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**LESSONS FROM COVID CHALLENGES
AND STRATEGIES FOR THE FUTURE**

STRENGTHENING EMERGENCY PREPAREDNESS



**PREPAREDNESS
LEADERSHIP
COUNCIL**

INTERNATIONAL

Strengthening Emergency Preparedness

Lessons From COVID Challenges and Strategies for the Future

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Foreword by Robert Kadlec, MD

The Preparedness Leadership Council International

The Preparedness Leadership Council (PLC), is a thought leadership group comprising insider practitioners and opinion leaders who offer advice and recommendations on topics relevant to emergency managers, first responders, medical receivers, local-state-federal authorities, nongovernmental organizations, and the private sector. Established in 2014, the PLC is tasked with developing quantifiable and quantitative feedback from surveys and roundtable discussions that is gathered from and shared with a broad multidiscipline, multi-jurisdictional audience of operational professionals and policy advisors.

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INTRODUCTION

In early 2020, countries worldwide recognized that a deadly pandemic had emerged. Despite previous warnings that such an event could and inevitably would occur, countries were caught off guard. Four years later, COVID-19 remains an active virus. Nevertheless, too many preparedness policy officials have moved on from that serious public health threat that took millions of lives and refocused their efforts on other domestic and foreign threats. Recognizing the potential for significant lessons to be lost, the Preparedness Leadership Council (PLC) organized and hosted two workshops in 2024. The PLC held the first on May 14 in Washington, D.C., and the second on July 9 in New York City (NYC). Both were moderated by Dr. Robert Kadlec, a lifelong public health expert who played an integral role in providing a vaccine to slow the spread of the disease.

For these workshops, the PLC extended invitations to other senior officials from Hospital and Healthcare, Public Health, Emergency Management, and other responder communities who had operational responsibility throughout the pandemic. Those participants' stories, reflections, and recommendations captured the deficiencies and strengths during the nation's COVID-19 response. This white paper summarizes these conversations and reinforces the need for sustained awareness that biothreats like the one that spurred a global pandemic are real and reoccurring. To better prepare future leaders across disciplines, the testimonies, lessons learned, best practices, and other key findings they revealed should be shared globally to ensure effective responses to future public health threats. Although biothreats do not recognize geographical boundaries, they do require timely coordination and global communication.

New York, NY, Workshop, July 9, 2024



HISTORICAL CONTEXT OF EMERGENCY PREPAREDNESS

Public Health Emergency Preparedness (PHEP) and other emergencies that threaten the public's health are not new to the U.S. or unique to the COVID-19 pandemic response. Past public health emergencies included Ebola (West African outbreak in 2013-2015 and Democratic Republic of Congo outbreak in 2018-2020), poliomyelitis (2014-present), Zika (2016), and COVID-19 (2020-present). Other biothreats that were handled with minimal impact included the H1N1 pandemic (known as the swine flu in 2009-2010), the polio outbreak (2014), the Ebola outbreak in Western Africa (2013-2016), and the Zika virus epidemic (2015-2016) (Wilder-Smith & Osman, 2020). These and similar biological threats can potentially reemerge in a comparable or modified form to impact the public health infrastructure. Advanced planning, early warning, and timely notification of a potential public health hazard can help mitigate potential emergencies.

EXISTING INFRASTRUCTURE AND SYSTEMS

With many decades of experience in public health emergencies, the federal government has created planning and response infrastructures and funding sources to mitigate threats. The Centers for Disease Control and Prevention (CDC) PHEP Cooperative Agreement Grants, the Administration for Strategic Preparedness and Response (ASPR) Hospital Preparedness Program Cooperative Agreement, the Healthcare Readiness Program, and the Regional Disaster Health Response System are examples of sources that enable local and state governments to prepare for weapons of mass destruction. Although these funds often focus on metropolitan statistical areas, they benefit most suburban and rural areas. Based on the NYC and Washington, D.C. discussions, it is apparent that some local and state governments have had more robust preparedness programs than others. Those programs enabled them to execute their plans more rapidly before the pandemic reached their communities than those lacking structure. Timely and effective response strategies to the COVID-19 pandemic and the challenges communities faced are outlined throughout this paper.



Washington, D.C., Workshop, May 14, 2024
Maryland Fire and Rescue Institute

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FOREWORD

While we continue to debate the origins of the COVID-19 pandemic, there is no debate on the pandemic's impact on our health care system, country and the world. Billions were infected. The World Health Organization estimates that over 7 million people died from SARS-CoV-2 infection. Over a million Americans died. The economic consequences are counted in the trillions of dollars. In aggregate, the pandemic's effects are staggering on individual lives, economies, societies, and nations. Only the global wars of the last century can compare, and even then, the effects and human costs are dwarfed by COVID-19.

For the millions of first responders who engaged in the treatment and care of the millions who became ill, the numbers are more personal. With each patient and life lost there is a personal story for each responder. It represents blood, sweat, and tears that each expended in the sincere effort to save the lives of strangers, neighbors, friends, coworkers, family members, and even themselves from a virus no one had encountered or treated before.

The participants of the two panels convened in Washington DC and New York represent the spectrum of professionals who fought the pandemic. They are paramedics, nurses, doctors, administrators, emergency managers, logisticians, and morticians. Each of them, whether their title or role was leader, became one. Like battlefield commissions in war, each of them stepped up to lead. They did what had to be done, often at great personal mental and physical risk and cost.

This is their story. It is a distillation of a myriad of their experiences, good and bad. While many institutions, agencies, and states have compiled their lessons observed, there has yet to be a national effort to compile them all. Until we can do so, the ingenuity, innovations, and failures of first responders in hospital emergency rooms's and intensive care units's, EMS units, emergency management agencies, warehouses, and morgues during this pandemic will not be fully cataloged and shared.

The participants talked about leadership, communications, planning, training, exercises, and logistics — issues not normally discussed in the care of patients suffering from a viral infectious disease. They also cited the challenges of treating patients and vaccinating the vulnerable. The dependencies of these apparently unrelated domains become stark and compelling by their observations and experiences.

We owe each of them so much for what they did—their efforts and sacrifices. We also owe them for their commitment to future generations. What they shared here goes beyond simple lessons observed and learned but lessons that must be acted upon and implemented. This is their gift for future responders who will one day face similar but not the same challenges when another pandemic sweeps the planet. Hopefully, these future responders will be more informed and better prepared because of those who dealt with the challenges of COVID-19 and met to candidly share their stories.

Robert Kadlec, MD
November 13, 2024

EXECUTIVE SUMMARY

The most significant national and global lessons to learn about public health disasters in the 21st century emerged from the COVID-19 pandemic response. Due to the pandemic's size and magnitude, some outcomes were inevitable. However, significant gaps and losses involving authorities, laws, orders, and command and control structures could have been mitigated or prevented with advanced warning, proper planning, and effective training and exercises. Two workshops organized by the PLC in 2024 addressed these issues. The May 14 workshop in Washington, D.C., and the July 9 workshop in NYC brought together participants from across disciplines: Hospital and Healthcare, Public Health, Emergency Management, and other responder communities. Their key findings and testimonies provide a roadmap for current and future leaders to navigate future public health threats. Both workshops were moderated by Robert Kadlec, MD, Assistant Secretary for Preparedness and Response at the Department of Health and Human Services from 2017 to 2021.

Workshop participants identified strong leadership traits as the most significant strength during the COVID-19 response. Communities demonstrated this when their leaders carried out their missions successfully despite political interference. Participants shared their personal experiences and behind-the-scenes insights from the pandemic, all of which highlight the importance of preparation, communication, collaboration, empathy, and learning from the crisis to prevent similar events in the future. They emphasized the need for better information systems, medical care telemedicine flexibilities, and investments in people and technologies to navigate the pandemic effectively.

Participants also shared their insights on effective emergency management strategies, including empowering the public, developing a solid workforce of trained personnel, and managing uncertainty. The federal government is critical in distributing resources to the communities that need them. However, the local government must improve its emergency preparedness efforts and supply-chain management rather than relying solely on federal funding.

LEADERSHIP

The pandemic thrust many people into leadership roles that quickly consumed their daily work and home routines. Janice Halloran, Executive Director of Emergency Management, NYC Health & Hospitals, Jacobi Medical Center Bronx, NY, recalled her experience, “I walked, talked, ate, and drank COVID whether I liked it or not. I lived in the hospital and never really went home.” With many years of hospital experience in the hot zone, she immediately identified resource problems that needed to be addressed. For example, the existing morgue capacity of 12 decedents at that time was not going to meet the demand. Her hospital needed to handle more than one patient at a time, requiring more trailers, an outside tent, and the conversion of the same-day surgery areas into Intensive Care Units (ICUs).



She acknowledged that her quick decisions and proactive approach were facilitated by her colleagues and her ability to be “humble enough to listen to the smarter people in the room. However, when nobody’s talking, then you’re the smart one.” With the help of the chief trauma surgeon, just five days after identifying the capacity gap, they transformed the hospital’s surgery centers into 14 ICU bays before their first patient arrived. She emphasized the critical leadership trait of being able to make a decision when no one else in the room wants to make it, “What most folks want is somebody to make the decision. So, be a good or bad guy, but be something. Just don’t be quiet.”

Titles do not make leaders

Titles do not make leaders. There is a difference between being in a leadership position and having leadership traits and qualities, which is an essential aspect for future leaders to consider. Sometimes, the lowest-ranked person in the room may be the only one available to make time-sensitive, critical decisions. Travis Cryan, Owner, TLC_TRNG, former Chief of Staff, International Association of Emergency Managers, noted, “We’ve seen a change in the role that we all take no matter what our job title,” as elected officials and others search for “chief problem solvers” during a crisis.

EFFECTIVE LEADERSHIP TRAITS AND BEHAVIORS

Although being in a leadership position does not automatically create a leader, sometimes, people grow into those roles when needed. Despite not wanting to be in charge, Dr. Laura Lavicoli, Chief Medical Officer for NYC Health and Hospitals, was reassigned to oversee the system’s response to the pandemic. Her leadership involved gathering knowledge and experts in the room, making plans and decisions based on that information, frequently reassessing these decisions, and changing them if the reassessment dictated. Dr. Lavicoli and the Emergency Department (ED) staff



Dr. Laura Lavicoli

designated the ED as a hot zone, meaning nobody could enter without full personal protective equipment (PPE) or exit with used PPE. Even though it initially was not a popular decision with the administration and others because wearing masks might scare the patients, she knew that those decisions would do the greater good for those in her care. She reasoned that in the “worst-case scenario, we get fired.”

One challenge Dr. Mary Foote, Medical Director for the Office of Emergency Preparedness and Response at the NYC Department of Health & Mental Hygiene, encountered involved allocating resources equitably throughout underserved

populations and communities. With a lack of planning, distributing scarce resources to address the needs of high-risk populations was challenging. The healthcare community witnessed disproportionate mortality rates and impacts on the poorest neighborhoods and on Black and Latino communities. Neighborhood maps listing areas with high poverty levels, HIV infections, or chronic diseases could have predicted that a pandemic would generate a poor outcome. Despite having more discussions on this topic, Dr.

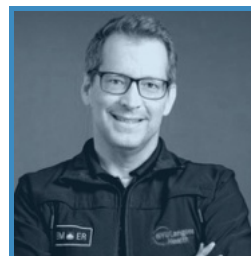
Foote has observed that similar issues continue to arise in subsequent responses, “Equity needs to be built into the plan. But you can’t just say it; you need buy-in.” She emphasized the importance of making some of those difficult leadership decisions to put scarce resources in the places where people are more likely to be impacted – neighborhoods and areas that do not have the power, independent safety nets, hospitals, etc. She added that some politicians who interfered with the resource distribution continue to deny that the nation went into crisis standards of care.



Dr. Mary Foote

PSYCHOLOGICAL ASPECTS OF CRISIS LEADERSHIP

Personal and community wide factors added another dimension to crisis leadership. The loss of family members, friends, and coworkers, economic stressors, disruptions to the supply chain, contradictory messaging, and isolation promoted feelings of denial, fear, anxiety, and other emotional and psychological aspects. Kelly McKinney, Emergency Manager at New York University Langone Health, stated, “I learned that the disaster world is different than the normal world, and people live in the normal world. They fear the disaster world. They deny the disaster world. They build a brick wall in their minds to shield themselves from it. And



Kelly McKinney

that psychological bias is the root of a lot of the problems that we're talking about with COVID."

Mental health also escalated among healthcare workers and others on the frontline of the pandemic response. Dr. Foote alluded to a study published in the *Proceedings of the National Academy of Sciences* that reported universal healthcare could have

It would take very little to collapse the healthcare system

reduced mortalities caused by negative COVID-related factors. Researchers estimated that a single-payer universal healthcare system would have saved 212,000 lives in 2020 alone. A Medicare-for-All system could have saved \$105.6 billion in medical expenses associated with COVID-19 hospitalization (Galvani et al., 2022). Regarding overworked hospital staff and burnout, Dr. Foote

described it as "a national security risk. It would take very little to collapse the healthcare system, as we have seen." She recommends shoring up safety nets and having better reimbursement structures so healthcare can have the staffing and resources needed to better withstand inevitable disasters.

For some, COVID-19 conjured memories of past battles. Scott Russell, a 30-year Baltimore County Fire Department veteran and hazardous materials instructor, said, "When I dealt with special forces in the military, when the guy went down next to you, guess what you had to do? You had to keep going. You had to finish the mission before you went back and took care of the person wounded. Just the way it was. So that's pretty much how I was. I just tried to sit down at the table and talk people through it and make them look at things from a different perspective." According to him, those in high positions are not being transparent when they tell the public, "We're going to fix everything." Instead, the public should understand that "We might not be able to fix this."



Regarding anxiety, Greg Burel, President and Principal Consultant for Hamilton Grace LLC and former director of the Strategic National Stockpile, added that leaders must educate the public. Regarding the preparedness measure Duck and Cover (Encyclopedia Britannica, 2021), he said that the civil-defense response, "as stupid as that was, it was something to tell the public about what you need to be thinking about. We're failing there."

COMMUNICATION

COMMUNICATION FROM THE TOP DOWN

Signs of an impending crisis surfaced months before anyone had heard of COVID-19. In July 2019, a nursing home in Fairfax County, Virginia, had an unknown outbreak, which was never fully diagnosed. However, with universal infection control measures, the health department could assist facilities in managing and containing the outbreak (Fairfax County, 2019). Scott Russel shared that, in September-October 2019, “We had personnel coming down with this so-called 100-day cough. They weren’t feeling good coming back to work and said something’s just here. And then Christmas came, and coughs went away.”

On December 12, 2019, patients in Wuhan, China’s Hubei province, began experiencing atypical pneumonia-like illnesses (CDC, 2023). On December 29, 2019, ProMeED International Society for Infectious Diseases was monitoring emerging diseases and distributed an email notification about an undiagnosed pneumonia-like illness (International Society for Infectious Diseases, 2019). That communication was followed by additional email notifications. Although some knew about these notifications, others never received them because Public Health typically does not have a designated person to oversee intelligence gathering and monitoring.

On December 31, 2019, the World Health Organization’s country office in China was informed of several cases of pneumonia of unknown cause that was not responding to any of the treatments. On January 20, 2020, the CDC reported the first laboratory-confirmed cases from the samples collected on January 18 from two patients in Washington state, thus activating its emergency operations center (EOC). A day later, the Chinese government confirmed human-to-human transmission.



Robert Kadlec, MD

In early 2020, when Dr. Robert Kadlec was serving as the Assistant Secretary for Preparedness and Response, a senior Taiwanese official, who was also a nephrologist and epidemiologist, whispered in Dr. Kadlec’s ear that they knew in November 2019 that something was going on in Wuhan. Assuming some of these were tied and cascading events, it is imperative to determine how to connect the dots and share early warning information among the Public Health profession globally. One way to make this determination could be to adopt a global Public Health intelligence-sharing organization such as the Program for Monitoring Emerging Diseases (ProMED) which is a program of the International Society for Infectious Diseases. ProMED is the largest publicly available system reporting of infectious disease outbreak (ProMED-Mail, 2024). These readily available systems for reporting infectious disease can be promoted and widely utilized to gather public health intelligence. Any confirmed human-to-human

transmission should prompt global activation in a global society, as it is difficult to contain a biological threat with an unknown etiology.



Dr. John Redd

On February 18, 2020, due to the high positivity rates for COVID-19, all passengers and crew of the Diamond Princess cruise ship were quarantined and prevented from returning to the U.S. for at least 14 days after they left the Diamond Princess (CDC, 2023). Dr. John Redd, Chief Medical Officer in charge of the evacuation of the ship in Oakland, had to extend the containment phase because of the failure of the initial laboratory efforts, which “delayed our ability to detect COVID properly in the United States, and therefore delayed our movement into a mitigation phase, in my opinion, probably by many weeks. It meant a lot of effort was made on containment when it really should have been turned to mitigation.”

Information sharing across Hospital and Healthcare systems was particularly challenging during the initial phase of the COVID-19 response. Dr. Redd was reassigned to the Federal Healthcare Resilience Task Force, which was leading the development of a comprehensive strategy for the U.S. healthcare system to facilitate resiliency and responsiveness to the threats posed by COVID-19. “The big thing that we noticed was that you’ve got to be able to push out information very, very quickly.” There was no system for developing clinical information quickly enough (Federal Healthcare Resilience Task Force EMS Prehospital Team, 2020).

Furthermore, Charles Guddemi, the Statewide Interoperability Coordinator for D.C.’s Homeland Security and Emergency Management Agency, shared his experience during the COVID-19 response. He included additional events, such as the George Floyd protest and inauguration, which challenged how governments build command posts and EOCs and caused them to shift tactics to share information. For the first time in history, 25 subcommittees met remotely to plan for the inauguration. Virtual EOCs should be adopted and continued to be utilized for everyday emergencies and events for rapid information sharing and response.



Charlie Guddemi

COORDINATION AND COMMUNICATION IN THE WHOLE COMMUNITY APPROACH

Communities that took a proactive rather than reactive approach were able to lessen some of the impacts that other communities experienced. Early activation and preparedness were crucial for success. This included combating the rapid spread of misinformation during the COVID-19 response. Some measures communities should continue to take for any public health emergency include retrieving ground-level

feedback, providing trustworthy information, mitigating public indifference, and dispelling disbelief about the pandemic. Countering misinformation involves recruiting trusted sources such as nurses, doctors, and others in the profession that the general public may relate to or believe.

Kelly McKinney's team monitored the coronavirus while being proactive and preparing for the unknown. They used the concept of watch, size up, notify, activate, and operate for the worst-case assumption planning. Despite resistance from many medical and administrative staff, they activated early. In January 2020, Michael Cox, Director of Maryland Fire and Rescue Institute, was visiting a family member at the University of Maryland, where he witnessed construction materials being transported through the hallways. He asked the nurse what they were for. The nurse said, "We are preparing for this China virus, making more isolation rooms." He said, "Really? It is not even here yet."

John Scrivani, Director of Safety, Security & Emergency Management for the Virginia Department of Transportation, deployed to NYC to run disaster morgue operations. He described his frustrating interaction with his neighbor upon his return home to Virginia, "My neighbor asked if COVID-19 was real. He said COVID-19 was bogus. I told him I towed my camper to the pier and lived with 3,500 to 4,000 decedents for 45 days." When Scrivani later asked his skeptical neighbor to describe his overall health condition, his neighbor fit into the demographics of most of the recent decedents. To make a point, Scrivani told him he had an extra body bag if needed.



Michael Gemelli, Director of CBRN/WMD Detection and Mitigation for the Metropolitan Transportation Authority (MTA), acknowledged that it was challenging to control rumors and misinformation. Despite the numerous protective measures implemented by the MTA, the public was slow to return to being comfortable using mass transportation. He said there were "a lot of lessons to be learned about communications with our employees and customers because there are a lot of misnomers that were spread about the subway and our buses." The MTA took a big financial hit with a reduction in passengers, from 8 million a day before March of 2020 to 500,000 a day in the months following the start of the pandemic.

In addition, being transparent with the public and communicating the rationale behind changes can improve trust in the government. In the fall of 2020, Dr. Redd's team moved into monoclonal antibodies under Operation Warp Speed. That partnership between the Departments of Health and Human Services (HHS) and Defense aimed to help accelerate the development of a COVID-19 vaccine and therapeutics. Once again, he said there was "a need to really pivot clinical care." Public information had to change from, if you are not that sick, do not come to the hospital, to if you want to get your monoclonal, you need to go to the hospital. According to Dr. Redd, the treatment

reduced the death rate by about 80%. Not only were lives saved, but the treatment reduced the number of hospital days. So, they were effective medications, but many providers did not know how to use them.

It is critical to have a mechanism and relationship in place to obtain timely and accurate data to help effectively drive operations and enable first responders to share this data. It is also imperative to educate and empower the public by being transparent and avoiding distrust. For example, although virtual services were implemented later, some people in churches lost trust because they were not allowed to gather. Workshop participants offered the following recommendations to build transparency and trust:

- Communicate with the public beforehand by being transparent and continuing to communicate any changes to the existing plan and response.
- Build trust and minimize distrust in the government with timely, frequent, efficient, and transparent public messaging. A message such as “Gathering in person would pose a health threat to your family of faith, but you can still practice with them through virtual services” could be more transparent.
- Be frank and inform the public of the reason a decision was made a certain way. The professionals at the workshops agreed that the public dealt with scarcity well, as long as it was a fair distribution.
- Deliver timely, efficient, and transparent messaging using community-trusted local emergency responders such as emergency medical service members.

COMMAND AND CONTROL: ROLES AND RESPONSIBILITIES

U.S. Northern Command (NORTHCOM) and the Federal Emergency Management Agency (FEMA) had different mission assignments that required constant deconflicting. One of the biggest challenges was determining what was needed at the local versus state levels. The lack of process for national command and control for coordinating resources at the local level caused challenges and duplication of efforts. For example, the National Guard was trying to deploy personnel to the same location where NORTHCOM already had active-duty personnel heading. Perhaps establishing a clear national roadmap leading down to local response can minimize some of the confusion and duplication of efforts that occurred during the COVID-19 pandemic.

The National Guard had resources such as Civil Support Teams, but they had to determine what and where they could be utilized locally (e.g., state laboratories, testing and decontamination sites). There was confusion with mass fatality support and decontamination efforts for NYC’s healthcare facilities, nursing homes, etc., due to a lack of formal procedures in place to use federal resources effectively. The New York State National Guard helped retrieve the bodies of those who died at home and brought them to the Office of Chief Medical Examiner. Although the National Guard has a lot of capabilities to help with feeding missions, testing sites, etc., it seemed to be

*Responders Found
It Challenging to
Explain the Incident
Command System
On-Site to Doctors*

competing with active-duty state and local government resources. The National Guard and active-duty resources need to be embedded into the local response and existing resources through plans and procedures.

Some operational challenges observed in test sites were medical providers' differing opinions. Some doctors' views differed on how to carry out the operations. Some responders found it challenging

to explain the Incident Command System on-site to these doctors. Briefings at the beginning and end of each shift are opportunities to share the common operating picture with operational staff. They can develop a unified understanding of the objectives and tactics necessary to carry out the operation successfully. Perhaps implementing and adopting policies and standardized procedures can minimize the room for subjectivity.

Workshop participants also agreed that there needs to be local and state integration with FEMA. Federal, state, and local government requests for information slowed the COVID-19 response. Hospitals could not handle these requests when they were busy acquiring resources and equipment. The workshop participants agreed that the decision-making should occur at the local level and that they should not divert their energy to tasks that local and state governments should control.

Regularly briefing executive leaders and assigning responsibilities to politicians and senior leaders provide them with some operational understanding, which may limit interference and enable operational staff to focus on the mission. For example, Diana Matty, Fire Chief at West Palm Beach, Florida, shared her city's approach to this process, "We created, yes steps" for politicians to be involved in issues related to food, water, and medicine for seniors, children, and families, and conduct outreach to community service volunteers and nonprofit and faith-based organizations. "We have a strong mayor system. We had each of our commissioners oversee one of the pillars. And it kept them actively engaged." This is one way to make politicians feel included and give them trust that they are part of the whole community response. Following are some best practices:



Diana Matty

- Clear roles and responsibilities should be outlined in the plans for human services versus health services.
- Local and state EOCs should not be tied up with Public Health and healthcare operations. In West Palm Beach, local EOCs were activated to run city human services operations, not for COVID-19 health operations, such as feeding the

city, transportation coordination with Uber, etc. Local and state EOCs should only coordinate the local government's human services response to an emergency.

- Local and state health departments should activate and operate their own public health emergency operations centers.

NYC Command Element Notification protocol was created so partners from each agency can call each other. However, communication stopped with those in charge, the ultimate decision-makers. Communication gaps may be due to restrictions placed on the Emergency Management profession's ability to communicate with one another even on blue-sky days due to the internal politics of each organization, government entity, etc. One solution to this challenge is establishing a statewide and national committee or task force for briefing politicians during blue-sky days with true subject-matter experts (not just someone in a higher-ranking state or federal leadership position).

Perhaps establishing or identifying an organization independent from the government could increase understanding of the gaps, challenges, and requirements for an effective response. Trust needs to be granted. For example, politicians regularly requested guardsmen until they realized states were running out of money. They had to be informed of critical needs and tasks to ensure active-duty resources could be used without going bankrupt, thus leading them to execute active-duty orders instead of state orders. Give them the facts so they can make an informed decision. Try to speak the politician's language when communicating and relaying information by being candid and honest.

PLANS, PLANNING, AND EXERCISES

Some responding agencies utilized their plans effectively, while others could not.

Although this may have been due to a turnover in the field, the consensus at the workshop was that some of the plans were neither operational nor actionable. For example, NYC Emergency Management was unaware of the mass fatality plan that could have assisted logistics planning. A turnover may have caused the disconnects in the planning process. One of the lessons learned for Frank DePaolo, retired Deputy Commissioner of the NYC Office of the Chief Medical Examiner (OCME), was that "No good plan is executed without politicians putting their two cents in."



Frank DePaolo

He said that if he had to rewrite the plan, he would have included a section called "political interference" because that caused him more grievance than anything else. He noted that, rather than burying people, politicians wanted a massive freezer solution that could freeze bodies for a year and a

half, which was costly. It had never been done before on the scale needed for that response. Ultimately, 85 percent of the people ended up being buried anyway. Chief contracting and procurement officers involved in the planning could help identify and secure supplies and equipment during emergency operations and blue-sky days. They could also help execute or may already have emergency procurement contracts with vendors.

Planning should also include playbooks for future pandemics. David Cullin, founder of Cullin Consulting LLC mentioned how he discussed the COVID-19 response with his daughter, a hospice nurse. She reported they did not have a playbook and had to build it as they responded to the pandemic. He asked if they had ever conducted exercises or used their knowledge to mentor the new workforce. The bottom line is, “No, we’re good at putting everything in the past and not worrying about it.”

*Plans Are Worthless, but
Planning Is Priceless*

Nevertheless, these plans should be updated based on the lessons learned nationwide. Perhaps research institutes could spearhead efforts to establish a more accessible and current national repository. For instance, Brittany Lampert, Visiting Bioweapons fellow at the Council on Strategic Risks team at the Brown University Pandemic Center, is working on an initiative to obtain lessons learned from state and local leaders in response to the COVID-19 pandemic and to share those lessons broadly. Additional key elements of operational plans identified during these workshops include but are not limited to:

- There is a lack of sustainable budgets, ongoing cuts, and shortfalls in current funding. Greg Burel stated, “There is just not enough money being appropriated not only to the [Strategic National Stockpile] but to Public Health.” Local governments must prioritize preparedness by allocating and advocating for funds without relying on federal funding.
- There is confusion between HHS and FEMA funds. Perhaps in coordination with the chief financial officers, a procedure should be created outlining the appropriate use of these funds.
- Emergency Management at the local, state, and federal levels needs involvement from the Government Accountability Office’s (GAO) Office of Inspector General (OIG) to ensure that improvement plans are implemented. The GAO, OIG, Comptroller’s Office, etc., should capture and enforce lessons learned during COVID-19 and other emergency responses to change and improve the plans.
- Ways to expand partnerships include:
- Have memoranda of understanding or memoranda of agreement with private sector partners.

- Promote innovation-based discussions to determine how the private sector can improvise its operations to support Public Health and the national emergency response. For example:
 - FLIR improvised its business continuity operations by producing skin temperature stickers.
 - Bacardi shifted a portion of production from premium rum distilleries to produce hand sanitizers in Puerto Rico
 - Chick-fil-A offered a drive-through vaccination distribution model.
 - The D.C. Fire Department partnered with a Giant food store to deliver meals to the fire department in case grocery stores and restaurants shut down. In addition, they set up COVID-19 test clinics for the public at the fire department. The D.C. Fire Department also partnered with Kaiser Permanente to vaccinate the fire department workforce to avoid making their staff vaccinate each other.
- Enhance predictability with incentives for corporations to support communities by having regular meetings and discussions about innovation-based emergency response during blue-sky days.
- Build nonprofit partnerships to identify existing resources and capabilities these partnerships may provide. For example, Samaritan’s Purse built a tent hospital in NYC.

International or global partnerships are essential for minimizing the impacts of supply-chain shortages and providing timely critical information sharing. FEMA procured a lot of PPE through global partnerships and donations (FEMA.gov, 2020). In a global society, biological events do not have territorial boundaries.

*Training Brings
Plans to Life*

Some local governments were equipped to provide PPE training for first responders by utilizing their fire and health department staff, while others needed support from the National Guard. The degree of training varied among local governments, and those

new to the workforce were unfamiliar with specialized PPEs such as N-95s and N100s. As such, it is imperative to assess training needs before a disaster and identify resources that may support them at the local and state levels (e.g., PPE and training for fire, emergency medical services, or police).

During COVID-19, some first response agencies operated independently, but it should not be assumed that they are equipped with everything they need. The consensus among workshop participants was to educate and empower first responders, including police, emergency medical services, fire, hospitals, healthcare institutions, politicians, and the public. These responders are critical in providing data for identifying, detecting,

and surveilling public health threats, so they should be included in the planning discussions.

Dr. Kadlec mentioned, “Sometimes all these elegant studies, and all these things from different federal agencies that are out there, take an extraordinarily long time, and you need just basic information.” To follow up on this recommendation, John Scrivani stated that the Virginia Department of Transportation is now leading the effort to simplify its existing plans and guides to empower staff to make decisions and streamline the process so anyone can pick them up and use them.

There was consensus among participants at both workshops that, like the civil service preparedness days, people should be trained for disasters, including children in schools. People are resilient and become creative when needed, so a framework could empower them to enhance those creative efforts. It all begins with involving legislators, policymakers, and leadership in plans and exercises on blue-sky days.

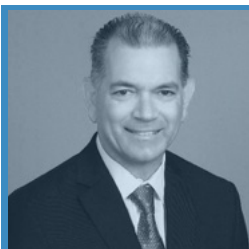
INVENTORY MANAGEMENT

LOGISTICS RESOURCES

For several years, through October 2019, L2 Defense, Inc. (L2) coordinated many large-scale exercises in NYC that included federal agencies, active-duty Department of Defense personnel, the NYC Fire Department, the city subway transit, the Amtrak train in Penn Station, NYC subways, and hospitals. Throughout these meetings, trainings, and exercises, relationships formed between the military, private sector, healthcare, and government agencies.

In March 2020, L2 personnel were back in NYC for a planning meeting with the fire department and Department of Defense when they were told all trainings and exercises were stopped, due to COVID-19.

Logistics Wins Wars



Russell Accardi

When COVID-19 started, the Executive Director from the Jacobi Medical Center Hospital in the Bronx, NY called Russell Accardi, Director of the Global Preparedness & Security Division at L2 Defense Inc., and said, “Can you find out from your contacts when we’re going to see soldiers at this hospital? We keep hearing we’re going to get them, and we need them.” Accardi, through his network established, over many years conducting training and exercises for the Active-Duty Army, called

NORTHCOM’s CBRN program manager and asked if Jacobi Medical Center would be receiving medical personnel from the U.S. Army, as they were in desperate need.

Accardi called his contact at Jacobi back after receiving confirmation from NORTHCOM of the deployment of 100 federal military medical personnel. The Executive Director at Jacobi picked up the phone and she said, “You’re not going to

believe this. I see a line of U.S. military in the hallways.” Accardi said that example highlights how the private sector, government, and emergency services intersect when an unusual event becomes a national level threat.

SUPPLY-CHAIN MANAGEMENT

The most significant supply challenge was a lack of resources such as ventilators and Personal Protective Equipment (PPE). When the hospital administration at Mt. Sinai said, “Federal government will come to help us,” Don Boyce, the System Vice President for Emergency Management at Mt. Sinai, responded, “There are currently are no plans in place to support the downrange effort that hospitals are hoping for.” Instead independent solutions need to be developed as quickly as possible. Dr. Lavicoli had a similar experience when her hospital administration met with city leadership. After the meeting, she was told, “Ventilators aren’t coming. Go save as many lives as you can.” They had to implement crisis standards of care. Some hospitals and healthcare facilities had difficulty allocating resources equitably. In addition to medical supply shortages, some struggled to find warehouse or storage space for large-scale PPE distribution. Healthcare participants at the workshop agreed, “Provide resources so there would be no competition between the city and hospitals. Bring us the supplies, and let us do it.”

ISOLATION AND QUARANTINE

Some participants alluded to an option to alleviate the pressure from the hospitals. Chief Matty’s team achieved this by driving around in what they called “COVID cars” to triage and perform complete assessments to decide if the patients needed to be in the hospital. They conducted follow-through calls over the next few days to ensure that the patients were okay. Their Medical Director made these small operational changes to create containment measures that used limited resources effectively and preserved critical care facilities for patients requiring lifesaving interventions.

Washington, D.C. Fire Department implemented a COVID-19 Incident Response Team. With proactive thinking, they developed their own policies and procedures to decontaminate N-95s and ambulances. They collected masks at the end of each shift, decontaminated them, and returned them to the same person before their next run. Edward Kauffman, Battalion Fire Chief of Homeland Security and Special Operations for the D.C. Fire and Emergency Medical Services Department, was proud to say they had no company out of service during the response. They had contingency plans in place to keep the shifts running. They worked rotating shifts of 24 hours on and 72 off, “We stayed full strength the whole time without having to cut a shift.” They conducted their own contact tracing by testing whoever presented symptoms and contacting everyone who interacted with that person.

MEDICAL COUNTERMEASURES, DISPENSING, TREATMENT, AND RESEARCH

The Defense Production Act of 1950 stated, “Congress finds that the security of the United States is dependent on the ability of the domestic industrial base to supply materials and services for the national defense and prepare for and respond to military conflicts, natural or man-caused disasters, or acts of terrorism within the United States” (House.gov, 2018). Paragraph 7 of the act’s Statement of Policy says, “to ensure that essential national defense requirements are met, consideration should be given to stockpiling strategic materials, to the extent of such stockpiling is economical and feasible.” After the COVID-19 response tested the national capability to respond to bioevents, current and future U.S. administrations should identify ways to execute this paragraph in the act to better prepare the nation to respond to future biological threats.

The economical and feasible stockpiling of resources can be accomplished by implementing sustainable solutions. Some of these can be achieved through Sections b1 and b2 of the Defense Production Act’s Declaration of Policy, which emphasize the need for federal government agencies to assess and evaluate production capabilities during emergencies and peacetime (House.gov, 2018). Perhaps FEMA or ASPR can be an authoritative entity whose purpose is to determine where resources are best needed and how to allocate excess resources to suit ever-changing needs. Long-term care facilities are regulated by the Center for Medicaid and Medicare Services, but they do not regulate assisted living facilities; states do. However, the degree of standards set by each state varies. While some are regulated by Public Health, others are regulated by social services. Perhaps states could enact laws for these facilities to be regulated by Public Health and be required to have a base stock of PPEs.

It is imperative to address supply-chain issues before a disaster when production is limited. For example, the pandemic exacerbated shortages of already backordered drugs. Dr. Kadlec mentioned how, in 2019, the Crimson contagion, a national level exercise conducted by the HHS to test the nation’s ability to respond to influenza pandemic, identified a problem experienced during COVID-19 (National Biodefense Science Board, 2019). The exercise participants identified that the Center for the Biomedical Advanced Research and Development Authority was not equipped to rapidly produce drugs in response to a large-scale public health threat. Dr. Kadlec even found that one of the companies involved in the Centers for Innovation and Advanced Development and Manufacturing opted out of the program. The exercise outcome indicated that the nation would have challenges during a pandemic.

Brian Shuy, Senior Vice President at The Conafay Group, received a call from Dr. Kadlec one night in the spring of 2020. Dr. Kadlec told him they would immediately have to make vaccines and therapeutics. With a small group of policymakers and medical professionals, a pizza, and a whiteboard, the group brainstormed Operation

Warp Speed, which the White House announced a week or two later. The next challenge was determining how to implement it with supply-chain issues. Shuy said, “But it started in a conference room with people thinking: What if you took off all the limits? What if you didn’t have every regulation? You could get around it a little. And so that big thinking, which I had never seen in government before. I always saw the opposite before, ‘You can’t.’ There is no, you can’t.”

One of the biggest lessons learned for Dr. Redd, who was tasked to run the Healthcare Resilience Task Force under the FEMA reorganization, was that they had to develop medical care telemedicine flexibilities, which still exist today. “Those are policies we wrote with the Centers for Medicare & Medicaid Services. Those were extremely important. We had to make sure that providers could practice over state lines. That’s something that needs to be maintained.” Hospitals and the healthcare community continue to utilize them every day.

PUBLIC HEALTH SERVICES ACT

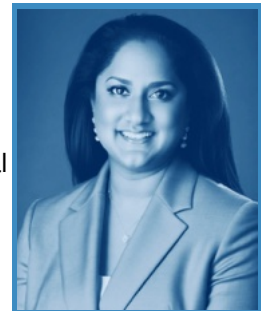
On January 31, 2020, the Secretary of HHS declared a public health emergency to lead the public and medical responses to the public health emergency. Later, the president expanded this authority into other authority and leadership structures. Through the establishment of the National Biodefense Strategy and National Security released September 2018, the president wrote a memorandum to form the White House Coronavirus Task Force.

Asha George, Executive Director of the Bipartisan Commission on Biodefense, recommended that the vice president lead the biodefense enterprise because it needed to be a multi-

jurisdictional and multi-agency response. “Everything, even a good recommendation by the commissioners, was all over the place.” It was obvious someone needed to be appointed to make that ultimate decision.

The benefits of such a strategy are outlined in this testimony. As a result, the president assigned people on the ground to determine what local responding agencies, such as NYC OCME, needed. Dr. Eastman, Countering Weapons of Mass Destruction, who the president detailed to FEMA to provide support to local leaders asked Frank DePaola, Former Deputy Commissioner of NYC OCME, what he needed and made a few calls. NYC OCME soon had military, Disaster Mortuary Operational Response Teams, etc., arriving to remove bodies from homes and other critical tasks. Before, when they requested resources, they were turned down (Weekly Update: DHS response to COVID-19, 2020).

The consensus among workshop participants was to prioritize vaccine distribution at the local level to ensure what works best for their communities while facilitating between state governments to coordinate the movement of vaccines back and forth as



Asha George, DrPH

necessary. The question posed by a few participants was related to providing the public with Narcan: Why not expand that process for vaccines? The proposed concept is for paramedics to deliver therapeutics locally in communities. Dr. Kadlec assigned Dr. Redd in May 2020 to run the remdesivir distribution, the first approved therapeutic. The federal government had to distribute 940,000 doses equitably across the United States, including the Pacific territories, in a setting without hospital-based data. Dr. Redd said, “Believe it or not, at the beginning of the pandemic, nobody could tell you how many hospitalized patients of a given type were in America’s hospitals.” They had to quickly develop an information system to know where people were admitted. Once they did that, they were able to distribute resources fairly.

KEY FINDINGS AND BEST PRACTICES

Workshop participants shared the following key findings and best practices to build capacity so the nation could improve and strengthen its response to future public health threats and emergencies:

1. Healthcare facilities improvised quickly to preserve N-95s by disinfecting PPE.
2. There was less dependency on emergency rooms as some vulnerable populations did not go to the hospitals. Hospitals and healthcare staff should be preserved for acute care.
3. It is possible to enhance and build vaccination capabilities by training others, such as those in the emergency medical services, to administer vaccines. This can be accomplished by executing licensure waivers nationally when the benefit outweighs the risk.
4. The Strategic National Stockpile is not a sustainable solution. It is necessary to create a sustainable solution by executing public-private partnership agreements. For instance, existing stocks of PPEs can be rotated through partnerships with hospitals and healthcare facilities before they expire.
5. By adopting and practicing a whole community approach, it is possible to remove territorial barriers.
6. Although some workshop participants have robust Hospital and Healthcare coalitions, they are not widely used or efficient nationwide. Forming medical task forces for hospital coordination may help assess hospital gaps and resources and coordinate the movement of these resources as needed by other hospitals.
7. Having hot-wash discussions at the end of each operation captures and shares lifesaving best practices throughout the field operations. For example, nasal cannulas reduced the need for ventilators. Sharing this information helped hospitals manage mechanical ventilation shortages effectively as they learned, adapted, and improved.

8. Developing and adopting additional state and federal regulations and authorities, such as regulating all assisted living facilities during blue-sky days, may improve operations.
9. Perhaps local and state emergency management entities and partners need to work on additional similar rules by being proactive, anticipating needs, and preparing before another national public health emergency – for example, utilizing Emergency Medical Services and Medical Reserve Corp, medical volunteers for triaging and supplementing medical capacity. Forethought and anticipating needs create the core foundation for a successful Emergency Management response.

FOUR CORE RECOMMENDATIONS

ONE: Leadership – During a public health crisis or other large-scale event, the person in the room must have the capacity and capability to lead the response and make critical decisions. Workforce training should include building essential leadership skills at all levels because, when called upon, the person in the room making decisions may not have a traditional leadership title.

TWO: A National Repository – The best practices during the COVID-19 response (what went well and what did not go well), after-action reports, and common pitfalls from not learning from past disasters should be compiled from entities nationwide.

THREE: Playbooks – A pandemic playbook based on COVID-19 responses should be created before the staff members forget.

FOUR: Exercises – Innovation, adaptability, and research should be integral to building exercises. These could include addressing the 2019 contagion to identify deficiencies and formulate new ideas.

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ABBREVIATIONS

ASPR = Administration for Strategic Preparedness and Response

CBRN = chemical, biological, radiological, and nuclear

CDC = Centers for Disease Control and Prevention

ED = Emergency Department

EOC = emergency operations center

FEMA = Federal Emergency Management Agency

GAO = Government Accountability Office's

HHS = Department of Health and Human Services

ICU = Intensive Care Unit

NORTHCOM = U.S. Northern Command

MFRI = Maryland Fire & Rescue Institute

NYC = New York City

OCME = Office of the Chief Medical Examiner

OIG = Office of Inspector General

PHEP = Public Health Emergency Preparedness

PLC = Preparedness Leadership Council

PPE = personal protective equipment

ProMED = Program for Monitoring Emerging Diseases

WMD = weapons of mass destruction

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