



EMERGENCY SERVICES SECTOR COVID-19 After Action Review

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Cybersecurity and Infrastructure Security Agency

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ACKNOWLEDGMENTS

The Cybersecurity and Infrastructure Security Agency (CISA) Emergency Services Sector Management Team (ES SMT) would like to acknowledge the many partners and organizations across the Emergency Services Sector (ESS) community for supporting the development of this document by participating in the project working group meetings and offering insights into their experiences and approaches to responding to the COVID-19 pandemic. The contributions of all who participated were invaluable toward the development of this document that we hope supports communities across the Nation in continuing to respond to, and prepare for, public health emergencies.



EXECUTIVE SUMMARY

The Emergency Services Sector (ESS) represents the Nation's first line of defense in the prevention and mitigation of risk from both intentional and unintentional manmade incidents, as well as from natural disasters. ESS functions support each of the other 15 critical infrastructure sectors and assist a range of organizations and communities in maintaining public safety, security, and confidence in the government by performing lifesaving operations, protecting property and the environment, assisting communities impacted by disasters, and aiding recovery from emergencies.



As the Nation's first responders, the ESS was critically involved in the response to the COVID-19 pandemic, with each sector discipline contributing essential services. Law enforcement provided security for healthcare facilities, managed an increase in public protests, engaged in community outreach to combat misinformation. Fire and rescue services stepped beyond their traditional roles, aiding in the setup of testing and vaccination sites, trained volunteers in pandemic healthcare support, and ensuring the distribution of crucial supplies. Emergency medical services (EMS) developed updated field triage protocols, collaborated with telehealth services, supported vaccination efforts, and shared crucial data with public health agencies. Public works departments maintained and sanitized public spaces, adapted building inspections and permitting procedures, and worked to expand broadband internet access for remote work and learning. Emergency management agencies developed strategies to support local businesses, facilitated interagency cooperation, and implemented virtual training for emergency teams. Though these efforts were not always successful and faced difficult challenges, the concerted efforts of these five disciplines were instrumental in the Nation's response to the pandemic.

As the intensity of the pandemic lessened in 2022, the Cybersecurity and Infrastructure Security Agency (CISA) Emergency Services Sector Management Team (ES SMT) established a working group of ESS government and private sector partners to examine the sector's response to the pandemic and develop lessons learned from its experiences. The working group began to conduct meetings in the fall of 2022, offering their pandemic response perspectives and experiences during several virtual meetings as well as in an online collaboration space open to working group participants.

The working group was focused on conducting deep-dive discussions regarding the ESS COVID-19 response, highlighting challenges faced by the sector and lessons learned throughout the response, surrounding several key topics:

- **General COVID-19 Response**
- **Logistics and Supply Chain**
- **Staffing and Capacity Needs**
- **Mental and Physical Health Impacts**
- **Communication, Collaboration, and Coordination**
- **Crosscutting Effects**
- **Preparedness and Guidance**

Throughout these discussions and associated data collection, participants frequently returned to common themes of challenges and lessons learned for the ESS response to the pandemic:

PERSISTENT CHALLENGES

The COVID-19 pandemic exposed and exacerbated several challenges within the ESS, such as PPE shortages, staffing issues (e.g., employee retention), and financial constraints. These challenges continue to impact ESS operations and should be addressed to better prepare for future public health emergencies.

COORDINATED GUIDANCE AND COLLABORATION

A lack of unified guidance and coordination across different levels of government and agencies led to confusion and inefficiency in the response. Improved communication, collaboration, and clearly defined roles and responsibilities are crucial for an effective response in future emergencies.

ADAPTATION AND INNOVATION

Despite the numerous challenges, ESS organizations demonstrated resilience by adapting and innovating throughout the pandemic. Such innovations developed in crises can be shared and implemented to enhance preparedness for future public health crises.

PLANNING AND TRAINING

The pandemic underscored the crucial need for comprehensive planning and targeted training for long-term response events. Prioritizing these aspects will enable the ESS to anticipate challenges, enhance cross-disciplinary collaboration, and ensure a robust and agile response in future emergencies.

WORKFORCE WELLNESS

The physical and mental health impacts of the pandemic on ESS personnel were brought into sharp focus. It is therefore imperative to address these impacts by providing adequate support systems for workforce well-being. This approach will not only protect ESS personnel but also contribute to the overall effectiveness and resilience of the sector.

This document provides a summary of the working group discussions, contributions from participants to the online collaboration space, and key references of associated research conducted by the CISA ES SMT. The following chapters are organized by the key topics of the working group discussions, each with a one-page summary followed by additional context.

1. GENERAL COVID-19 RESPONSE

Major Challenges

Uncoordinated guidance from federal/SLTT/private sector confused the response and reduced effectiveness.



ESS disciplines, SLTT governments, and federal agencies were given duties outside of their normal functions.



Misinformation (e.g., social media, news media, word of mouth) hindered delivering correct information to the workforce.



Challenges That Persist

Mental health and wellness of the workforce has been negatively affected by the pandemic and exacerbated long-standing staffing challenges.



Supply chain disruptions persist across the ESS and the potential for additional large-scale outbreaks in other countries threaten future critical equipment and supply availability.



Reimbursement limitations for pandemic response (e.g., not all expenditures associated with responding to the pandemic were reimbursable) have exacerbated financial stress on ESS organizations.



Lessons Learned

Whole of community approach to large scale emergencies works well.



Emergency response disciplines/organizations that work, plan, and exercise together are more effective.



Innovations and adaptations developed during the pandemic can continue and be shared.



Preparedness planning is imperative for effective emergency response.



1.1. MAJOR CHALLENGES DURING THE RESPONSE

The COVID-19 pandemic exposed several challenges within the ESS, one of which was the lack of coordinated guidance from various sources, including federal, state, local, tribal, and territorial (SLTT) authorities, as well as the private sector. This uncoordinated approach created confusion among ESS personnel, leading to a fragmented response and a reduction in the overall effectiveness of their efforts. Inconsistent or conflicting directives from different agencies further compounded the issue, making it difficult for responders to prioritize tasks and allocate resources efficiently.

In the midst of the COVID-19 pandemic, ESS representatives expressed concerns regarding coordination and consultation challenges during interviews with the Government Accountability Office (GAO).¹ These challenges included difficulties in identifying appropriate intergovernmental affairs contacts, limited knowledge of federal agencies about state and local government operations, and inconsistent consultation on proposed regulations. These coordination issues contributed to the overall lack of coherent guidance experienced by the ESS, hampering their ability to effectively respond to the crisis.

The Senate Homeland Security and Governmental Affairs Committee released a report detailing the findings of a two-year investigation into the federal government's initial response to COVID-19.² The report's key findings include:

- The U.S. **inadequately invested in public health preparedness** across multiple Administrations.
- **Statutory authorities and policy directives** that dictate federal leadership during public health emergencies **overlap and lack clarity**.
- The U.S. medical supply chain **lacks sufficient domestic manufacturing capacity** for critical medical products.
- U.S. **public health surveillance systems** for monitoring and detecting emerging infectious diseases are **inadequate, antiquated, and fragmented**.
- Communications about COVID-19 were **inconsistent and sometimes contradictory** and critical federal public health guidance was often delayed.

Another significant challenge encountered by the ESS during the pandemic was the assignment of duties outside normal functions to ESS disciplines, SLTT governments, and federal agencies. For example, ESS organizations were deeply involved in vaccination campaigns, SLTT governments developed new procurement practices (sometimes international) for pandemic response materials and equipment, and federal agencies typically focused on policy and standards moved into leadership roles for incident response. This unprecedented public health crisis necessitated that these entities take on new responsibilities, often with little prior experience or training in those areas. This sudden shift in responsibilities led to a steep learning curve, inefficiencies, and potential delays in providing critical services, all of which hindered the overall effectiveness of the response. To address such challenges and improve overall emergency response capabilities, it is essential to invest in cross-training, capacity building, and collaboration between various disciplines and agencies. This would ensure a more robust and adaptable workforce capable of responding to a wide range of emergencies, including those that require skill sets beyond their traditional roles.

Misinformation surrounding the COVID-19 pandemic, propagated through various channels such as social media, news media, and word of mouth, posed a significant challenge to the ESS. In the rapidly evolving landscape of the pandemic, the spread of false or misleading information made it difficult for emergency

¹ U.S. Government Accountability office, The Critical Role of Federal Partnerships with States & Local Governments During COVID-19 (September 2020)

² Committee on Homeland Security & Governmental Affairs, Peters Investigation Finds Significant Failures in Federal Government's Pandemic Preparedness and Initial COVID-19 Response (December 2022)

responders to obtain accurate, reliable, and timely information, which is essential for effective decision-making and crisis management. In addition, the prevalence of misinformation led to public mistrust and confusion, exacerbating anxiety and fear during an already challenging time.

Various sources contributed to the spread of misleading information, including medical personnel driven by skepticism and fear, anti-vaccine campaigns orchestrated by those seeking financial or political gain, as well as rumors and hoaxes disseminated through social gatherings and social media platforms. In the early stages of the pandemic, many individuals were hospitalized, and some died as a result of misinformation.⁵

Furthermore, a RAND study revealed that both Russia and China engaged in news manipulation to serve their geopolitical goals with regard to COVID-19. The study found that Russian media propagated anti-U.S. conspiracy theories surrounding the virus, while Chinese media promoted pro-China news that sought to improve Beijing's reputation in terms of its COVID-19 response. This proliferation of misinformation had tangible effects on healthcare providers as well. In a recent poll, more than 70 percent of surveyed physicians reported that misinformation made it more difficult to treat COVID-19 patients and, as a result, ultimately harmed patient health.⁶

As the COVID-19 pandemic unfolded, the Federal Emergency Management Agency (FEMA) found itself with an expanded role in handling the crisis under a Stafford Act declaration. This legislation mandated FEMA to prepare for, protect against, and respond to the pandemic, adding new layers of responsibility to the agency's usual functions.

On March 19, 2020, FEMA was assigned the critical task of leading the federal response in combating COVID-19, placing them at the center of coordinating federal support for the response efforts. This increased role in the pandemic response demanded rapid adaptation and resource allocation from FEMA, as they navigated the complexities of a public health crisis on an unprecedented scale, while continuing to provide essential emergency management services.³

The pandemic exposed many vulnerabilities in FEMA's resource request systems and allocation processes. For example, FEMA's WebEOC (used to process resource requests including those for PPE and ventilators) contained unreliable data to inform allocation decisions and ensure requests were accurately adjudicated.⁴

To mitigate the impact of misinformation in future emergencies, it is important to establish trustworthy sources of information and effective communication channels that ensure accurate and consistent messages reach not only the ESS workforce but also the public at large. This would contribute to a more informed and united response, ultimately enhancing the resilience of communities during public health emergencies.

1.2. CHALLENGES THAT PERSIST

The COVID-19 pandemic has had a lasting impact on the mental health and wellness of the workforce within the ESS, exacerbating pre-existing staffing challenges such as high turnover and shortages. The pandemic caused heightened levels of stress, anxiety, and burnout among ESS workers, who faced increased pressures, long working hours, and concerns about their own safety and that of their families. Consequently, ESS organizations should consider developing and implementing strategies and support systems to address the mental health of these workers to maintain a healthy and effective workforce following the pandemic.

³ Department of Homeland Security Office of the Inspector General, Lessons Learned from FEMA's Initial Response to COVID-19 (September 2021)

⁴ Ibid

⁵ Caceres et al. The impact of misinformation on the COVID-19 pandemic (January 2022)

⁶ De Beaumont, 70% of doctors say COVID misinformation has negatively impacted patients' health: poll (March 2023)

See Chapter 4 for more context on health impacts of the pandemic on the ESS workforce.

Moreover, supply chain disruptions continue to persist across the ESS, posing a significant challenge for the sector. The potential for additional large-scale outbreaks in other countries threatens the future availability of critical equipment and supplies, such as personal protective equipment (PPE) and medical devices, which are essential for emergency response efforts. In light of these ongoing disruptions, it has become vital for ESS organizations to develop strategies to manage and mitigate the risks associated with supply chain vulnerabilities, such as diversifying suppliers and enhancing coordination between organizations. See chapter 2 for additional detail regarding ESS logistics and supply chain issues of the pandemic.

The Federal Government directed unprecedented support to its agencies to help with pandemic response. An estimated \$335 billion was provided to various federal agencies to assist states, localities, territories, and tribes in addressing the COVID-19 pandemic. This included the Department of the Treasury's Coronavirus Relief Fund, increased Medicaid funding, FEMA's Disaster Relief Fund disbursements, the Education Stabilization Fund, and the Department of Transportation's transit and airport grants.⁷ Despite the unprecedented support, many ESS organizations faced difficulty in accessing adequate support.

In addition to these challenges, reimbursement limitations for pandemic response have placed considerable financial stress on ESS organizations. During the pandemic, not all expenditures associated with the response efforts, such as overtime pay, additional staffing, and the procurement of equipment, were reimbursable by federal or state agencies. This has had lasting implications on the financial stability of these organizations, which must now continue to grapple with the financial constraints imposed by the pandemic. Addressing these challenges requires ESS organizations to simultaneously strive to maintain and improve their capacity to respond to future public health emergencies while advocating for more flexible funding and reimbursement mechanisms.

1.3. LESSONS LEARNED

During the pandemic, it became evident that a whole-of-community approach to large-scale emergencies yields better results for the ESS response. This approach involves the collaboration of various stakeholders, including government agencies, private sector entities, and community members, to create a comprehensive and coordinated response. Engaging a diverse array of partners helps to identify and address potential gaps in resources and capabilities, resulting in a more resilient and effective response to the crisis at hand.

Another key lesson learned from the overall pandemic response is the importance of emergency response disciplines and organizations working, planning, and exercising together. When organizations have established relationships and trust before an emergency, they are better equipped to coordinate and share resources during a crisis. This collaboration ultimately enhances the effectiveness of the response and ensures that each organization can perform its specific duties more efficiently.

The COVID-19 pandemic also highlighted the value of innovations and adaptations that emerged during the crisis. ESS organizations demonstrated remarkable resourcefulness in addressing the unique challenges presented by the pandemic, leading to new processes and technologies that can be beneficial in future emergencies. By sharing these innovations and adaptations, organizations can learn from one another and collectively strengthen their ability to respond to future crises.

⁷ U.S. Government Accountability Office, The Critical Role of Federal Partnerships with States & Local Governments During COVID-19 (September 2020)

In addition, the pandemic underscored the critical importance of preparedness planning for an effective emergency response. Comprehensive planning ensures that organizations are better equipped to handle unexpected situations, as it allows them to identify potential vulnerabilities, allocate resources efficiently, and establish clear lines of communication. Preparedness planning not only improves the ability of ESS organizations to respond to emergencies but also enhances their overall resilience in the face of future crises.

The whole-of-community approach to large-scale emergencies proved its worth during the pandemic, as many organizations found it challenging to respond effectively on their own. The unprecedented nature of the crisis forced these organizations to cooperate and find more efficient ways to address the challenges they faced.

Although making adjustments to their operations was difficult at the time, the increased collaboration ultimately led to better results in the long term, highlighting the value of this approach in managing large-scale emergencies.



2. LOGISTICS AND SUPPLY CHAIN

Major Challenges

Significant PPE supply chain shortages were difficult throughout the pandemic, especially for masks and gloves. This problem was exacerbated by the need for a continuous supply of PPE.



Counterfeit PPE was often provided and created additional challenges (e.g., PPE failures) in clinical settings.



States responded differently, or not at all, to federal or national guidance on PPE and other equipment.



Pandemic operations quickly necessitated greater use of equipment or provisions relied upon less before COVID-19 (e.g., laptops, smart phones, IT support, additional sleeping quarters).



Challenges That Persist

Supply chain of appropriate sizes of PPE for the ESS workforce.



Manufacturing of emergency vehicles (e.g., ambulances, fire trucks, specialized response units).



Lessons Learned

Tracking inventory is helpful for maintaining effective situational awareness.



Communicating with staff collectively aids the process of getting the right size of PPE, the right type of equipment, and the right information ahead of time and will make processes more efficient.



ESS organizations were creative in finding PPE and cleaning supplies (e.g., borrowing from public schools or other temporarily closed facilities) to conduct cleaning.



The Strategic National Stockpile is not always the best solution—many ESS agencies are not aware of the process it takes to access the stockpile.



2.1. MAJOR CHALLENGES DURING THE RESPONSE

In the early stages of the ESS response to the pandemic, the supply chain of personal protective equipment (PPE) became a major challenge. Frontline workers and emergency responders struggled to obtain adequate supplies of masks and gloves. As the pandemic progressed, the continuous need for PPE intensified the pressure on the supply chain, resulting in widespread shortages and affecting the safety and effectiveness of the ESS.

In addition to PPE shortages, the distribution of counterfeit PPE created further challenges for the ESS workforce, especially those working in clinical settings. These counterfeit products often failed to provide the necessary protection, exposing frontline workers to additional risks and further straining the already limited PPE resources. The varying degrees of adherence to federal or national guidance on PPE and other equipment by different states added to the complexity of the situation. Inconsistent response to guidance led to disparities in the availability of essential resources across states and regions, making it difficult to ensure that PPE and other crucial equipment were distributed where they were needed most.

As the pandemic forced organizations to adapt and evolve their operational strategies, the demand for equipment and provisions that had previously been less essential skyrocketed. Remote work and communication became the new norm, requiring an increased reliance on laptops, smartphones, and IT support. Frontline workers, particularly those working in close proximity to infected individuals, needed additional sleeping quarters to minimize the risk of infection and ensure their well-being. This sudden shift in operational needs placed unprecedented stress on ESS logistics and supply chains, highlighting the importance of flexibility, adaptability, and preparedness in responding to unforeseen crises like the COVID-19 pandemic.

According to a 2022 survey from a manufacturing platform, a significant **76.6% of companies faced some form of external disruption** to their supply chain during the previous year. The most prevalent issue encountered was material shortages, which impacted 60.9% of the surveyed businesses. Furthermore, nearly half of the respondents, **49.4%, reported experiencing material shortages with greater frequency in 2022** when compared to 2021.⁸

A 2020 survey conducted by the United States Conference of Mayors revealed that a staggering **91.5% of the cities**, representing 192 cities in total, **did not possess an adequate supply of face masks** for their first responders, such as police officers, firefighters, and EMTs, as well as medical personnel.⁹

In a national survey of hospital professionals in late March 2020 close to **one-third of hospitals had almost no more face masks and 13% had run out of plastic face shields**.¹⁰

2.2. CHALLENGES THAT PERSIST

The supply chain for obtaining appropriately sized personal protective equipment (PPE) for the diverse ESS workforce remains a significant challenge. The effectiveness of PPE in protecting frontline workers from hazards depends on its proper fit, which varies across body types and sizes. Ensuring a consistent and adequate supply of various PPE sizes is critical for maintaining the safety and performance of ESS personnel.

⁸ Jennifer Read, New Supply Chain Resilience Report Reveals the Extent of Disruption in 2022 and Expectations for 2023 (December 2022)

⁹ The United States Conference of Mayors, Shortages of COVID-19 emergency equipment in U.S. cities (March 2020)

¹⁰ Cohen, J., & van der Meulen Rodgers, Y, Contributing factors to personal protective equipment shortages during the covid-19 pandemic (October 2020)

This ongoing challenge highlights the need for improved inventory management and distribution systems to meet the diverse sizing requirements of ESS responders.

The manufacture of emergency vehicles, such as ambulances, fire trucks, and specialized response units, is another ongoing challenge for ESS logistics and supply chain. These vehicles play a vital role in providing timely and efficient emergency services, and their availability directly impacts the response capabilities of ESS organizations. Disruptions in the production and delivery of emergency vehicles can cause delays, putting additional stress on the already strained ESS infrastructure. It is essential to address the vulnerabilities in the manufacturing and procurement processes to ensure a steady and reliable supply of emergency vehicles for the ESS, ultimately enhancing its capacity to respond to emergencies effectively.

2.3. LESSONS LEARNED

Effective inventory tracking is crucial for maintaining situational awareness during emergencies. By implementing robust inventory management systems, ESS organizations can better monitor available resources, anticipate potential shortages, and allocate supplies more efficiently. This proactive approach to tracking inventory helps ensure that ESS personnel have the necessary equipment and materials to respond effectively to crises, while also minimizing the risk of resource mismanagement.

Clear and collective communication with staff plays a vital role in the efficient distribution and utilization of resources, including PPE and other essential equipment. By engaging in open dialogue with personnel, ESS organizations can more accurately determine the appropriate sizes of PPE, types of equipment needed, and necessary information to be disseminated ahead of time. This streamlined approach to communication not only enhances the overall efficiency of ESS operations but also contributes to a safer and more effective response.

During the pandemic, ESS organizations demonstrated remarkable resourcefulness in procuring PPE and cleaning supplies. Faced with widespread shortages, they turned to unconventional sources, such as temporarily closed public schools and other facilities, to obtain the necessary items. This innovative approach to resource acquisition highlights the adaptability and creativity of ESS organizations in overcoming logistical challenges, ultimately ensuring the continuity of critical services.

The Strategic National Stockpile (SNS) can provide valuable resources during emergencies, but it is not always the best solution for every situation. Many ESS agencies are unfamiliar with the process of accessing the SNS,

The ESS is facing a quiet crisis as the supply of new, remounted, and used ambulances dwindles, with prices soaring due to an unprecedented combination of economic events. The global shortage of microchips has sharply curtailed automotive production, particularly affecting the production of chassis used for ambulances. Chassis supply issues have led to **extended lead times of 14-24 months** for built-to-order Type I and Type III ambulances, disrupting customary specification, budgeting, procurement, and replacement cycles.

ESS organizations are also grappling with a **25-30% increase in the cost of new ambulances**, as material and labor costs are passed on by various stakeholders. The shortage of new ambulances has also affected the supply of used ones, with prices **up as much as 60% for units in excellent condition**. Skilled labor shortages at many popular ambulance builders exacerbate the problem, preventing them from accelerating production rates even if material shortages ease. Amid this uncertainty, ESS organizations are encouraged to secure procurement authority and funding in advance to have same day buying power when vehicles become available.¹¹

¹¹ James Philips, Ambulance Chassis: Wait Times Soar, Costs Skyrocket (June 2022)

which can create delays and additional complications during a crisis. This issue underscores the need for improved education and training on the SNS, as well as the development of alternative supply chains to ensure that ESS organizations have access to the resources they need when faced with future emergencies.



3. STAFFING AND CAPACITY NEEDS

Major Challenges

Extended wait times for hospital drop offs rendered EMS teams out of service for extended periods of time.



“Long COVID” symptoms (persistent COVID-19 like symptoms lasting for months or years after infection) suffered by emergency responders led to extended absence of personnel.



Long-term scheduling was difficult to plan because of quarantine requirements in the event of staff exposure (sometimes for multiple personnel at once).



It was necessary to contract with staffing agencies to ensure sufficient workforce capacity, which brought on new administrative (accounting and human resources) challenges.



Challenges That Persist

Higher levels of anxiety persist in the workforce due to factors that are unknown (who is vaccinated, fear of contracting COVID-19 or other respiratory illnesses, transmitting illness to family, etc.).



Recruitment and retention rates for the ESS workforce continue to be low as a result of the pandemic.



Lessons Learned

Cross-training of emergency response staff with administrative staff in ESS would have resulted in significant benefits during the COVID-19 response.



Improved administrative preparedness (contracts, finance) to contract with staffing agencies is needed to prepare for future major health emergencies.



Improved virtual/remote processes are necessary to better equip emergency responders for action during a health emergency requiring quarantine.



CISA’s Essential Critical Infrastructure Workforce Guidance was helpful in designating essential workers and deciding how to allocate scarce resources used to protect those workers.



3.1. MAJOR CHALLENGES DURING THE RESPONSE

During the COVID-19 response, extended wait times for hospital drop-offs posed a significant challenge for emergency service providers. As hospitals became inundated with COVID-19 patients, their capacity to admit new patients was strained, resulting in longer waiting periods for EMS teams. This, in turn, kept EMS teams out of service for extended periods of time, reducing their ability to respond to other emergencies and potentially putting more lives at risk.

Another major challenge encountered during the pandemic was the manifestation of "Long COVID" symptoms among ESS workers. These persistent symptoms, which include fatigue, difficulty concentrating, and respiratory issues, led to prolonged absences of essential personnel. This not only reduced the overall workforce capacity but also placed additional strain on the remaining staff who had to cover for their affected colleagues.

Long-term scheduling became increasingly difficult to plan as quarantine requirements for staff exposure to the virus often impacted multiple personnel simultaneously. The unpredictability of COVID-19 outbreaks and the potential need for staff to quarantine made it challenging for ESS organizations to maintain sufficient workforce capacity and ensure adequate coverage for ongoing emergencies. In April 2020, the New York City Police Department experienced a significant impact on its workforce due to COVID-19, with 5,600 police officers, or 15% of the workforce, calling in sick and being off duty as a result of the virus.¹⁶

Data provided by D.C. fire and EMS revealed that on December 2, 2021, the **average transport unit drop time was approximately 75 minutes**. Over the course of nine days, **12 percent of all patient transports took more than two hours**, representing a significant increase compared to earlier in fiscal year 2021, when nearly 7 percent of drop times were equal to or greater than two hours.¹²

In San Francisco, city regulations stipulate that **hospitals should accept ambulance patients within 20 minutes** in over 90% of cases. However, records obtained from the SF Department of Emergency Management revealed that **none of the city's largest hospitals achieved this goal in any month during 2022**.¹³

This highlights the growing strain on the ESS during the pandemic, as extended drop-off times impacted the efficiency and capacity of EMS teams.

In both 2020 and 2021, **COVID-19 was the leading cause of on-duty deaths for police officers**. The pandemic made 2021 the most dangerous year to be a police officer since 1930. According to the National Law Enforcement Memorial and Museum, 301 COVID-19-related fatalities – were the leading cause of death in 2021, as they were in 2020 when at least 182 officers died of the virus. That's an **increase of 65% in one year**.¹⁴

A report by the National Fire Protection Association (NFPA) revealed that the **leading cause of firefighter fatalities in the United States in 2021 was COVID-19**. The report emphasized the significant impact of COVID-19 on the on-duty firefighter experience throughout 2021, as it resulted in over 60 deaths due to on-duty exposure to the virus.¹⁵

¹² Hilton, J and Portnoy, J, Fire and EMS departments grapple with long ambulance waits at hospitals amid latest covid surge (December 2021)

¹³ Noah Baustin, Why San Franciscans Wait So Long for Ambulances. (December 2022)

¹⁴ Rachel Treisman, COVID was again the leading cause of death among U.S. law enforcement (January 2022)

¹⁵ Fahy, R and Petrillo, J , Firefighter Fatalities in the US in 2021 (August 2022)

¹⁶ WABC, Coronavirus news: NYPD has 5,600 officers out sick, 5 deaths (March 2020)

To overcome workforce shortages, many ESS organizations had to contract with staffing agencies to ensure they had enough administrative and support personnel to manage the increased demand during the pandemic. This approach, while necessary, introduced new administrative challenges related to accounting and human resources. Emergency service providers had to adapt quickly to manage these additional complexities while still focusing on their primary mission of saving lives and protecting their communities during the COVID-19 crisis.

3.2. CHALLENGES THAT PERSIST

The COVID-19 pandemic continues to present challenges within ESS organizations regarding staffing and capacity, particularly in terms of heightened anxiety levels stemming from various unknown factors. Employees, especially those in high-risk environments, grapple with uncertainties such as the vaccination status of their colleagues, which can lead to concerns about potential exposure. Additionally, the fear of contracting COVID-19 or other respiratory illnesses and the possibility of transmitting these illnesses to their families can create a constant state of unease. These concerns contribute to a more stressful work environment, potentially impacting the overall well-being, mental health, and performance of the workforce. In turn, this can lead to increased absenteeism, lower productivity, and difficulties in maintaining a stable and effective workforce.

As an associated persistent challenge, recruitment and retention rates within ESS continue to be low, a worrisome trend that has emerged as a direct consequence of the pandemic. A variety of factors contribute to this trend including increased job-related risks, mental health challenges, and elevated stress levels associated with the response to the pandemic. The sheer intensity of the crisis, along with its prolonged duration, has resulted in workforce burnout and a subsequent decline in new recruits.

An examination of U.S. Bureau of Labor Statistics and Census Bureau data reveals a consistent decrease in law enforcement and local government positions throughout the pandemic. Between March 2020 and August 2022, the total number of **local law enforcement personnel experienced a 4% decline**. A related federal study indicated there was an anticipated demand for an **additional 40,000 full-time emergency medical personnel** between 2016 and 2030.¹⁷

According to a 2020 survey conducted by the American Ambulance Association (AAA) involving 258 EMS organizations across the nation, **nearly one-third of the workforce departed from their ambulance company within a year**. The survey also revealed that **11% of the respondents left their position within the initial three months**. A separate AAA survey reported a **turnover rate of 36%** for full-time emergency medical technicians (EMTs) and **27%** for full-time paramedics in 2022.¹⁸

The pandemic also had a significant impact on the hiring process for entry-level firefighters. Due to safety concerns for both applicants and proctors, **the Candidate Physical Ability Test (CPAT) was suspended**. As a crucial component of the hiring process, the suspension of the CPAT left numerous aspiring firefighters unable to enter the workforce, **leading to a staffing shortage** throughout the United States. The situation underscored the need for adaptability and alternative solutions in the face of unprecedented challenges.¹⁹

¹⁷ Duret D, and Li W, It's not just a police problem, Americans are opting out of government jobs (January 2023)

¹⁸ Marsha Mercer, States strive to reverse shortage of paramedics, EMTs (February 2023)

¹⁹ International Association of Fire Fighters, COVID-19: Interim After-Action Report (October 2023)

3.3. LESSONS LEARNED

During the COVID-19 response, the importance of cross-training emergency response personnel to perform administrative duties in the ESS became apparent. Such collaboration would have enhanced resource management, communication, and overall coordination of efforts during the pandemic. In Addition, this approach would have better supported frontline personnel, ensuring their needs were met promptly and efficiently, ultimately resulting in a more effective response.

The pandemic also emphasized the need for improved administrative preparedness, including having well-structured contracts and finance systems in place to quickly contract with staffing agencies during major health emergencies. By streamlining these processes, ESS organizations can rapidly address workforce shortages, maintain their capacity to respond effectively, and adapt to evolving situations without delay.

As the pandemic progressed, it became clear that having robust virtual and remote processes in place is crucial for emergency responders during health emergencies that require quarantine measures. By investing in advanced technologies and communication tools, emergency response staff can work and collaborate effectively from remote locations, ensuring the continuity of essential services while minimizing the risk of infection for themselves and others.

CISA's *Essential Critical Infrastructure Workforce Guidance* was helpful to ESS organizations in the COVID-19 response by designating essential workers and providing a framework for allocating scarce resources to protect them. This guidance enabled decision-makers to prioritize resource distribution effectively, ensuring that critical personnel were well-equipped to carry out their duties during the crisis. Adopting and refining such guidance for future emergencies can greatly improve the resilience and preparedness of the ESS workforce.



4. MENTAL AND PHYSICAL HEALTH IMPACTS

Major Challenges

Increased and prolonged stress for the workforce led to continued anxiety, PTSD-like symptoms, and burnout.



The physiological response to trauma and prolonged stress compounded anxiety and other mental health issues.



Longer shifts including prolonged physical activity impacted physical and mental health (e.g., physiological and mental stress, poor eating and sleeping patterns, injuries).



Those affected by “long COVID” suffered from ongoing symptoms, resulting in staffing limitations.



Challenges That Persist

COVID-19 added new layers to mental health challenges existing before and after the pandemic.



The capability to recognize someone who may be experiencing mental health issues, when/how to take action to address those issues, and the social stigma associated with mental health issues are all continual challenges.



Lack of centralized, uniform guidance to develop long-term, sustainable communication/mitigation approaches.



Lessons Learned

Regular training is needed on the physiological effects of trauma and mental health impacts for better awareness.



Guidance on effective policies and implementation of policies is needed to be more successful in addressing mental and physical health issues.



Dedicated funding for mental and physical health is needed to better prepare ESS organizations.



ESS organizations should consider planning and training for the physical and mental health effects of long-term response events (including cross-discipline and cross-government participation).



4.1. MAJOR CHALLENGES DURING THE RESPONSE

The COVID-19 response placed immense pressure on the ESS, leading to increased and prolonged stress for its workforce. ESS personnel were consistently exposed to high-stress situations, witnessing the devastating impacts of the pandemic firsthand. This heightened stress resulted in continued anxiety, symptoms akin to post-traumatic stress disorder (PTSD), and burnout among emergency responders, significantly impacting their overall well-being and ability to perform their duties efficiently.

In addition to the mental strain, the physiological response to trauma and prolonged stress compounded anxiety and other mental health issues among ESS personnel. The body's natural stress response, such as increased cortisol levels, can impair cognitive function, memory, and decision-making abilities. These physical reactions to stress further exacerbated the challenges faced by emergency responders during the pandemic, impacting their overall performance and mental health.

ESS workers were also subjected to longer shifts, which included extended periods of physical activity. These demanding work conditions took a toll on both their physical and mental health, manifesting as increased physiological and mental stress, poor eating and sleeping patterns, and a higher risk of injuries. The lack of proper rest and recovery time led to fatigue, decreased immune function, and increased susceptibility to illness, further stressing an already overwhelmed workforce.

Furthermore, "long COVID" presented a unique challenge during the pandemic, as those affected by the lingering symptoms faced ongoing health issues, such as fatigue, difficulty concentrating, and joint pain. In 2022, the Census Bureau's Household Pulse Survey revealed that approximately 16 million working-age Americans, aged 18 to 65, were suffering from long Covid. Among those affected, it was estimated that between 2 and 4 million were unable to work due to the persistent symptoms associated with the condition.²² This situation resulted in staffing limitations within the ESS, as the affected personnel were unable to fully perform their duties, placing additional strain on an already overburdened workforce. The need to accommodate these workers and their health concerns added another layer of complexity to managing staffing and capacity within the ESS during the pandemic.

4.2. CHALLENGES THAT PERSIST

COVID-19 intensified the preexisting mental health challenges within the ESS, creating a more complex landscape that persists even after the pandemic. The unprecedented stressors and unique situations faced by emergency responders during the pandemic exacerbated underlying mental health issues and introduced new

ESS professionals often face **elevated levels of both acute and chronic stress**, as well as **higher rates of depression and substance abuse** compared to the general population. They also exhibit a greater risk of suicide. Studies indicate that burnout levels tend to rise with the duration of ESS experience and are more prevalent among those working shifts that last between 12 and 24 hours.²⁰

A study conducted in 2022 disclosed that **over 40% of ESS workers exhibited post-traumatic stress symptoms**, while **over 80% displayed symptoms of depression**. Furthermore, nearly a quarter (24.4%) of the respondents acknowledged having thoughts of suicide or self-harm within the preceding two weeks. Besides that, **more than a third (37.8%) demonstrated PTSD symptoms**, and **almost three-quarters experienced symptoms of depression (73.9%) and anxiety (74.7%)**.²¹

²⁰ George K., Sweeney S., State Actions to Address EMS Workforce Shortages. (July 2022)

²¹ Hendrickson et al., The Impact of the COVID-19 Pandemic on Mental Health, Occupational Functioning, and Professional Retention Among Health Care Workers and First Responders (February 2022)

²² Katie Bach, New data shows long Covid is keeping as many as 4 million people out of work (August 2022)

concerns. As the world moves forward, addressing these compounded mental health challenges will remain a critical focus for ESS organizations and their personnel.

One of the persistent challenges in the ESS is the capability to recognize someone who may be experiencing mental health issues, knowing when and how to take action to address those concerns, and overcoming the social stigma associated with mental health problems. Emergency responders often operate in high-stress environments, which can make it difficult to distinguish between normal stress reactions and more severe mental health issues. Furthermore, the stigma surrounding mental health can discourage individuals from seeking help or discussing their struggles, ultimately hindering the identification and intervention process.

Another ongoing challenge for the ESS is the lack of centralized, uniform guidance to develop long-term, sustainable communication and mitigation approaches for mental health issues. In the absence of a standardized framework, individual organizations may struggle to implement effective mental health support systems for their staff. This challenge highlights the need for a cohesive, evidence-based approach to addressing mental health concerns within the ESS, ensuring that emergency responders receive the necessary support and resources to maintain their well-being during and after crises.

There is a connection between working during disaster periods and enduring psychological challenges. A case in point is a longitudinal study carried out following the 2017 Taiwan earthquake, which involved 37 EMS providers.

The study revealed that **51.3% (19 providers) reported PTSD symptoms after one month, and out of those, 13 continued to exhibit PTSD symptoms at a six-month follow-up.**²³

4.3. LESSONS LEARNED

The COVID-19 pandemic has underscored the importance of regular training on the physiological effects of trauma and mental health impacts for ESS workers. This training should include information on recognizing early signs of stress and burnout, as well as coping strategies to build resilience. A comprehensive understanding of the effects of trauma and stress will empower ESS personnel to better manage their mental health and seek appropriate support when needed, ultimately contributing to a more effective emergency response.

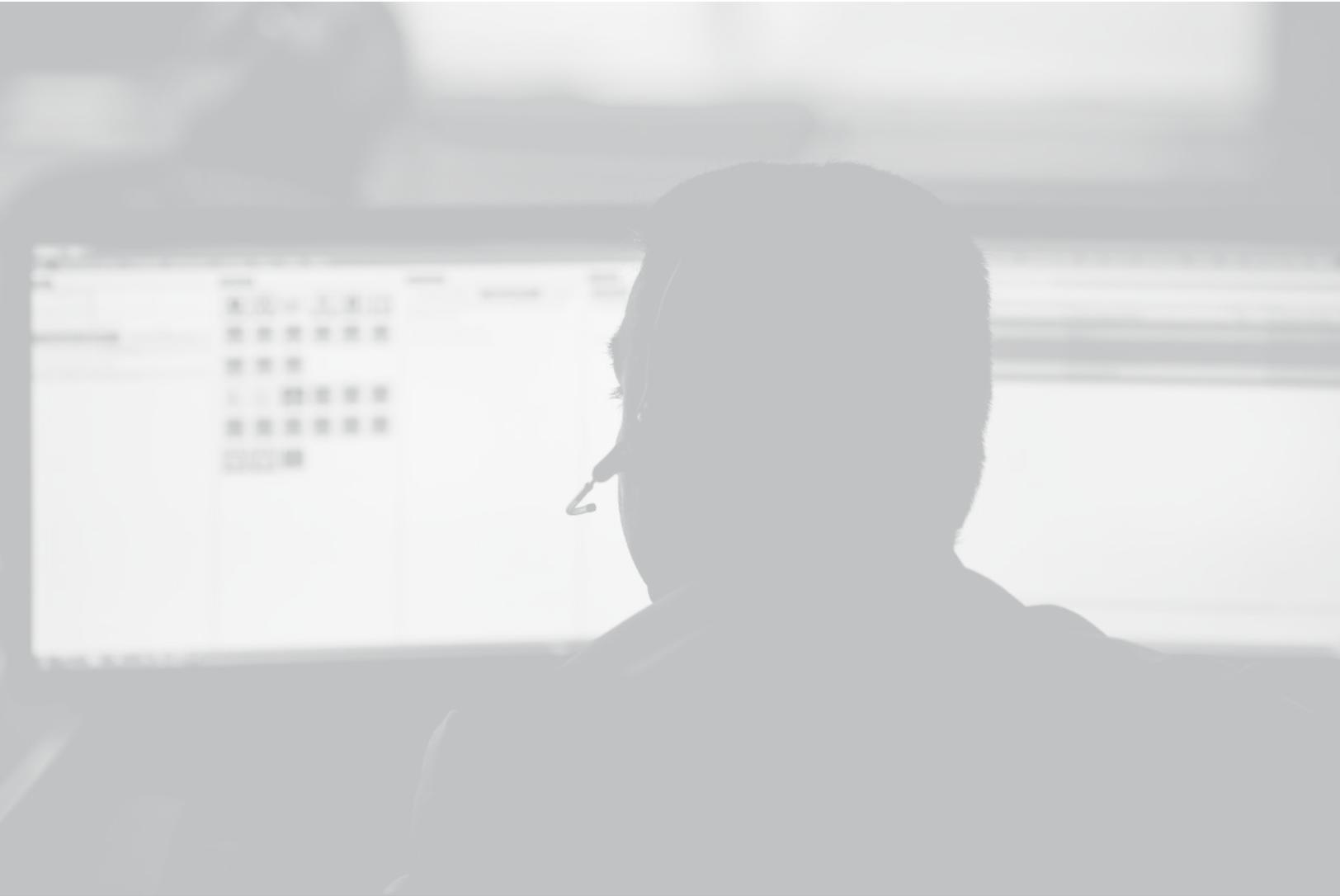
To address mental and physical health issues in ESS organizations more successfully, it is essential to develop and implement effective policies. These policies should incorporate evidence-based practices and interventions to foster a healthier work environment, such as mental health screenings, peer support programs, and stress reduction workshops. By providing clear guidance on creating and enforcing these policies, organizations can enhance the well-being of their workforce and improve their capacity to respond to emergencies.

Securing dedicated funding for mental and physical health initiatives within ESS organizations is another key lesson learned. This funding can be used to develop targeted programs and services, such as mental health counseling, wellness programs, and preventive health screenings. A dedicated budget for health initiatives will demonstrate the organization's commitment to the well-being of its personnel and enable investments in strategies that can improve the overall health and resilience of emergency responders.

ESS organizations should consider prioritizing planning and training for the physical and mental health effects of long-term response events. This entails fostering cross-discipline and cross-government participation to

²³ Abdullah Abdulaziz Alghamdi, The psychological challenges of emergency medical service providers during disasters: A mini-review (February 2022)

leverage the expertise and resources of various agencies and stakeholders. By engaging in collaborative planning and training exercises, ESS organizations can develop comprehensive strategies to address the unique challenges posed by prolonged emergency events. Proactively addressing the well-being of emergency responders will not only enhance the effectiveness of the response but also ensure the long-term sustainability and health of the ESS workforce.



5. COMMUNICATION, COLLABORATION, AND COORDINATION

Major Challenges

Difficulties in coordinating with other departments due to the scale, tasks, and varied approaches of the response led to continued confusion and feelings of unfairness among staff.



Reduced resources forced ESS organizations to develop new, unfamiliar collaboration pathways with other local, state, and federal agencies.



Ineffective and inconsistent communication and coordination resulted in difficult, politicized, and slow responses.



Challenges That Persist

Lack of clear and well-defined roles and responsibilities (e.g., between agencies and levels of government) negatively impacted the response and could hinder future responses to public health emergencies.



Lessons Learned

Despite the existence of a Joint Powers Agreement to coordinate the sourcing of PPE, trust built between departments before COVID-19 is what made coordination work.



Implementing communication plans to streamline efficient information-sharing mechanisms and establishing collaboration procedures between the various stakeholders would greatly improve preparedness.



Large-scale ESS responses should consider allowing SME input and expertise with appropriate oversight.



Coordinated efforts among ESS stakeholder organizations are needed to improve collaboration at the municipal, state, and regional levels.



5.1. MAJOR CHALLENGES DURING THE RESPONSE

The COVID-19 pandemic highlighted the challenges faced by ESS organizations in coordinating with other departments due to the scale, tasks, and varied approaches of the response. The unprecedented nature of the crisis placed immense pressure on ESS systems, leading to confusion and feelings of unfairness among staff members.

Discrepancies in resource allocation, decision-making processes, and protocols between different departments and agencies further exacerbated these issues, making it difficult to create a cohesive and effective response strategy.

In addition, reduced resources forced ESS organizations to explore new and unfamiliar collaboration pathways with other local, state, and federal agencies. These partnerships were vital to addressing the complex and evolving challenges posed by the pandemic, but they also introduced an array of logistical and bureaucratic obstacles. Navigating these new relationships required ESS organizations to adapt quickly, develop new lines of communication, and establish efficient coordination mechanisms to share resources, information, and expertise effectively.

Ineffective and inconsistent communication and coordination during the pandemic further compounded the challenges faced by ESS organizations. The rapidly changing nature of the crisis, coupled with the sheer volume of information from various sources, often led to conflicting guidance, politicized decision-making, and slow responses. This lack of clarity and consistency in communication hindered the ability of ESS personnel to act swiftly and decisively, ultimately impacting the overall effectiveness of the sector's response to the pandemic.

A 2021 GAO report raised concerns about the **insufficient number of FEMA personnel required to effectively engage with tribal governments**, as well as the strain on the Disaster Relief Fund in responding to the COVID-19 pandemic. This strain was exacerbated by the growing need to reimburse state, local, tribal, and territorial governments. Additionally, the report highlighted that **tribal leaders expressed dissatisfaction with the ongoing lack of timely and consistent tribal consultation** during the pandemic. Furthermore, the GAO report pointed out **the absence of coherent, clear, and consistent federal guidance to assist states and school districts** in reevaluating the operational status of K-12 schools.²⁴

A 2021 RAND research report highlighted that **law enforcement agencies have encountered a challenging operational environment**. Their roles have greatly differed due to the diverse measures taken by states and localities in response to the pandemic. Additionally, smaller departments experienced cases where entire teams tested positive for the virus or were quarantined due to exposure, necessitating support from other agencies to cover policing duties in their jurisdictions. The research also observed that, during the pandemic, crime patterns and service demands shifted. While the total number of service calls decreased, certain jurisdictions witnessed a rise in violent crime, including homicide.²⁵

5.2. CHALLENGES THAT PERSIST

The lack of clear and well-defined roles and responsibilities among various agencies and levels of government emerged as a significant challenge during the COVID-19 pandemic, negatively impacting the overall response. This ambiguity in roles and responsibilities led to confusion, delays, and inefficiencies in decision-making and resource allocation. Competing priorities and overlapping responsibilities among different agencies further complicated the situation, making it difficult to develop and implement a unified and effective approach to

²⁴ U.S. Government Accountability Office, COVID-19: Sustained Federal Action Is Crucial as Pandemic Enters Its Second Year (March 2021)

²⁵ Jackson et al., Promising practices from law enforcement's COVID-19 response (April 2021)

addressing the crisis. Moving forward, these issues could hinder future responses to public health emergencies if not adequately addressed. Establishing clear lines of communication, delineating roles and responsibilities, and fostering a collaborative environment among all involved stakeholders are crucial steps in ensuring a more efficient and coordinated response to any future public health emergencies.

5.3. LESSONS LEARNED

The COVID-19 pandemic demonstrated the importance of trust between departments, even when formal agreements like Joint Powers Agreements for PPE sourcing were in place. The successful coordination of resources and actions largely depended on pre-existing trust and collaboration between departments, which facilitated cooperation and understanding. This emphasizes the need for fostering relationships and trust between departments during non-emergency times, laying the foundation for more efficient responses during crises.

The pandemic also revealed the necessity of having well-structured communication plans in place to ensure efficient information-sharing and collaboration among various stakeholders. These plans should be comprehensive, addressing the needs of all involved parties and outlining clear communication channels and protocols. By doing so, decision-making can be expedited, and valuable time can be saved during emergencies. The establishment of such plans will significantly improve preparedness and ensure all stakeholders are aware of their roles and responsibilities.

Involving Subject Matter Experts (SMEs) in large-scale ESS responses has proven to be beneficial, as they bring specialized knowledge and expertise to the table. Their input can help develop more targeted and effective strategies for dealing with specific challenges posed by emergencies. Including SMEs in planning and decision-making processes should be done thoughtfully, ensuring they contribute their expertise while still maintaining proper oversight and accountability.

In addition, fostering collaboration across ESS stakeholder organizations at municipal, state, and regional levels is crucial for a more effective response to emergencies. By bridging jurisdictional gaps and sharing resources, knowledge, and capabilities, ESS organizations can create a more unified and efficient response network. This increased level of collaboration will not only enhance preparedness but also improve the overall resilience of communities during times of crisis. Strengthening these collaborative efforts should be a priority for ESS organizations moving forward.

In its 2022 COVID-19 After Action Report, the Los Angeles EMS agency acknowledged that its current communication approach with EMS System/Healthcare Coalition members **relied too heavily on informal relationships, rather than a dependable structure**. Furthermore, the absence of an up-to-date, automated facility contact database posed risks to effective communication and coordination with EMS System/Healthcare Coalition members.²⁶

The 2022 King County (WA) After Action Report disclosed that **varying response structures among departments complicated decision-making processes** and caused confusion within teams. The report emphasized that the disarray was **exacerbated by the absence of a single, unified response structure across departments**, which occasionally resulted in miscommunication and overlapping efforts.²⁷

²⁶ County of Los Angeles, Incident After-Action Report (AAR): COVID-19 Pandemic (January 2020 – April 2021)

²⁷ Public Health - Seattle and King County, COVID-19 After Action Report (November 2022)

6. CROSSCUTTING EFFECTS

Major Challenges

Physical and mental health effects of pandemic response on the workforce hindered response to other concurrent incidents.



Resources drained by the pandemic response were unavailable or limited for other incidents.



Challenges That Persist

Staffing issues continue to render ESS vulnerable to disruptions in response to concurrent incidents.



Lessons Learned

Relationships and trust built across ESS organizations prior to the pandemic made response to concurrent incidents more effective.



Planning, training, and exercising for concurrent incidents/responses is of utmost importance for ESS preparedness.



Adaptation to virtual operations (e.g., establishing virtual emergency operations centers, EMS involvement in telemedicine, remote video conferencing for staff meetings) is valuable for future events.



6.1. MAJOR CHALLENGES DURING THE RESPONSE

The physical and mental health effects of the pandemic response on the ESS workforce significantly impacted their ability to effectively respond to other concurrent incidents. The unprecedented demands placed on emergency responders during the pandemic led to increased stress, anxiety, and burnout, which in turn diminished their capacity to manage other emergencies or events simultaneously. Consequently, this created a strain on the overall emergency response system and highlighted the need for improved support and resources for ESS workers to maintain their well-being and effectiveness in such situations.

Resources that were drained by the pandemic response became unavailable or limited for other incidents, further exacerbating the challenges faced by ESS organizations. As the pandemic consumed a significant portion of financial, material, and human resources, other emergencies or events were left with insufficient support. This resource scarcity underscored the importance of contingency planning and resource allocation strategies that ensure the readiness of ESS organizations to manage multiple crises or emergencies concurrently, without compromising the quality of their response.

A 2022 study revealed a marked increase in personnel changes within the firefighter and EMS sectors, sparking apprehensions among communities about maintaining sufficient emergency services staffing amidst the pandemic.

The study also highlighted the potential detrimental effects of these staffing deficits. For the firefighter and EMS workforce, this could mean extended shifts, while the public might experience increased waiting times following a 911 call.²⁸

6.2. CHALLENGES THAT PERSIST

Staffing issues persist as a major challenge for ESS organizations, leaving them vulnerable to disruptions when responding to concurrent incidents. The pandemic has highlighted the fragility of emergency response systems in the face of staffing shortages, prolonged absences due to illness, and burnout. The inability to maintain adequate personnel levels has created a ripple effect throughout ESS organizations, leading to delays in response times, reduced efficiency in service delivery, and increased stress on the remaining workforce. To address this ongoing concern, ESS organizations must prioritize effective recruitment, retention, and support strategies that ensure a well-prepared and resilient workforce capable of handling multiple emergencies without compromising their own well-being or the quality of their response.

6.3. LESSONS LEARNED

Strong relationships and trust built across ESS organizations before the pandemic proved to be crucial in making the response to concurrent incidents more effective. Pre-established connections and networks allowed for smoother communication and collaboration, ensuring resources and support were provided efficiently during emergencies. In the future, ESS organizations should continue to invest in building and maintaining these relationships to enhance preparedness and facilitate seamless coordination when faced with multiple crises.

The importance of planning, training, and exercising for concurrent incidents and responses cannot be overstated for ESS preparedness. Lessons learned from the pandemic have emphasized the need for comprehensive and ongoing training programs that account for multiple, simultaneous emergencies. By focusing on versatile and adaptable strategies, ESS organizations can better equip their personnel to handle a wide range of incidents, ultimately improving their overall response capabilities and resilience in the face of

²⁸ Gaughan, A. A., Rush, L. J., MacEwan, S. R., Panchal, A. R., & McAlearney, A. S. (2022). Perspectives of Volunteer Firefighters during the COVID-19 Pandemic: Stumbling Blocks and Silver Linings. *Challenges*, 13(2), 46. MDPI AG.

7. PREPAREDNESS AND GUIDANCE

Major Challenges

Inconsistent, conflicting, and rapidly changing guidance from federal, state, nonprofit, and private sector organizations impacted the response.



Lack of a central trusted source of information and guidance hindered response effectiveness.



Challenges That Persist

States and ESS organizations continue to want for a centralized source of lessons learned and effective practices that would help them better prepare for another pandemic.



Lessons Learned

Emergency response plans previously developed for a pandemic should be reviewed to create a roadmap to improve response and lessen consequences during future incidents.



ESS organizations are overall better prepared for future public health crises having experienced the COVID-19 response.



Consolidating what the ESS has learned into guidance for future use will be valuable.



7.1. MAJOR CHALLENGES DURING THE RESPONSE

The ESS response to the pandemic was significantly impacted by inconsistent, conflicting, and rapidly changing guidance from federal, state, nonprofit, and private sector organizations. The lack of unified, clear direction led to confusion among ESS personnel, making it challenging to implement and maintain coherent response strategies. Moreover, this resulted in difficulties in prioritizing resources, managing expectations, and coordinating efforts among various stakeholders. To avoid similar challenges in future emergencies, it is crucial to establish a more consistent, collaborative approach to guidance development and dissemination.

The absence of a central trusted source of information and guidance also hindered the effectiveness of the ESS response during the pandemic. Emergency responders and organizations were often left to navigate an overwhelming array of resources and conflicting advice, making it difficult to identify the most reliable and pertinent information. This challenge ultimately slowed down decision-making processes and undermined the overall response effort. In order to improve future responses, it is essential to establish a centralized, authoritative source of information and guidance that ESS organizations can trust and rely on during emergencies.

A 2022 report from the Senate Homeland Security & Governmental Affairs Committee revealed that during the initial three months of the federal pandemic response starting in January 2020, the Administration frequently shifted overall responsibilities for managing the response. Initially, the responsibility lay with the Department of Health and Human Services (HHS), but it was later moved to the White House and eventually to FEMA. A former Chief of Staff at the CDC told the Committee that one of the most significant issues with the pandemic response was the **constant changing of leadership**.

The Committee's findings showed that federal communications throughout the initial pandemic response **did not adhere to basic principles, leading to widespread confusion and deep-rooted divisions** regarding the best methods for Americans to protect themselves and their families. In addition, federal response **lacked adequate surveillance systems to inform decision-making**, which often resulted in unclear and delayed guidance for the public.²⁹

7.2. CHALLENGES THAT PERSIST

States and ESS organizations continue to grapple with the absence of a centralized source of lessons learned and effective practices, which would significantly help them better prepare for another pandemic or similar emergency. This persistent challenge leaves them with limited access to comprehensive and validated knowledge, forcing them to rely on fragmented information and potentially outdated or ineffective strategies. Establishing centralized sources of lessons learned and best practices could greatly enhance their preparedness and response capabilities by providing a reliable, up-to-date resource for planning, training, and collaboration. Ultimately, this would enable states and ESS organizations to make more informed decisions, streamline their efforts, and improve overall resilience in the face of future public health emergencies.

7.3. LESSONS LEARNED

The COVID-19 pandemic has underscored the need to reevaluate previously developed emergency response plans for pandemics, using them as a roadmap to enhance future responses and mitigate negative consequences during similar incidents. By reviewing these plans and incorporating the knowledge and

²⁹ Senate Homeland Security & Governmental Affairs committee, Historically Unprepared: Examination of the Federal Government's Pandemic Preparedness and Initial COVID-19 Response (December 2022)

experience gained from the recent pandemic, ESS organizations can identify areas for improvement, refine their strategies, and ensure better alignment with emerging best practices and lessons learned.

ESS organizations, having gone through the COVID-19 response, are now better prepared for future public health crises. The firsthand experience has equipped these organizations with a greater understanding of the challenges and complexities involved in such large-scale emergencies. This collective knowledge will enable them to make more informed decisions, improve coordination, and adapt more effectively to the evolving demands of public health emergencies in the future.

Consolidating the lessons learned by ESS organizations during the COVID-19 pandemic into guidance for future use is crucial. This process will ensure that valuable insights, best practices, and knowledge gained from the pandemic response are systematically captured and documented. This guidance can then serve as a foundation for ongoing improvements in emergency preparedness, response capabilities, and collaboration among ESS organizations. In turn, this will contribute to greater resilience and effectiveness in the face of future public health emergencies or other large-scale incidents.

In 2020, the Department of Justice's Office of the Inspector General (DOJ OIG) conducted an anonymous online survey requesting Special Agents, Criminal Investigators, U.S. Marshals, and Deputy U.S. Marshals to evaluate the effects and impact of COVID-19 on Department law enforcement investigative operations.

The survey revealed that, out of 1,291 text responses from a random sample, the majority expressed a **negative sentiment concerning the guidance they received**. Respondents were generally worried about the **lack of detailed guidance from their agencies**, the limited availability of masks and other PPE, a need for increased testing, and a **desire for leadership to follow through on established COVID-19 policies**.³⁰

A 2022 study revealed that first responders experienced frustration with COVID-19 information due to inconsistencies across different sources, misinformation on social media, and the influence of politics. When asked about their sources of information on COVID-19, the majority of first responders expressed dissatisfaction with the following aspects:

- They found the COVID-19 information **confusing and inconsistent**.
- **Misinformation was widespread on social media platforms**.
- **Political factors influenced the information being disseminated**.³¹

³⁰ DOJ Office of the Inspector General, Survey on the Effects of COVID-19 on ATF, DEA, FBI, USAO, and USMS Investigative Operations (January 2021)

³¹ McAlearney et al., Pandemic experience of first responders: Fear, frustration, and stress (April 2022)

APPENDIX A. RESOURCES

Key resources for this document are listed below in alphabetical order within each chapter topic.

GENERAL COVID-19 RESPONSE

Caceres et al. The impact of misinformation on the COVID-19 pandemic (January 2022)

ncbi.nlm.nih.gov/pmc/articles/PMC9114791/

Committee on Homeland Security & Governmental Affairs, Peters Investigation Finds Significant Failures in Federal Government's Pandemic Preparedness and Initial COVID-19 Response (December 2022)

hsgac.senate.gov/media/dems/peters-investigation-finds-significant-failures-in-federal-governments-pandemic-preparedness-and-initial-covid-19-response/

De Beaumont, 70% of doctors say COVID misinformation has negatively impacted patients' health: poll (March 2023) debeaumont.org/news/2023/physician-poll-medical-misinformation-is-harming-patients/

Department of Homeland Security Office of the Inspector General, Lessons Learned from FEMA's Initial Response to COVID-19 (September 2021) oig.dhs.gov/sites/default/files/assets/2021-09/OIG-21-64-Sep21.pdf

U.S. Government Accountability office, The Critical Role of Federal Partnerships with States & Local Governments During COVID-19 (September 2020) gao.gov/blog/critical-role-federal-partnerships-states-local-governments-during-covid-19

U.S. Government Accountability Office, The Critical Role of Federal Partnerships with States & Local Governments During COVID-19 (September 2020) gao.gov/blog/critical-role-federal-partnerships-states-local-governments-during-covid-19

LOGISTICS AND SUPPLY CHAIN

Cohen, J., & van der Meulen Rodgers, Y, Contributing factors to personal protective equipment shortages during the covid-19 pandemic (October 2020) ncbi.nlm.nih.gov/pmc/articles/PMC7531934/

James Philips, Ambulance Chassis: Wait Times Soar, Costs Skyrocket (June 2022)

firehouse.com/apparatus/type/ambulance/article/21266475/ambulance-chassis-wait-times-soar-costs-skyrocket

Jennifer Read, New Supply Chain Resilience Report Reveals the Extent of Disruption in 2022 and Expectations for 2023 (December 2022) emsnow.com/new-supply-chain-resilience-report-reveals-the-extent-of-disruption-in-2022-and-expectations-for-2023/

The United States Conference of Mayors, Shortages of COVID-19 emergency equipment in U.S. cities (March 2020) usmayors.org/issues/covid-19/equipment-survey/

STAFFING AND CAPACITY NEEDS

Duret D, and Li W, It's not just a police problem, Americans are opting out of government jobs (January 2023)

themarshallproject.org/2023/01/21/police-hiring-government-jobs-decline

Fahy, R and Petrillo, J , Firefighter Fatalities in the US in 2021 (August 2022) nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Emergency-responders/osFFF.pdf

Hilton, J and Portnoy, J, Fire and EMS departments grapple with long ambulance waits at hospitals amid latest

covid surge (December 2021) [washingtonpost.com/dc-md-va/2021/12/30/ambulance-hospital-drop-offs-covid/](https://www.washingtonpost.com/dc-md-va/2021/12/30/ambulance-hospital-drop-offs-covid/)

International Association of Fire Fighters, COVID-19: Interim After-Action Report (October 2023) iaff.org/wp-content/uploads/COVID-19-Interim-After-Action-Report-2020.pdf

Marsha Mercer, States strive to reverse shortage of paramedics, EMTs (February 2023) stateline.org/2023/02/06/states-strive-to-reverse-shortage-of-paramedics-emts/

Noah Baustian, Why San Franciscans Wait So Long for Ambulances (December 2022) sfstandard.com/public-health/san-francisco-ambulance-emergency-response-time/

Rachel Treisman, COVID was again the leading cause of death among U.S. law enforcement (January 2022) npr.org/2022/01/12/1072411820/law-enforcement-deaths-2021-covid

WABC, Coronavirus news: NYPD has 5,600 officers out sick, 5 deaths (March 2020) abc7ny.com/nypd-coronavirus-deaths-nyc-news/6065991/

HEALTH IMPACTS

Abdullah Abdulaziz Alghamdi, The psychological challenges of emergency medical service providers during disasters: A mini-review (February 2022) ncbi.nlm.nih.gov/pmc/articles/PMC8918654/

George K., Sweeney S., State Actions to Address EMS Workforce Shortages (July 2022) ncsl.org/health/state-actions-to-address-ems-workforce-shortages

Hendrickson et al., The Impact of the COVID-19 Pandemic on Mental Health, Occupational Functioning, and Professional Retention Among Health Care Workers and First Responders (February 2022) link.springer.com/article/10.1007/s11606-021-07252-z

Katie Bach, New data shows long Covid is keeping as many as 4 million people out of work (August 2022) brookings.edu/research/new-data-shows-long-covid-is-keeping-as-many-as-4-million-people-out-of-work/

COMMUNICATION, COLLABORATION, AND COORDINATION

County of Los Angeles, Incident After-Action Report (AAR): COVID-19 Pandemic (January 2020 – April 2021) file.lacounty.gov/SDSInter/dhs/1123780_LACountyEMSAgencyCOVID-19AARJan2020-April2021.pdf

Jackson et al., Promising practices from law enforcement's COVID-19 response (April 2021) rand.org/pubs/research_briefs/RBA108-1.html

Public Health - Seattle and King County, COVID-19 After Action Report (November 2022) file.lacounty.gov/SDSInter/dhs/1123780_LACountyEMSAgencyCOVID-19AARJan2020-April2021.pdf

U.S. Government Accountability Office, COVID-19: Sustained Federal Action Is Crucial as Pandemic Enters Its Second Year (March 2021) gao.gov/products/gao-21-387

CROSSCUTTING EFFECTS

Gaughan, A. A., Rush, L. J., MacEwan, S. R., Panchal, A. R., & McAlearney, A. S. (2022). Perspectives of Volunteer Firefighters during the COVID-19 Pandemic: Stumbling Blocks and Silver Linings. *Challenges*, 13(2), 46. MDPI AG. [http://dx.doi.org/10.3390/challe13020046](https://dx.doi.org/10.3390/challe13020046)

PREPAREDNESS AND GUIDANCE

DOJ Office of the Inspector General, Survey on the Effects of COVID-19 on ATF, DEA, FBI, USAO, and USMS Investigative Operations (January 2021)

experience.arcgis.com/experience/891259547d994573a314acf7927ac6c4

McAlearney et al., Pandemic experience of first responders: Fear, frustration, and stress (April 2022)

ncbi.nlm.nih.gov/pmc/articles/PMC9028623/

Senate Homeland Security & Governmental Affairs committee, Historically Unprepared: Examination of the Federal Government's Pandemic Preparedness and Initial COVID-19 Response (December 2022)

hsgac.senate.gov/wp-content/uploads/imo/media/doc/221208_HSGACMajorityReport_Covid-19.pdf

APPENDIX B. METHODOLOGY

The ES SMT conducted this project primarily through a series of virtual facilitated sessions, hosted by CISA, and consisting of working group members with additional invited subject matter expert stakeholders from across the ESS community. The sessions were organized around the following several topics relating to the ESS pandemic response.

- General COVID-19 Response
- Logistics and Supply Chain
- Staffing and Capacity Needs
- Mental and Physical Health Impacts
- Communication, Collaboration, and Coordination
- Crosscutting Effects
- Preparedness and Guidance

During the sessions, participants offered their relevant perspectives on the pandemic response and associated sector challenges and lessons learned. In addition to the discussions during the sessions, an online collaboration space was made available to working group members and other participants to provide written responses to tailored questions per session topic. Participants offered responses during the sessions as well as between and after sessions.

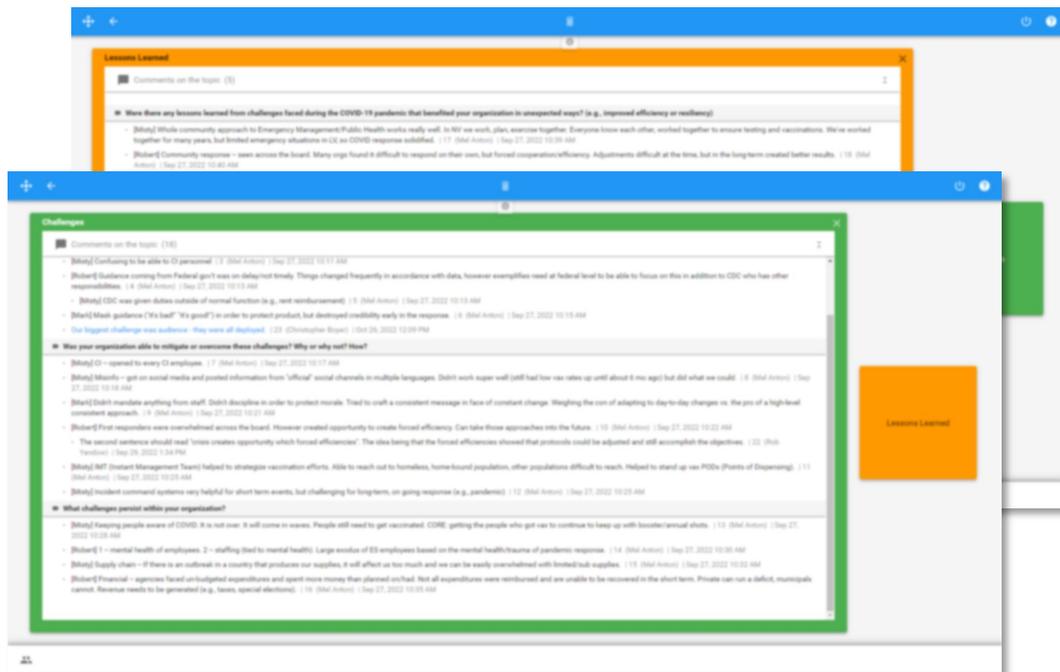


Figure B1: Screen shots of online collaboration space

Collectively, information from the discussions, submissions to the online collaboration space, and research conducted by the ES SMT for relevant supporting and reference documents formed the basis of this after action review.