- Lack of a centralized set of EMS/911 pandemic data
- Lack of approaches for resolving data conflicts
- Inconsistent and changing guidance

Timeliness of Actionable Data/ Information/Guidance (e.g., mechanisms/capabilities)

- Outdated and slow data processes
- Inability to collect real-time information
- Outdated guidance due to slow clearance process for documents

Ability to Share (e.g., legal agreements/ resolutions)

- Lack of data use agreements
- Information-sharing barriers
- Varied State and local legislation

Solutions

Federal

- ✓ Expand NEMSIS State and local data
- ✓ Develop NEMSIS-like 911 data system
- ✓ Develop crisis standards for data
- ✓ Develop crisis clearance process for guidance documents

National

- ✓ Educate on regulatory guidance (e.g., HIPAA)
- ✓ Develop data-sharing agreements guidance
- ✓ Improve collaboration among associations for unified voices

State

- ✓ Improve integration of 911, EMS, fire departments, public health, healthcare, and emergency management agencies
- ✓ Develop State data and information clearinghouse for EMS/911

Local

- ✓ Establish relationships and mutual aid agreements
- ✓ Provide education on benefits and rationale for enhanced data collection and sharing

Lead Roles for Implementation of Solutions

HHS ONC and CMS
NHTSA OEMS
NEMSIS
FICEMS and NEMSAC

National and International Associations
State EMS Medical Directors
State Public Health Departments
State Emergency Management
State HIEs

The COVID-19 pandemic has presented EMS and 911 organizations with unforeseen challenges in collecting, processing, analyzing, storing, sharing, and submitting essential data and information relating to their operations. Related challenges existing prior to the pandemic have been exacerbated and highlighted as well. These new and existing challenges involving data and information include: resources, sources of truth, timeliness of actionable data and information, and ability to share.

Potential solutions to these and other data and information challenges can be implemented at the Federal, national, State, and local levels to enhance the ongoing pandemic response and better prepare for future crises. The solutions described below are key examples and not an exhaustive list.

Data and Information Challenges

Resources

For EMS practitioners and 911 telecommunicators, essential data and information resource requirements include time, funding, and personnel. The collection and processing of data, as well as the submission and receipt of information, are subject to increased pressure on timing and staffing restraints. During the pandemic, agencies have been required to collect, share, and submit nontraditional data and information types. This often requires additional resources to complete. Workforce shortages, as noted in the Workforce section, exacerbated the issue since staffing simply was not available. Automation meant to ease data processing and free up resources often increased the cost-burden of requiring updated equipment and software, as well as the time dedicated to training personnel. The 911 telecommunicators faced an additional challenge in which the first responding agencies often use different computer-aided dispatch systems than the 911 agency, creating additional barriers to automated data sharing.

Sources of Truth

Practitioners need to be able to rely on trusted sources of information. Mis- and disinformation was prevalent without a centralized set of trusted resources upon which practitioners could rely for operational information. This resulted in the establishment of ill-informed opinions and inefficient application of reliable data and standards. With several datasets and no recognized methodology for prioritizing and even identifying available datasets, agencies were forced to pick and choose data, resulting in inconsistent information across agencies and regions. There is limited guidance available for navigating sources of information, including recommended approaches for resolving conflicts between data sources or systems.

Timeliness of Actionable Data/Information/Guidance

The weakness of available mechanisms and deficient capabilities of often outdated and slow data submission processes can cloud the overview of operational information available to EMS/911 agencies. The agencies often lack the ability to collect information on real-time EMS needs such as PPE, staffing, and trend identification of

NPD-220927-001

incident responses. This inhibits the appropriate allocation of resources as demands change. Workforce reporting tools and resources regarding vaccination workplace incidents need to be timely and accurate to be effective. Such data and information have been commonly too old to be valuable in the rapidly changing pandemic operating environment.

Ability to Share

Agencies can feel significantly restrained in their freedom to share actionable information with relevant stakeholders due to the absence of legal agreements or resolutions to mitigate fears or delays (or the awareness of such mechanisms). The lack of data use agreements between jurisdictions and organizations that might facilitate the evaluation of operational data has been a significant challenge. Agencies may feel restricted from sharing information beyond the local level, if at all. An example would be legal barriers preventing associations from sharing information from their members. The lack of formal agreements may also make organizations overly cautious for fear of violating a confidence, incurring liability, or both. Beyond the individual and agency concerns are those surrounding the data systems themselves. Identification of the dataset and specific elements provides the precursor to seeding a larger, encompassing set of data. The identification of the available data, sources, and how to connect them must occur ahead of time, with gaps resolved prior to a mid-response need for the data.

Data and Information Solutions

Federal Government Agencies

The National Emergency Medical Services Information System includes the database to store EMS data at the national level. State and local data for NEMSIS should be expanded to include geographic information, local public health statistics, and EMS/911 operational data. Integration of USFA National Fire Incident Reporting System data with NEMSIS should also be developed. A similar system should be developed for 911 data. The ability to view and analyze trending data would serve to assist in the allocation of resources in the current crisis and help plan for the next pandemic but requires a significant change in the collection and timely submission of the data. Development of data use agreements and understandings across Federal and SLTT partners is imperative for the success of this effort. Since both NEMSIS and NFIRS datasets are post-event collection systems, strong recommendations should be made to all users and practitioners of the data, encouraging accurate and timely submission.

Federal EMS/911 stakeholders should collaborate through FICEMS to develop crisis standards of data and information-sharing that appropriately address the regulatory landscape for data and information collection, submission, and processing during emergency events such as pandemics. The timing of such crisis standards could be lifted after Federal emergency declarations are lifted.

National and International Associations

EMS/911 agencies deserve clear guidance on regulatory aspects of healthcare data and information, especially regarding the fundamentals of HIPAA. There has been a great deal of competing assertions (especially among healthcare systems) during the pandemic surrounding what HIPAA is, what it applies to, what it protects, and

NPD-220927-001

what it prohibits. This causes widespread confusion in practitioners and leads to delays and roadblocks in EMS and 911 operations. Practitioners are not certain of what they can or cannot collect or access. National associations should clarify HIPAA guidance for EMS, 911, hospitals, clinics, and other healthcare facilities that interact with EMS and 911 to alleviate data concerns and confusion. Existing guidance at the Federal level can be leveraged [e.g. *An Imaginary Barrier How HIPAA Promotes Bidirectional Patient Data Exchange With Emergency Medical Services* (Page, Wolfberg & Wirth, LLC., n.d.)] Emergency response organizations need to know what data they can share and how to present it.

National associations should develop national guidance on EMS/911 data-sharing agreements between jurisdictions and disciplines (e.g., EMS, fire, public safety, healthcare, public health, emergency management), including recommendations on standard provisions to include for data collection and sharing. Such agreements would ease liability concerns and increase the efficiency and effectiveness of data- and information-sharing. A primary goal should be the seamless integration between pre- and in-hospital care.

State Government and Associations

State governments should improve the integration between 911, EMS, and hospital IT systems for continuity of care and information-sharing. Existing systems in place to increase integration are working but not consistent. Variability between different regions, localities, and even facilities leads to inconsistencies in the way data are collected and shared. The priorities of one EMS medical director or local organization may not be that of another. There is a need to develop State standards that stakeholders commit to (e.g., more robust information/data continuity plans; shared platforms for interagency communication; improved data linkage between EMS and hospital/other healthcare entities) which could be incentivized by connecting available State resources to standards adherence.

Another potential solution to address EMS/911 data and information challenges is for States to develop State-level data and information clearinghouses for shareable information and analysis. This would aid State and local EMS and 911 organizations in increasing the efficiency with which they collect, store, share, and submit data and information during crises. For such mechanisms to work effectively, decision-makers should be educated in the comparative advantages and disadvantages of different solutions.

Local Government and Organizations

Local EMS and 911 organizations should enhance their preparedness for crises such as pandemics by establishing relationships and mutual aid agreements with stakeholders across jurisdictions and disciplines. This includes developing relationships with local, State, national, and Federal organizations, as well as between EMS and 911 organizations within the same area of operation. Emergency managers are in a position to develop and continue these relationships, and the recognition that emergency management is a critical component is important. It is imperative that practitioners develop such relationships before crises emerge so that beneficial connections and pathways for data- and information-sharing can be established before they are urgently needed.

Local EMS and 911 organizations should provide education to their practitioners on the benefits of and rationale for enhanced data collection and sharing. Education and training can demonstrate the value EMS and 911 organizations may derive from adopting certain types or methods of data collection. For example, understanding how including data fields for supplies and PPE can minimize turnaround times and increase field readiness would garner support among practitioners. At a minimum, a standard should be developed for the consistent *potential* collection of data. For example, a standardized set of PPE fields and data elements should be established, so if agencies decide to collect this information, the same information is collected in the same

NPD-220927-001

way, allowing for later aggregation. Incentives (e.g., certification or preferred provider programs, insurance premium reduction programs) for enhanced data collection methods or processes could further increase support and adoption.

Solutions Roadmap

- **The Federal Government** convenes relevant stakeholders to develop expanded State and local data and NFIRS integration in NEMSIS and crisis standards of data and information.
- **National organizations** provide clear guidance on HIPAA and EMS/911 data-sharing agreements between jurisdictions and disciplines.
- **State government and organizations** improve the integration between EMS, 911, and hospital IT systems for continuity of care, including the development of an information clearinghouse for sharable information and analysis.
- **Local government and organizations** build relationships and mutual aid agreements with stakeholders across jurisdictions and disciplines (including across these four levels of solution implementation) to create effective pathways for data- and information-sharing. Local jurisdictions develop training and exercises to improve relationships and mutual aid agreements.

AGREEMENT ON COVID-19 CASE DEFINITIONS

An agreed-upon set of definitions regarding documenting and reporting COVID-19 cases by EMS and 911 was delayed in the beginning of the pandemic. Some healthcare data vendors collaborated to define COVID-19 case nomenclature and streamline methods to report among agencies and disciplines. The vendors agreed on definitions for COVID-19 cases and established common, repeatable ways of reporting to central locations. These definitions and methods were shared with EMS and 911 agencies. This improved the documentation, sharing, and tracking of COVID-19 data across the healthcare continuum.

NPD-220927-001

Challenges	Solutions
Limited in-person instruction & testing ▪ Training and testing centers, and clinical facilities closed ▪ Field experience prohibited ▪ Stressed instructors leaving the field	**Federal** ✓ Convene associations and State agencies to identify and address in-person limitations to education ✓ Create model crisis standards for certification
Increased demand in the field ▪ Workforce pulled from classrooms ▪ Limited PPE for education/training programs (scarcity or donated to field) ▪ Lack of educational resources	**National** ✓ Designate education, testing, oversight institutions, and EMS students as "essential" ✓ Encourage local agencies to conduct their own training within their agency
Delays in educational process ▪ Quarantines ▪ Background checks ▪ Lack of online capabilities	**State** ✓ Develop crisis standards of education ✓ Incorporate technology and virtual learning into training programs
Inconsistent response to issues ▪ Lack of flexibility among State governing agencies ▪ Inconsistent materials/curriculum for different EMS levels ▪ Changes in scope of practice/education standards	**Local** ✓ Offer field personnel training opportunities to become instructors ✓ Form crisis education teams that can develop provisional curricula and classes

Lead Roles for Implementation of Solutions

HHS ASPR and HRSA	**National and International Associations**
FEMA USFA	**Higher Education Institutions**
NHTSA OEMS	**State EMS Medical Directors**
FICEMS and NEMSAC	**State Public Health Departments**

Closely related to workforce issues, education issues posed another set of challenges to EMS and 911 organizations across the country. Restrictions on in-person gatherings, social distancing, and quarantine measures resulted in closures of training programs and testing centers, postponement or prohibition of clinical and field experience, and delays in educational processes such as background checks. The effects on education also included an increased demand for workers in the field led to instructors being pulled from classrooms to bolster the clinical workforce, limited PPE for education and training programs due to scarcity or donations to field personnel, and a general lack of resources for education. Varying responses to these education issues created conflicts between community college policies and EMS programs, inconsistent curriculum for different EMS levels, and changes in education standards. These challenges and possible associated solutions at various levels are outlined below.

Education Challenges

Limited In-Person Instruction and Testing

During the early stages of the pandemic in particular, restrictions on in-person gatherings and social distancing measures led to the closure of training programs and testing centers. This limited instruction time and testing opportunities, delaying educational processes. Clinical facilities were also closed to EMS students, postponing or outright prohibiting hands-on clinical and field experience, such as ride-along training.

In addition, EMS programs experienced students dropping out of classes due to safety and other concerns. Instructors similarly left the field due to the stress of the pandemic and struggles adjusting to teaching in an online environment. Testing policies in 911 centers had to be modified for online delivery, and the subject matter had to be changed from previous in-person examinations to fit the new format. A lack of time for training new instructors on both the new and old testing standards meant that new instructors could not teach the old education standards in the classroom. The combination of all these challenges impacted the overall quality of EMS and 911 education.

Increased Demand in the Field

Due to increased demand in the field, instructors were pulled from classrooms to bolster the workforce. This reduced the number of experienced instructors available to teach EMS students. Training programs also sometimes donated PPE to those in the field during times of PPE scarcity, limiting resources for safe in-person instruction.

Delays in Education Process

Factors that caused further delays in the education process, and thus the education pipeline, included closures of offices that conduct background checks and an initial lack of online capabilities in some training programs and education centers.

Inconsistent Response to Education Issues

Reponses to the myriad of education issues during the ongoing COVID-19 pandemic have been inconsistent among State governing agencies, which exhibited a lack of flexibility in the face of rapidly changing conditions, and among EMS programs and community colleges, which resulted in conflicting policy changes. Similarly, there were inconsistencies in materials and curriculum administered at different EMS levels. Changes to curriculum sometimes made classes too long or expensive, creating additional barriers to entry into the field. There were also variations in the speed at which updated information and lessons learned from the pandemic were

incorporated into curriculum. These ad hoc changes in the scope of practice and in education standards may present a challenge in returning to the original education standards.

Education Solutions

Federal Government Agencies

Initially, it would be beneficial to conduct a full assessment at the Federal level of the efficacy of solutions that were enacted during the height of the pandemic. This effort could include convening associations and State agencies to identify and address in-person limitations to education. Some ideal outcomes of an assessment such as this would be model crisis standards for certification and recertification and updated education standards. Federal agencies could also collaborate with associations on technology-based solutions to education challenges.

Other options for relevant education solutions include the creation of a program like AmeriCorps for EMS and 911, a national testing program for armed forces to ease entry of military members into the EMS workforce, and provisions for educators to be able to work across regions or the country to fill gaps, based more readily on FEMA declarations.

National and International Associations

Designating education, testing, and oversight institutions, as well as EMT and paramedic students, as "essential" would enable the education pipeline to continue without delays in future events. Current operational countermeasures and best practices about topics such as PPE and decontamination procedures should be included in education curriculum.

National associations could encourage local agencies to conduct their own training within their own agencies. Additionally, creating an option for tracking protocol changes in real-time, (e.g., the World Health Organization's documentation workflow that provided periodic operational situation reports with rationale), would be a beneficial solution.

State Government and Associations

State EMS groups and State higher education offices should collaborate to develop "crisis standards of education" that outline how EMS education will continue during a future pandemic or similar large-scale event. These standards should detail temporary concessions that may be made, as well as guidance for returning to original standards. Waivers from certain State regulations related to staffing patterns, response time, treatment in place, certification, retirees reentering the workforce, and testing requirements could be prepared in advance for immediate implementation to minimize delays in educational processes. Additionally, technology and virtual learning should be incorporated into training programs alongside hands-on learning. This would better prepare instructors and students for future necessary adaptations to EMS education and make EMS education accessible to more types of students.

Since many State personnel are trained as EMTs and paramedics and are occasionally former educators, the possibility of pulling them out of the office to bolster either field or instructor workforce gaps would be beneficial. A backfill mechanism could be created to find people to temporarily fill in for their administration duties.

Local Government and Organizations

One solution suggested during the education listening session was to offer EMT or paramedic academies within local agencies, funded by workforce development funding options, which guarantee employment to those who graduate. Another solution could involve offering experienced field personnel training opportunities to increase the number of EMS instructors. Additionally, opportunities for high school students to select EMS as a career path and work towards becoming certified after graduation could further expand the education pipeline. Finally, there may be a need at a local level to form crisis education teams that can develop provisional curricula and classes during events like the COVID-19 pandemic.

Solutions Roadmap

- **The Federal Government** convenes associations and State agencies to develop model crisis standards for certification and recertification, and update education standards.
- **National organizations** encourage and support local agencies to conduct their own in-house training.
- **State government and organizations** incorporate technology and virtual learning into training programs alongside hands-on learning.
- **Local government and organizations** offer high school students to select EMS as a career path and work towards becoming certified after graduation.

Challenges

Limited and inconsistent **resource availability**

- Time, funding, staffing, mechanisms
- Distribution errors and inequities

Inconsistent implementation of **response frameworks**

- Inadequate EMS/911 representation in response framework groups
- HPH/emergency management disconnect
- Training/exercise gaps

Burden and misunderstanding of existing **law/policy/rules/regulations**

- Restrictions hindering response
- Hesitancy in crisis
- Fear of retribution

Communication breakdown between organizations

- Failure to participate appropriately
- Failure to recognize importance of different disciplines
- Mistaken assumptions regarding multi-level involvement

Solutions

Federal

- ✓ Clarify EMS/911 roles in FEMA ESFs and Lifelines
- ✓ Update guidance/exercise programs for ESF/NIMS/ICS

National

- ✓ Identify areas underserved by EMS/911
- ✓ Partner with Federal development/ updating of ESFs/Lifelines/guidance
- ✓ Collaborate with States for crisis standards development

State

- ✓ Establish communications distribution mechanisms before crises
- ✓ Co-locate emergency and healthcare disciplines in education/training
- ✓ Define and share crisis standards

Local

- ✓ Establish communications distribution mechanisms before crises
- ✓ Establish relationships and mutual aid agreements
- ✓ Include elected officials in training/ exercises

Lead Roles for Implementation of Solutions

CDC CPR
HHS ASPR and HRSA
FEMA National Preparedness Directorate
NHTSA OEMS
FICEMS and NEMSAC

National and International Associations
State EMS Medical Directors
State and Local Emergency Management
State Public Health Departments

Response to the COVID-19 pandemic has included a significant amount of chaos throughout the national public health crisis. This hindered coordination and collaboration among organizations, disciplines, and jurisdictional levels, affecting their ability to respond effectively. EMS and 911 organizations faced unforeseen challenges in understanding responsibilities and requirements, working together across governments and specialties, and adapting to the changing needs of the response. Related challenges existing prior to the pandemic have been exacerbated and highlighted, as well. These new and existing challenges regarding coordination and collaboration include limited and inconsistent resource availability, inconsistent implementation of response frameworks, burden and misunderstanding of existing law/policy/rules/regulations, and communication breakdown between organizations.

Potential solutions to these and other coordination and collaboration challenges can be implemented at the Federal, national, State, and local levels to enhance the ongoing pandemic response and better prepare for future crises. The solutions described below are key examples and not an exhaustive list.

Coordination and Collaboration Challenges

Limited and Inconsistent Resource Availability

As with many of the challenges faced by EMS/911 in the response to the pandemic, resources available to support coordination and collaboration among EMS/911 stakeholders were often lacking, difficult to find, or completely unavailable. Time, funding, staffing, and mechanisms to conduct coordination and collaboration were already stretched thin among many EMS/911 organizations, and these resources became scarcer during the pandemic. In addition to the sparsely available occasions and opportunities in which resources were available, the distribution of such aid to support coordination and collaboration was often error-prone (e.g., resources offered or delivered to those not in need of the support) or fraught with inequities (e.g., the jurisdictions or communities most in need receiving support last or not at all).

Inconsistent Implementation of Response Frameworks

For some groups involved in the national response to the pandemic beyond EMS/911, well-established frameworks for emergency response such as the National Response Framework and its associated Emergency Support Functions, the National Incident Management System, and the Incident Command System were sought as appropriate mechanisms with which to implement coordination and collaboration. However, the implementation of such frameworks was woefully inconsistent and particularly not applied or inclusive to EMS/911. Large collaborative efforts (meetings, calls, webinars, etc.) to enhance the response based on the frameworks often did not invite or include EMS/911 organizations at various levels. EMS/911 representation was often not included, misrepresented, and diluted among different categories within the frameworks.

In addition to inadequate representation, disconnects between how healthcare and public health and emergency management disciplines at State and local levels interpret and participate in the frameworks caused confusion and inconsistency in how EMS/911 was involved. Further exacerbating inconsistency are the significant gaps across the country in training, awareness, and exercises regarding these response frameworks. Areas familiar with natural disasters (e.g., hurricanes along the Gulf and Atlantic coasts, wildfires in the West) are well-versed in emergency response tied to response frameworks, whereas areas without such experience take longer to understand, agree on, adopt, and implement such an organized response.

NPD-220927-001

Burden and Misunderstanding of Existing Law/Policy/Rules/Regulations

State and local laws, policies, rules, and regulations often contributed to delaying and hindering coordination and collaboration in the pandemic response. Restrictions in EMS/911 operations (e.g., staffing requirements, lack of reciprocity across jurisdictions, inability to enter healthcare facilities) created barriers to effective rapid response. Misunderstanding or confusion of laws, policies, rules, and regulations by EMS/911 practitioners led to delays in responding to critical situations. Fear of repercussions or retribution from making decisions that did not align with such requirements (known or unknown) also led to slowing down or even halting coordination and collaboration in the response.

Communication Breakdown Between Organizations

Throughout the pandemic response, there has often been a breakdown of effective communication on coordination and collaboration between organizations across jurisdictions, disciplines, and areas of influence and responsibility. Many organizations did not appropriately participate in coordination and collaboration efforts due to communication problems, such as lack of awareness, and delays in notifications from other organizations. Similarly, failures to recognize the value and importance of different disciplines relating to emergency response inhibited coordination and collaboration (e.g., public health not including EMS organizations in coordination of PPE, staffing shortages in 911 telecommunicators not included in mutual aid discussions). Assumptions made—without communication—regarding the appropriate involvement and representation of various levels of stakeholders (e.g., local, State, Federal) also contributed to lapses and disparities in coordination and collaboration. Organizations assumed that if they were participating, other appropriate levels of representation were in place.

Coordination and Collaboration Solutions

Federal Government Agencies

Federal agencies with equities in emergency preparedness and response can work together in an organized fashion (potentially through FICEMS) to help mitigate the coordination and collaboration challenges experienced by EMS/911 in the pandemic response and support more effective response to future large-scale public health crises. Federal agencies can greatly enhance future response efforts by addressing challenges uncovered regarding key response frameworks, such as those described above. Specifically, Federal partners including FEMA, CDC, and HHS should collaborate to clarify the roles of EMS/911 in the FEMA NRF and its associated ESFs, Support Annexes, and Community Lifelines doctrine (e.g., including EMS/911 as part of the structures/processes, at a minimum). EMS/911 roles should also be clarified in the FEMA NIMS and ICS. Guidance documents, training programs, and exercises developed and administered by Federal agencies should be updated accordingly. Input from national and international EMS/911 associations should be included in these efforts.

National and International Associations

As a baseline for improving coordination and collaboration for pandemic response, appropriate national and international associations should identify areas of the country that are underserved by EMS/911. Such areas are likely in most need of support through coordination and collaboration. EMS/911 associations should also partner with Federal agencies in the updating of response frameworks, national doctrine, and related training and exercise programs, and conduct outreach and awareness to increase adoption and participation among their constituents. National and international associations can also collaborate with State and local governments to develop and coordinate crisis standards across jurisdictions.

NPD-220927-001

State Government and Associations

State governments and associations can improve coordination and collaboration by developing and establishing solid communication distribution mechanisms during steady-state times so that tested and assured pathways are in place before crises arise. For example, State EMS/911 directors should have known methods of communicating and interacting with other State administrators for emergency response so that coordination and collaboration have EMS/911 included. Supporting the development of such trusted pathways, State education and training programs for emergency response should be co-located for the inclusion of healthcare, public health, law enforcement, fire, 911, EMS, and emergency management disciplines. State agencies should also work across disciplines to develop and share crisis standards for emergency response coordination and collaboration.

Local Government and Organizations

Similar to the State solution above, local governments and organizations can improve their response efforts by establishing trusted methods for communication on coordination and collaboration with other organizations to be better prepared for future crises. This could be done in concert with establishing mutual aid agreements with other organizations to improve coordination and collaboration for EMS/911 and other disciplines at the local level. Local elected officials should be included in training and exercises for coordination and collaboration for improved awareness and understanding.

Solutions Roadmap

- **The Federal Government** focuses on supporting EMS and 911 organizations as priority groups during emergencies through coordination on the FEMA lifelines and ESFs.
- **National organizations** partner with Federal agencies to update response frameworks, national doctrine, and related training and exercise programs.
- **State governments and organizations** develop and maintain communication distribution mechanisms prior to times of crisis and work across disciplines to develop and share crisis standards for emergency response coordination and collaboration.
- **Local governments and organizations** establish trusted methods of communication and mutual aid agreements with other organizations to improve coordination and collaboration between EMS/911 and other disciplines at the local level.

NPD-220927-001

Challenges	Solutions
Higher cost of readiness ▪ Difficulty making value proposition for business continuity planning ▪ Existing thin budgets and systemic problems ▪ Limited expertise in and access to grants/funding sources/approaches ▪ Increased personnel costs ▪ Increased equipment and supply costs **Inconsistent business continuity planning/guidance** ▪ Only reviewed when disaster strikes ▪ Pandemic impact on EMS/911 limits effectiveness of existing plans ▪ Lack of awareness regarding existing planning/guidance **Innovations for patient care not reimbursed** ▪ Usual revenue/reimbursement streams diminished (fewer accidents/typical emergency events) ▪ Changes in billing requirements/ waivers (e.g., confusing, inconsistent) ▪ Insurers choosing to reduce reimbursements to EMS agencies **Inconsistent distribution of Federal relief funds** ▪ EMS/911 not included in Federal designation ▪ State allocations not consistent for EMS/911	**Federal** ✓ Model primary relief funding for EMS relevant to encounter data ✓ Establish a primary Federal entity with direct EMS oversight, influence, accountability, and governance ✓ CMS align payment schedule to realistic changes in operating costs ✓ Develop a framework for innovation that supports advances from the field **National** ✓ Develop financial stress test for EMS agencies ✓ Develop education for State/local administrators in business modeling and development ✓ Direct reimbursement outside healthcare revenue streams for EMS ✓ Develop minimum requirement doctrine for EMS/911 business continuity planning **State** ✓ Require joint planning and training among disciplines ✓ Streamline State-local statutory/ regulatory issues regarding innovation ✓ Communicate with the healthcare system to ensure mission alignment **Local** ✓ Local, expandable “roadmap” with defined stages of response readiness ✓ Emphasis on leadership training ✓ Direct technical assistance to smaller services

Lead Roles for Implementation of Solutions

OMB **NHTSA OEMS** **FICEMS and NEMSAC**	**National and International Associations** **State and Local Emergency Managers** **EMS Directors** **State Health Departments**

This section focuses on two related challenges that EMS and 911 organizations faced during the COVID-19 pandemic: the challenge of developing and maintaining a business continuity plan, and the challenge of staying in business while working through a pandemic. Support for the development of a business continuity plan is certainly not unique to EMS and 911 organizations; however, there are few sectors that could benefit more from such a plan, and even fewer that face more consequences when lacking a plan. There are several challenges that EMS/911 face when developing, maintaining, and resourcing business continuity plans, perhaps none more paramount than the high cost of readiness, especially for situations such as the COVID-19 pandemic. EMS and 911 organizations typically operate on thin budgets while responding to emergencies, making the development and implementation of forward-looking plans challenging. In addition to a lack of time and money for the development of a business continuity plan, there are also limited and, at times, inconsistent resources to help in the creation of a plan.

There are more specific challenges facing EMS and 911 organizations while ensuring they have the funding available to operate, especially during a pandemic. COVID-19 required EMS/911 to adapt like never before in terms of patient care, and some of those activities and innovations were not considered reimbursable. While Federal relief funds did become available during the pandemic for EMS and 911 organizations, the relief was not consistent and often not available for EMS/911.

Potential solutions to these and other funding and business continuity challenges can be implemented at the Federal, national, State, and local levels to enhance the ongoing pandemic response and better prepare for future crises. The solutions described below are key examples and not an exhaustive list.

Funding and Business Continuity Challenges

Higher Cost of Readiness

When it comes to the cost of preparedness and the development of a business continuity plan, the challenge is broadly two-fold: it can be difficult for EMS and 911 organizations to make the time available (and therefore funding) to develop, maintain, and resource a plan, and the expertise for plan development is not always found internally within EMS/911 organizations. It can be difficult to make the value proposition for business continuity planning within these organizations, especially when considering what are typically existing thin budgets and other systemic barriers to keeping a plan up to date. While there are funds and grants available to EMS/911 for plan development and maintenance, many EMS and 911 organizations lack the expertise in grant pursuit, as well as how to actually build and resource a business continuity plan. When considering these high costs of readiness for business continuity planning, it is important to note that the COVID-19 pandemic introduced increased personnel costs. While expertise and funding are typically a challenge for business continuity, the pandemic made it nearly impossible for this kind of forward-thinking planning.

NPD-220927-001

Inconsistent Business Continuity Planning/Guidance

The inconsistency of EMS and 911 business continuity planning often comes from inconsistent knowledge of resources available to fund and aid in the development of a plan. This often stalls the process before a plan can start to be established. If a plan has been developed within an EMS or 911 organization, additional challenges exist to review and update the plan on a consistent basis. Organizations can fall into the trap of only reviewing business continuity plans when a disaster strikes, often revealing outdated or non-resourced plans. While it is difficult to plan, it cannot be understated that the pandemic was unprecedented and therefore made many good plans useless or severely limited their effectiveness.

Innovations for Patient Care Not Reimbursed

While business continuity planning is important, the pandemic brought on whole new challenges for EMS/911 in continuing to conduct business, as much of the pandemic innovation these organizations took on were outside the typical business as usual. The unprecedented nature of the COVID-19 pandemic led to reduced calls for service for EMS and 911, as the public stayed home more and fewer accidents and emergency response events occurred. When EMS/911 started taking on new roles as the pandemic required, innovations in patient care (such as vaccine administration) were not easily reimbursable activities, at times not reimbursable at all. Changes in billing requirements or the use of waivers were often inconsistent and confusing. The relationship between a business continuity plan and the new ways of doing business that COVID-19 required for EMS/911 should not be understated, but many of the challenges brought on by the pandemic would have been difficult to foresee during the planning process.

Reimbursement Limitations

- EMS agencies were encouraged/directed to not transport low-acuity patients to local emergency rooms
- Many agencies did this effectively and safely, with high patient satisfaction, but were not compensated for the lost transport revenue
- Community paramedicine continues to demonstrate excellent patient outcomes and reduction in acute care utilization, but is often not eligible for reimbursement

Inconsistent Distribution of Federal Relief Funds

While other emergency care organizations were targeted for Federal relief funds, EMS and 911 organizations were not included due to their Federal designation. As discussed throughout this white paper and identified in the cross-cutting themes section of this white paper, the lack of priority designation for EMS/911 continually affected their ability to operate throughout the pandemic. In addition, State allocations of funds were not always consistently distributed, adding an additional challenge and time-intensive task for EMS and 911 to work through during the pandemic.

Funding and Business Continuity Solutions

Federal Government Agencies

Federal Government support for helping EMS and 911 organizations manage health emergencies like a pandemic can be summarized simply: Focus on coordination and innovation. Additional coordination would help further if reimbursement policy aligned more appropriately to reflect the services provided to the public by EMS/911 and the return on investment for those services, especially during health emergencies like a pandemic. In addition, outside of payment for services, the Federal Government can better align how relief funding is dispensed to EMS and 911 organizations. Primary relief funding for EMS should be modeled for financing relevant to the encounter data formulary to properly help organizations in the field.

Section 1861(s) of the Medicare and Medicaid Act of 1965 describes ambulance services as a transportation benefit and section 1834(l) establishes the fee schedule for ambulance services. Community paramedicine services that became prevalent during the COVID-19 pandemic are not covered under the provisions of this statute (CMS Frequently Asked Questions on Medicare Fee-for-Service Billing) and would require a new benefit. Revising the existing law to include community paramedicine services may present a similar opportunity to include ambulance services as a "healthcare with transportation benefit," and could include language that establishes the paramedic practitioner as an "other qualified healthcare professional" that could bill at a higher rate.

The Center for Medicare and Medicaid Services is in the process of trying to realign payment schedule with realistic changes in operating costs. However, CMS has indicated cost data from ambulance providers/suppliers on the cost of providing ambulance services is limited. The majority of ambulance organizations enrolled in Medicare are suppliers but are not required to submit cost reports. Section 50203(b) of the Bipartisan Budget Act of 2018 required CMS to finalize regulations for a ground ambulance data collection system. The system is required to collect cost, revenue, utilization, and other information with respect to providers and suppliers of ground ambulance services to evaluate the extent to which reported costs relate to payment rates. CMS will be selecting ground ambulance organizations to support this initiative beginning early 2023. Data collected during this reporting period will be supplied to the Medicare Payment Advisory Commission to prepare a report for Congress on the adequacy of payment rates for ground ambulance services with considerations for geographic variations that factor in the cost of furnishing those services.

These kinds of solutions tie into the innovation required of the Federal Government to better support EMS/911 during health emergencies like a pandemic. While funding support is vital, additional strategic support to aid in service innovations would also benefit EMS and 911 organizations in the long-term. A framework for helping providers understand, support, and compensate innovation based on advances from the field during the COVID-19 pandemic would help EMS/911 be as impactful as possible in the community while surviving as a business. This framework should also articulate the value proposition of such innovative new services, making new ways of doing business more attractive for various EMS and 911 organizations.

NPD-220927-001

National and International Associations

There is a significant role for national EMS and 911 organizations to better prepare EMS/911 for future health emergencies like the COVID-19 pandemic.

> **Funding and Reimbursement Innovations**
>
> - Change the reimbursement model for EMS to pay for the ***response*** and ***disposition***, even if the patient is not transported
> - State governments should designate EMS as an essential service, with service levels and funding determined by local governments

From a financial perspective, the responsibility is two-fold; (1) provide recommended methods for direct reimbursement for services outside of typical healthcare revenue streams, and (2) develop financial stress tests for EMS and 911 organizations to better prepare them for future serious healthcare events. While the Federal Government can take significant steps to coordinate and align funding for EMS/911, national groups can help EMS/911 organizations move through red tape to establish faster and direct reimbursement for services they are providing outside of their usual scope in the field (e.g., telemedicine, services performed in non-traditional locations). As national associations have insights coming from across the country (and sometimes the world), they are in an ideal position to develop stress-test scenarios to determine preparedness of EMS and 911 organizations. This may reflect a future pandemic or other health emergency that shuts down business as usual.

National organizations are also in a position to educate EMS/911 in preparation for future serious health events and aid in their business continuity planning. As noted in the challenges section of this chapter, many EMS and 911 organizations lack experience to pursue funding and develop forward-looking plans. Education for administrators in (1) business modeling, (2) the development of a guide to funding options, and (3) minimum requirement doctrine for EMS/911 business continuity planning would be very beneficial for these organizations. Grouping together education on how to develop a continuity plan, along with the tools to understand financial forecasts, and a go-to list of potential funding sources, can help EMS and 911 organizations fortify their services in the face of future health emergencies like COVID-19.

State Government and Associations

Collaboration is the focus area for State entities supporting EMS and 911, acting as a convener to realize solutions across the board for EMS/911 organizations during health events like the pandemic. While national organizations are able to stress-test EMS organizations, State organizations may be in a better position to coordinate annual joint training and exercises among frontline workers and disciplines. This training should be required and help align services amongst organizations most vital to responding to significant health emergencies. Based on this training, State organizations can aid in opening channels of communication within the healthcare system that are blocked or stifled to ensure service and mission alignment. As part of annual training, best practices and lessons learned should be documented to help inform these communication channel updates to make frontline workers even more effective during future events. This kind of State support not only helps EMS/911 organizations stay afloat during times of uncertainty like the pandemic, but also supports a key theme of partnership development with other frontline services. The State role in EMS/911 funding and business continuity solutions also includes efforts to streamline and address State statutory and regulatory issues related to the reference innovation EMS and 911 organizations took on during COVID-19. While the Federal Government and national

associations also have a role here, States can also provide support by ensuring there are no State or local challenges blocking payment for these services.

Local Government and Organizations

As noted in this white paper, the local level effort to overcome the identified challenges in each chapter is vital to ensure solutions are designed with the specific community in mind. To help local EMS and 911 organizations overcome funding and business continuity issues, it would be beneficial for EMS/911 leaders to receive specific leadership education on business management and plan for the organization's future. In addition to this training, local governments and organizations can assist with defining an EMS/911 readiness roadmap with defined stages of response readiness based on various healthcare events. The roadmap can build on guidance coming from other stakeholders (such as national support referenced in this chapter) and include a level of detail specific to the community. This solution may require a local government organization to act as a convener across first responder organizations. Local government and organizations can also help direct technical assistance to smaller EMS/911 services to help with business continuity and funding during serous healthcare events like the COVID-19 pandemic.

Solution Roadmap

- **The Federal Government** is the top-level coordinator for EMS and 911 organizations, providing high-level guidance through a single source that collects information from all branches of Federal Government impacting EMS and 911. The Federal Government not only provides guidance from experts as a convener, but also uses lessons learned and best practices from stakeholders around the country to inform innovative practice opportunities for EMS and 911 organizations.
- **National organizations** provide top-level templates to develop business continuity plans, education modules for leadership, and coordination of funding opportunities for EMS and 911 organizations. In addition, they can provide feedback on best practices collected nationally to inform new revenue streams and provide a financial stress test on EMS/911 to simulate unprecedented healthcare emergencies. National organizations also provide guidance to State EMS offices in cost-of-services data reporting.
- **State governments and organizations** are conveners amongst other State frontline organizations, responsible for organizing business continuity exercises and identifying opportunities to remove communication barriers between frontline organizations like EMS and 911. State governments and organizations also support ensuring cost-of-services data of ground ambulance services are compliant with CMS cost reporting standards.
- **Local governments and organizations** are responsible for ensuring any used templates for business continuity are aligned with the specifics of their community, and to ensure EMS and 911 leadership are trained on best business practices for their organizations.

PRESERVING ACUTE CARE RESOURCES

The Metropolitan Area EMS Authority in Fort Worth, Texas, developed and implemented a COVID-19 non-transport policy to respond to increased calls. Patients with low-acuity signs and symptoms were denied transport to emergency departments, even if they requested transport.

At the height of the pandemic, up to 15 patients per day were not transported to emergency departments under this protocol.

System-wide adoption of similar, medical director approved protocol (with quality assurance review) can help preserve acute care resource utilization and enhance patient outcomes. However, to be effective long-term for EMS/911 organizations, such protocols need a defined reimbursement mechanism.

NPD-220927-001

Challenges	Solutions
Rapid changes in **scope of practice** ▪ Increase in non-traditional roles/ practice ▪ Working in alternate environments ▪ Lack of resources for adaptation (time, staff, training, equipment) Inconsistent and changing **guidance/ crisis standards** ▪ Too rapid versus too slow ▪ Confusion surrounding responsibility/ applicability (EMS/911 versus general public) ▪ Inconsistent distribution of guidance ▪ Several Federal and national sources **Communication breakdown** between organizations ▪ Inaccurate or misleading information ▪ Lack of communication among frontline organizations and to other levels **Difficult decision-making** regarding innovative care and clinical/treatment standards/requirements ▪ Standards/requirements lag operational advances ▪ Uncertainty surrounding financial and other consequences	**Federal** ✓ Establish centralized source for operational guidance/ recommendations/best practices/data ✓ Develop national standards for EMS/ 911 pandemic response **National** ✓ Develop universal information-sharing mechanisms ✓ Develop position statements on national standards/recommendations implementation **State** ✓ Improve coordination between EMS/ 911/State health departments ✓ Develop implementation guidance for national standards/recommendations ✓ Participate in EMS compact **Local** ✓ Develop interdisciplinary healthcare coalitions to share information ✓ Support medical directors' development of organizational clinical standards

Lead Roles for Implementation of Solutions	
CDC CPR and NIOSH	**National and International Associations**
HHS ASPR	**State EMS Medical Directors**
NHTSA OEMS	**State and Local Emergency Management**
FICEMS and NEMSAC	**State Public Health Departments**

EMS and 911 practitioners routinely must adapt to the pressures, requirements, and demands of their operating environments to provide patient care in emergency situations. Over time, standards and scopes change in response to the changing nature of the work but associated operational changes may be years in the making to reach across the EMS/911 community. For this section, operational countermeasures include adaptations by EMS/911 practitioners and organizations in the tools of the trade to appropriately respond to the changing COVID environment, such as the following.

- Clinical and dispatch protocol
- PPE/decontamination
- Medicine
- Data/information
- Crew structure
- Response schemes
- Triage policies
- Alternate transport destinations
- Treatment-in-place
- Telemedicine
- Patient offload times

During the COVID-19 pandemic, operational challenges requiring changes to how EMS/911 work was done arrived rapidly and in sometimes overwhelming numbers. The EMS/911 workforce faced challenges in quickly changing their roles and scope of practice, interpreting and leveraging uncoordinated guidance, maintaining high-quality care with limited support and equipment, and continually making very difficult decisions to provide the best possible care in an ongoing national health crisis.

Potential solutions to these and other operational countermeasures challenges can be implemented at the Federal, national, State, and local levels to enhance the ongoing pandemic response and better prepare for future crises. The solutions described below are key examples and not an exhaustive list.

Operational Countermeasures Challenges

Rapid Changes in Scope of Practice

To address the rapidly changing challenges and demands of responding to the pandemic, EMS/911 practitioners' scope of practice also changed rapidly. Roles and practices less familiar became commonplace, such as administering vaccines, increasing remote connections with patients (e.g., telemedicine), heightened infection control, and frequent decontamination activities. Conducting the response to the pandemic also brought EMS practitioners to different work environments more frequently, such as ad-hoc vaccination facilities, staffing emergency operations centers, and delivering patients to destinations other than hospitals. Unfamiliarity with such practices and environments can lead to excess stress and fatigue. In addition to the added stressors of unfamiliar scope of practice, available resources to meet the new demand were lacking and dwindling, especially in time, staffing, training, and equipment. For example, EMS practitioners were accepting employment offers in other clinical settings (e.g., hospitals, clinics, urgent care facilities) and leaving the EMS profession.

Inconsistent and Changing Guidance/Crisis Standards

A major challenge for EMS/911 in adapting operational countermeasures in the pandemic response has been the myriad of inconsistent and changing guidance and crisis standards. Often, new guidance was delivered too rapidly for practitioners to adopt, which added frequent confusion to operations. When guidance was not

NPD-220927-001

changing rapidly, it sometimes was conversely too slow to appropriately address the dynamic response environment. Additional confusion surrounded the responsibility and applicability of new or updated guidance. For example, there was confusion whether guidance from Federal agencies applied to EMS/911 operations and practitioners, the general public, or both. Similarly, EMS/911 practitioners encountered confusion regarding who was responsible for enacting new guidance. The distribution of guidance and crisis standards was also inconsistent. Appropriate information often did not reach those who needed it most, and delivery mechanisms varied between jurisdictions and disciplines. The uncoordinated multitude of different Federal, national, State, and local sources for guidance and crisis standards compounded all of these challenges.

Communication Breakdown Between Organizations

As seen across challenge themes of the subchapters in this section of the white paper, the breakdown of communication between organizations hindered improvements in operational countermeasures, as well. Inaccurate or misleading information regarding changes in operational strategies directed organizations toward erroneous or ineffective practices. Poor communication among frontline organizations responding to the pandemic prevented rapid adaptations from being realized across jurisdictions and disciplines.

Difficult Decision-Making Regarding Innovative Care and Clinical/Treatment Standards/Requirements

EMS/911 organizations in normal circumstances often are required to make difficult decisions in emergency situations to provide the highest quality care possible to patients. During the pandemic, difficult operational decisions needed to be made more frequently. Innovations in delivering that care may develop rapidly and enhance patient outcomes yet are sometimes at odds with clinical or treatment standards or requirements. Such standards or requirements of care naturally take time to develop following operational advances from the field. Uncertainty regarding potential consequences (e.g., reimbursements not approved, activities ineligible for payment or reimbursement, lawsuits) for choosing innovation over standards or requirements has been a challenge for EMS/911.

Operational Countermeasures Solutions

Federal Government Agencies

Appropriate Federal agencies can support advances in operational countermeasures by establishing a centralized source for operational guidance for EMS/911, including recommendations, best practices, and data that practitioners can readily access and leverage. This centralized source would drastically cut down the levels of confusion surrounding changing EMS/911 guidance and standards. Federal EMS/911 stakeholders should collaborate through FICEMS to develop national standards for EMS/911 pandemic response based on the experiences of practitioners throughout the pandemic.

National and International Associations

With so many different jurisdictions, disciplines, and areas of responsibility, EMS/911 practitioners need a streamlined way to share information on operational countermeasures. National and international EMS/911 associations should work together to develop universal information-sharing mechanisms for operational countermeasures. In addition, associations should support their constituents' involvement in the development

NPD-220927-001

and implementation of national EMS/911 standards and recommendations by developing position statements on such national doctrine.

State Government and Associations

As with other State solutions to challenges in this white paper, State governments and their EMS/911- relevant associations should strive to improve the coordination between EMS/911 organizations and State health departments. Disconnects between such organizations can be drastically reduced by State coordination and collaboration to appropriately spread advances in EMS/911 operational countermeasures. For the national standards and recommendations developed by Federal agencies and association partners, State- level organizations should develop implementation guidance for EMS/911 organizations in their jurisdictions. Additional advances in operational countermeasures can be found for those States participating in the EMS Compact. State governments should work together (through the Compact and other means of collaboration) to increase consistency of EMS/911 practices across States.

Local Government and Organizations

Local government and EMS/911 organizations are well-placed to address operational countermeasures challenges by developing interdisciplinary healthcare coalitions to appropriately share information regarding innovations and changes in standards of care among EMS/911 organizations in their areas of responsibility. Local organizations can also leverage existing healthcare coalitions that have been established by Federal entities, such as HHS ASPR. Local governments should also support their medical directors' autonomy in developing their own organizational clinical standards. This would allow for flexibility in adopting innovative operational countermeasures more rapidly.

Solutions Roadmap

- **The Federal Government** is an organizer, establishing a centralized source for operational guidance for EMS/911, including recommendations, best practices, and data that practitioners can readily access and leverage.
- **National organizations** should work together to enable a universal information-sharing mechanism for operational countermeasures.
- **State government and organizations** should focus on enabling collaboration between EMS/911 and State health departments, as well as developing implementation guidance for EMS/911 organizations in their jurisdictions.
- **Local government and organizations** can help EMS and 911 organizations innovate by developing interdisciplinary healthcare coalitions to appropriately share information regarding innovations.

ADAPTING BUSINESS STRATEGIES TO ADRESS CHALLENGES

At the height of the COVID-19 pandemic, many counties across the Nation experienced widespread shortages of PPE for EMS practitioners. The Alameda County (CA) Emergency Medical Services Agency experienced the same shortages and took action to remedy the challenge by getting into the supply and distribution business.

The agency established itself as the central point for PPE and other COVID-19 response material (testing supplies, medications, disinfectant wipes, hand-sanitizer, etc.) procurement, storage, warehousing, and dissemination to the first responder and healthcare community in the county. This helped relieve the pressures of inadequate PPE supplies throughout the county.

In major healthcare crises such as pandemics, EMS/911 organizations can address or fend off complex logistical challenges by adapting systems-based approaches such as applied by Alameda County.

Challenges

Inconsistent guidance

- Administration of vaccines
- Reimbursement for vaccine distribution and administration
- When to leave/return to work
- Who should be tested and vaccinated
- Discrepancy between provider, pharmacy, and practitioner guidance

Availability and supply chain of vaccines and testing for practitioners

- Prioritization for EMS/911 workforce
- Limited resources to increase testing
- Medical logistics

Delays and reductions in workforce

- Under-vaccinated workforce
- Vaccine reaction downtime
- Tracking vaccine status
- Legal ramifications
- Clashing of values and mandates

Mis- and disinformation influence on workforce protections

- Lack of single authoritative source for EMS/911/fire workforce
- Distrust of information provided
- Validating vaccine status
- Perception of immunity

Solutions

Federal

- ✓ Define lead Federal spokesperson
- ✓ Establish central Federal information- sharing resource
- ✓ Improve transparency regarding availability and supply chain of vaccines and testing for practitioners

National

- ✓ Coordinate messaging across associations and with States
- ✓ Develop guidance on return-to-work recommendations and supply chain
- ✓ Support update of national infection control standards

State

- ✓ Improve integration of EMS/911 across healthcare and coordination with public health
- ✓ Update scope of practice and associated training to include administering vaccines

Local

- ✓ Establish relationships and mutual aid agreements
- ✓ Provide education on benefits and rationale

Lead Roles for Implementation of Solutions

CDC CPR
HHS CMS
OSHA
NHTSA OEMS
FICEMS and NEMSAC

National and International Associations
State EMS Medical Directors
State and Local Emergency Management
State Public Health Departments

While some of the vaccine and testing challenges faced by EMS and 911 organizations during the COVID-19 pandemic were unique, others are challenges that much of the world has faced since tests and vaccines became available. Specifically, and as echoed throughout this white paper, EMS/911 often found themselves not prioritized for either vaccines or tests, making the challenges of patient care during a pandemic much more complicated. In addition, some EMS/911 personnel were influenced, like many people, by rampant mis- and disinformation about vaccines and tests, causing vaccine and testing hesitancy and refusal. More specific to EMS and 911 organizations, they faced a variety of challenges in working through inconsistent guidance from several stakeholders on a number of topics, from vaccine administration (to patients and providers) to reimbursement procedures for the service. Finally, EMS/911 also dealt with challenges related to a lack of available personnel to provide service.

Potential solutions to these and other vaccines and testing challenges can be implemented at the Federal, national, State, and local levels to enhance the ongoing pandemic response and better prepare for future crises. The challenges and solutions described below are key examples and not an exhaustive list.

Vaccines and Testing Challenges

Inconsistent Guidance

Guidance Awareness

- EMS is listed in the definition of healthcare personnel under CDC and OSHA guidelines
- EMS is under the CDC and OSHA enforced guidelines for vaccines
- There is a lack of education for EMS agencies on these guidelines

As noted, some of the inconsistent guidance that EMS and 911 organizations received was similar to inconsistent information many people faced during the pandemic. Inconsistent information for how to decide when to stay home or go to work based on specific symptoms without the confirmation of a test was challenging for decision-making in EMS/911 organizations. In addition, information changed as the pandemic evolved on when it was safe to return to work following a COVID-positive case, increasing complexity for EMS/911 workforce planning. During earlier periods of the pandemic, when tests and vaccines were not as readily available, there was also considerable confusion on who should be tested and vaccinated. When guidance was developed to prioritize different groups, the administration of that guidance varied between States. State and local agencies developed their own policies, such that EMS/911 workforces were prioritized differently between jurisdictions. Though EMS and 911 organizations were on the frontline of the COVID-19 response, they were not afforded consistent guidance on when to test or when to vaccinate, again making planning harder. EMS/911 organizations' decisions to follow hospital-related guidance versus EMS/911 guidance also confused matters.

EMS and 911 organizations also struggled with inconsistent guidance when using the vaccine in the field, whether it concerned their role for administering vaccines to patients or providers, receiving reimbursement for vaccine distribution and administration, or coordination with providers, pharmacies, and practitioners. As noted in this white paper, EMS/911 adapted to the pandemic to best serve the patient, becoming part of an unprecedented vaccine rollout program, often taking on new roles to ensure vaccines were available and used in areas across the country. While EMS and 911 were prepared to act, unified guidance on how to work with vaccines in the field did not come until later in the pandemic. Misinformation about the development and use of the vaccines added to the challenges for many EMS and 911 organizations.

Though inconsistent and rapidly changing guidance was a frequent concern for EMS/911 organizations during the pandemic, it should be noted that policies, recommendations, and guidance naturally change—and should be expected to do so—along with the science of responding to such public health emergencies.

Availability and Supply Chain of Vaccines and Testing for Practitioners

As echoed throughout this white paper, vaccine and testing challenges appeared for EMS/911 because of lack of prioritization for these organizations. During earlier portions of the pandemic when vaccines and tests were not as readily available, EMS/911 struggled to serve their communities because they were not included in the front-line prioritization for the pandemic response. In addition, EMS/911 also dealt with general lack of resources to increase testing and more safely work with patients during the COVID-19 pandemic. While more details on supply chain challenges can be found in the Supply Chain chapter, the availability and timing of arrival for vaccine and testing kits made workforce planning a difficult task.

Delays and Reductions in Workforce

Delays and reduction of EMS/911 workforce were to be expected during a pandemic, but specific challenges related to vaccinations and testing significantly impacted staff availability in EMS/911 organizations. In some cases, agencies trended a decreased in staff available for field work as some workers separated from the agencies because they were unable to receive the vaccination or chose not to be vaccinated. In other cases, agencies trended daily fluctuations in staffing numbers due to the downtime associated with vaccination side effects experienced by those volunteering to be vaccinated. It should also be noted that inconsistencies in tracking vaccination status (especially when boosters became available) also contributed to fluctuations in daily staffing numbers. The chaos of the pandemic response made vaccination tracking even more difficult, which resulted in situations where there was confusion about a staff members' vaccination status. Without proper documentation of a staffer's vaccination status, leaders often had to confirm a staffer's status before putting a staffer into service. Confirmation steps created further delays in beginning daily operations activities. Moreover, because of State and local mandates regarding the vaccine were multivariate, EMS/911 organizations found it times difficult to track compliance, especially in cases when agencies were required to comply with different vaccine mandates as implemented by municipalities, hospitals, long-term care facilities, etc.. Finally, challenges existed at the person-to-person level for EMS and 911, as varied opinions could create conflict. These kinds of challenges are difficult to plan for but can be incredibly impactful in how EMS and 911 organizations conduct business.

Mis- and Disinformation Influence on Workforce Protections

In line with the inconsistent guidance EMS and 911 organizations received from trusted sources, some staff were also significantly impacted by mis- and disinformation. Part of this challenge was due to the lack of a single authoritative source for information on vaccines and testing for EMS/911. Without a trusted source, challenges to testing and vaccination grew in line with a level of distrust in information that was provided to EMS and 911 organizations, leaving the doors open to disinformation from resources unqualified to inform EMS/911 operations. Because some workers were influenced by this disinformation, some EMS/911 organizations found challenges in validating the vaccine status of their workforce. Some workers, who operated under false information about the pandemic and the vaccine, were willing to be dishonest about their vaccination status. This made operations during the pandemic even harder.

Vaccines and Testing Solutions

Federal Government Agencies

Defining a lead Federal spokesperson to serve as the primary source of information for EMS/911 organizations would reduce confusion around workforce planning and recommended vaccine and testing procedures. Additionally, establishing a central Federal information-sharing resource and improving transparency regarding the availability and supply chain of vaccines and testing for practitioners would allow for more decisive and informed decision-making in the field.

National and International Associations

National level associations should coordinate their messaging through their memberships, based on national recommendations, to reduce inconsistencies in guidance and information for EMS/911 organizations. Convening a group to recommend updates to NFPA Section 1582 on Health and Safety and Section 1581 on Infection Control would support necessary changes to the national infection control standards. Finally, national and international associations should collaborate on developing return-to-work guidance and recommendations for dealing with supply chain disruptions. This guidance would help EMS/911 organizations improve their workforce planning efforts. In a pandemic, this will constantly change based on evolving evidence. Guidance developed for EMS/911 should be consistent and aligned with standard contingency and crisis guidelines made available for healthcare personnel.

State Government and Associations

Broadly, States need to improve the integration of EMS/911 into the larger healthcare system and increase coordination across disciplines of public health. Close integration with and understanding of emergency management is crucial. Additionally, updating the scope of practice to include the administration of vaccines would ensure that this role for EMS agencies is in place ahead of future large-scale pandemic events like COVID-19. This is essential, along with education and training on the vaccines. Community participants may have questions, and States need to be able to answer them. This is especially important for all vaccines and for care in the world of community paramedicine and mobile integrated health.

Local Government and Organizations

Proactively establishing relationships and mutual aid agreements between local organizations and governments would create a social safety network through which resources and information can be shared to combat issues of inconsistent guidance, availability and supply chain of vaccines and tests, and workforce. Providing education at the local level on the benefits and rationale of received guidance and recommendations on workforce protections may insulate personnel from the influence of mis- and dis-information. Regular engagement with emergency management and response disciplines will ensure that the response agencies are comfortable working with each other *before* the emergency.

Solutions Roadmap

- **The Federal Government** serves as the primary information source by defining a role for a central information-sharing resource to improve transparency about the availability of vaccines and testing for EMS/911 practitioners.

NPD-220927-001

- **National organizations** coordinate their messaging and guidance with States and collaborate on updates to national infection control standards, return-to-work guidance, and recommendations for dealing with supply chain disruptions.
- **State governments and organizations** integrate EMS/911 into the larger healthcare system and increase coordination across disciplines of public health.
- **Local governments and organizations** are responsible for proactively establishing relationships and mutual aid agreements amongst themselves and providing education on the benefits and rationale of workforce protections guidance to their personnel to combat mis- and dis-information.

Appendix A. References

The following are key references that informed the development of this white paper and include context for EMS and 911 response to the COVID-19 pandemic that may be helpful to EMS and 911 organizations.

Federal Documents and Websites

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Appendix B. Methodology

FICEMS developed this white paper through research, stakeholder engagement, and analysis of the results of those efforts, with support from its Technical Working Group (TWG) and additional subject matter experts. The major sources of input for this white paper were the eight listening sessions FICEMS hosted with the EMS/911 community and stakeholders from October 2021 – March 2022. Participants in the listening sessions included representatives from Federal agencies, SLTT government, EMS/911 agencies, national and international associations, nonprofit organizations, and private industry. Contractual support to FICEMS for the development of the white paper was provided by Energetics.

Research

FICEMS conducted research into public sources to gather data, records, and publications related to the national COVID-19 response and its impact on EMS/911. This research was leveraged to plan for, prepare for, and conduct the listening sessions, including determining discussion topics, participants, and focus questions. References and supporting material were submitted to FICEMS by listening session participants and subject matter experts throughout the white paper project.

Listening Sessions Process

Each listening session followed a similar virtual format, had 40–50 participants, lasted for 3.5 hours, and was facilitated by a neutral third-party (Energetics). Each listening session focused on the challenges faced by EMS/911 organizations during the pandemic response regarding one of eight topics (as seen on the right), and potential solutions to address those challenges.

Topic	Date
Workforce	Oct. 27, 2021
Supply Chain	Nov. 10, 2021
Data and Information	Dec. 1, 2021
Education	Dec. 15, 2021
Collaboration and Coordination	Jan. 12, 2022
Funding and Business Continuity	Feb. 2, 2022
Operational Countermeasures	Mar. 1, 2022
Vaccines and Testing	Mar. 30, 2022

The listening sessions began with opening remarks and context for all participants, followed by two concurrent breakout sessions to discuss major challenges and potential solutions. The breakout sessions covered the same material but were established to have smaller groups for more in-depth conversations. See below for an example agenda slide from the education listening session held on December 15, 2021.

Per listening session topic, overarching themes of major challenges faced by the EMS/911 community were offered to begin the breakout discussions. Participants offered their perspectives on the themes and offered additional context or topics they felt were important to the discussion.

NPD-220927-001

Listening Session Agenda Example – Education Listening Session

Agenda

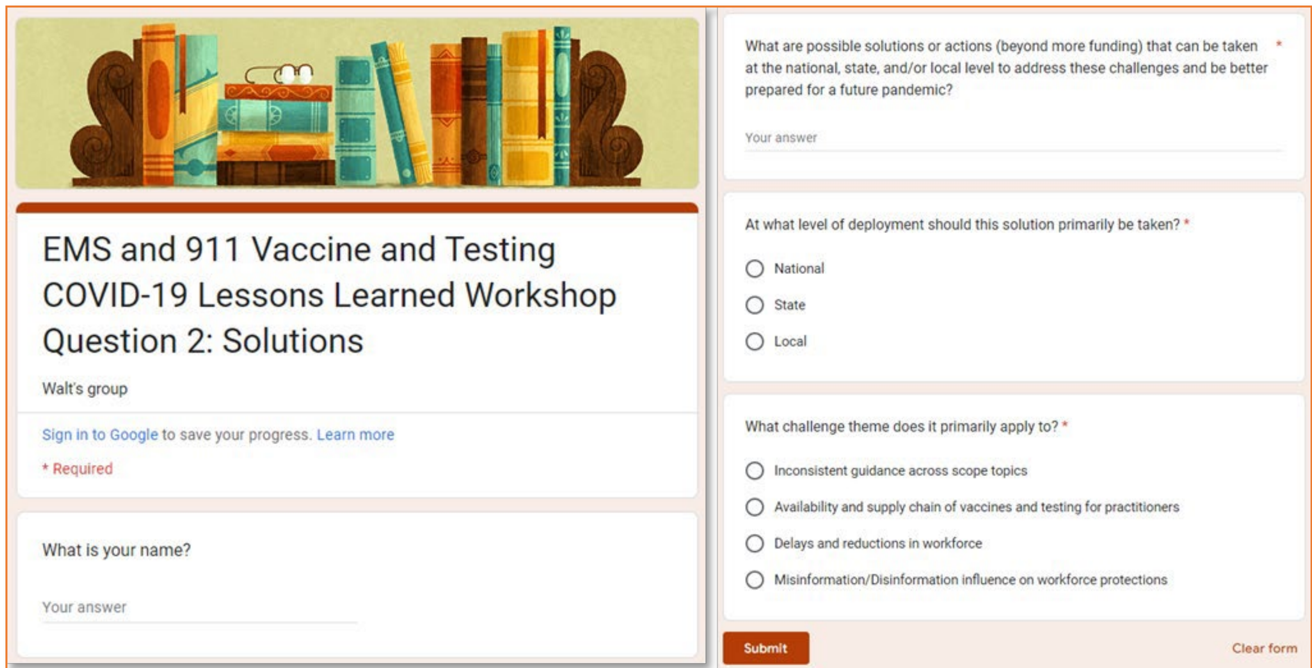
<table>
<tr><td>1:00pm</td><td>Welcome and Introductions</td><td>NHTSA OEMS</td></tr>
<tr><td>1:05pm</td><td>Session Objectives and Scope</td><td>Walt Zalis, Energetics</td></tr>
<tr><td>1:15pm</td><td>Facilitated Discussion: EMS and 911 Education Challenges</td><td rowspan="4">Walt Zalis/Marc Sigrist, Facilitators, Energetics</td></tr>
<tr><td>1:45pm</td><td>Facilitated Discussion: Education Solutions</td></tr>
<tr><td>2:45pm</td><td>Prioritization of Discussed Solutions</td></tr>
<tr><td>3:00pm</td><td>Facilitated Discussion: Education Solutions Matrix</td></tr>
<tr><td>3:45pm</td><td>Report-out: Matrix Results</td><td>Walt Zalis/Marc Sigrist, Energetics</td></tr>
<tr><td>4:00pm</td><td>Next Steps and Wrap-Up</td><td>NHTSA OEMS</td></tr>
</table>

Federal Interagency Committee on Emergency Medical Services | 3

Following the discussion of challenges, participants were given the opportunity to provide potential solutions to address the challenges discussed by filling out an online form of questions. A link was provided to the participants on which to click and fill out the form. See below for an example online form from the vaccines and testing listening session held on March 30, 2022. Participants were asked to type a solution, identify at what level of deployment the solution should primarily be taken (i.e., national, State, or local), and identify to which challenge theme the solution applies for the listening session topic. Participants were encouraged to offer as many solutions as they wanted and given the opportunity to discuss the solution with the group for added context. The solutions and additional context were collected and included by the facilitators in a matrix of solutions to be discussed later in the listening session and taken into the listening session notes for future reference.

Prior to a discussion of the matrix of solutions, the participants were asked to prioritize all the solutions offered in the listening session. A separate online form was provided for all participants to choose the three most impactful solutions they believed would best address the challenges discussed. These results were collected by the facilitators to assist in the following discussion of the matrix of solutions.

Listening Session Data Collection Example – Vaccines and Testing Listening Session



EMS and 911 Vaccine and Testing COVID-19 Lessons Learned Workshop Question 2: Solutions

Walt's group

Sign in to Google to save your progress. Learn more

* Required

What is your name?

Your answer

What are possible solutions or actions (beyond more funding) that can be taken at the national, state, and/or local level to address these challenges and be better prepared for a future pandemic? *

Your answer

At what level of deployment should this solution primarily be taken? *

- National
- State
- Local

What challenge theme does it primarily apply to? *

- Inconsistent guidance across scope topics
- Availability and supply chain of vaccines and testing for practitioners
- Delays and reductions in workforce
- Misinformation/Disinformation influence on workforce protections

Submit

Clear form

To show the alignment of solutions offered by participants across levels of implementation and different challenge themes for the listening session topic, a matrix of solutions was populated by the facilitators for discussion with participants. See below for example solutions matrices from both breakout rooms of the data and information listening session held on December 1, 2021.

Participants could see their solution responses from the forms they filled out across rows of the different implantation levels, and columns of the listening session topic challenge themes. Prior to the listening session, example potential Federal Government solutions were included in the matrix per topic challenge theme. During the solution matrix discussion, participants were asked to provide additional context to solutions, and discuss potential solutions not offered before in the listening session to fill gaps in the solutions matrix. These discussions provided clarification and combining of solutions as well as opportunity for additional potential solutions to be added as participants engaged in discussion.

After participants discussed the matrix of solutions in their breakout groups, all participants were brought back together for a summary of solutions discussed and closing remarks. Across the eight listening sessions, notes collected from discussions regarding the challenge themes and the solutions matrices were foundational for the development of this white paper.

Listening Session Results Example – Data and Information Listening Session

Capability / Responsibility		**Solutions** per Challenge Theme			
		Resources (e.g., funding, personnel, time)	Sources of Truth (e.g., trusted sources)	Timeliness of Actionable Data/Information (e.g., mechanisms/capabilities)	Ability to Share (e.g., legal resolutions/agreements)
Capability / Responsibility	Federal Government Level	Expanded state and local-level data for NEMSIS (e.g., geographic data, local public health data)	Centralized reference for different types of EMS/911 data/information (e.g., operations, public health, etc.)	Streamlined guidance to EMS/911 organizations on reporting requirements	Data use agreement guidance for States, localities, Associations
		NEMSIS-like system for EMS/911 operational data			
	National Level (Associations)	Create a National EMS data application comparable to eNFIRS application used by the USFA.	Coordinate who collects what data and reduce double/triple or inconsistent reporting.	Make the changing of data more agile in an interoperable way that can be exported.	Setting a national standard that hospital EMRs and Dispatch software must be compatible for communication.
		Improve the national dataset to capture gaps in the data.	**Further empower NEMSIS to take the lead in creating data standards for both EMS and interoperability.**	Provide more support to states for data collection and sharing.	Create a glossary of data terminology and venn diagrams about types of information.
		Push NEMSIS analytics and information out to the local agency level to promote a desire to provide better data.			**Better communication and collaboration across healthcare.**
		Leadership and coordination towards consistency and regular training, education, and feedback for improving the system.			**Create a national data sharing agreement that allows sharing of enough detail that can be easily ramped up.**
					Ensure technology companies play by the rules laid out by Agencies and not the other way around.
	State Government Level	State-level data has not been helpful; resources needed to ensure data submitted is helpful and useful. Currently a black hole.	Allow more specific data to be shared.	Education on the "why" and benefits of data collection for medics and agencies. (Webinars with CEUs)	As data becomes available, need ways to publish faster; push in this direction.
		Guidance on training to provide, resources to produce.		**Develop ways to make state and NEMSIS data collection processes be less 'punitive' and more meaningful.**	
		Provide state level folks a educational module on "what they don't know" - a "czar" in each state that looks in other parts of state gov/review existing resources/see where efficiencies are and what needs to be communicated to work together and pool resources to be more impactful. Real vs. marketing.		Same data collection mode for all to access, allowing for all to add data as it comes in on the same platform.	
	Local Level	Education on the "why" and benefits of data collection for medics and agencies.	Establish an EHR in the industry that tracks the internal health of responders	Need reasoning to why they need to share data beyond just the local fire department, and show how that can be used to impact local, regional, beyond analysis.	
		Return results directly to clinicians so they know their work matters.	what information is needed and why is it needed - that question needs to be answered at this level?		
		Place more focus on the benefits to the end-users of the data.			

Capability / Responsibility		**Solutions** per Challenge Theme			
		Resources (e.g., funding, personnel, time)	Sources of Truth (e.g., trusted sources)	Timeliness of Actionable Data/Information (e.g., mechanisms/capabilities)	Ability to Share (e.g., legal resolutions/agreements)
Capability / Responsibility	Federal Government Level	Expanded state and local-level data for NEMSIS (e.g., geographic data, local public health data)	Centralized reference for different types of EMS/911 data/information (e.g., operations, public health, etc.)	Streamlined guidance to EMS/911 organizations on reporting requirements	Data use agreement guidance for States, localities, Associations
		NEMSIS-like system for EMS/911 operational data			
	National Level (Associations)	Allow funding for EMS for rapid testing / telemedicine / alternative care -- this then allows further sharing of data in a community without ED transport	Standard data points (w/ consistent phrasing) across vendors to improve data accuracy	Support for streamlined guidance	**ONC to tackle directly national EMS standards that force convergence of solutions between healthcare and EMS, tied to reimbursement**
		Develop a national standard set of EMS elements pertinent to an infectious agent that could be collected to characterize the patient population, infection geographic locations and local EMS resources employed to address the issue.	[#1] Clarify that EMS, hospitals, and clinics can share data without HIPAA concerns with respect to patient status (COVID and future disease "x").		Fed government - sponsor a project that establishes standard for data related to pandemics or any type of health concern situations
		More required and less optional choices for Data. Optional choices will be left blank	Communication standards and data dictionaries specifically for pandemics (but could branch to other topics like infectious disease, severe weather response, active shooter events)-- set a common language and performance standards at the national level for providers, across agencies.		**National healthcare registries: send all the data to single central point to obviate many-many issues (model EMS after existing national HC registries)**
		'EMS Wiki': guidance and links for where local EMS can go to request resources	'EMS Wiki': guidance and links on where to go for data/info		[#3] Healthcare data systems across the continuum of care should be formatted to provide rapid data exchange for specified data elements important to inform real-time healthcare and community safety decisions.
		Implication guidance for State/local EMS			
		Incentivize State/local implementation with affiliated group requirements (MUAs among services)			
	State Government Level	Design resource requests (from State EMA) with local level input/awareness	Provide education to local level about services state government can provide (break silos)	Automated data sources with real-time data and secure access (mitigate different philosophies in which entities focus on population health vs individual care)	**connection of EMS data systems to a health information exchange**
		Minimum standards applied to State/local			[#2] More integration between 911, EMS, and Hospital IT systems for continuity of care.
		Incentivize local implementation with affiliated group requirements (MUAs among local EMS)			MUAs
		Develop a playbook for EMS to make requests (which have to go through a lot of hoops)			
	Local Level	Pandemic Toolkit for EMS Providers	Education @local level Data Mgrs., etc.	More input from all local stakeholders (esp. local clinicians)	MUAs
		Reach out to state/national/feds to establish relationships before they're needed	Assessment of local data		
			Daily practice for where to go (e.g., to make a request for PPE)		

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