



**COVID-19  
PANDEMIC**  
**After-Action Report**

**JUNE 2021**

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# EXECUTIVE SUMMARY

Not since the 1918 pandemic has the United States faced a public health emergency of the magnitude of the COVID-19 pandemic. The National Homeland Security Consortium (NHSC) developed this report to capture the insights its members have learned thus far about the COVID-19 pandemic response. The NHSC's 22 associations represent a diverse cross-section of thousands of state, local, and private-sector professionals who are responsible for the safety and security of the nation. The consortium is uniquely positioned to draw from a broad range of different perspectives and experiences to identify recommendations and best practices to share broadly in order to improve preparedness for this ongoing and for future pandemic responses.

To develop this report, the NHSC engaged in a six-month effort that culminated in virtual, after-action conference held February 2–4, 2021. The after-action review process had two objectives:

- To clearly articulate problems and issues encountered throughout the COVID-19 response and develop corresponding recommendations to solve these problems.
- To create a list of best practices that the NHSC believes should be widely promulgated and would benefit most, if not all, of the members it represents.

Specifically, deliberations focused on issues and recommendations associated with five topics: inadequate, confusing, and changing guidance; adherence to protective measures; logistics and supply chain management; revenue shortfalls; and operational coordination. The conference also addressed best practices for four topics—logistics and supply chain management, workforce resilience, information sharing and public messaging, and emergency powers and authorities.

NHSC representatives identified more than 90 recommendations and 37 best practices for improving preparedness and response for future pandemics. Individual problem statements, associated recommendations, and best practices are located in the main body of the report, organized around the aforementioned topics. The COVID-19 pandemic revealed several overarching insights about the nation's pandemic preparedness, including the following:

- **Politics played a much larger role than anyone planned for.** The politicization of the pandemic further fractured public messaging, contributing to public confusion and distrust. NHSC representatives and survey respondents expressed a clear desire to ensure a more cohesive front with elected officials and to minimize politicization of future pandemics.

- **Unity of effort was not always achieved.** The pandemic revealed a need to clarify the respective roles and responsibilities of all parties when applying the unified command concept to a public health emergency and a need to redouble education, training, and exercise efforts to increase familiarity and build upon existing plans and key concepts such as the National Incident Management System (NIMS) and Incident Command System (ICS).
- **Responding to the COVID-19 pandemic has more closely resembled a response to a catastrophic earthquake than recent public health emergencies.** The scale and complexity of the pandemic have required a whole-of-society effort and forced innovation because standard approaches for responding to incidents were insufficient. Even after mobilizing all available resources, government officials faced personnel and resource shortfalls that required them to triage and prioritize resource allocation.
- **The Strategic National Stockpile (SNS) fell short of expectations.** As concerns about shortages of medical supplies and personal protective equipment (PPE) grew, state and local authorities turned to the SNS, only to discover that it could not meet the demands of the COVID-19 pandemic. Current funding for the SNS is insufficient to meet the expectations that different stakeholders have assumed the stockpile's mission and role should be. The nation needs to clarify the role of the SNS as part of a broader strategy to ensure a more resilient supply chain for future pandemics.
- **The pandemic affected responder availability.** The pandemic was unusual in its sizeable and prolonged effect on the health and availability of both public and private response personnel. Jurisdictions faced challenges with staffing critical services because of illness and quarantine. Moreover, typical means of bolstering the responder workforce through mutual aid were not available, as all states were dealing with the pandemic simultaneously. Furthermore, the pandemic disrupted key support services (e.g., school, childcare) that some responders rely on so they can focus on their jobs.

Like other major, complex incidents in U.S. history, the pandemic continues to push at the boundaries of our existing response capabilities and to reveal areas for improvement and innovations to carry forward to future responses. In the year since the World Health Organization's declaration of the COVID-19 pandemic, the country has already seen widespread closures, large-scale shifts to remote work, attempts at reopening businesses and schools, a winter second wave, and the initial stages of a vaccine rollout. This report provides a timely opportunity to review and act on important insights from the first year of the pandemic.



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# INTRODUCTION

It was a matter of when. Since the 1918 influenza pandemic, the threat of an analogous global pandemic has loomed for public health experts. In 2020, the threat was realized. As of March 2021, one year after the World Health Organization declared the COVID-19 outbreak a pandemic, more than half-a-million individuals in the United States have died from COVID-19.

Although the number of COVID-19–related deaths may not match the 675,000 deaths estimated to have occurred in the U.S. from the 1918 influenza [1], it is sobering that a virus could result in a comparable death toll more than 100 years later. Officials and responders have had to make countless difficult decisions in the face of uncertainty and limited resources. Out of necessity, they have found themselves testing different approaches to the numerous challenges that have arisen because of the novelty, scale, and duration of the pandemic.

The National Homeland Security Consortium (NHSC) developed this report to capture the lessons and best practices learned thus far from the COVID-19 pandemic response. Its goal is to institutionalize hard-won insights from the first year of the pandemic across all 22 associations of the NHSC. Collectively, these associations represent thousands of local, state, and private-sector professionals responsible for the health, safety, and security of the United States. Through an after-action review process, the NHSC identified more than 90 recommendations and 37 best practices for improving preparedness and response to future pandemics.

## Topics addressed

NHSC representatives elected to focus on eight topics, which were addressed during a three-day after-action conference held in February 2021 (see Figure 1).<sup>1</sup>

### Why is the National Homeland Security Consortium issuing an after-action report on COVID-19?

This report aligns to all five of the consortium's objectives:

*Provide a broad-based resource and sounding board on homeland security issues for all national stakeholders*

*Share information, knowledge, experiences, and practices*

*Contribute to the homeland security debate and discussion*

*Focus efforts to resolve issues*

*Develop recommendations in identified areas of common interest*

<sup>1</sup> For more details on the approach used to develop this report, please see Appendix A: Approach.

To arrive at these topics, each NHSC association received an initial survey questionnaire that asked its NHSC representatives to identify the key issues that its members had encountered in responding to the COVID-19 pandemic and best practices identified by its members that should be adopted broadly. Qualitative analysis of the survey responses identified the 11 most common issues, which were shared with the NHSC representatives at an initial planning meeting for the after-action conference. Of the 11 issue topics, the NHSC representatives selected five Issues & Recommendations topics to focus on, with the intent of identifying specific problem statements and corresponding recommendations to address these problems. Additionally, the representatives also selected four Best Practices topics from among 12 identified from the initial survey analysis for further discussion of best practices. One topic, logistics and supply chain management, overlaps both Issues & Recommendations and Best Practices categories.

Figure 1. Report topic areas

		ISSUES & RECOMMENDATIONS	BEST PRACTICES
	<b>Adherence to protective measures:</b> To include behaviors from staff, businesses, and the public toward policies and public health orders	✓	
	<b>Emergency powers and authorities:</b> To include adoption of extraordinary measures to stop the spread of COVID-19 and expansion of authorities to support the response		✓
	<b>Inadequate, confusing, and changing guidance:</b> To include public health and other guidance issued at federal, state, and local levels; and keeping up with and implementing guidance	✓	
	<b>Information sharing and public messaging:</b> To include sharing information among responding agencies and organizations, providing situational awareness, and conveying information to the public		✓
	<b>Logistics and supply chain management:</b> To include procuring, tracking, warehousing, and distributing personal protective equipment (PPE) and other supplies and equipment	✓	✓
	<b>Operational coordination:</b> To include establishing a unified and coordinated operational structure that integrates critical stakeholders	✓	
	<b>Revenue shortfalls:</b> To include state, local, territorial, and tribal budget shortfalls and their cascading effects on available services and resources	✓	
	<b>Workforce resilience:</b> To include mitigation of circumstances and stressors that can affect workforce productivity and mission success		✓

## Report organization

The main body of the report includes four sections. The first section highlights insights about the nation's pandemic preparedness. The second section addresses each of the five Issues & Recommendations individually. Each write-up begins by framing the issue in the context of the COVID-19 response, presenting some of the key drivers underlying the concerns expressed by the NHSC representatives and their members. This segues into a list of the highest priority concerns, as identified by the NHSC representatives at the after-action conference. Each of these concerns is described in a one- or two-sentence problem statement, followed by a list of associated recommendations to address the problem. The third section breaks down each of the four Best Practices topics, including a select list of those best practices that conference participants prioritized as warranting broad consideration among all 22 NHSC associations. The fourth and final section presents some concluding remarks.

The report also includes the following appendices:

- **Appendix A: Approach** provides a detailed description of the methods used to arrive at the findings presented in this report.
- **Appendix B: Crosswalk to Core Capabilities and Community Lifelines** maps each of the report's eight topics to one or more of the 32 core capabilities outlined in the National Preparedness Goal.
- **Appendix C: List of Problem Statements** lists all problems statements introduced for discussion at the after-action conference.
- **Appendix D: List of Best Practices** lists all best practices introduced for discussion at the after-action conference.

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The COVID-19 pandemic's scale and widespread disruption of society make it one of the most critical disasters in American history. Similar to events such as the attacks of September 11 and Hurricane Katrina, the pandemic has stressed response capabilities in new ways and, in doing so, has revealed a number of insights about the state of our pandemic preparedness. The bullets below summarize a few of these insights:

- **Politics played a much larger role than anyone planned for.** As months passed, COVID-19 increasingly seemed to become a political litmus test. According to the Pew Research Center, by early September 2020, 79 percent of Republicans said the president was giving the country the right message on the virus, while 90 percent of Democrats said he was delivering the wrong message [2]. This is not meant to impugn one political party, strategy, or federal, state, or local administration. Instead, it demonstrates the role politics played in the response and recovery to this pandemic. With everyone at risk of infection, public messaging served as a key aspect of the response. The politicization of the pandemic further fractured messaging about the pandemic, contributing to public confusion and distrust. NHSC representatives and survey respondents expressed a clear desire to ensure a more cohesive front with elected officials and minimize politicization in future pandemics.
- **Unity of effort was not always achieved.** Several factors added to the complexity of achieving unity of effort in the pandemic response, including the following:
  - Lack of familiarity by some elected officials with traditional concepts and structures for emergency response (e.g., NIMS and ICS);
  - Lack of experience by some officials, agencies, and stakeholders in applying these concepts and structures in the context of a public health emergency;
  - Inclusion of a larger number of and atypical stakeholders into the incident command structure;<sup>2</sup> and
  - Clashes in organizational culture that sometimes arose between emergency management agencies and public health agencies.

<sup>2</sup> For example, San Diego County's emergency operations center incorporated stakeholders representing homeless populations, education and childcare, healthcare organizations, and long-term care facilities as part of the incident command structure for the pandemic response.

The pandemic revealed a need to clarify the respective roles and responsibilities when applying the unified command concept to a public health emergency and the need to redouble education, training, and exercise efforts to increase familiarity with NIMS/ICS, existing plans, and roles and responsibilities.

- **Responding to the COVID-19 pandemic has more closely resembled a response to a catastrophic earthquake than recent public health emergencies.** What makes the COVID-19 pandemic unique is its scale. For the first time in U.S. history, all 50 states, the District of Columbia, and five territories are operating under simultaneous major disaster declarations. Public officials faced shortfalls in resources (e.g., PPE, ventilators) that required them to triage and prioritize resource allocation. To address these shortfalls, jurisdictions and agencies have also had to bring to bear a whole-of-society effort. The pandemic also forced innovation—such as a rapid and large-scale shift to virtual operations—because standard approaches for responding to the event were inadequate. As a result, the response to the COVID-19 pandemic seems more analogous to the Cascadia catastrophic earthquake scenario than to recent public health emergencies such as 2009 H1N1 pandemic [3].
- **The SNS fell short of expectations.** As concerns about shortages of medical supplies and PPE grew, state and local authorities turned to the SNS only to discover that it could not meet the demands of the COVID-19 pandemic.<sup>3</sup> Current funding for the SNS is insufficient to meet the expectations that different stakeholders have as to what the stockpile’s mission and role should be. In fiscal year 2020, the SNS budget was approximately \$705 million [5]. In comparison, Congress provided \$16 billion for the SNS as part of an emergency supplemental appropriations for the COVID-19 pandemic [6]. As outlined in Executive Order on a Sustainable Public Health Supply Chain, issued January 21, 2021, the U.S. needs to clarify the role of the SNS as part of a broader strategy to ensure a more resilient supply chain for future pandemics and biological threats [7].
- **The pandemic affected responder availability.** The pandemic was unusual in its sizeable and widespread effect on the health and availability of response personnel. For example, at one point during the spring of 2020, more than 20 percent of the Detroit Police Department were unavailable to work because they were in self-quarantine [8]. Jurisdictions were concerned about staffing critical services. In addition, most incidents have a defined geographic footprint; associated with this concept is the assumption that responders can always be brought in from outside the affected area. However, typical means of bolstering the responder workforce through mutual aid were not available in this situation, as all states were dealing with the pandemic simultaneously. Finally, the pandemic disrupted key support services (school, childcare) that responders rely on so they can focus on their jobs.

<sup>3</sup> Since its inception, the emphasis of the SNS has been on medical countermeasures for a CBRN attack on the United States. It was never meant to handle a crisis like a global pandemic. Supplemental appropriations in 2005 and 2006 allowed the SNS to stockpile materials to use for pandemic influenza. However, in response to the 2009 H1N1 pandemic influenza, the SNS pushed those materials to states and did not replace them because of insufficient funds [4].



This section presents each of the five Issues & Recommendations topics discussed at the after-action conference. Each topic write-up begins by summarizing a few key drivers that broadly contributed to problems faced. Next, specific problem statements are presented; each problem statement is followed by a corresponding list of recommendations to help address the problem.

Several recommendations are applicable to more than one problem statement. Repeat instances of a recommendation are listed as bullets and cross-referenced against the initial occurrence of the recommendation.

## Issue #1. Inadequate, confusing, and changing guidance

Numerous agencies expressed frustration with pandemic-related guidance, including its timeliness, accuracy, usefulness, and consistency. Two key underlying drivers raised at the conference were:

- **The evolving nature of our scientific understanding of COVID-19.** As researchers learned more about this novel virus, their findings—such as the possibility for asymptomatic transmission—led to guidance updates on protective measures.
- **Politicization of the pandemic.** Guidance from elected officials sometimes conflicted with accepted scientific findings and official guidance from public health agencies. This led to significant differences in guidance appearing from jurisdiction to jurisdiction.

Unfortunately, the seemingly abrupt and occasionally contradictory changes in safety recommendations, the lack of unified messaging, and the patchwork nature of guidance across jurisdictions likely contributed to public confusion and a fractured information environment in which misinformation and even disinformation could readily exacerbate feelings of distrust.

Challenges in issuing guidance did not only occur with protective measures. The pandemic raised a host of issues—such as defining essential workers, PPE and testing prioritization, exemptions, access to PPE resupply (for private-sector versus public-sector response personnel), reopening businesses, and pandemic-related grant funding—that demanded the rapid establishment of new guidance. This led to a lack of clarity and challenges with implementing guidance in practice.<sup>4</sup>

<sup>4</sup> For example, there was not uniform adherence to federal guidelines that prioritized fire and emergency medical services (EMS) agencies for access to PPE and testing. Adherence to Centers for Disease Control and Prevention guidance on reusing N95 and PPE has also not consistently exempted agencies from enforcement actions (e.g., fines) by the Occupational Safety and Health Administration.

The following eight problem statements, each followed by a series of recommendations, address the factors contributing to fragmented and inconsistent guidance and the negative consequences of unclear, vague, and sometimes incorrect guidance.

**Problem Statement #1: The federal government’s messaging was neither unified nor consistent. The failure to implement a national strategy or plan led to states, localities, tribes, and territories (SLTTs) issuing guidance that was inconsistent with federal guidance. The guidance changed constantly, which further confused the public and led to lost credibility.**

**Recommendations:**

- 1.1.1** Update and promulgate a national strategy, framework, and plan for pandemics
- 1.1.2** Clearly define roles and responsibilities across all levels of government during a pandemic
  - Immediately identify and announce the lead agency in charge
  - Clarify the coordination mechanisms for ensuring strong unity of command at the national level
- 1.1.3** Develop strategy at all levels to address development and sharing of guidance
- 1.1.4** Provide clear, consistent, top-down guidance from the federal government
  - The federal government, in consultation with state leadership, should develop broad guidance that states can implement flexibly based on their situations
  - Federal officials, if possible, should share pre-decisional guidance with applicable stakeholders to validate the intended effects and implementation approach

**Problem Statement #2: For political reasons, guidance from elected representatives sometimes conflicted with science-based, official guidance from agencies.**

**Recommendations:**

- 1.2.1** Ensure that elected officials and subject matter experts have clear and delineated responsibilities for communicating guidance and that these responsibilities are aligned to their respective roles
- 1.2.2** Educate the public about emergency response and recovery processes and the role of key agencies. Include agency leadership in education efforts to strengthen their credibility
- 1.2.3** Educate elected officials about emergency response and recovery processes. Incorporate elected officials into response and recovery exercises paying particular attention to transitions and changeover
- 1.2.4** Improve the use of joint information centers (JICs) to coordinate information to release to the public, including messaging from elected representatives
- 1.2.5** Use a single official federal voice for national pandemic guidance

**Problem Statement #3: Guidance from international, federal, state, and local sources was not aligned, resulting in updates that were not clear, specific, consistent, or concise and causing confusion among public officials and the public.**

**Recommendations:**

- 1.3.1** Coordinate guidance at all levels and socialize it at the beginning of the disaster for unity of effort
- 1.3.2** Educate the public that guidance will evolve as understanding about a novel virus improves, and assure the public that this evolution is appropriate to the situation
- 1.3.3** Incorporate into exercises the coordination of guidance at all levels of government
- 1.3.4** Have states provide regional counterparts with the opportunity to engage in pre-decisional consultations prior to announcing guidance
  - The federal government, in consultation with state leadership, should develop broad guidance that states can implement flexibly based on their situations (1.1.4)
  - Improve the use of JICs to coordinate information to release to the public, including messaging from elected representatives (1.2.4)

**Problem Statement #4: The release of changing guidance, without sufficient and effective risk communication, and misinformation (and disinformation) confused the public and led to lost credibility.**

**Recommendations:**

- 1.4.1** Ensure that accurate and culturally appropriate information is communicated to the public
- 1.4.2** Ensure that changes in guidance are deliberate, justified (e.g., based on new, accepted scientific evidence), and consistent with accepted processes
- 1.4.3** Communicate clearly why changes are being made to the guidance
- 1.4.4** Develop a proactive and accurate information campaign to counter disinformation and misinformation
- 1.4.5** Implement measures to control rumors and debunk myths
- 1.4.6** Build stronger relationships with the media to support the release of more frequent and accurate information
- 1.4.7** Ensure that a strong joint information system (JIS) is part of the ICS structure

**Problem Statement #5: The urgent nature of the response led to actions being taken before public education and messaging.**

**Recommendations:**

- 1.5.1** Develop retrospective public messages that transparently describe the rapid actions taken and the reasons they were necessary
- 1.5.2** Rapidly establish the JIS and demand that all relevant agencies participate in it, and establish routine and frequent public engagement, especially at the start of the incident or when changes are occurring

### Problem Statement #6: A lack of clarity and consistency about funding eligibility and reimbursement led to financial risk for jurisdictions.

#### Recommendations:

- 1.6.1 Avoid modifying guidance for federal funding and eligibility in the midst of the response when possible
- 1.6.2 Establish dynamic and flexible funding streams at the state level (e.g., treasury loans, “rainy day” funds, disaster relief funds) to meet the frequency and complexity of disasters, including support for both private and public responders

### Problem Statement #7: Guidelines were sometimes issued without engaging or notifying those responsible for implementation.

#### Recommendation:

- 1.7.1 Before the public release of pandemic guidance, engage those responsible for its implementation to discuss possible effects, challenges, and unintended consequences; allow sufficient time to prepare for implementation

### Problem Statement #8: Stakeholders did not have sufficient experience and training to issue and implement guidance amid uncertainty.

#### Recommendation:

- 1.8.1 Expose leaders to the planning process and training and exercise opportunities that enable them to understand and practice crisis management and crisis decision-making
  - Design exercises to test and train participants specifically at the point of failure
  - Work with associations to develop and provide new leaders with primers on their roles, responsibilities, and authorities in emergency preparedness, response, and recovery

## Issue #2: Adherence to protective measures

Survey responses and conference discussions identified several factors that caused individuals and businesses to fail to adhere to protective measures. Two of the most important drivers were behavioral:

- **Individuals not taking the risk of infection seriously.** Misinformation downplayed the severity of COVID-19. Statements from elected officials such as, COVID-19 was “far less lethal” than the flu [9], the virus would “fade” or “go away”[10], and “99 percent” of COVID-19 cases are “totally harmless”[11] helped foster beliefs that the virus was a hoax and that preventative measures were unnecessary.
- **Skepticism about the benefits of protective measures.** Changing guidance, for example, on the benefits of face coverings may have contributed to confusion and skepticism about their effectiveness [12].

When identifying recommendations to increase adherence to protective measures, conference participants favored the use of communication strategies over mandates or enforcement actions. In line with best practices in public messaging, NHSC representatives emphasized the need for clear, consistent, and repetitive messaging.

They also acknowledged the need for public messaging campaigns to use trusted voices and engage a wide variety of information outlets to target different audiences.

NHSC representatives prioritized the following seven problems statements, which address different causal factors contributing to lower adherence to protective measures.

**Problem Statement #1: Misunderstandings and misinformation from senior elected and appointed officials about the severity and communicability of COVID-19, amplified by social media, led to some individuals not taking the risk of infection or the spread of the virus seriously.**

**Recommendations:**

- 2.1.1** Implement a public awareness and education campaign with grassroots approaches (e.g., word-of-mouth from those who have first-hand experience with the hazard)
- 2.1.2** Conduct multipronged information campaigns that assess and target how different groups of people receive information, and craft tailored messages to reach them
- 2.1.3** Tap community influencers and report compelling personal stories to build trust within local communities prior to a pandemic
- 2.1.4** Develop communications strategies (e.g., implement rumor control) to debunk myths and counter misinformation
  - Use a single official federal voice for national pandemic guidance (1.2.5)
  - Ensure that accurate and culturally appropriate information is communicated to the public (1.4.1)
  - Develop a proactive and accurate information campaign to counter disinformation and misinformation (1.4.4)
  - Build stronger relationships with the media to support the release of more frequent and accurate information (1.4.6)
  - Ensure that a strong JIS is part of the ICS structure (1.4.7)

**Problem Statement #2: Skepticism and distrust of information about the benefits of protective measures resulted in noncompliance. These feelings arose, in part, due to changes in public health guidance on protective measures and politicization of the pandemic.**

**Recommendations:**

- 2.2.1** Provide clear, consistent, and repetitive guidance through multiple channels (e.g., community influencers, social media)
- 2.2.2** Be transparent about what is known and unknown
  - Use a single official federal voice for national pandemic guidance (1.2.5)
  - Ensure that accurate and culturally appropriate information is communicated to the public (1.4.1)
  - Develop a proactive and accurate information campaign to counter disinformation and misinformation (1.4.4)
  - Build stronger relationships with the media to support the release of more frequent and accurate information (1.4.6)
  - Ensure that a strong JIS is part of the ICS structure (1.4.7)
  - Tap community influencers and report compelling personal stories to build trust within local communities prior to a pandemic (2.1.3)
  - Develop communications strategies (e.g., implement rumor control) to debunk myths and counter misinformation (2.1.4)

**Problem Statement #3: Existing cultural views, attitudes, and demographics among and within communities may have contributed to a higher initial risk tolerance.**

**Recommendations:**

- Ensure that accurate and culturally appropriate information is communicated to the public (1.4.1)
- Ensure that a strong JIS is part of the ICS structure (1.4.7)
- Tap community influencers and report compelling personal stories to build trust within local communities prior to a pandemic (2.1.3)
- Develop communications strategies (e.g., implement rumor control) to debunk myths and counter misinformation (2.1.4)

**Problem Statement #4: Disinformation led to a lack of compliance with protective measures and continues to hinder efforts to promote vaccination.**

**Recommendations:**

- 2.4.1** Maintain a productive relationship with the intelligence community and share with the public any information that can be declassified (e.g., through fusion centers)
- 2.4.2** Ensure that local governments, health departments, and other government agencies post information under “.gov” domains (see DOTGOV Online Trust in Government Act of 2019)

### **Problem Statement #5: Attempts to impose protective measures sometimes ran afoul of beliefs in personal freedoms.**

#### **Recommendations:**

- 2.5.1** Leverage lessons learned from past case studies that introduced protective measures (e.g., speed limits, drinking age, seatbelts)
- 2.5.2** Reinforce to elected representatives the importance of leading by example

### **Problem Statement #6: A lack of direct experience with or exposure to the virus over time led to complacency for some individuals.**

#### **Recommendations:**

- Implement a public awareness and education campaign with grassroots approaches (e.g., word-of-mouth from those who have first-hand experience with the hazard) (2.1.1)
- Conduct multipronged information campaigns that assess and target how different groups of people receive information, and craft tailored messages to reach them (2.1.2)

### **Problem Statement #7: Enforcement of protective measures was often left to local businesses, which proved to be a challenge.**

#### **Recommendations:**

- Ensure that accurate and culturally appropriate information is communicated to the public (1.4.1)
- Before the public release of pandemic guidance, engage those responsible for its implementation to discuss possible impacts, challenges, and unintended consequences; allow sufficient time to prepare for implementation (1.7.1)
- Tap community influencers and report compelling personal stories to build trust within local communities prior to a pandemic (2.1.3)

## **Issue #3: Logistics and supply chain management**

PPE shortages were an early and ongoing issue in the pandemic response. The need for these supplies nationwide quickly exceeded the amounts available in the SNS, which was not supplied to deal with a pandemic scenario of this magnitude. The resulting shortfalls and the absence of a coordinated national purchasing strategy led to competition to procure PPE. Opportunistic sellers took advantage of the desperation, resulting in price gouging and quality assurance problems [13-14].

Even when agencies managed to procure PPE, they encountered logistical challenges in tracking, warehousing, and distributing these supplies. For example, one major city tasked its logistics center with centrally sourcing PPE for all healthcare facilities, placing the center in the difficult position of having to vet and prioritize more than 2,000 requests for PPE. Additionally, increases in counterfeit PPE (e.g., N95 mask) have led to confusion over seizures of counterfeit orders and concerns about acquired PPE. Given the prolonged duration of the pandemic, concerns also arose about the sustainability of existing logistics operations and the corresponding drain on budgets.

The pandemic also highlighted vulnerabilities arising from the nation's reliance on foreign manufacturing for PPE and sparked debates on how aggressively the Defense Production Act (DPA) should have been applied.

Of the seven problem statements that follow, several focus on early challenges with obtaining PPE and later logistical and cost challenges associated with the large volume of PPE. NHSC representatives also identified concerns about deciding who should receive scarce PPE and the logistical complexities of vaccine distribution.

**Problem Statement #1: Insufficient coordination led to inefficiencies (e.g., duplication of orders, competition among groups, excessive stockpiling of supplies). State and local jurisdictions were competing against each other, the federal government, private industry, and international entities to procure PPE. Poor planning assumptions also contributed to inefficiencies.**

**Recommendations:**

- 3.1.1** Use existing, well-known, and trusted processes and organizational structures to fill resource needs when possible
- 3.1.2** Examine and implement waivers to normal pricing and procurement practices
- 3.1.3** Clearly articulate the contents of the SNS, and any planning assumptions about the use of SNS contents, to enable SLTTs to plan appropriately

**Problem Statement #2: Organizations had trouble procuring PPE in the amounts needed and timelines required. PPE availability was particularly challenging early in the pandemic and difficulties persist. Limited availability resulted in higher costs (including price gouging) and problems with quality assurance.**

**Recommendations:**

- 3.2.1** Improve supply type(s), quantity, and quality in the SNS
- 3.2.2** Provide federal leadership to understand and address supply chain vulnerabilities. Evaluate the nation's capacity to meet its PPE needs, including PPE supply chains and existing federal and state stockpiles
- 3.2.3** Study and assess the application of the DPA and identify courses of action that could be applied in future pandemics (e.g., develop a menu of options for DPA application); exercise the use of these courses of action in worst-case scenarios
- 3.2.4** Ensure that PPE meets required standards, using standards and testing procedures from the National Institute for Occupational Safety and Health
  - Use existing, well-known, and trusted processes and organizational structures to fill resource needs when possible (3.1.1)
  - Examine and implement waivers to normal pricing and procurement practices (3.1.2)

**Problem Statement #3: Federal prioritization guidelines for PPE were not always coordinated with state and local agencies.**

**Recommendation:**

- 3.3.1** Conduct a hotwash or after-action review of the guidelines produced in 2020 to determine whether they need to be updated or modified

**Problem Statement #4: The SNS was completely inadequate (supply type, quantity, and quality).**

**Recommendation:**

- 3.4.1** Reevaluate the role of the SNS and ensure that it is properly stocked to meet the required role
- Include state and local agencies in the reevaluation process
  - Educate SLTT agencies and Congress about the role of the SNS, including its responsibilities to, and the roles of, SLTT agencies

**Problem Statement #5: Reliance on just-in-time delivery models led to an inadequate ability to store, handle, and secure resources in the amounts required during the pandemic.**

**Recommendations:**

- 3.5.1** Align with SLTT expectations when planning for the commodities that the SNS should maintain
- 3.5.2** Develop guidance to assist SLTTs in maintaining their own stockpiles
- Clearly articulate the contents of the SNS, and any planning assumptions about the use of SNS contents, to enable SLTTs to plan appropriately (3.1.3)

**Problem Statement #6: Organizations were concerned about paying for ongoing costs associated with supplies and storage.**

**Recommendations:**

- 3.6.1** Develop financial mechanisms for maintaining logistics readiness
- 3.6.2** Seek out or establish public-private partnerships to establish access to critical supplies, such as PPE
- Identify critical supplies and leverage public-private partnerships to provide a certain level of on-hand stock/inventory and to meet sustained surge capacity requirements

## Problem Statement #7: Balancing the requirements of different vaccines has made vaccination efforts more difficult.

### Recommendations:

- 3.7.1** Provide federal technical assistance to support state-level development and framing of vaccination campaigns that address the complexities of the variety of vaccines available
- 3.7.2** Commit to additional federal investments in innovative vaccine technologies
  - Provide requirements to vaccine developers that promote ease of movement, storage, and administration of vaccine supplies
  - Balance the timeliness of vaccine development against the need for more portable and easily distributed vaccines
- 3.7.3** Establish robust logistical systems that include reception, storage, and distribution using various modes of transport, and exercise their use

## Issue #4: Revenue shortfalls

The pandemic has added significant uncertainties to government revenues and revenue projections, threatening budgets for agencies and departments at a time when demands for services were often increasing. Starting in March 2020, SLTTs went into varying degrees of lockdown and issued stay-at-home orders, contributing to an enormous contraction of the U.S. economy. Several existing mechanisms that SLTTs used for revenue generation (e.g., sales tax) suffered directly and indirectly. For example, casinos in Nevada were closed for nearly three months, resulting in a \$162 million decrease in gaming tax revenues for Nevada’s fiscal year 2020 (which ended June 30, 2020)[15]. Meanwhile, the pandemic led to rising costs (e.g., backfilling for quarantined personnel), particularly for health and human services and public safety.

The timing, extent of, and constraints on federal pandemic relief and stimulus funds has further complicated the financial outlook for jurisdictions. Despite the passage of the CARES Act in March 2020 and COVID-Related Tax Relief Act in August 2020, some states and localities had to cut costs by reducing services and laying off or furloughing employees. Moreover, funds from these two acts were targeted toward specific efforts. The resulting decrease in flexibility proved particularly challenging because of the differing needs among jurisdictions in responding to COVID-19. The \$1.9 trillion American Rescue Plan Act provided \$350 billion for SLTTs. While these funds appear to exceed current projected shortfalls, the longer-term economic outlook for pandemic recovery remains highly uncertain.

Four of the five problem statements that follow highlight concerns expressed at the conference about the uncertain outlook jurisdictions faced in light of the severe economic disruptions caused by the pandemic. The final problem statement addresses the downstream effects of pandemic expenditures on available funds for other disasters.

**Problem Statement #1: Permanent local business closures have both short- and long-term effects on tax revenues. Even temporary local business closures affect tax revenues. These closures are contingent on vaccination rates and the appearance and spread of COVID-19 variants, and thus create significant economic uncertainty.**

**Recommendations:**

- 4.1.1 Implement and communicate confidence-building safety measures to drive quicker re-openings of businesses
- 4.1.2 Support development of business continuity plans
- 4.1.3 Evaluate COVID-19 closure decisions and use the insights to inform more apolitical decision-making processes
  - Consider the cascading effects of closure decisions
- 4.1.4 Strengthen the business case tying vaccination of individuals to economic recovery

**Problem Statement #2: State and local jurisdictions relied on revenue streams linked to various economic sectors that were hit hard by the pandemic. Revenue reductions led to layoffs and program impacts.**

**Recommendations:**

- 4.2.1 Provide direct federal aid to state and local governments to offset economic losses
- 4.2.2 Increase the resilience and diversity of economic sectors on which state and local governments rely
- 4.2.3 Understand and document critical dependencies on specific revenue streams, including potential cascading effects
- 4.2.4 Identify best practices for maintaining sufficient cash reserves and/or accessing lines of credit
- 4.2.5 Develop awareness-level training for agencies to better understand how the decisions they make during an incident link to and can affect state and local economies

**Problem Statement #3: Finding a balance between reopening services while minimizing public health concerns has been challenging and is subject to ongoing political disputes.**

**Recommendations:**

- 4.3.1 Address pandemic emergency protective measures in an apolitical way. Evaluate organizations that re-opened successfully and the information gathered to inform future decision-making (i.e., use a case study approach)
  - Collect timely, accurate, and actionable information
- 4.3.2 Provide clear guidance from the federal government on public health mitigation measures that are required to reopen services; incentivize implementation of this guidance with federal response/recovery funds
  - Evaluate COVID-19 closure decisions and use the insights to inform more apolitical decision-making processes (4.1.3)
    - Consider the cascading effects of closure decisions

#### **Problem Statement #4: Uncertainty about future reductions in federal and state support has led to anxiety about the potential for new or additional cuts to operating budgets.**

##### **Recommendations:**

- 4.4.1** Educate federal and state legislatures about the consequences of budgets falling below a certain threshold and obtain commitments to maintaining funding above that level
- 4.4.2** Consider a holistic effort to re-tool economies and functions (e.g., a Works Progress Administration-like effort); view the pandemic as a national emergency, rather than a series of local emergencies
- 4.4.3** Enhance information sharing about future federal and state financial support so that jurisdictions have the information they need to make budget decisions as early as possible

#### **Problem Statement #5: The prolonged nature of the pandemic response has further stressed SLTT funds available to respond to and recover from other incidents in 2020, and for long-term recovery efforts from prior years. Additionally, prior funds set aside to offset revenue shortfalls are now exhausted, leading to greater financial vulnerability to future disasters.**

##### **Recommendations:**

- 4.5.1** Ensure resources to sustain critical preparedness activities (e.g., training), even in a pandemic environment
- 4.5.2** Educate state and local legislators about the considerable duration of long-term recovery for some incidents
- 4.5.3** Educate state and local lawmakers and taxpayers about the need to increase funding levels consistently over time
- 4.5.4** Sustain grant programs and funding through presidential administration changes
- 4.5.5** Shift the focus from consequence management to disaster risk reduction; create a “new normal” that promotes investments in mitigation through education efforts, such as educating federal officials and lawmakers about the return on investment from mitigation

## **Issue #5: Operational coordination**

The COVID-19 pandemic represents an unprecedented incident in U.S. history, with all 50 states, territories, and District of Columbia operating under simultaneous major disaster declarations. The pandemic’s scale and effects on nearly all public and private services have truly tested the extent to which the nation has embraced the operational coordination concepts of NIMS and ICS.

Several responses to the initial and follow-on surveys described the successful integration of emergency management, public safety, public health, and other stakeholders involved in responding to the pandemic. But more frequently, the survey responses revealed that agencies had difficulty keeping in sync on the response, experienced challenges with operating from different locations, and were unable to execute a unified command. According to NHSC representatives, the pandemic revealed a need to: (1) clarify the respective roles and responsibilities when applying the unified command concept to a public health emergency; (2) review, update, and socialize existing strategies and plans; and (3) redouble training and exercise efforts to increase familiarity with NIMS/ICS, existing plans, and roles and responsibilities.

More broadly, representatives also expressed concerns about the willingness of officials to stay the course with existing coordination mechanisms, rather than adopt ad hoc structures to address the pandemic. Criticisms relayed about the ad hoc structures included how they favored existing relationships (as opposed to professional expertise), increased confusion about roles and responsibilities, duplicated efforts, and split resources. As one representative noted, “a lot of professionals who had been planning and preparing for this event for years and decades were suddenly sidelined as new structures were created and superimposed over what had been built over the years.”

The following six problem statements highlight the challenges the pandemic posed to implementing standard emergency management coordination concepts and structures, as well as other challenges stemming from the prolonged duration of the pandemic and the transition to coordinating operations in a virtual environment.

**Problem Statement #1: The pandemic saw elected officials willing to abandon existing plans and preparedness efforts and develop new or ad hoc structures, leading to increased uncertainty about roles and responsibilities during the response. There was confusion about who was in charge of what.**

**Recommendations:**

- 5.1.1** Clearly identify a capable incident commander as early as possible
- 5.1.2** Designate emergency management as the lead coordinating agency at the federal and state level for all multiagency incidents across all phases of the incident (including recovery), using the specific expertise of other agencies involved in the incident\*
- 5.1.3** Ensure that newly elected officials are aware of existing plans and authorities and their roles and responsibilities
  - Update existing plans to document roles and responsibilities for leaders/elected officials and develop onboarding training for newly elected officials
- 5.1.4** Socialize existing pandemic plans with elected leaders and with a broad audience of stakeholders outside of the public health sphere
- 5.1.5** Conduct tabletop exercises regularly with leaders/elected officials to reinforce training and build and/or maintain relationships across agencies and levels of government

\* **Please note:** Consensus was not achieved among all NHSC associations on this recommendation. At least one association maintained that as a public health disaster, public health at the state and national level should be the lead coordinating agency.

**Problem Statement #2: In managing the response, public health and other organizations did not always achieve unity of effort or unified command.**

**Recommendations:**

- 5.2.1** Conduct a national-level facilitated discussion among the major stakeholders within the unified command; ensure participation from public health and healthcare entities
- 5.2.2** Expand relationships and partnerships before an incident to encompass all public health partners and those involved in the response partners
- 5.2.3** Educate all response partners about the emergency response system and unified command
- 5.2.4** Update existing plans to describe how to apply unified command between public health leadership and other organizations in managing a pandemic response

**Problem Statement #3: This event tested the limits of the national response doctrine—in particular NIMS/ICS—and agencies’ understanding of how to implement it, for prolonged, nontraditional, complex incidents.**

**Recommendations:**

- 5.3.1** Understand the authorities and systems in place
- 5.3.2** Reevaluate the usefulness of existing authorities and systems; revisit the appropriateness of different approaches to situations faced during the pandemic
- 5.3.3** Make federal funding contingent on aligning systems in place to maximize all-hazards preparedness
- 5.3.4** Include more deliberation, particularly on potential implications, before implementing new or modifying existing public policy in reaction to a complex incident
- 5.3.5** Ensure that preparedness activities address the role that new policies and policy-making processes play in responding to a complex incident
- 5.3.6** Exercise public health pandemic response plans at the state level

**Problem Statement #4: The pandemic response involved new stakeholder groups (e.g., hospitals), some of which still struggle with NIMS/ICS concepts. As a result, the ability to execute unified command suffered.**

**Recommendations:**

- 5.4.1** Update existing plans to reflect these new stakeholder groups, if necessary, and describe their roles and responsibilities in a pandemic response
- 5.4.2** Educate and develop training for stakeholders on pandemic response plans and how to apply NIMS/ICS concepts in the context of their roles and responsibilities
- 5.4.3** Conduct regular exercises that involve all organizations and stakeholders involved in pandemic response to reinforce training and build or maintain relationships across agencies and levels of government

**Problem Statement #5: As the duration of the response grew, personnel struggled to simultaneously carry out their COVID duties and steady-state, work-related responsibilities. The stress and duration of the pandemic has led to staff burnout and sustainment issues.**

**Recommendations:**

- 5.5.1** Encourage actions that promote workforce resilience (e.g., flexible work schedules, wellness training, self-care)
- 5.5.2** Identify appropriate and flexible levels of staffing for agencies involved in a long-term pandemic response
- 5.5.3** Develop strategies to supplement staff and use expertise from across jurisdictional agencies to manage long-term incidents and/or multiple simultaneous incidents

**Problem Statement #6: Coordinating operations in a virtual environment presented new information technology challenges, including online meeting and collaboration tools.**

**Recommendations:**

- 5.6.1** Test and exercise contingency staffing approaches (e.g., shift work, telework) before an incident; when possible, weave these approaches into the regular work schedule
- 5.6.2** Ensure that the information technology infrastructure and equipment for remote operations are readily available for use

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The after-action conference provided an opportunity for NHSC representatives to discuss and highlight a set of best practices in each of four topics—logistics and supply chain management, workforce resilience, information sharing and public messaging, and emergency powers and authorities. Appendix D: List of Best Practices presents the full list of all best practices introduced at the conference.<sup>5</sup> The 37 best practices listed in this section, however, represent those that participants felt were most important.

## Topic #1: Logistics and supply chain management

The nine best practices listed below address aspects of logistics—including procurement, tracking, quality assurance, and distribution—necessary to increase efficient and timely delivery of supplies:

- Coordinate at the local, regional, and/or state levels to facilitate bulk purchases and avoid competing for resources
- Establish a dedicated point of contact at state and local levels to coordinate the receipt, storage, and distribution of PPE
- Clearly designate the entity that will be responsible for procurement and logistics within the unified command
- Develop inventory management systems at state and local levels to support tracking and calculation of usage rates for supplies
- Expedite processes for purchasing supplies at state and local levels of government
- Offer a single portal for resource donations at the state or operational-area level and advertise it, especially to existing vendors
- Review existing product lists—leveraging support from partners such as the U.S. Department of Homeland Security Science and Technology Directorate—to identify equivalent products and create pre-approved lists of alternatives that meet standards
- Partner with the National Guard to support logistics operations
- Use legal and purchasing departments to vet vendors before making any purchases

<sup>5</sup> This list is by no means exhaustive. The Federal Emergency Management Agency, for example, maintains a website where additional COVID-19 best practices can be found (see <https://www.fema.gov/disasters/coronavirus/best-practices#community>).

## Topic #2: Workforce resilience

The pandemic provided any number of challenges for workforce resilience, forcing jurisdictions and agencies to assess and, in some cases, reimagine how they conduct operations in a COVID-19 environment. Meanwhile, the stress and fatigue from a prolonged pandemic response has taken a toll on the workforce. Most of the eight best practices listed below focus on increasing flexibility and attention to employee well-being:

- Implement flexible work schedules, when possible, while maintaining critical services
- Provide consistent wellness training for employees, including webinars, mindfulness strategies, and coping resources
- Provide staff members and their families access to mental and behavioral health services and peer support programs
- Encourage jurisdictional leaders to take extra interest in their workforces and to demonstrate empathy and kindness in their interactions
- Ensure that childcare and other needed resources are available to support the families of responders, teachers, and other essential workers
- Host virtual employee town-hall meetings with leadership to facilitate open communication and transparency and to address questions
- Provide financial support for remote work equipment and/or compensation for increased risk of exposure
- Expand planning for continuity of operations to address pandemics, and update existing plans with lessons learned from the COVID-19 pandemic

## Topic #3: Information sharing and public messaging

NHSC representatives prioritized a set of 12 best practices related to information sharing. These best practices addressed the ability to use virtual platforms effectively. Many of the selected public messaging best practices were rooted in fundamentals of public information—such as providing consistent, accurate, and accessible messages and using trusted voices—and ensuring these were not overlooked in the chaotic response environment of the pandemic.

- Conduct regular meetings with all stakeholders using virtual meeting platforms
- Ensure that technological capabilities are in place to interface with multiple online platforms and tools
- Unify public messaging within and across disciplines and all levels of government
- Ensure equity in dissemination approaches (e.g., translation services, technology access, Americans with Disabilities Act compliance) for all public messaging and information sharing
- Identify methods and tools for reaching constituents with access and functional needs (e.g., through community-based organizations, accessibility support technologies)

- Ensure that websites used for public messaging are current, accurate, user-centric, easily understandable, and evolve as needed throughout the disaster; include explanations of data quality and comply with language-access laws
- Expand organizations' social media presence for public messaging
- Seek partnerships with the media and news organizations to ensure that messaging is accurate and prioritized appropriately
- Incorporate trusted community-based organizations and community figures to develop and deliver information to their constituents
- Leverage opportunities to amplify messaging with emerging trusted voices (e.g., social media influencers)
- Present information with appropriate context to avoid increasing confusion; define what the data do and do not mean and use comparisons to help people understand the differences
- Establish a rumor control website that performs fact-checking and debunks rumors

## **Topic #4: Emergency powers and authorities**

The eight best practices listed below were evenly split between those seeking to enhance processes for executing emergency powers and authorities and those speaking to specific response actions taken to address challenges arising from the pandemic. These adjustments were not only focused on expanding authorities, but also reducing, eliminating, and suspending authorities to facilitate response efforts.

- Take early, proactive measures that are well communicated and coordinated with public and private partners and with buy-in from elected officials
- Develop alternatives to law enforcement to encourage and enforce compliance with public health mandates
- Delegate authority to streamline executive action, but ensure regular communication between designees and elected officials
- Streamline procurement processes to maximize decision-making at the lowest possible level
- Cancel or modify community special events
- Set up first responder lodging to prevent exposure to family and friends
- Set up alternative housing for those in congregate housing, those in isolation and quarantine, and vulnerable populations
- Provide access to free public testing

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The COVID-19 pandemic has altered, in some cases enduringly, the way our society functions. Like other major, complex incidents in U.S. history, the pandemic has and continues to highlight areas for improvement and innovations to carry forward to future responses. For more than a year, states and localities have participated—out of necessity—in a grand experiment of how to limit the spread and deaths associated with COVID-19 while continuing to provide essential services. This report is only the start of extracting, synthesizing, and sharing the value from these hard-fought individual efforts to improve pandemic preparedness in the future.

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# APPENDIX A: APPROACH

The National Homeland Security Center (NHSC) began this after-action effort in August 2020. The project team initially developed a questionnaire with a handful of open-ended questions and sent it to each of the NHSC representatives. Given the diverse associations that make up the NHSC, the purpose of this initial questionnaire was to capture the breadth of pandemic response experiences that association members had encountered to date and to begin identifying a common set of topics—framed around issues and best practices—that warranted further deliberation at an after-action conference. The questionnaire asked the following central questions:

- What actions did your association’s members take in responding to the COVID-19 pandemic that you believe should be shared and adopted more broadly as best practices?
- What key issues or challenges did your association’s members encounter in responding to the COVID-19 pandemic?
- What actions did your association’s members take to address the COVID-19–related issues or challenges you outlined in the previous question? Of these, which would you recommend as successful mitigating strategies?

Eleven of the 22 NHSC associations responded on behalf of their members.<sup>6</sup> Responses were coded using the qualitative analysis software NVivo to identify a set of topics of common interest among the associations. The topics served as the starting point for deliberations in a planning meeting for the after-action conference.

During the planning meeting, a facilitator walked NHSC representatives through each of the topics, outlining the working definition for each topic (see Figure 1) and providing select examples from the survey responses. The representatives then prioritized the topics in a group voting exercise using EasyRetro. For the highest-voted topics, the NHSC representatives discussed their rationale for selection, provided additional examples, and identified aspects of the topic that warranted further exploration through data collection efforts before the after-action conference. As listed in the main body of the report, attendees selected five topics as issues and four topics as best practice areas.

Once topics were selected, the project team developed a more detailed questionnaire, which the NHSC associations distributed to their members in December 2020. The 47-question, online questionnaire was broken down by topic, with each topic having between two and nine questions. While developing this follow-on survey, the project team conducted eight interviews with representatives from select NHSC associations, as well as association members, to obtain feedback to refine the survey questions and collect insights about each of the eight topics.

Of the 22 NHSC associations, 10 had members who submitted responses. In total, 291 respondents answered the follow-on survey questionnaire. Most of the responses (78 percent) came from emergency management agencies and public works agencies (14 percent). Therefore, the project team simply used the survey data as a starting point for discussions at the after-action conference.

<sup>6</sup> Four of the 11 associations responding executed a formal, repeatable process to arrive at their answers; the remaining seven based their answers on insights gathered from informal engagements with members of their associations.

The virtual after-action conference—held on February 2, 3, and 4, 2021—had breakout sessions in which participants worked through each of the topics. Participants were divided among three breakout rooms (each representing a diverse mix of disciplines) to encourage active participation from all representatives. For each of the five Issues & Recommendations, the facilitator did the following:

- Presented select survey results to help orient participants to the topic
- Reviewed the pre-identified problem statements, obtaining participant perspectives and refining the problem statement language
- Facilitated an open discussion to define additional problem statements
- Engaged in a brief discussion of broader, more systemic questions pertaining to the topic
- Led participants through a prioritization activity (using EasyRetro) to select the most important problem statements to address
- Assisted the group in articulating recommendations for the highest-voted problem statements (up to five)

A similar process, absent the last step of developing recommendations, occurred for the four Best Practices discussed at the conference. Please note that while only the prioritized issues and best practices are presented in the main body of the report, Appendix C contains the full list of problem statements. Similarly, Appendix D contains the full list of best practices.

# APPENDIX B: CROSSWALK TO CORE CAPABILITIES AND COMMUNITY LIFELINES

The National Preparedness Goal identifies 32 core capabilities that, if developed, allow the nation to prepare for all hazards. Not all associations in the NHSC are familiar with the core capability framework. As a result, the project team elected to define topics using the language and descriptions from the initial survey responses. The table below maps the topics to corresponding core capabilities.

In addition, the table maps the topics to corresponding community lifelines. FEMA developed the community lifelines construct to describe the most fundamental services in a community that enable all other aspects of society to function. The seven community lifelines help drive the response to incidents, establishing priorities and organizing lines of effort until the lifelines are stabilized.

Topic	Core Capabilities	Community Lifelines
Adherence to protective measures	<ul style="list-style-type: none"> <li>Physical protective measures</li> </ul>	<ul style="list-style-type: none"> <li>Health and medical</li> <li>Safety and security</li> </ul>
Emergency powers and authorities	<ul style="list-style-type: none"> <li>Community resilience</li> <li>On-scene security, protection, and law enforcement</li> </ul>	<ul style="list-style-type: none"> <li>Food, water, shelter</li> <li>Health and medical</li> <li>Safety and security</li> <li>Transportation</li> </ul>
Inadequate, confusing, and changing guidance	<ul style="list-style-type: none"> <li>Environmental response/Health and safety</li> </ul>	<ul style="list-style-type: none"> <li>Communications</li> <li>Health and medical</li> </ul>
Information sharing and public messaging	<ul style="list-style-type: none"> <li>Intelligence and information sharing</li> <li>Situational assessment</li> <li>Public information and warning</li> </ul>	<ul style="list-style-type: none"> <li>Communications</li> <li>Health and medical</li> </ul>
Logistics and supply chain management	<ul style="list-style-type: none"> <li>Logistics and supply chain management</li> </ul>	<ul style="list-style-type: none"> <li>Food, water, shelter</li> <li>Health and medical</li> <li>Transportation</li> </ul>
Operational coordination	<ul style="list-style-type: none"> <li>Operational coordination</li> <li>Planning</li> </ul>	<ul style="list-style-type: none"> <li>Communications</li> <li>Safety and security</li> </ul>
Revenue shortfalls	<ul style="list-style-type: none"> <li>Economic recovery</li> </ul>	<ul style="list-style-type: none"> <li>Safety and security</li> </ul>
Workforce resilience	<ul style="list-style-type: none"> <li>Health and social services</li> </ul>	<ul style="list-style-type: none"> <li>Health and medical</li> <li>Safety and security</li> </ul>

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# APPENDIX C: LIST OF PROBLEM STATEMENTS

The table below lists all the problems statements that the NHSC representatives discussed at the after-action conference. High-priority problems statements, which are addressed in the main body of the report, are shown in bold.

## Issue #1: Inadequate, confusing, and changing guidance

- **The federal government’s messaging was neither unified nor consistent. The failure to implement a national strategy or plan led to states, localities, tribes, and territories (SLTTs) issuing guidance that was inconsistent with federal guidance. The guidance changed constantly, which further confused the public and led to lost credibility.**
- **For political reasons, guidance from elected representatives sometimes conflicted with science-based, official guidance from agencies.**
- **Guidance from international, federal, state, and local sources was not aligned, resulting in updates that were not clear, specific, consistent, or concise and causing confusion among public officials and the public.**
- **The release of changing guidance, without sufficient and effective risk communication, and misinformation (and disinformation) confused the public and led to lost credibility.**
- **The urgent nature of the response led to actions being taken before public education and messaging.**
- **A lack of clarity and consistency about funding eligibility and reimbursement led to financial risk for jurisdictions.**
- **Guidelines were sometimes issued without engaging or notifying those responsible for implementation.**
- **Stakeholders did not have sufficient experience and training to issue and implement guidance amid uncertainty.**
- Updates to existing guidance did not always occur in a timely or regular fashion.
- Failure to couple guidance with mandates, ordinances, or regulations led to an inability to enforce the guidance.
- Insufficient frontline worker guidance available. Issues identifying who is a frontline worker. Lack of flexibility in identifying frontline workers.
- Siloed guidance across disciplines led to confusion for jurisdictions.

## Issue #2: Adherence to protective measures

- **Misunderstandings and misinformation from senior elected and appointed officials about the severity and communicability of COVID-19, amplified by social media, led to some individuals not taking the risk of infection or the spread of the virus seriously.**
- **Skepticism and distrust of information about the benefits of protective measures resulted in noncompliance. These feelings arose, in part, due to changes in public health guidance on protective measures and politicization of the pandemic.**
- **Existing cultural views, attitudes, and demographics among and within communities may have contributed to a higher initial risk tolerance.**
- **Disinformation led to a lack of compliance with protective measures and continues to hinder efforts to promote vaccination.**
- **Attempts to impose protective measures sometimes ran afoul of beliefs in personal freedoms.**
- **A lack of direct experience with or exposure to the virus over time led to complacency for some individuals.**
- **Enforcement of protective measures was often left to local businesses, which proved to be a challenge.**
- Challenges in securing PPE, especially early on, hindered the ability to comply with protective measures that were established.
- The public experienced compliance fatigue, combined with disparate guidance.
- The challenge of a hazard with lagged effects led people to make higher risk decisions.
- Psychologically, individuals' risk tolerance increased over time.
- Jurisdictions tended to develop binary approaches (e.g., open versus closed).

### Issue #3: Logistics and supply chain management

- **Insufficient coordination led to inefficiencies (e.g., duplication of orders, competition among groups, excessive stockpiling of supplies). State and local jurisdictions were competing against each other, the federal government, private industry, and international entities to procure PPE. Poor planning assumptions also contributed to inefficiencies.**
- **Organizations had trouble procuring PPE in the amounts needed and timelines required. PPE availability was particularly challenging early in the pandemic and difficulties persist. Limited availability resulted in higher costs (including price gouging) and problems with quality assurance.**
- **Federal prioritization guidelines for PPE were not always coordinated with state and local agencies.**
- **The SNS was completely inadequate (supply type, quantity, and quality).**
- **Reliance on just-in-time delivery models led to an inadequate ability to store, handle, and secure resources in the amounts required during the pandemic.**
- **Organizations were concerned about paying for ongoing costs associated with supplies and storage.**
- **Balancing the requirements of different vaccines has made vaccination efforts more difficult.**
- PPE management has diverted personnel and equipment that are necessary for regular operations.
- Essential worker definitions are unclear and inadequate. The definition of an essential worker must be differentiated from the definition of a first responder.
- Domestic manufacturing requirements for critical medical supplies do not exist.
- Challenges associated with forward planning of scarce resources (e.g., vaccine).
- Challenges associated with communicating accurate data.

#### Issue #4: Revenue shortfalls

- **Permanent local business closures have both short- and long-term effects on tax revenues. Even temporary local business closures affect tax revenues. These closures are contingent on vaccination rates and the appearance and spread of COVID-19 variants, and thus create significant economic uncertainty.**
- **State and local jurisdictions relied on revenue streams linked to various economic sectors that were hit hard by the pandemic. Revenue reductions led to layoffs and program impacts.**
- **Finding a balance between reopening services while minimizing public health concerns has been challenging and is subject to ongoing political disputes.**
- **Uncertainty about future reductions in federal and state support has led to anxiety about the potential for new or additional cuts to operating budgets.**
- **The prolonged nature of the pandemic response has further stressed SLTT funds available to respond to and recover from other incidents in 2020, and for long-term recovery efforts from prior years. Additionally, prior funds set aside to offset revenue shortfalls are now exhausted, leading to greater financial vulnerability to future disasters.**
- Lack of revenue and federal funding has increased reliance on the National Guard.
- Current hiring freezes and layoffs may result in longer-term challenges with securing personnel.
- The multiplicity of funding streams has increased administrative and audit burdens.
- The interconnectedness of tax codes and tax structure plays out differently in each jurisdiction.
- Ongoing costs of COVID could endure for more than a year. A layering effect associated with overlapping disasters will raise costs—i.e., the cost of each disaster appears to be increasing.

## Issue #5: Operational coordination

- **The pandemic saw elected officials willing to abandon existing plans and preparedness efforts and develop new or ad hoc structures, leading to increased uncertainty about roles and responsibilities during the response. There was confusion about who was in charge of what.**
- **In managing the response, public health and other organizations did not always achieve unity of effort or unified command.**
- **This event tested the limits of the national response doctrine—in particular NIMS/ICS—and agencies' understanding of how to implement it, for prolonged, nontraditional, complex incidents.**
- **The pandemic response involved new stakeholder groups (e.g., hospitals), some of which still struggle with NIMS/ICS concepts. As a result, the ability to execute unified command suffered.**
- **As the duration of the response grew, personnel struggled to simultaneously carry out their COVID duties and steady-state, work-related responsibilities. The stress and duration of the pandemic has led to staff burnout and sustainment issues.**
- **Coordinating operations in a virtual environment presented new information technology challenges, including online meeting and collaboration tools.**
- Development of a coordinated response was complicated by loss of responders and staff to quarantine and isolation.

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# APPENDIX D: LIST OF BEST PRACTICES

The table below lists all best practices that the NHSC representatives discussed at the after-action conference. Those voted as higher priority for sharing widely, as highlighted in the main body of the report, are shown in bold.

## Topic #1: Logistics and supply chain management

- **Coordinate at the local, regional, and/or state levels to facilitate bulk purchases and avoid competing for resources**
- **Establish a dedicated point of contact at state and local levels to coordinate the receipt, storage, and distribution of PPE**
- **Clearly designate the entity that will be responsible for procurement and logistics within the unified command**
- **Develop inventory management systems at state and local levels to support tracking and calculation of usage rates for supplies**
- **Expedite processes for purchasing supplies at state and local levels of government**
- **Offer a single portal for resource donations at the state or operational-area level and advertise it, especially to existing vendors**
- **Review existing product lists—leveraging support from partners such as the U.S. Department of Homeland Security Science and Technology Directorate—to identify equivalent products and create pre-approved lists of alternatives that meet standards**
- **Partner with the National Guard to support logistics operations**
- **Use legal and purchasing departments to vet vendors before making any purchases**
- Have a team—consisting of emergency management and public health representatives—dedicated to identifying and filling gaps in logistical needs, including FEMA push packs and the SNS
- Incorporate a state private sector liaison into emergency operations center operations
- Encourage partners to share information on trusted, vetted vendors and have associations serve as repositories of trusted vendor information
- Arrange and contract with university to test products that were purchased or donated to ensure they met specifications
- Work through entities such as councils of government or a lead local government to coordinate regional procurement (i.e., cooperative purchasing)

## Topic #2: Workforce resilience

- **Implement flexible work schedules, when possible, while maintaining critical services**
- **Provide consistent wellness training for employees, including webinars, mindfulness strategies, and coping resources**
- **Provide staff members and their families access to mental and behavioral health services and peer support programs**
- **Encourage jurisdictional leaders to take an extra interest in their workforces and to demonstrate empathy and kindness in their interactions**
- **Ensure that childcare and other needed services are available to support the families of responders, teachers, and other essential workers**
- **Host virtual employee town-hall meetings with leadership to facilitate open communication and transparency and to address questions**
- **Provide financial support for remote work equipment and/or compensation for increased risk of exposure**
- **Expand planning for continuity of operations to address pandemics, and update existing plans with lessons learned from the COVID-19 pandemic**
- Provide technical support to secure work-from-home operations, including cybersecurity information and measures
- Schedule regular social and morale-boosting events
- Examine opportunities to allow virtual meeting platforms for social use (e.g., connecting with friends and family)
- At the state level, prohibit use of personal technology equipment to access state networks
- Provide timely, accurate, and actionable information to mitigate confusion that gives rise to employee stress
- Create a medical monitoring unit to monitor workforce health, track exposures and illness, and standardize and centralize decision-making

### Topic #3: Information sharing and public messaging

- **Conduct regular meetings with all stakeholders using virtual meeting platforms**
- **Ensure that technological capabilities are in place to interface with multiple online platforms and tools**
- **Unify public messaging within and across disciplines and all levels of government**
- **Ensure equity in dissemination approaches (e.g., translation services, technology access, ADA compliance) for all public messaging and information sharing**
- **Identify ways and tools for reaching constituents with access and functional needs (e.g., through community-based organizations, accessibility support technologies)**
- **Ensure that websites used for public messaging are current, accurate, user-centric, easily understandable, and evolve as needed throughout the disaster; include explanations of data quality and comply with language-access laws**
- **Expand social media presence for public messaging**
- **Seek partnerships with the media and news organizations to ensure that messaging is accurate and prioritized appropriately**
- **Incorporate trusted community-based organizations and persons to develop and deliver information to their constituents**
- **Leverage opportunities to amplify messaging with emerging trusted voices (e.g., social media influencers)**
- **Present information with appropriate context to avoid increasing confusion; define what the data does and does not mean and use comparisons to help people understand differences**
- **Establish a rumor-control website that performs fact-checking and debunks rumors**

#### Topic #4: Emergency powers and authorities

- **Take early, proactive measures that are well communicated and coordinated with public and private partners and with buy-in from elected officials**
- **Develop alternatives to law enforcement to encourage and enforce compliance with public health mandates**
- **Delegate authority to streamline executive action, but ensure regular communication between designees and elected officials**
- **Streamline procurement processes to maximize decision-making at the lowest possible level**
- **Cancel or modify community special events**
- **Set up first responder lodging to prevent exposure to family and friends**
- **Set up alternative housing for those in congregate housing, those in isolation and quarantine, and vulnerable populations**
- **Provide access to free public testing**
- Establish a mandatory quarantine period after travel
- Use ordinances to mandate implementation of public health mitigation measures at the local level
- Align the powers of public health officials and the executive authorities of state governors

# ABOUT THE NATIONAL HOMELAND SECURITY CONSORTIUM

The National Homeland Security Consortium is a forum for public and private sector disciplines to coalesce efforts and perspectives about how best to protect America in the 21st century. The Consortium consists of 22 national organizations that represent local, state, and private professionals. The group represents the array of professions that deliver the daily services that are vital to the safety and security of the United States.

- Adjutants General Association of the United States
- American Public Works Association
- Association of State & Territorial Health Officials
- Big City Emergency Managers
- Governors' Homeland Security Advisors Council
- International Association of Emergency Managers
- International Association of Fire Chiefs
- International City/County Management Association
- Major City Police Chiefs Association
- Major County Sheriffs' Association
- National Association of Counties
- National Association of County & City Health Officials
- National Association of State Chief Information Officers
- National Association of State Emergency Medical Services Officials
- National Conference of State Legislatures
- National Emergency Management Association
- National Fusion Center Association
- National Governors' Association
- National League of Cities
- National Sheriffs' Association
- Naval Postgraduate School Center for Homeland Defense & Security
- U.S. Chamber of Commerce

## For More Information:

The National Homeland Security Consortium (NHSC<sup>®</sup>) is administered by the National Emergency Management Association, 1776 Avenue of the States, Lexington, KY 40511. For more information, contact the NEMA Washington, DC office at (202) 624-5459 or visit the NHSC page on the NEMA website at [www.nemaweb.org](http://www.nemaweb.org).

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