

Protecting National Public Health and Health Care Infrastructure for the Next Disaster

An Examination of Public Health and Health Care Preparedness and Response Capabilities and Capacities in the Context of the Pandemic and All-Hazards Preparedness and Advancing Innovation Act of 2019 Sec. 210

January 2023

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Table of Contents

Executive Summary	vii
Section 1.0 Introduction	1
1. About Healthcare Ready	5
Section 2.0 Methodology	7
1. Study Design	7
2. Considerations and Limitations	8
3. Data Collection Methods	9
Section 3.0 Relevant Preparedness and Response Programs, Frameworks, Initiatives	14
1. Overview and Background	14
2. Medical Surge Capacity Considerations	16
3. Cooperative Agreements for Public Health or Health Care Preparedness and Response	16
4. Other Federal Public Health or Health Care Preparedness and Response Programs, Frameworks, and Initiatives	18
5. Preparedness and Response Benchmarks and Standards Established by Non-Federal Sources	19
6. Other National Policies, Strategies, & Directives Undergirding National Preparedness Response Capabilities Beyond the Scope of this Study	23
Section 4.0 Administration for Strategic Preparedness and Response Hospital Preparedness Program and Its Impacts on Medical Surge Capacity and Public Health Preparedness and Response	26
1. Background	27
2. Overview: ASPR Preparedness and Response Capabilities and Diversity of HCCs	28
3. ASPR HPP Performance Measures	29
4. Progress Toward Health Care Preparedness & Response Capabilities	30
5. Opportunities for Improvement	35
6. Recommendations	39
Section 5.0 Evaluation of CDC Public Health Emergency Preparedness Cooperative Agreements and Impacts to Public Health and Medical Surge Capacity and Public Health Preparedness and Response	42
1. Background	43
2. Overview: Public Health Emergency Preparedness Capabilities	44
3. CDC Public Health Emergency Preparedness Cooperative Agreement Performance Measures	46
4. Progress Toward Public Health Emergency Preparedness Cooperative Agreement Capability Domain Areas	47

5. Recommendations	72
Section 6.0 Collective Considerations for Medical Surge Capacity	77
1. Coordination Between ASPR HPP and CDC Public Health Emergency Preparedness Cooperative Agreement Recipients/Sub-Recipients	77
2. Coordination with Other Critical Infrastructure Sectors	79
3. Coordination with Environmental Health Agencies with Expertise in Preparedness and Response	81
4. Medical Surge Capacity of Health Care Facilities	81
5. Opportunities to Improve Medical Surge Capacity	86
6. Recommendations	95
Section 7.0 Evaluation of Emergency Preparedness and Response Capabilities Related to At-Risk Individuals	96
1. Definition of At-Risk Individuals and Vulnerable Populations	96
2. Standards and Benchmarks for Public Health Emergency Preparedness and Response Capabilities Related to At-Risk Individuals	97
3. Evaluation of Current Emergency Preparedness and Response Capabilities Related to Meeting the Needs of At-Risk and Vulnerable Populations	101
4. Considerations for Enhancing Capabilities to Meet the Needs of At-Risk Individuals and Vulnerable Populations	103
5. Recommendations	105
References	106
List of Figures	
Figure 1. Evolution of the Pandemic and All-Hazards Preparedness Act	2
Figure 2. Differences in National Preparedness Structures by Sector: Health Care versus Public Health	4
Figure 3. Healthcare Ready's Position at the Intersection of Sectors	5
Figure 4. Theory Of Change: How Investments in State and Local Public Health and Health Care Infrastructure Save Lives	7
Figure 5. Categories of Stakeholders Interviewed during Semi-Structured Informational Discussions	11
Figure 6. Federal Agencies in Scope of this Report	15
Figure 7. Administration for Strategic Preparedness and Response Hospital Preparedness Program Cooperative Agreement Funding, 2002–2020	37
Figure 8. Centers for Disease Control and Prevention Public Health Emergency Preparedness Cooperative Agreement Notice of Funding Opportunity Logic Model, 2019–2024	47

Figure 9. Advancements in Public Health Emergency Response Systems: A National Snapshot of Public Health Preparedness, 2016	48
Figure 10. Centers for Disease Control and Prevention Public Health Emergency Preparedness Cooperative Agreement Funding, 2004–2017	49
Figure 11. Federal Emergency Management Agency Community Lifelines, 2019	82
Figure 12. Regional Preparedness or Response Programs Highlighted in this Report	84

List of Tables

Table 1. Definition of Terms for Programs, Frameworks, and Initiatives	14
Table 2. Relevant Report Outputs from the National Academies of Sciences, Engineering, and Medicine and Trust for America’s Health	21
Table 3. Overview of the Centers for Disease Control and Prevention Public Health Emergency Preparedness Cooperative Agreement Capability Domains	45
Table 4. Comparing the Administration for Strategic Preparedness and Response Hospital Preparedness Program Cooperative Agreement and Centers for Disease Control and Prevention Public Health Emergency Preparedness Cooperative Agreement	77
Table 5. Centers for Disease Control and Prevention Public Health Emergency Preparedness and Emergency Response Capabilities that Reference Individuals with At-risk and Functional Needs	98

List of Appendices

Appendix A PAHPAIA Section 210 Legislative Language	115
Appendix B Study Interview Questions for Health Care Coalitions and Public Health Departments	118
Appendix C Study Interview Questions for Subject Matter Experts	121
Appendix D Study Interview Questions for Focus Groups	123
Appendix E Anchor Frameworks	124
Appendix F ASPR Health Care and Preparedness Response Capabilities	125
Appendix G CDC Public Health Preparedness and Response Capabilities	126
Appendix H Core Study Questions	130
Appendix I Qualitative Analysis Codebook	131

Frequently Used Acronyms

AFN	Access and Functional Needs
ASPR	Administration for Strategic Preparedness and Response
CBRNE	Chemical, biological, radiologic, nuclear, explosive
CDC	US Centers for Disease Control and Prevention
FSLTT	Federal, state, local, tribal and territorial
HHS	US Department of Health and Human Services
HPH	Health and Public Health
HPP	Hospital Preparedness Program Cooperative Agreement
NHPP	ASPR National Healthcare Preparedness Programs Branch
PM	Performance Measure
SNS	Strategic National Stockpile
USG	US Government

Executive Summary

Section 210 of the [*Pandemic and All-Hazards Preparedness and Advancing Innovation Act of 2019*](#) (PAHPAIA; P.L. 116-22) established a requirement to conduct a study of the nation's public health preparedness and response capabilities and the medical surge capacities of hospitals, long-term care facilities, and other health care facilities. The law requires the findings of this study be provided to the Secretary of Health and Human Services (HHS) and relevant congressional committees with recommendations for improving these capabilities and capacities, including identifying ways to improve or develop new benchmarks and objective standards for federal preparedness and response¹ initiatives, as well as identifying best practices to improve preparedness and response capabilities and medical surge capacity of health care facilities to:

- Address future potential public health threats,
- Coordinate efficiently between recipients of federal funding and critical infrastructure stakeholders, and
- Ensure the adequacy of preparedness and response capabilities for individuals with access and functional needs.

Initially launched in 2019, this study includes lessons learned from the COVID-19 pandemic and prior public health emergencies. As outlined in the National Response Framework and made starkly more apparent through the nation's response to the pandemic—achieving national preparedness requires a “whole community” approach with extensive coordination and collaboration across government and private sector entities (including for-profit businesses, nonprofit, and voluntary organizations), as well as a range of sectors that undergird the delivery of health care and public health services.

With this context in mind, this report considers health care and public health as distinct fields with independent stakeholders and entities that may hold shared values, but different and sometimes conflicting operating models, goals, and incentives to preparedness or response. In order to sustain community-level access to health care services amidst disruptions, public and private sector stakeholders from both sides must collaborate effectively before, during, and after an event.ⁱ Recognizing the complex and interwoven preparedness and response landscape that exists at local, state, and national levels across public health and health care, this report emphasizes benchmarks and standards that are associated with preparedness and response programs and activities that are authorized by the Public Health Service (PHS) Act, and how they have advanced the nation's operational readiness and ability to respond to disasters of all types. Relevant programs and activities that are examined in this report include:

- HHS Administration for Strategic Preparedness and Response (ASPR) [Hospital Preparedness Program](#) Cooperative Agreements (HPP), which provides funding to 62 health departments in all 50 states, territories, freely associated states, and four metropolitan areas to support the health care delivery system through health care coalitions.²
- Centers for Disease Control and Prevention (CDC) [Public Health Emergency Preparedness](#) Cooperative Agreements, which provide funding and technical support to help 62 state, local, and territorial health departments prepare for and respond to emerging threats, natural disasters, and mass casualty events.

¹ Including the Hospital Preparedness Program (HPP), and CDC Public Health Emergency Preparedness Cooperative Agreements, and the Regional Health Care Emergency Preparedness and Response Systems under section 319C-3 of the Public Health Service Act.

² As of the writing of this report.

- [**Regional Disaster Health Response System**](#) (RDHRS) demonstration pilots; comprised of four regional pilot projects to date that are established by ASPR cooperative agreements, these aim to "establish a network of state-level clinical response assets as well as interstate regional assets to create a more coherent, comprehensive, and capable health care disaster response system."

This report also recognizes the linkage between the medical surge capacities of health care facilities; the health status of communities pre-event; and whole-of-community structures associated with health care outcomes following a disaster; and examines policies, frameworks, and structural elements beyond PAHPAIA when discussing preparedness and response capabilities and capacities for individuals with access and functional needs.

Methods

Strengths and gaps in the nation's public health and health care preparedness and response infrastructure were evaluated using a mixed-methods approach. Key sources of information included:

- A literature review of over 170 reports, websites, journal articles, and government documents;
- Forty-eight informal discussions guided by a list of semi-structured questions with recipients (or subrecipients) of ASPR HPP, CDC Public Health Emergency Preparedness Cooperative Agreement, and subject matter experts in health security, emergency logistics, community resilience, health policy, and patient care/health care delivery; as well as
- Four focus group discussions with community-based organizations and advocacy groups representing historically underserved communities in health care and/or those with access and functional needs.

Data from across these sources were combined to assess public health preparedness and response capabilities and medical surge capacities of health care facilities. Neither individual nor aggregated performance measure data from ASPR HPP, CDC Public Health Emergency Preparedness Cooperative Agreement, or other federally funded preparedness and response programs were available for this report. In the absence of such data, this evaluation leverages publicly available information on the achievements of ASPR HPP and CDC Public Health Emergency Preparedness Cooperative Agreements toward improving preparedness and response capabilities. Thus, this report focuses on capability evaluation rather than program evaluation. Further, the report does not focus on federal programs or initiatives that are intended to support mitigation or recovery from disasters, though those programs are referenced and acknowledged throughout this report as critical components to achieving aspirational public health and health care preparedness and response capabilities.

Ten Years of Progress

In years since the 2013 Pandemic and All-Hazards Preparedness Reauthorization Act (PAHPRA), which amended the Public Health Service Act to reauthorize federal preparedness and response programs and activities, the ASPR HPP Cooperative Agreement, CDC Public Health Emergency Preparedness Cooperative Agreement, regional disaster demonstration sites, and other initiatives have markedly advanced the nation's preparedness and response capabilities. Health care coalitions (HCCs) established via ASPR HPP, for instance, have demonstrated success in improving bidirectional information sharing, intersectoral communication, and resource management during disasters, among many other accomplishments. CDC Public Health Emergency Preparedness Cooperative Agreement recipients have demonstrated rising progress across key elements

of a developed public health emergency response system, including establishing emergency operations centers, health care and public health coordination, enhanced risk communications, improved biosurveillance, strengthened lab capacity, and more coordinated incident and information management capabilities. Key areas of progress across RDHRS pilot sites also include improved coordination and information-sharing mechanisms (e.g., via the RDHRS Response Center, and creation of the Knowledge Center incident management platform) along with enhanced medical surge capabilities for certain conditions, and more rapid ability to operationalize alternate care sites and strategies (e.g., via a disaster telemedicine platform).

There are also a range of technical assistance, training, and other initiatives stewarded by federal agencies that aim to strengthen public health and health care preparedness and response capabilities that are not studied in this report. Examples include technical assistance provided by ASPR [Technical Resources, Assistance Center, and Information Exchange](#), CDC's preparedness and response system Online Technical Resource and Assistance Center, and the Federal Emergency Management Agency's (FEMA) [Resilience Analysis and Planning Tool](#).

Findings and Recommendations

While this report finds that federal cooperative agreements have improved the nation's posture for preparedness and response overall, research conducted for this report along with understanding of the diversity of cooperative agreement recipients and their varied composition (of resources, capabilities and capacities) suggests greater opportunity for improvements to be achieved *consistently* across regions and communities. Further strategic investments are necessary to continue to foster and accelerate improvements in national preparedness and response, and to address long-standing barriers that may otherwise continue to constrain medical surge capacity.

Opportunities to Accelerate Improvement

- Increased federal funding to support local and regional preparedness, as well as dedicated funding for response.
- Development of a cohesive, national strategy to improve coordination and collaboration across jurisdictions.
- Clarification and communication of roles and responsibilities of preparedness and response stakeholders, especially for large-scale events.
- Greater investments (e.g., support for workforce training, retention programs) to address current public health workforce shortages and challenges.
- Greater focus and funding to support community engagement prior to emergencies.
- Greater consistency for how public health, health care, and emergency management define and apply an equity lens in disaster planning.
- Greater response and recovery support for regions and communities disproportionately impacted by repeated disasters.
- Enhancements in data modernization across health care and public health.

Recommendations

The recommendations in this report are intended for Congress and relevant federal agencies. Categorized across four thematic areas, they are summarized here:

1. Improve communication and coordination across sectors, agencies, programs, and levels.

Core strategies to do so include:

- Defining roles and responsibilities across agencies, programs, and cooperative agreement recipients involved in federal disaster preparedness, including with respect to incident management, medical countermeasures, and regional systems.
- Encouraging and enabling improved bidirectional information sharing across all stakeholders (e.g., between private and public entities; between local, state, and federal entities responding to events).
- Strengthening and maintaining partnerships across agencies and sectors, including within ASPR HPP (e.g., implement regular processes for getting input from the health care sector writ large), CDC Public Health Emergency Preparedness Cooperative Agreement (e.g., require recipients to engage community partners in preparedness exercises), and regional relationships (e.g., strengthen relationships between ASPR Regional Emergency Coordinators, HPP field officers, and HCC leaders and members; RDHRS recipients and other regional systems such as the National Special Pathogen Systems; and medical countermeasures stakeholders).

2. Strengthen accountability by setting targets for all program goals and benchmarks for all standards and ensure monitoring and evaluation of progress, with transparent reporting of results.

Not all ASPR HPP nor CDC preparedness and response system performance measures have established benchmarks, and the progress toward developing benchmarks to date, is opaque to the public. The lack of publicly available data makes it difficult to hold administrators of federal cooperative agreements responsible for ensuring programmatic evaluation catalyzes continuous improvement. It also makes it difficult to understand the challenges that recipients of federal cooperative agreements face preventing them from meeting programmatic requirements.

3. Strengthen efforts to apply an equity lens to public health and health care preparedness and response.

Core strategies to do so include:

- Applying an equity lens to preparedness and response work at all levels and measuring progress toward equity goals.
- Understanding drivers that put certain populations at higher risk of poor outcomes after an emergency or disaster.
- Collecting data to identify populations with access and functional needs to improve the capacity to meet their needs before, during, and after an emergency.
- Engaging communities in applying this equity lens and ensuring the work is responsive to community needs.
- Addressing health-related social needs to reduce the size of the population at higher risk and to improve resilience.

4. Increase funding for federal preparedness and response. ASPR HPP and CDC Public Health

Emergency Preparedness Cooperative Agreement require more funding to ensure that program administrators, recipients, and sub-recipients have the necessary resources to enhance activities supporting long-term community and stakeholder engagement, data modernization, and other areas that have been long underfunded or resource constrained.

In addition, we recommend several areas of future study that were considered beyond the scope of this report:

- Ways to improve public and private sector engagement across health care, public health, and emergency management stakeholders.
- Clarification of the roles, responsibilities, and powers of different stakeholders in preparedness and response.
- An investigation into how ASPR plans to replicate best practices from regional pilot sites.
- Assessment of the value of instilling transparency requirements around performance measure data for ASPR HPP and CDC Public Health Emergency Preparedness Cooperative Agreements.
- An investigation into the utility and impact of existing or adding new requirements in ASPR HPP and CDC Public Health Emergency Preparedness Cooperative Agreements for recipients to apply an equity lens to preparedness work.

Impact

Progress toward these recommendations will further strengthen our nation’s preparedness and response capabilities, help to achieve better outcomes after disasters, and contribute to ensuring our nation’s health security against future threats. Implementation of the recommendations in this report will help to:

- Build public will for a strong preparedness system.
- Create more effective and efficient preparedness systems.
- Meet the needs of all Americans—especially populations that are at greater risk of being disproportionately impacted by disasters.

Recommendations for Congress and Relevant Federal Agencies

1a. Improve Communication and Coordination: Roles and Responsibilities		
Program: Agency	Actor	Recommendation
CDC	CDC	1. Clarify incident management roles, responsibilities, and authorities of CDC and recipients of cooperative agreements and establish accountability mechanisms to ensure roles and responsibilities are being met.
HPP:ASPR	ASPR	2. Level-set on the roles and responsibilities of stakeholders for future medical countermeasure distribution strategies and communicate how health care coalitions (HCCs)—and other stakeholders—should work with the Strategic National Stockpile for future events.
ASPR and CDC	HHS, White House	3. Encourage multi-stakeholder discussions to help clarify incident management roles, responsibilities, and authorities for large-scale events.

Legend: CDC = Centers for Disease Control and Prevention; ASPR = Administration for Strategic Preparedness and Response; SNS = Strategic National Stockpile; NHPP = National Healthcare Preparedness Programs Branch

1b. Improve Communication and Coordination: Information Sharing		
Program: Agency	Actor	Recommendation
HPP: ASPR	ASPR	4. Proactively seek annual input from recipients/sub-recipients on HPP requirements, performance measures, and benchmarks around information sharing practices and challenges.
CDC	CDC	5. Support the flow of bidirectional information across FSLTT public health, private sector, and other stakeholders to ensure more informed and cohesive preparedness and response efforts, including the flow of information down to state and local public health departments, particularly tribal and territorial health departments, by: <ul style="list-style-type: none"> • Identifying a liaison within federal agencies to speak to all public health departments; • Ensuring state health departments are providing sufficient information to local health departments (e.g., situational awareness, technical guidance, demographics data).
Public Health Emergency Preparedness Cooperative Agreement: CDC	CDC	6. Develop benchmarks and standards to assess recipients' progress toward strengthening information management systems and procedures. The benchmarks should require recipients to conduct an after action report of a scenario that tests their emergency public information warning systems and information-sharing plans with external stakeholders.

Legend: HPP = Hospital Preparedness Program; ASPR = Administration for Strategic Preparedness and Response; FSLTT = Federal, state, local, tribal, and territorial; CDC = Centers for Disease Control and Prevention

1c. Improve Communication and Coordination: Partnerships

Program: Agency	Actor	Recommendation
Public Health Emergency Preparedness Cooperative Agreement: CDC	CDC	7. Encourage recipients to more frequently identify and proactively engage private sector health care, community partners, and other stakeholders as part of preparedness exercises, such as testing their surge plans, to identify opportunities for improvement.
Public Health Emergency Preparedness Cooperative Agreement: CDC	CDC	8. Develop programmatic benchmarks and targets for: <ul style="list-style-type: none"> • Incident management—Performance measures should require recipients to articulate how they will work with neighboring jurisdictions during a widespread disaster or public health emergency within all-hazards preparedness and response plans, and require that these plans be tested with neighboring jurisdictions. • Coordination of health care needs during a medical surge event—such benchmarks should seek to measure how recipients coordinate with partners to address public health and health care needs during a medical surge event either during an exercise scenario or a real-world event.
HPP: ASPR	ASPR	9. Proactively seek input and buy-in from the broader health care sector (e.g., increased input from hospital systems and varying levels of leadership; increased input from physicians, community-based health centers, dialysis facilities, home health providers) in the development of HPP requirements, including performance measures and corresponding targets/ benchmarks, to drive stronger private sector engagement in program activities.
HPP: ASPR	ASPR	10. Identify, track, and continue to implement new strategies that incentivize stronger engagement in HCCs by current and prospective members.
HPP: ASPR	ASPR	11. Develop performance measures to allow HPP to collect data on engagement quality between health care coalitions and ASPR to better understand where gaps remain in ASPR's capacity to support preparedness and response efforts, including information sharing and communication.
HPP: ASPR	ASPR	12. Strengthen relationships between ASPR Regional Emergency Coordinators and/or HPP Field Project Officers and HCC leads, recipients and sub-recipients to fill the gap between regional and federal communications and information sharing.
ASPR and CDC	ASPR, CDC	13. Build on the private sector engagement strategies and tactics deployed during COVID-19 and create more opportunities to seek input from and collaboration with private sector stakeholders in medical countermeasure procurement and distribution.
	HHS and Congress	14. Consider existing mechanisms and channels that can be leveraged for long-term care and other facilities to improve planning and coordination around evacuation.

Legend: CDC = Centers for Disease Control and Prevention; HPP = Hospital Preparedness Program; ASPR = Administration for Strategic Preparedness and Response; CMS = Centers for Medicare and Medicaid Services; LTC = Long-term care; NDMS = National Disaster Medical System; MRC = Medical Reserve Corp; EMAC = Emergency Management Assistance Compact

2. Strengthen Accountability

Set targets for all program goals and benchmarks for all standards and ensure monitoring and evaluation of progress with transparent reporting of results. Specific areas where goals and associated targets are needed, and/or where standards and associated benchmarks should be in place, are noted throughout the report recommendations.

3. Strengthen Efforts to Apply an Equity Lens

Program: Agency	Actor	Recommendation
Public Health Emergency Preparedness Cooperative Agreement: CDC	CDC	15. Require recipients to utilize an equity lens in their preparedness and response work and add benchmarks to the programmatic requirements to ensure recipients employ an equity lens in response plans.
CDC	CDC	16. Provide technical training for state and local agencies to help them leverage existing data to analyze, understand, and address the needs of populations with access and functional needs in their jurisdictions.
CDC	CDC	17. Support and encourage FSLTT public health agencies to expand proactive and sustainable community engagement, including application of an equity lens in preparedness and response work.
	ASPR	18. Develop clear standards and benchmarks for addressing the needs of individuals with access and functional needs in emergencies.
HPP: ASPR	ASPR	19. Require HPP recipients and sub-recipients to approach their work through an equity lens (including the addition of goals and targets related to individuals with access and functional needs) to ensure they are meeting the needs of the communities who are at higher risk of experiencing disparate health outcomes during an emergency.
HPP: ASPR	ASPR	20. Add a benchmark to assess whether HCC response plans apply an equity lens.
HHS	HHS	21. Identify and track vulnerable geographies based on regional assessments (e.g., support data collection and tracking for the availability and closure of hospitals and other health care facilities to examine trends on health care infrastructure access, especially for rural or historically medically underserved areas).
	HHS and Congress	22. Require GAO to investigate how key offices adhere to requirements to include populations with access and functional needs in emergency planning.
	HHS and Congress	23. Require federal agencies to coordinate and build a network that increases expertise on areas necessary for community resilience. (e.g., SAMHSA expertise on behavioral health can be leveraged to weave mental health into all steps of emergency management cycle; FEMA expertise on logistics and resource management can be leveraged to help state/local agencies understand how to work across sectors toward resilience).

Legend: CDC = Centers for Disease Control and Prevention; FSLTT = Federal, state, local, tribal, and territorial; HPP = Hospital Preparedness Program; ASPR = Administration for Strategic Preparedness and Response; HCC = Health care coalitions; GAO = Government Accountability Office; SAMHSA = Substance Abuse and Mental Health Services Administration; FEMA = Federal Emergency Management Agency.

4. Increase Funding

Program: Agency	Actor	Recommendation
Public Health Emergency Preparedness Cooperative Agreement: CDC	Congress and CDC	24. Enhance and expand existing funding for data modernization and public health laboratories through CDC Public Health Emergency Preparedness and Response Cooperative Agreements to strengthen biosurveillance and epidemiologic capabilities. Develop benchmarks and targets for the program to assess how these efforts are strengthening biosurveillance activities.
	Congress	25. Provide additional funding to recipients to invest in infrastructure needed to support and promote community engagement (e.g., customer relationship management platforms, staffing, training, professional development).
	Congress	26. Increase preparedness and response system funding to support recipients' abilities to support surge capacities.
ASPR	Congress	27. Increase HPP funding to ensure that every jurisdiction can have the basic capacities and capabilities to prepare for an emergency.
ASPR and CDC	Congress	28. Increase funding for the preparedness and response system to enhance capabilities to build resilience and long-term recovery.
	HHS and Congress	29. Invest in and support the development of deployable health personnel via National Disaster Medical System and Medical Reserve Corps.

Legend: CDC = Centers for Disease Control and Prevention; HPP = Hospital Preparedness Program; ASPR = Administration for Strategic Preparedness and Response

Additional Recommendations for Future Study

Actor	Recommendation
Congress	Provide pathway for clarifying public health roles and responsibilities (in the context of preparedness and response) of elected officials, and powers (legislative and regulatory) within states and across jurisdictions.
HHS	Increase visibility of performance measure data from programs such as CDC Public Health Emergency Preparedness Cooperative Agreement and ASPR HPP for government and non-government stakeholders, including Cooperative Agreement recipients and sub-recipients, research-focused groups, and other federal agencies or offices within HHS.
ASPR	Explore how RDHRS and other regional demonstration site learnings can be applied and replicated in other areas to ensure that lessons learned from pilot sites are amplified.
Congress	Require GAO study to identify the reasons for variation in medical countermeasure distribution/allocation across jurisdictions, including what federal/state coordination issues exacerbated this variation.
ASPR	Add mechanisms and requirements to monitor and report the amount of funding each HCC receives via the HPP Cooperative Agreement to ensure any increase in funding available via the HPP Cooperative Agreement leads to adequate resourcing support for regional health care delivery systems, in addition to meeting cooperative agreement-specific requirements (performance measures) that advance system preparedness.

Legend: CDC = Centers for Disease Control and Prevention; HPP = Hospital Preparedness Program; ASPR = Administration for Strategic Preparedness and Response; HHS = Department of Health and Human Services; RDHRS = Regional Disaster Health Response System; GAO = Government Accountability Office

Section 1.0 Introduction

This report was written by Healthcare Ready under a cooperative agreement with the Administration for Strategic Preparedness and Response (ASPR) at the US Department of Health and Human Services (HHS). Section 210 of the *Pandemic and All-Hazards Preparedness and Advancing Innovation Act of 2019* (PAHPAIA) Public Law No. 116-22 requires ASPR to engage a third-party to conduct a “study regarding the public health preparedness and response capabilities and medical surge capacities of hospitals, long-term care facilities, and other health care facilities to prepare for, and respond to, public health emergencies, including natural disasters.” The full text of Section 210 can be found in Appendix A.

A key component of PAHPAIA—which amended the Public Health Service (PHS) Act, following the 2006 *Pandemic and All-Hazards Preparedness Act* (PAHPA) and the 2013 *Pandemic and All-Hazards Preparedness Reauthorization Act* (PAHPRA)—is the intent to expand and strengthen the authorities of ASPR and the CDC Director to better prepare the nation to respond to and recover from public health emergencies. With a stated focus on strengthening regional capacity and capabilities, PAHPAIA reauthorizes and enhances authorities for the ASPR Hospital Preparedness Program Cooperative Agreement (HPP), CDC Public Health Emergency Preparedness Cooperative Agreement, and other public health and medical preparedness programs.³ (See Figure 1 for a summary of the key components of PAHPA, PAHPRA, and PAHPAIA, and how the Public Health Service Act has evolved since 2006.)

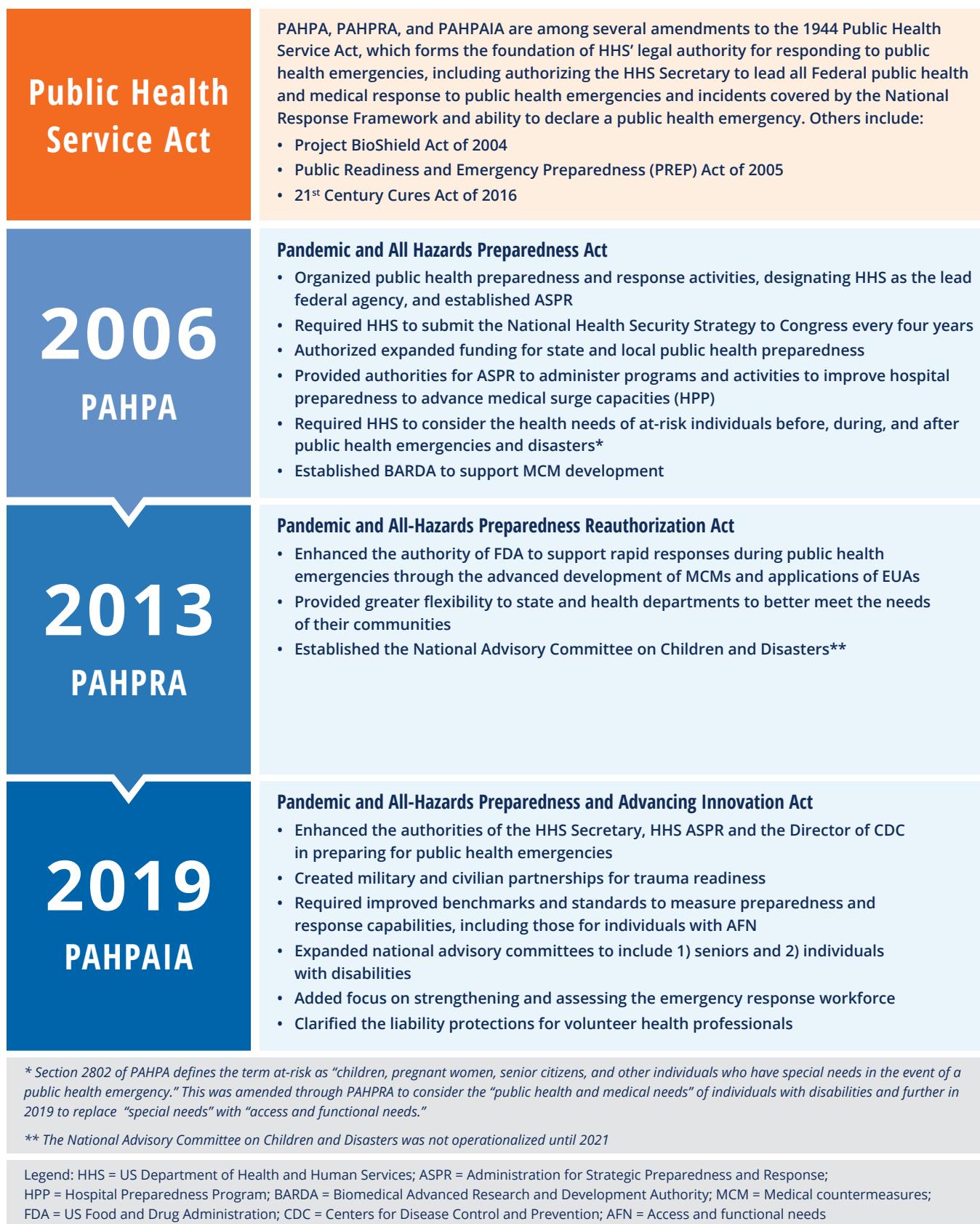
Recognizing the complex and interwoven preparedness and response landscape that exists at local, state, and national levels, this report places an emphasis on relevant benchmarks and standards associated with preparedness and response programs and activities that are authorized by the Public Health Service (PHS) Act, and how they have helped advance the nation’s operational readiness and ability to respond to disasters of all types. Relevant programs and activities that are examined in this report include:

- Advancements in preparedness and response that are a result of federally funded initiatives (e.g., ASPR Hospital Preparedness Program [HPP], Centers for Disease Control and Prevention [CDC] Public Health Emergency Preparedness cooperative agreements, Centers for Medicare and Medicaid Services [CMS] Emergency Preparedness Rule);
- Preparedness gaps among health care facilities and particularly for populations that experience disproportionate impacts from disasters, including those with access and functional (AFN) needs;⁴ as well as
- Coordination efforts between federal agencies and critical infrastructure partners and, where applicable, environmental health agencies.

³ Additional funding authorizations available under PAHPAIA include the authorized use of the Public Health Emergency Fund when ASPR declares a public health emergency or determines a “significant potential for a public health emergency and authorizes advanced funding for buying medical countermeasures under the Project BioShield Act.” Such funding is intended to be made available for research and development of medical countermeasures when the HHS Secretary determines that a chemical, biological, radiological, or nuclear event may affect national security.

⁴ Section 2802 of PAHPA defines the term at-risk as “children, pregnant women, senior citizens, and other individuals who have special needs in the event of a public health emergency.” This was amended in 2013 through the Pandemic and All-Hazards Preparedness Reauthorization Act (PAHPRA) to consider the “public health and medical needs” of individuals with disabilities and further in 2019 to replace “special needs” with “access and functional needs.” More information on this is available in Section 7.0 of this report.

Figure 1. Evolution of the Pandemic and All-Hazards Preparedness Act



Within this report, health care and public health are recognized as distinct fields with independent stakeholders and entities that may hold shared values, but different and sometimes conflicting operating models, goals, and incentives to preparedness or response. Regardless of differences, stakeholders in both areas work together before, during, and after disasters to address community needs, and to orchestrate a coordinated response to sustain community-level access to health care amid disruptions to the health care system caused by disasters.ⁱⁱ

For the purpose of this report, health care entities are defined as all businesses and related physical and operational infrastructure needed to deliver health care services. This includes health care facilities, such as hospitals and dialysis centers, and the workforce needed to provide medical care (e.g., clinicians, nurses, business administrators, environmental services staff)—the latter being the primary health care stakeholders examined in this report. There are also several other key stakeholders involved in health care, including financing entities, such as CMS, private payers, and other entities that facilitate payment for (or regulate) medical services that are not a primary focus of this report. The primary federal funding source supporting preparedness and response capabilities among health care entities in the US is HPP.

For the purpose of this report, public health includes all federal, state, local, tribal, and territorial (FSLTT) entities that provide essential services in the care and surveillance of a community or population. Key public health stakeholders include state and local public health departments, federal agencies such as CDC, public health laboratories, and other critical governmental institutions. The primary federal funding source supporting preparedness and response capabilities in public health within the US is the CDC Public Health Emergency Preparedness Cooperative Agreement.

Figure 2 provides an overview and comparison of the key differences in national preparedness structures across the health care and public health sectors.

Figure 2. Differences in National Preparedness Structures by Sector: Health Care versus Public Health

HEALTH CARE	PUBLIC HEALTH
Key Federal Agencies and Cooperative Agreements for Preparedness and Response	
<ul style="list-style-type: none"> Administration for Strategic Preparedness and Response (ASPR)* Hospital Preparedness Program (HPP) Cooperative Agreements Emergency Support Functions #8 and #14 	<ul style="list-style-type: none"> US Centers for Disease Control and Prevention (CDC) Public Health Emergency Preparedness (PHEP) Cooperative Agreements Emergency Support Functions #8 and #14
Stakeholders Responsible for Local and Regional Preparedness and Response	
<ul style="list-style-type: none"> Health Care Coalitions (e.g., hospitals, emergency medical services, public health agencies, emergency management organizations) Health Care Provider/Supplier Facilities** Academic Centers Supply Chain 	<ul style="list-style-type: none"> Federal, State, Local, Tribal, and Territorial departments of health Public health laboratories
Preparedness Capability Frameworks	
<p>ASPR HPP is the only federally managed preparedness initiative that defines preparedness capabilities at regional levels. The four preparedness capabilities outlined by ASPR are as follows:</p> <ul style="list-style-type: none"> Establish a foundation for health care and medical readiness Advance health care and medical response coordination Ensure continuity of health care service delivery during emergencies Deliver timely and efficient care even when the demand for care and services exceeds supply <p>Preparedness capability goals for health care entities are also established by private sector stakeholders (e.g., The Joint Commission, National Health Security Preparedness Index) as well as government (e.g., CMS Preparedness Final Rule, CMS Five-Star Quality Rating System).</p>	<p>The CDC Public Health Emergency Preparedness Cooperative agreement measures jurisdictional increases in achieving greater preparedness against 15 capability areas across six domains:</p> <ul style="list-style-type: none"> Community resilience Incident management Information management Medical surge management Countermeasures and mitigation Biosurveillance

* At the time of this report, the Office of the Assistant Secretary for Preparedness and Response has been elevated from a staff division to an operating division, with a name change to the Administration for Strategic Preparedness and Response. The transition will be phased in over the next 1-2 years.

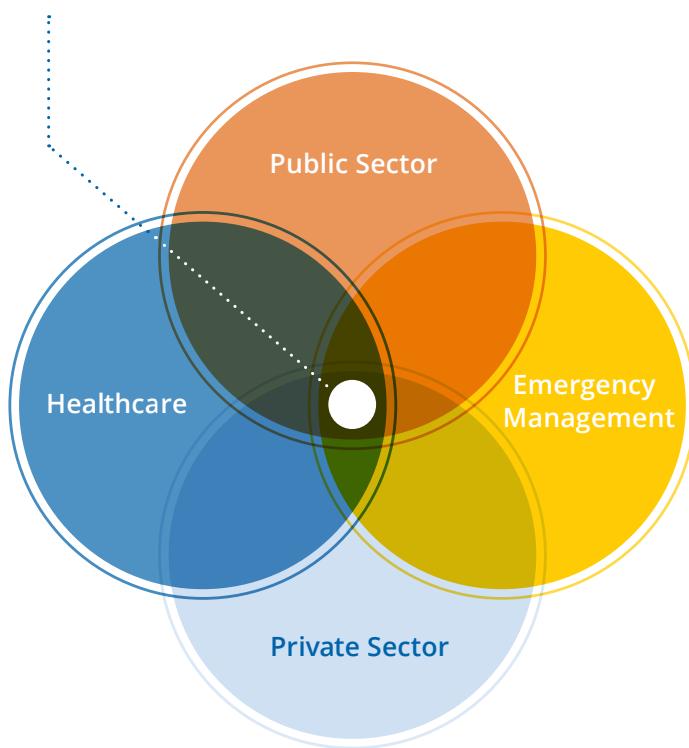
** Centers for Medicare & Medicaid Services (CMS) Emergency Preparedness Rule defines 17 provider and supplier types: Hospitals; Religious Nonmedical Health Care Institutions; Ambulatory Surgical Centers; Hospices; Psychiatric Residential Treatment Facilities; All-Inclusive Care for the Elderly; Transplant Centers; Long-Term Care Facilities; Intermediate Care Facilities for Individuals with Intellectual Disabilities; Home Health Agencies; Comprehensive Outpatient Rehabilitation Facilities; Critical Access Hospitals; Clinics, Rehabilitation Agencies, and Public Health Agencies as Providers of Outpatient Physical Therapy and Speech-Language Pathology Services; Community Mental Health Centers; Organ Procurement Organizations; Rural Health Clinics and Federally Qualified Health Centers; End-Stage Renal Disease Facilities.

This report examines the preparedness and response capabilities of public health, and, medical surge capacities of health care facilities supported by federal preparedness and response cooperative agreements. Recommendations for improvement in these areas are highlighted for relevant committees in Congress, federal agency leaders, and other stakeholders in the field to enhance the nation's readiness.

About Healthcare Ready

Healthcare Ready is a 501(c)(3) nonprofit organization that works to ensure patient access to health care in times of disaster and disease outbreaks. Established in 2007, Healthcare Ready functions as a critical and nontraditional response arm coordinating the federal government and the private sector (manufacturing, supply chain, and health care support and delivery) as a public-private partnership that works to bridge the private sector health care supply chain with public health and emergency management on preparedness, response, and recovery efforts. The organization accomplishes this through public-private partnerships with all levels of government, nongovernmental organizations across health care and disaster response, and private sector partners across the health care supply chain to build and enhance community resilience before, during, and after emergencies.

Figure 3. Healthcare Ready's Position at the Intersection of Sectors



Created out of the demonstrated need for enhanced public-private coordination following Hurricane Katrina, Healthcare Ready was initially founded to restore and resolve supply chain operations and to address the needs of health care facilities and patient-focused groups. The organization later expanded its mission to include preparedness, recovery, resilience, and health care access and equity as central pillars.

Healthcare Ready has activated its Emergency Operations Center (EOC) for over one hundred different natural disasters, infectious disease outbreaks, and man-made catastrophes over the past 15 years, and leverages relationships with private sector health care entities and NGOs across all 50 US states and territories. Most critically, Healthcare Ready functions as a bridge between the private sector and the government during non-emergency declaration intervals when certain dialogue between the US government (USG) and industry may have greater restrictions. This reduces delays to engagement between the two when an emergency occurs, creating greater capacity for restoring health care functions and saving lives following an emergency.

Healthcare Ready is also a Department of Homeland Security (DHS)-designated Information Sharing and Analysis Center (ISAC) for the Healthcare and Public Health (HPH) Sector, operating 24/7 to facilitate information sharing across sectors to enhance the security and resilience of HPH critical infrastructure against all-hazards risks. As an independent nonprofit and nontraditional emergency response partner, the research leading to the recommendations in this report is informed by a diverse array of perspectives and collective experiences relevant to conducting an operational evaluation of national preparedness and response capabilities and capacity to respond to future all-hazards risks.

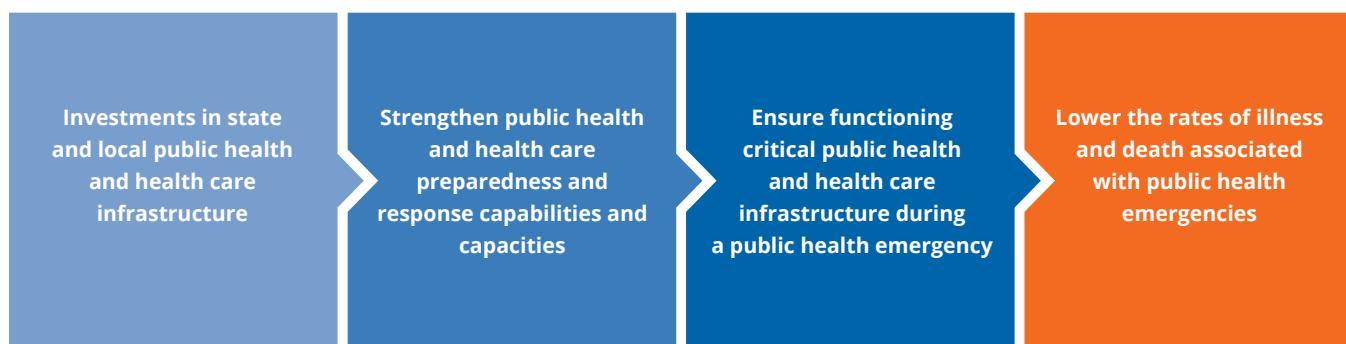
The largest driver of resilience in a community is its health care infrastructure, and every disaster can potentially tax a community's health system by increasing the public's need for these facilities while simultaneously reducing access. The speed at which a community can bounce back from these challenges depends on its resilience. As challenges evolve and escalate around us—from pandemics to hurricanes and other natural disasters—Healthcare Ready can help communities prepare for the inevitable, respond when in crisis, and recover to be more resilient and better equipped to handle the next disaster.

Section 2.0 Methodology

1. Study Design

This study examines the strengths and gaps in the capabilities and capacity of the nation's public health and health care infrastructure to prepare for and respond to public health emergencies resulting from all-hazards. In accordance with the remit of PAHPAIA Sec. 210, this study places an emphasis on the contributions and influences of HPP Cooperative Agreement, CDC Public Health Emergency Preparedness Cooperative Agreements, and other regional initiatives. The design of this study is based on the following theory of change: Amendments to the Public Health Service Act have led to federal investments that enhance preparedness and response capabilities, specifically through the Hospital Preparedness Program (HPP) and the Centers for Disease Control and Prevention (CDC) Public Health Emergency Preparedness Cooperative Agreements. These cooperative agreements, along with many other initiatives, enhance state and local public health and healthcare infrastructure by supporting their capability and capacity for preparedness and response, including coordination and meeting the needs of individuals with access and functional needs (AFN). As a result, morbidity and mortality are reduced and critical infrastructure remains functional during a public health emergency.

Figure 4. Theory Of Change: How Investments in State and Local Public Health and Health Care Infrastructure Save Lives



Based on the language in PAHPAIA Sec. 210 and the theory of change, Healthcare Ready developed core study questions (Appendix H). To establish key terms, concepts, standards, and measures for characterizing, assessing, and analyzing preparedness and response capabilities, Healthcare Ready identified several anchoring texts, including commonly recognized benchmarks and standards, strategies, frameworks, and initiatives in preparedness and response relevant to public health and health care in the US (Appendix E). For the purpose of this report, these terms are defined as:

- **Performance Measurement:** The ongoing monitoring and reporting of accomplishments toward preestablished goals and objectives, often related to processes, outcomes, impact, cost-benefit or effectiveness.ⁱⁱⁱ
- **Benchmark:** A specific, measurable, variable that can be used to assess improvements in preparedness goals across the public health and health care systems.

- **Standard:** A model or established norm that determines an acceptable or desirable level of achievement. Standards are often applied to a practice or set of guidelines.
- **Framework:** An overarching strategy, set of guidelines, or system that is used to prepare for or respond to a specified threat.
- **Initiative:** An act or partnership that is intended to identify potential solutions during an emergency or disaster, or a novel approach to strengthening emergency preparedness and response.

A summary of the benchmarks, standards, frameworks, and initiatives used in this evaluation is provided in Section 3.0 of this report.

Study Period

The report study period took place between March 2021 to December 2021, with literature sources primarily identified over an 11-year period from 2010 to 2021. Changes have also been made after December 2021 to incorporate newly released versions of annual reports and to address technical corrections from reviewers. During the course of review for this report, ASPR was elevated to an operating division of HHS. Formerly the Office of the Assistant Secretary for Preparedness and Response, as of July 2022 the agency is now called the Administration for Strategic Preparedness and Response and is referenced to as such throughout this report.

2. Considerations and Limitations

Benchmarks and standards to assess preparedness and response: Recipients of federal funding through ASPR HPP and CDC Public Health Emergency Preparedness Cooperative Agreements (i.e., health care coalitions [HCCs]; local, state and territorial health departments; other entities participating in regional preparedness demonstration projects) are required to report performance data in accordance with programmatic requirements to receive funding. Healthcare Ready requested access to such performance measure data; however, neither individual nor aggregated performance measure data were available for review for this study, precluding certain analyses. Instead, this evaluation leverages publicly available information on the achievements of ASPR HPP and CDC Public Health Emergency Preparedness Cooperative Agreements toward improving preparedness and response capabilities. Thus, this report focuses on capability evaluation rather than program evaluation. Further, the report does not focus on federal programs or initiatives that are intended to support mitigation or recovery from disasters, though those programs are referenced and acknowledged as critical components to achieving aspirational public health and health care preparedness and response capabilities.

Benchmarks and standards to assess medical surge capacity of health care facilities: Medical facilities are held to quality standards from a variety of accrediting and funding institutions, including (but not limited to) The Joint Commission, Centers for Medicare and Medicaid Services (CMS) Quality Rating Systems, and the CMS Emergency Preparedness Rule. This core focus of this report is medical surge capacity in health care facilities within the context of benchmarks and standards related to preparedness and response, and relevant federal preparedness and response programs in PAHPAIA. The facilities assessed in the report are limited to facility types referenced in PAHPAIA Sec. 210 and other CMS provider types that may impact medical surge capacity.

All-Hazards Approach: As guided by Sec. 210 of PAHPAIA, the report focuses on preparedness and response capabilities for “public health emergencies, including natural disasters.” Considerations were made throughout

this process toward all potential hazards that may impact public health or health care services in the US, including impacts of natural hazards, and chemical, biological, radiological, cyber, and other events.

Study Period: The congressional mandate to conduct this study was provisioned in PAHPAIA in 2019.

Healthcare Ready was selected by ASPR to conduct this study beginning in the Fall of 2020. Due to the ongoing response to COVID-19 and competing demands from other simultaneous disasters on public health and health care sector stakeholders during the period which this study took place, efforts to engage stakeholders in round tables and discussions were limited. Healthcare Ready is grateful for the support of the ASPR NHPP project team and other national partners who assisted in identifying and engaging participants to contribute data collected for this report.

3. Data Collection Methods

To answer the research questions, Healthcare Ready developed a mixed-methods approach that included a literature review and key informant discussions.

Literature Review

Healthcare Ready conducted a multi-phased literature review to gather information related to the federal programs of focus, as well as the medical surge capacities of health care facilities, including program guidance and strategy documents. As a result of this search and review, this report synthesizes information from more than 170 reports, websites (e.g., federal websites with program descriptions, policy think tanks), journal articles, and government documents.

Methods

Google, PubMed, and government agency websites were used in the literature review. Key search terms included: national health security, ASPR HPP, CDC Public Health Emergency Preparedness Cooperative Agreements, at-risk or vulnerable, disasters, public health events, medical surge capacity, crisis standards of care, and variations thereof, in combination with the names of specific past public health emergencies (e.g., Hurricane Irma, H1N1, Zika). Documents were screened in the following way with several inclusion and exclusion criteria. The documents were narrowed down by those that described strategies, goals, and implementation structures of federal programs supporting health care and public health preparedness and response, including those authored by presiding agencies as well as other sources; evaluations of past performance of federal programs by government auditing agencies, including the Government Accountability Office (GAO) and Office of Inspector General (OIG); strategy and initiative documents published by government agencies involved in disaster mitigation, response and recovery, including, but not limited to, FEMA, DHS, Presidential directives and executive orders; after action reports (AARs) that analyze the performance of an organization or group of organizations in the aftermath of an event or event simulation; peer-reviewed academic research articles available in the public domain on public health and health care preparedness and response; evaluations of public health and health care policies and trends, including impacts of preparedness and response practices for at-risk and vulnerable populations; and peer-reviewed and industry accepted benchmarks and standards used to evaluate public health and health care facilities in the context of disaster preparedness.

Analysis

To understand the contributions and influence of the federally funded programs of interest on public health and health care capabilities, Healthcare Ready aggregated information from published evaluations and reports to generate an objective, operational, systems-level assessment. Observational findings related to best practices, strengths, and weaknesses were corroborated by national frameworks for preparedness and response and nationally recognized research bodies or experts in preparedness and response, including and not limited to National Academies of Sciences, Engineering, and Medicine (NASEM) committees, Bipartisan Commission on Biodefense, and the Joint Council established by the National Association of County and City Health Officials (NACCHO) and the Association of State and Territorial Health Officials (ASTHO).

Discussions and Focus Groups

Healthcare Ready collected qualitative data via key informant discussions and focus groups. Healthcare Ready sought perspectives from four stakeholder categories: (1) public health entities,⁵ (2) representatives from the health care sector,⁶ (3) non-federal subject matter experts in preparedness and response,⁷ and (4) community-based organizations and advocacy groups.⁸ Participation in qualitative data collection is summarized in Figure 5.

Recruitment

FSLTT Governmental Agencies

Healthcare Ready worked with two membership associations to recruit state and local government agency participants: NACCHO and ASTHO. NACCHO and ASTHO shared recruitment messages during nationwide situational awareness calls and in member newsletters. Project advisers from ASPR's National Healthcare Preparedness Programs Branch (NHPP) shared recruitment messaging with NHPP Field Project Officers (FPOs). FPOs are aligned to HHS regions and support recipients and sub-recipients within their regions, as well as provide tailored technical assistance and work with HPP recipients to improve their performance and enhance capacity for preparedness and response. In addition, forty-five individuals representing health departments and HCCs received direct invitations to participate. A concerted effort was made to have perspectives from all ten HHS regions. In total, 21 discussions guided by a list of semi-structured questions were conducted with state, local, and territorial agencies. Potential participants were also invited to respond to questions via an online survey.⁹

⁵ Leaders from state, local, tribal, and territorial public health departments (i.e., Public Health Emergency Preparedness Cooperative Agreement recipients) and representatives of regional health care coalitions (i.e., ASPR HPP cooperative agreement recipients).

⁶ Medical facility leaders who manage preparedness and/or medical mass casualty response.

⁷ Government affairs and policy leaders for health care and public health trade associations or advocacy groups; Former ASPR officials; Academic experts on health preparedness and response, including crisis standards of care; Leaders of patient advocacy groups and community-based organizations focused on historically underserved communities adversely affected by persistent poverty and inequality.

⁸ Older adults, children, tribal and indigenous communities, and persons who are disabled.

⁹ Only one response was received via online survey.

Figure 5. Categories of Stakeholders Interviewed during Semi-Structured Informational Discussions



Subject Matter Experts in National Health Security

Healthcare Ready identified 43 potential interviewees across five key areas of expertise.¹⁰ Each potential key informant received two recruitment messages via email. Twenty-seven discussions guided by a list of semi-structured questions were conducted with non-federal subject matter experts,¹¹ providing insights across the health care and public health sectors. Potential participants were also invited to respond to questions via an online survey.

Community-Based Organizations and Advocacy Groups for Populations with AFN

Healthcare Ready sought insight from organizations that represent or advocate for populations that are characterized in the literature as having AFN during emergencies, including persons with disabilities, indigenous populations, tribal communities, children, older adults, medically fragile populations, persons who are incarcerated, those experiencing homelessness, rural communities, and immigrant populations. Healthcare Ready identified 44 organizations that represent or advocate for these populations. Ultimately, 27 of these received recruitment emails or phone calls to participate in four focus groups: (1) Older adults, (2) Children, (3) Tribal and indigenous communities, and (4) Persons who are disabled. Seven organizations participated in these focus group discussions. Those who could not participate in a focus group were invited to respond to an online survey.

Methods

Virtual discussions and focus groups were conducted between August and December 2021. Sessions lasted one hour each, were conducted by experienced facilitators, and were based on a semi-structured question guide. Consistent with the emergent and evolutionary nature of qualitative research, not all questions on the interview guide were asked of every participant, and some participants may have been asked follow-up questions not included in the interview guide.

Analysis

Healthcare Ready employed a deductive analysis approach for the qualitative data generated by discussions and focus groups. Discussions and focus groups were audio recorded and transcribed, omitting any names or other personal identifiers. Staff developed a codebook derived from key terms referenced in Section 210 and the interviewers' initial impressions of theme. The codebook can be found in Appendix I. Analysts used the codebook to assign and compare codes for multiple transcripts to establish interrater reliability. Analysts were trained to annotate transcripts using Dedoose, a cloud-based qualitative analysis software. All discussion and focus group data were coded by two analysts. Each transcript was annotated using the themes established in the codebook by a primary analyst. A second analyst reviewed the coded transcript to verify the proper

¹⁰ Five areas of expertise: (1) Health Security: Expertise in biosecurity, biological threats (e.g., infectious diseases) or medical countermeasure development and distribution frameworks; (2) Emergency Logistics: Experience managing emergency response activities; (3) Community Resilience: Expertise in developing research and evidence-based recommendations for community resilience, health promotion, and promoting access to health and social services; (4) Health Policy: Experience in policy research and analysis or experience providing policy recommendations to various levels of government; (5) Patient Care / Healthcare Delivery: Expertise on topics related to direct patient care, supporting patient care groups, or advocating for solutions to patient issues (e.g., access to care and services).

¹¹ i.e., Not currently employed full-time by the federal government.

application of codebook. Then, using a thematic analysis approach, analysts examined coded excerpts related to an individual theme of interest to identify key sub-themes and representative quotes (e.g., perceived positive and negative impacts of a specific initiative, perceived gaps in and opportunities for communication). The findings were integrated into the report, and no data are attributed to individuals or organizations by name.

Section 3.0 Relevant Preparedness and Response Programs, Frameworks, Initiatives

This section provides an overview of relevant preparedness and response programs, frameworks, and initiatives undergirding the nation's preparedness and response posture for public health emergencies with the potential to impact medical surge capacity.

1. Overview and Background

In accordance with practices established in the National Response Framework under Emergency Support Function (ESF) #8, this report recognizes the HHS Secretary as the lead for all federal public health and medical response to public health emergencies and incidents. ESF-8 describes the mechanism for Federal assistance to supplement state, tribal, territorial and other local resources.^{iv} The scope of this report focuses on core federal preparedness and response programs and activities that are authorized by the Public Health Service (PHS) Act, and certain other federal and non-federal benchmarks and standards, programs, frameworks, and initiatives that directly impact medical surge capacity of health care facilities. Definitions for the terms program, framework, and initiative are listed in Table 1.

Table 1. Definition of Terms for Programs, Frameworks, and Initiatives

Term	Definition
Federal Program	Federally funded programs are administered by a federal office or agency where funding recipients (often organizations, sometimes individuals) are typically required to meet certain terms and obligations (e.g., performance measures, benchmarks). If the terms and obligations of a program are not met, the funding recipient can face consequences, such as the non-continuation of funding. Programs can be designed to build, create, or augment certain types of capabilities or relationships. Examples of federal programs include ASPR HPP and CDC PHEP.
National Framework or Initiative	National frameworks (i.e., sets of guidelines) or initiatives (i.e., acts or partnerships intended to identify potential solutions) are widely agreed-upon standards in a field that are authored by a federal agency or office and do not have an enforcement body nor enforcement functions. Examples include the <i>ASPR 2017–2022 Public Health Preparedness and Response Capabilities</i> , or <i>CDC Public Health Preparedness and Response Capabilities: National Standards for State, Local, Tribal, and Territorial Health</i> . Beneficiaries or stakeholders that use (or benefit from) frameworks and initiatives have the option of abiding by guidance from these sources. They are tools to help guide implementation and differ from federal programs in that they do not have an enforcement mechanism.
Non-Federal Program / Framework / Initiative	Non-federal programs / frameworks / initiatives follow the same definitions as above. However, funding and implementation (including enforcement, when applicable) are administered by non-federal sources, typically nonprofits or academic institutions.

Several federal entities outside of HHS play key roles in safeguarding the health and security of the nation. This report acknowledges the critical work performed by Department of Defense (DOD) and DHS (primarily through FEMA) to support national health and safety in response to all-hazards, as well as the Department of Transportation (DOT) and the National Highway Traffic Safety Administration (NHTSA) to support highway and transport safety that assists Emergency Medical Services (EMS). However, this evaluation centers on public health and health care preparedness and response capabilities with benchmarks or standards that are related to relevant programs and activities in Sec. 210 of PAHPAIA. As a result, this report is focused on programs within HHS and DHS.^{12,13}

Figure 6 shows the focus of this report on federal agencies providing significant funding for local, state, regional, or territorial preparedness and response capability-building in public health and/or health care.

Figure 6. Federal Agencies in Scope of this Report.

THE WHITE HOUSE U.S. CONGRESS			
Department of Health & Human Services	Department of Homeland Security	Department of Defense	Department of Veterans Affairs
Administration for Strategic Preparedness and Response*	Cybersecurity & Infrastructure Security Agency		
Centers for Disease Control and Prevention	Federal Emergency Management Agency		
Centers for Medicare & Medicaid Services			
Food and Drug Administration			
Health Resources and Services Administration			
National Institutes of Health			
Substance Abuse and Mental Health Services Administration	<p>* At the time of this report, the Office of the Assistant Secretary for Preparedness and Response has been elevated from a staff division to an operating division, with a name change to the Administration for Strategic Preparedness and Response. The transition will be phased in over the next 1-2 years.</p>		

¹² DHS/FEMA programs and frameworks that are recognized but not considered a core focus of this report include: Homeland Security Exercise Program (HSEEP); Urban Areas Security Initiative (UASI); Threat and Hazard Identification and Risk Assessment (THIRA); Stakeholder preparedness review; National Response Framework; National Preparedness Goal and Report; National Risk Index, National Incident Management Structure.

¹³ The Substance Abuse and Mental Health Services Administration (SAMHSA) is charged with leading public health efforts to advance the behavioral health of the nation and improve the lives of individuals and families living with mental and substance use disorders. While SAMHSA is not explicitly involved in preparedness and response efforts, the agency provides [funding opportunities](#) that help communities address behavioral health-specific response needs such as [Resilience in Communities After Stress and Trauma](#).

2. Medical Surge Capacity Considerations

ASPR, the federal entity designated to lead medical response to public health emergencies, defines medical surge capacity as “the ability to evaluate and care for a markedly increased volume of patients that exceeds normal operating capability.”^v Building for surge capacity ensures the ability to manage a sudden influx of patients, and surge capability refers to the ability to manage patients requiring specialized medical care, including special interventions in response to uncommon public health emergencies related diagnoses (e.g., radiation sickness, chemical burns).^{vi} At a broader, whole-of-community scale, medical surge capacity is inclusive of all tools and resources available for public health and health care systems, as well as stakeholder roles and responsibilities during medical surge events.

Medical surge capacities of health care facilities are linked to structural factors that contribute to baseline population health, including a community’s existing access to health care services (physical and structural barriers). This report takes into consideration existing social determinants that contribute to the health and well-being of communities and health care facilities, including and not limited to:

- Health care workforce staffing levels, inclusive of workers with specialized skills, clinicians, and non-clinical staff including administrators, environmental service technicians, etc.
- Patients’ baseline access to care, such as physical proximity and financial ability to obtain health care services for preventative and acute care within their physical community.
- Existing investments in public health and preparedness practiced by community stakeholders delivering services across public health, emergency management, health care, and ancillary health care facilities.
- Regulatory or other legal requirements met by health care facilities that ensure quality or standards of care.

To address the broader, whole-of-community structures that contribute to health care outcomes following public health emergencies, Section 7.0 of this report examines an expanded set of policies, frameworks, and structural elements (i.e., beyond PAHPAIA) that affect preparedness and response capabilities and capacities.

3. Cooperative Agreements for Public Health or Health Care Preparedness and Response

ASPR HPP and CDC Public Health Emergency Preparedness Cooperative Agreements are the two primary federal funding mechanisms supporting state, local, territorial preparedness and response capabilities for public health or health care entities. Relevant capabilities frameworks used to assess preparedness and response capabilities by ASPR HPP and CDC Public Health Emergency Cooperative Agreements are summarized, below.

ASPR HPP

ASPR HPP is a federal cooperative agreement that aims to strengthen the readiness of health care delivery systems across the nation. **HPP is the primary source of federal emergency preparedness funding that is specifically allocated for health care systems.**^{vii} Three of the underlying goals of HPP are to improve patient outcomes, reduce the need for federal and state resources during a public health emergency, and enable rapid recovery from major disasters or catastrophic events by supporting HCCs.^{viii} More information on the program is provided in Section 4.0 of this report.

ASPR's 2017–2022 *Health Care Preparedness and Response Capabilities* document was developed to further inform and support health care delivery system preparedness. Created using recommendations from the 2012 *Health Care Preparedness Capabilities: National Guidance for Health Care System*,^{ix} the document outlines four key capabilities for health care delivery systems (e.g., HCCs, hospitals, emergency medical services) and what stakeholders must do to effectively prepare for and respond to emergencies that affect the public's health. See Appendix F for a full list of the capabilities, and Section 4.0 for more on how this is used in this report to help evaluate national preparedness and response capabilities for public health and health care.

CDC Public Health Emergency Preparedness Cooperative Agreement

The CDC Public Health Emergency Preparedness Cooperative Agreement was established in 2002 to help public health systems enhance their abilities to prepare for and respond to emerging threats, natural disasters, and mass casualty events (i.e., public health emergencies) by providing funds and technical support to recipients.

Public Health Emergency Preparedness Cooperative Agreement, administered by CDC, serves as an essential source of funding 62 recipients including health departments across state and territorial jurisdictions, as well as five major metropolitan areas.

CDC uses 15 capabilities established in *Public Health Emergency Preparedness and Response Capabilities: National Standards for State, Local, Tribal, and Territorial Public Health* to guide and assess state, local, and territorial (SLT) public health's ability to plan and operationalize the ability to prepare for, respond to, and recover from public health emergencies.^x CDC requires that all 62 Public Health Emergency Preparedness Cooperative Agreement recipients create and execute capability-based plans to ensure they use their allotted funding to enhance and sustain public health preparedness and response capacity.^{xi} Since its inception, the capabilities have also encouraged collaboration across FSLTT public health jurisdictions by aligning on a strategy to address community needs.

The capabilities were revised in 2018 to reflect lessons learned from past responses, incorporate updates to evidence-based best practices across the readiness cycle, and add key findings from internal assessments and other feedback from subject matter experts. The national framework formalized jurisdictional emergency readiness, and helped state public health agencies step into their roles as lead ESF-8 agencies. CDC also uses the Operational Readiness Review (ORR) to evaluate SLT planning and operational efforts. Originally created to evaluate capabilities for medical countermeasures (MCM)¹⁴ distribution and dispensing efforts during a widespread response, the ORR has since been expanded to help evaluate other capabilities, with the intent to expand to all capabilities in the future.^{xii xiii} The Cities Readiness Initiative (CRI) is another component of the cooperative agreement that focuses on strengthening preparedness across the largest populated cities in the US.^{xiv}

¹⁴ While originally intended to evaluate capabilities related to MCM distribution and dispensing, the ORR now focuses on identifying strengths and gaps of preparedness capabilities for all-hazards across all 62 PHEP recipients and local planning jurisdictions with CRI, who are encouraged to use the ORR to "demonstrate risk-based, all-hazards emergency plans are maintained", among other measures.

4. Other Federal Public Health or Health Care Preparedness and Response Programs, Frameworks, and Initiatives

There are several other federally-funded initiatives with requirements for improving community-level preparedness and response. Those listed below are outside the focus of this study, but are broadly considered throughout this report.

CMS Emergency Preparedness Rule

The CMS Emergency Preparedness Rule established “national emergency preparedness requirements to ensure adequate planning for both natural and man-made disasters, and coordination with federal, state, tribal, regional, and local emergency preparedness systems.”^{xv} The rule applies to 17 provider and supplier types, which must also have their own set of emergency preparedness regulation integrated into their requirements for certification.^{xvi,xvii} Each provider and/or supplier type must meet four key components of the Emergency Preparedness Rule: risk assessment and emergency plans, communication plans, policies and procedures, and trainings.^{xviii}

Prior to March 2021, CMS expected risk assessment and emergency plans to be revised and updated every year. However, revisions to the Burden Reduction Rule allowed providers and supplies to update plans biennially, save for long-term care (LTC) centers that still must update annually.^{xix} These requirements also include plans for notice and non-notice events. Similarly, communication plans must comply with federal and state laws. However, revisions eliminated the requirement that each “emergency plan include documentation of efforts to contact local, tribal, regional, state, and federal emergency preparedness officials and a facility’s participation in collaborative and cooperative planning efforts.”^{xx}

Policies and procedures must comply with state and federal requirements. These requirements are based on risk assessments and emergency plans that must address subsistence of staff and patients, evacuations, sheltering in place, and tracking patients and staff.^{xxi} Additional revisions have required trainings to be updated biennially, except for nursing homes, which must conduct trainings annually. The Burden Reduction Rule revised the temporal requirements for facilities that receive Medicare/Medicaid funding, making the process less onerous. As mentioned above, the revisions allow most facilities to now revise emergency preparedness plans and procedures biennially instead of annually, except for LTCs and nursing homes.^{xxii,xxiii} CMS also amended Appendix Z, which covers the all-hazards approach for emergency preparedness and planning, to include the definition for “emerging infectious diseases.”^{xxiv}

Health Resources and Services Administration (HRSA) Health Center Program

Another source of federal funding for health care preparedness is the HRSA Health Center Program’s State and Regional Primary Care Association (PCA) Cooperative Agreements. State PCAs support the nation’s health centers and enhance emergency preparedness and response by providing training, supporting coordination, and providing other types of aid to health centers in their state. More on HRSA and PCAs is provided in Section 6.5 on *Opportunities to Improve Medical Surge Capacity*.

5. Preparedness and Response Benchmarks and Standards Established by Non-Federal Sources

Non-federal programs, frameworks, reports, and initiatives are critically important in advancing the nation's preparedness and response efforts. They provide evidence-based policy recommendations to promote the expansion of preparedness programs that are intended to support public health systems, supply chain operations, and health care systems, staff, and infrastructure. The many non-federal organizations and entities that produce these programs, frameworks, and initiatives significantly help to increase the quality, accountability, and performance of programs that support health care preparedness and response efforts.

National Academies of Sciences, Engineering and Medicine

NASEM conducts independent research on topics related to science, medicine, and engineering and advances the conversation around critical issues by serving as a neutral convener to explore the latest research, new ideas, and possible solutions.^{xxv} Several key activities and committees focus on discussions relevant to national health security, including and not limited to:

- [Forum on Medical and Public Health Preparedness for Disasters and Emergencies](#)
- [Standing Committee on Emerging Infectious Diseases and 21st Century Health Threats](#)
- [Standing Committee for CDC Center for Preparedness and Response](#)

The Forum on Medical and Public Health Preparedness for Disasters and Emergencies gathers public and private sector leaders to improve and strengthen the national preparedness, response, and recovery systems against public health threats and emergencies. These stakeholders provide critical insights to reports and discussion sources included in this research to ensure government and private sectors make informed, evidence-based health decisions. For example, CDC Center for Preparedness and Response sponsored studies that resulted in the [Evidence-based Practice for Health and Preparedness Response](#) (2020) and the [Evolving Crisis Standards of Care](#) workshop series.

In 2021, with support from ASPR, NASEM created an ad hoc committee to conduct a study evaluating existing Public Health Emergency Medical Countermeasure Enterprise (PHEMCE) policy and practices and make recommendations for a re-envisioned PHEMCE.^{xxvi} Table 2 describes key takeaways from relevant reports from NASEM.

Trust for America's Health—Ready or Not Reports

Trust for America's Health (TFAH) is a nonpartisan public health policy, research, and advocacy organization that envisions a nation that values the health and well-being of all and where prevention and health equity are foundational to policymaking at all levels of society.^{xxvii} Annually, TFAH releases several series and reports, including their annual public health funding series and their Ready or Not reports, which evaluate state-level health and preparedness measures. Table 2 describes key takeaways from relevant reports from TFAH.

The TFAH *Ready or Not* 2021 Report,¹⁵ uses ten preparedness indicators to evaluate State Public Health Preparedness, including:

- 1. Incident Management:** Adoption of the Nurse Licensure Compact.
- 2. Cross-Sector Community Collaboration:** Percentage of hospitals participating in health care coalitions.
- 3. Institutional Quality:** Accreditation by the Public Health Accreditation Board.
- 4. Institutional Quality:** Accreditation by the Emergency Management Accreditation Program.
- 5. Institutional Quality:** Size of the state public health budget compared with the past year.
- 6. Water Security:** Percentage of the population that used a community water system that failed to meet all applicable health-based standards.
- 7. Workforce Resiliency and Infection Control:** Percentage of employed population that used paid time off.
- 8. Countermeasure Utilization:** Percentage of people ages 6 months or older who received a seasonal flu vaccination.
- 9. Patient Safety:** Percentage of hospitals with a top-quality ranking ("A" grade) on the Leapfrog Hospital Safety Grade.
- 10. Health Security Surveillance:** The public health laboratory has a plan for a six- to eight-week surge in testing capacity.

In the 2021 report, TFAH identifies seven priority areas for federal and state policy action, including: providing stable, sufficient funding for domestic and global public health security; preventing outbreaks and pandemics; building resilient communities and promoting health equity in preparedness; ensuring effective leadership, coordination, and workforce; accelerating development and distribution of medical countermeasures; preparing the health care system to respond and recover; and preparing for environmental threats and extreme weather. The report describes the state of the nation as "unprepared" due to millions of lives lost during the COVID-19 pandemic in 2021 because of widespread political, funding, economical, and social factors.

¹⁵ The 2022 Ready or Not report was released in March 2022.

Table 2. Relevant Report Outputs from the National Academies of Sciences, Engineering, and Medicine and Trust for America's Health

Organization	Report (Year)	Key Takeaways
National Academies of Sciences, Engineering, and Medicine	Forum on Medical and Public Health Preparedness for Disasters and Emergencies (since 2007)	A forum of public and private sector leaders to improve the nation's preparedness for, response to, and recovery from disasters, public health emergencies, and emerging threats to ensure and sustain national security, promote recovery, and enhance resilience.
	Evidence-Based Practice for Public Health Preparedness and Response (2020)	Reviews Public Health Emergency Preparedness and Response practices and necessary improvements needed to strengthen its systems.
	Evolving Crisis Standards of Care and Lessons Learned: A Workshop Series (ongoing)	Series of public workshops on Crisis Standards of Care during public health emergencies, including lessons learned from the COVID-19 pandemic.
	Ensuring an Effective Public Health Emergency Medical Countermeasures Enterprise (2021)	This report addresses how the PHEMCE will coordinate and collaborate with partners across the interagency to ensure that the needed medical countermeasures and associated capabilities are in place to protect the American people.
Trust for America's Health	Ready or Not Report Series (since 2002)	Evaluation of national health and preparedness measures.
	The Impact of Chronic Underfunding on America's Public Health System: Trends, Risks, and Recommendations, 2021 (last 2021)	Examines public health funding trends and provides recommendations to improve public health system.
	A Blueprint for the 2021 Administration and Congress: The Promise of Good Health for All: Transforming Public Health in America (2020)	Provides five priorities toward improving national health and well-being, such as: investing in public health system, combating racism / discrimination; addressing negative social determinates of health; acknowledge threats to national health; and provide optimal health opportunities for all.

Legend: PHEMCE = Public Health Emergency Medical Countermeasures Enterprise

National Health Security Preparedness Index (NHSPI)

NHSPI, or the “Index,” is a Robert Wood Johnson Foundation program that examines the nation’s preparedness efforts by looking collectively at states’ health security preparedness. The NHSPI Program Management Office is based at the Colorado School of Public Health, University of Colorado, in collaboration with the Center for Business and Economic Research at the Gatton College of Business and Economics, University of Kentucky. The 2021 Index is the eighth in the series, and the first two index releases in December 2013 and December 2014 were supported by CDC. Since the third release, the Index has been supported by the Robert Wood Johnson Foundation. The Index is updated annually to reflect the nation’s progress in preparedness and response efforts by state, allowing for valid comparisons over time.^{xxviii} NHSPI is used to examine how preparedness capabilities relate to local jurisdictions, not federal-level preparedness capabilities.

The Index includes 130 measures from 64 sources over the following six domains:^{xxix} health security surveillance, community planning and engagement, information and incident management, health care delivery, countermeasure management, and environmental and occupational health. The key findings from *The National Health Security Preparedness Index 2021 Release* showed that overall levels of health security remained the same in 2020, but had trended upward in most domains since 2013, particularly for surveillance, incident management, and community planning. Health care delivery has shown little improvement, and the US would require at least 12 years to reach an average Index value of 9.0 at this rate of improvement.¹⁶ These data are key for HPP and the Public Health Emergency Preparedness Cooperative Agreements and demonstrate how federal preparedness initiatives could benefit overall health outcomes.^{xxx}

Bipartisan Commission on Biodefense

The Bipartisan Commission on Biodefense was established in 2014 to analyze gaps and provide guidance to improve the nation's biodefense.^{xxxi} In 2015, the Commission produced [A National Blueprint for Biodefense: Leadership and Major Report Needed to Optimize Efforts](#), which identified national vulnerabilities to biological threats and provided 33 steps to mitigate or address these vulnerabilities.^{xxxii} The 2015 report highlighted several concerns around the lack of clarity for national-level leadership in wide-scale responses, among other vulnerabilities that could critically hamper national response to a wide-scale event.^{xxxiii} As noted in the Commission's 2021 report, [Biodefense in Crisis: Immediate Action Needed to Address National Vulnerabilities](#)^{xxxiv} and according to the assessment therein, the USG completed only three of the 87 actions recommended in the 2015 report, and took no action on 22 items in the five years since their foundational report and through the onset of the COVID-19 pandemic.

National Quality Forum—Healthcare System Readiness Measurement Framework

The National Quality Forum (NQF) is a not-for-profit, nonpartisan, membership-based organization that sets measures and standards for initiatives to enhance health care value, make patients safer, and achieve better outcomes.^{xxxv} NQF's *Healthcare System Readiness Measurement Framework*^{xxxvi} is a unifying framework established to guide the future development of objective measures of health care systems' readiness for disasters and emergencies. The NQF Healthcare System Readiness Committee began developing this report in 2018 as a guide for measuring the quality of readiness in health care systems.

The guiding principles in the *Healthcare System Readiness Measurement Framework* define key criteria for the development of performance measures for health care system readiness, which are subcategorized into: "the what," "the where," and "the how." The "what" subcategory examines factors that broadly impact readiness and includes the need for a person-centered, capacity- and capability-focused, available, accessible system that also considers health maintenance. The "where" subcategory looks at readiness as a concept of the location where

¹⁶ Levels of health security varied across domains of activity, across states and counties, and demonstrated geographic disparities across regions. States in the South-Central, Upper Mountain West, Midwest, and Pacific lag behind other regions, and rural areas have significantly lower levels of protection than urban areas. Most states have seen improvements in health security over the last 8 years but did so at various times and to different extents. Counties with higher rates of social and health vulnerability, measured by the Community Resilience Index, had significantly lower health security levels, and COVID-19 deaths were significantly lower in communities with higher health security levels. In communities with higher rates of social and health vulnerability, health security levels were a stronger protective factor against COVID-19 mortality.

care is delivered, and considers care beyond hospitals, scalability, geographical considerations, and health care system size. The “how” is concerned with actions of preparation, communication, and evaluation before and after an emergency and includes communication among entities, preparing for the known and unknown, maintenance of readiness, and ongoing measurement.

The NQF framework is comprised of four domains and 19 subdomains. The four domains are staff, stuff, structure, and systems. “Staff” is focused on safety, capability, training, and support for health care workers. “Stuff” is related to medical and nonmedical supply levels in health care facilities. The structure and system domains relate to facility infrastructure and health care systems capacity.

Public Health Accreditation Board Standards and Measures

The Public Health Accreditation Board is a nonprofit organization dedicated to advancing the continuous improvement of quality, accountability, and performance of public health. Through the national public health accreditation program administered by the Public Health Accreditation Board since 2011, over three hundred local public health departments across forty states, including the District of Columbia, have been accredited.^{17,xxxvii} The program does not extend to mental health, substance abuse, primary care, human services, or social services for public health departments.

There are standards and measures to evaluate the twelve domains used to address ten essential public health services and the management, administration, and governance of public health departments. Each domain includes a standard, measure, and purpose used for assessment. The measure defines the evaluation parameters for health department and the standard is the section to which the measure applies for evaluation. The Board’s latest impact report with the de Beaumont Foundation found that most communities entered the pandemic with a staffing deficit. An 80% increase in workforce—or the equivalent of eighty thousand full-time positions in state and local health departments—is needed to meet core requirement of community needs and close the gap.^{xxxviii}

6. Other National Policies, Strategies, & Directives Undergirding National Preparedness Response Capabilities Beyond the Scope of this Study

This report centers on federally-funded initiatives that enhance the preparedness and response capabilities of public health or health care facilities. Acknowledging the deep collaboration needed between health care and public health (led by HHS according to ESF-8) and emergency management (e.g., DHS, FEMA, National Incident Management Structure), this report takes into consideration the federal programs that exist beyond the scope PAHPAIA-related authorizations. The following programs are recognized for their critical importance to national health and security but are not comprehensively addressed in this evaluation because they are established outside of PAHPAIA.

¹⁷ Discussion with staff at the accrediting agency.

Defense Protection Act^{xxix}

The Defense Production Act of 1950 gives the president the authority “to require persons (including businesses and corporations) to prioritize and accept contracts for materials and services as necessary to promote the national defense.” Since the Executive Order 13603: National Defense Resource Preparedness was issued in 2012, this authority has been delegated most often to DOD. The Act was last extended in 2019 and has allowed the government to call upon private sector partners to increase production during the COVID-19 pandemic.

Department of Homeland Security—Homeland Security Exercise and Evaluation Program (HSEEP) and Urban Areas Security Initiative

Along with HHS, DHS plays a key role in public health and health care preparedness and response, particularly through FEMA. Given its coordinating role within the federal government to ensure the nation is prepared for and able to respond to disasters, FEMA is critical to public health and health care preparedness and response. FEMA’s National Response Framework and National Incident Management Structure serve as the nation’s roadmap for how government and non-government entities should manage emergency operations. The National Response Framework establishes the principles of ESFs, which “describe federal coordinating structures that group resources and capabilities into functional areas most frequently needed in a national response.”

The HSEEP and the UASI provide guidelines and funding opportunities for emergency planners across the nation. HSEEP creates guides for emergency planners to devise and evaluate past and future exercises. UASI guidelines allow communities to receive funding to close capability gaps identified in their THIRA and/or SPR, so long as the funding is also used to strengthen terrorism preventive measures. These guidelines have been incorporated into FEMA’s preparedness and response framework, creating a system that allows for greater evaluation of national preparedness reporting, threat identification and risk assessment, and community and local-level preparedness capabilities.

FEMA National Preparedness Report^{xli}

The National Preparedness Report is a guide composed of 32 core capabilities used for evaluating government funded programs, annually. Using Threat and Hazard Identification and Risk Assessment and Stakeholder Preparedness Review reports submitted by cooperative agreement recipients as data sources, these programs are evaluated against these core capabilities to assess their prevention, protection, mitigation, response, and recovery efforts. The 2021 National Preparedness Report uses the events of 2020 to draw conclusions about national risk and capabilities in addition to identifying management opportunities to reduce risk and expand capabilities. The report provides insight into the preparedness and support decisions about program priorities, resource allocation, and action to all levels of government, tribes, the private sector, and nonprofits.

FEMA Threat and Hazard Identification and Risk Assessment (THIRA)/Stakeholder Preparedness Review (SPR)

The THIRA is conducted every three years by the communities of cooperative agreement recipients, particularly those receiving the Homeland Security Grant, Tribal Homeland Security Grant, and the Emergency Management Grant. This assessment is then used to identify hazards and threats that may affect these communities, as well as to determine capability goals for them to work toward. Communities use their THIRA results to submit the SPR, allowing for the evaluation of their capabilities, existing communal gaps, and the targets needed to

overcome these gaps. THIRA and SPR facilitate community involvement in local-level planning, and give the government data for the National Preparedness Report. Together, these products measure national risks, capabilities, and gaps.

National Health Security Strategy (NHSS)^{xli}

The NHSS, published by ASPR, is a strategy for the US to prevent, mitigate, and respond to health security threats, including pandemics. The strategy is focused around three objectives: a whole-of-government approach to respond to events; leveraging private sector capabilities; and protecting the nation from emerging and pandemic infectious diseases and chemical, biological, radiological, nuclear, and explosive (CBRNE) threats. The document highlights the importance of working with other government agencies, the private sector, and nongovernmental organizations, while the strategy discusses funding, medical countermeasures, and the supply chain, among other themes. ASPR develops a new edition of the NHSS every four years; the latest edition covers 2019–2022.^{xlii}

National Biodefense Strategy (NBS)^{xliii}

The National Biodefense Strategy (NBS) that ASPR released in 2018 outlined a national vision to address the challenges and impacts from biological threats. This includes naturally occurring, deliberate, or accidental biological threats. NBS focuses on providing effective and thorough defense mechanisms and strategies to mitigate these threats. In 2018, the National Security Presidential Memorandum 14 and NBS directed the HHS Secretary to serve as the chair of the Steering Committee and created a leadership structure wherein the Secretary oversees and coordinates all biodefense activities carried out across the USG to protect Americans from biological threats.^{xliv} The NBS consists of five primary goals each with corresponding objectives. The overarching goals address: (1) Enable risk awareness to inform decision-making across the biodefense enterprise, (2) Ensure biodefense enterprise capabilities to prevent bioincidents, (3) Ensure biodefense enterprise preparedness to reduce the impacts of bioincidents, (4) Rapidly respond to limit the impacts of bioincidents, (5) Facilitate recovery to restore the community, the economy, and the environment after a bioincident. Not every aspect of biological incidents and threats can be anticipated, but these strategies serve to mitigate vast risk through medical countermeasures, critical infrastructure, and information sharing.

National Infrastructure Protection Plan (NIPP)^{xlv}

Released by CISA, the National Infrastructure Protection Plan is a national plan defining government agencies' role in risk management and critical infrastructure protection. The plan calls for a coordinated approach to the protection of critical infrastructure and directs agencies to work with the private sector to meet these goals. The latest version, created in 2013, builds on earlier versions (2009) and established critical coordinating structures including Sector Coordinating Councils, Government Coordinating Councils, and cross-sector councils.^{xvi} Agriculture, energy, public health, and water systems are some of the included sectors.

Section 4.0 Administration for Strategic Preparedness and Response Hospital Preparedness Program and Its Impacts on Medical Surge Capacity and Public Health Preparedness and Response

Summary of Recommendations for ASPR

Theme	Actor	Recommendation
1a. Improve Communication and Coordination: Roles and Responsibilities	ASPR	2. Level-set on the roles and responsibilities of stakeholders for future medical countermeasure distribution strategies and communicate how health care coalitions (HCCs)—and other stakeholders—should work with the Strategic National Stockpile for future events.
1b. Improve Communication and Coordination: Information Sharing	ASPR	4. Proactively seek annual input from recipients/sub-recipients on HPP requirements, performance measures, and benchmarks around information sharing practices and challenges.
1c. Improve Communication and Coordination: Partnerships	ASPR	9. Proactively seek input and buy-in from the broader health care sector (e.g., increased input from hospital systems and varying levels of leadership; increased input from physicians, community-based health centers, dialysis facilities, home health providers) in the development of HPP requirements, including performance measures and corresponding targets/ benchmarks, to drive stronger private sector engagement in program activities.
1c. Improve Communication and Coordination: Partnerships	ASPR	10. Identify, track, and continue to implement new strategies that incentivize stronger engagement in HCCs by current and prospective members.
1c. Improve Communication and Coordination: Partnerships	ASPR	11. Develop performance measures to allow HPP to collect data on engagement quality between health care coalitions and ASPR to better understand where gaps remain in ASPR's capacity to support preparedness and response efforts, including information sharing and communication.
1c. Improve Communication and Coordination: Partnerships	ASPR	12. Strengthen relationships between ASPR Regional Emergency Coordinators and/or HPP Field Project Officers and HCC leads, recipients and sub-recipients to fill the gap between regional and federal communications and information sharing.
1c. Improve Communication and Coordination: Partnerships	ASPR, CDC	13. Build on the private sector engagement strategies and tactics deployed during COVID-19 and create more opportunities to seek input from and collaboration with private sector stakeholders in medical countermeasure procurement and distribution.
3. Strengthen Efforts to Apply an Equity Lens	ASPR	18. Develop clear standards and benchmarks for addressing the needs of individuals with access and functional needs in emergencies.

3. Strengthen Efforts to Apply an Equity Lens	ASPR	19. Require HPP recipients and sub-recipients to approach their work through an equity lens (including the addition of goals and targets related to individuals with access and functional needs) to ensure they are meeting the needs of the communities who are at higher risk of experiencing disparate health outcomes during an emergency.
3. Strengthen Efforts to Apply an Equity Lens	ASPR	20. Add a benchmark to assess whether HCC response plans apply an equity lens.

Legend: HHS = Department of Health and Human Services; ASPR = Administration for Strategic Preparedness and Response; HCC = Health care coalitions; HPP = Hospital Preparedness Program; NHPP = National Healthcare Preparedness Program Branch

1. Background

Since its establishment in 2002, the Hospital Preparedness Program Cooperative Agreement (HPP) has invested in building a consistent, coordinated system of readiness across health care systems (i.e., ability to plan for and respond to large-scale emergencies and disasters).^{xlvii} HPP, administered by the Administration for Strategic Preparedness and Response (ASPR) National Healthcare Preparedness Program Branch (NHPP), is a significant source of federal funding specifically allocated for health care systems.^{xlviii}

Three core goals of HPP are to improve patient outcomes, reduce the need for federal and state resources during a public health emergency, and enable rapid recovery from major disasters or catastrophic events by supporting health care coalitions (HCCs).^{xlix} The *2017–2022 Health Care Preparedness and Response Capabilities* document describes four core capabilities that health care delivery organizations and systems, including HCCs, hospitals, other health facility types, and emergency medical services (EMS) should develop to ensure their ability to prepare for and respond to all-hazards.^l ASPR prioritizes these four core capabilities with the understanding that they are achieved through close coordination and collaboration between all health care and public health stakeholders. ASPR recognizes that best outcomes cannot be achieved solely with funding provided to HPP recipients and sub-recipients.^{ll}

ASPR provides guidance and technical assistance to its HPP cooperative agreement recipients and subrecipients in several ways. NHPP Field Project Officers (FPOs) align with HHS regions to support recipients and sub-recipients in those regions. FPOs then provide specifically tailored technical assistance to work with HPP cooperative agreement recipients towards improving their performance and capacity for preparedness and response. ASPR's Technical Resources, Assistance Center, and Information Exchange (TRACIE) works "to meet the information and technical assistance needs of regional ASPR staff, healthcare coalitions, healthcare entities, healthcare providers, emergency managers, public health practitioners, and others working in disaster medicine, healthcare system preparedness, and public health emergency preparedness."^{lli}

This section explores HPP capabilities, HCCs, and how HPP has helped strengthen national preparedness and response capabilities. In addition, this section covers opportunities for improvement and recommendations that would extend HPP's achievements and impacts in strengthening preparedness and response capabilities, and medical surge capacity of health care facilities.

2. Overview: ASPR Preparedness and Response Capabilities and Diversity of HCCs

ASPR developed the 2017-2022 *Health Care Preparedness and Response Capabilities*, or the Capabilities, to further inform and support health care delivery system preparedness. The document identifies four capabilities to describe what a health care delivery system must do to effectively prepare for and respond to emergencies that affect the public's health, which include: (1) Foundation for Health Care and Medical Readiness; (2) Health Care and Medical Response Coordination; (3) Continuity of Health Care Service Delivery; (4) Medical Surge. While Capabilities inform health care coalition (HCC) activities, they were designed to reach the entire health care preparedness and response delivery system – not HCCs alone. They are designed to serve as a roadmap of health care preparedness and response functions for entities that support health care readiness.

HCCs can help a community advance their preparedness and response capability and capacity, in summary, by¹⁸:

- **Capability 1:** Foundation for Health Care and Medical Readiness
 - Engaging essential stakeholders within the health care delivery system and effectively coordinating them with other entities that contribute to preparedness and response by fostering strong relationships, identifying hazards and risks, hosting trainings and exercises that meaningfully test regional capabilities and capacities, and managing resources including but not limited to medical supplies.
- **Capability 2:** Health Care and Medical Response Coordination
 - Efficiently connecting private health care organizations and state government entities (i.e., hospitals, public health departments, and emergency management agencies) for risk awareness and information sharing to lead to better resource management and overall response coordination during an event to maintain medical services.
- **Capability 3:** Continuity of Health Care Service Delivery
 - Ensure health care organizations and health care staff can continue to provide care to patients despite disruptions caused by emergencies, with support from HCCs and ESF-8.
 - Health care operations in steady state and emergency situations depend on the continued operations of other critical infrastructure sectors. This capability is also intended to address identification of essential functions for health care delivery (e.g., utilities, medical gases, transportation services), as well as understanding impacts to and from other critical infrastructure sectors, it is essential for health care organizations to be able to assess and understand potential downstream impacts that could lead to supply scarcity¹⁹ or delays in returning to normal or ideal operations at the provider level.
- **Capability 4:** Medical Surge
 - Working alongside the ESF-8 to support coordination and communication needs of members during

¹⁸ Per the goals of the capabilities in [ASPR 2017-2022 Health Care Preparedness and Response Capabilities](#) document.

¹⁹ Severe shortages of supplies might trigger crisis standards of care to occur, requiring decisions that place a patient or provider at risk of a poor outcome. <https://nam.edu/crisis-standards-of-care-and-covid-19-what-did-we-learn-how-do-we-ensure-equity-what-should-we-do/>

a medical surge event to ensure that health care organizations have the ability (space, staff, supplies, and systems) to evaluate and care for a markedly increased volume of patients that exceeds normal operating capacity.

HCCs are important coordinating bodies that bring together the many public and private stakeholders that are needed to ensure a well-coordinated all-systems response in a defined geographic area, typically within a single state.^{lvi}

There are 62 HPP Cooperative Agreement recipients, including all 50 states, eight territories, and four major metropolitan areas.^{lv} HCCs are considered sub-recipients, with funding flowing from recipients (jurisdictional departments of health) to sub-recipients (HCCs). As of April 2021, there are 326 HCCs²⁰ across the US, which includes 42,128 members nationwide.^{lv} They are inherently diverse in composition, capabilities, and practices; and responsibilities may vary across HCCs.

Each HCC is required to include: acute care hospitals (a minimum of two), EMS (including interfacility and other non-EMS patient transport systems), emergency management organizations, and public health agencies located within a coalition's boundaries.^{lvii} Some HCCs also include members representing other health care facilities like dialysis centers, community health centers, federally qualified health centers, LTC facilities, home health agencies, outpatient health care; Community Emergency Response Teams and medical reserve corps; infrastructure companies; jurisdictional partners; local chapters of health professional organizations; local public safety agencies; medical and device manufacturers and distributors; nongovernmental organizations; academic institutions; support services; or other regional entities like faith-based organizations.^{lviii}

It is important to note that in some jurisdictions, other health facility types (e.g., CHCs, dialysis facilities, LTC facilities) may have certain responsibilities to support patients during a medical surge event, even if they are not HCC members. At the time of this report, it is unclear how data are collected and assessed to determine the degree to which these facility types are needed or engaged for regional health delivery during a surge event. Additional studies to assess the value of engagement, and impacts of non-engagement, are recommended to determine a regional-based approach for when and how these other non-HCC member health facility types are impacted by their lack of membership.

3. ASPR HPP Performance Measures

In 2017, HPP and the Office of Strategy, Planning, Policy, and Requirements (SPPR) developed 28 performance measures based on the 2017–2022 Health Care Preparedness and Response Capabilities.^{lviii} The performance measures were later refined using the 2019 HPP Funding Opportunity Announcement.^{lix} At the time of publication of the *2019–2023 HPP Performance Measures Implementation Guidance*, benchmarks and target values have only been established for 15²¹ of the 28 performance measures despite a Government Accountability Office report on

²⁰ [Health Care Coalitions \(HCCs\) One-Pager \(phe.gov\)](https://www.phe.gov/ASPR/HPP/Performance-Measures/Pages/Performance-Measures.aspx)

²¹ As of the writing of this report, only nine of the 28 performance measures have benchmarks that are publicly available. An additional six benchmarks have also been created and will be included in an updated version of the 2019–2023 Hospital Preparedness Program Performance Measures Implementation Guidance, which is expected to be published on ASPR's website (<https://aspr.hhs.gov/HealthCareReadiness/guidance/Pages/performance-measures-guidance-and-reports.aspx>) after this report is released in December 2022.

National Preparedness in 2013 that called for the development of clearly defined milestones to more effectively assess HPP awardees' performance and progress toward preparedness.^{22, lx, lxi} As of July 2022, performance measure targets have been established for performance measures that now have at least three years of data. MRSE measures and joint measures collected by EMSC and Public Health Emergency Preparedness Cooperative Agreements do not have benchmarks or targets (data is being collected to set targets).

HPP and SPPR used data from previous fiscal years to establish baseline values and benchmarks (or, targets) for recipients and sub-recipients. To assess progress in meeting program goals, SPPR compares recipients and sub-recipients self-reported data against previously reported data, and against other recipients and sub-recipients.^{xii} Data sources include site visits, self-produced after-action reports, and HCC response plans.

At the time of this writing, ASPR was building a public facing HPP performance data dashboard intended for release by the end of 2022.²³ Performance data, analysis, and synthesis were not available for review. Absent these data, this section focuses on progress that has been made by recipients and sub-recipients in meeting preparedness and response *capabilities* to provide a qualitative analysis of the operational advancements that have been made in preparedness and response since the HPP Cooperative Agreement's establishment.

4. Progress Toward Health Care Preparedness & Response Capabilities

ASPR HPP cooperative agreements have helped to lay the groundwork for aligning the nation on a strategic approach to preparedness. Specifically, HPP impacts medical surge capacity across the nation by ensuring that health care and public health sector stakeholders are collaborating, sharing information, and coordinating to support and the allocation of scarce resources during a disaster. Through HPP, HCCs bring together key entities in the disaster preparedness space to support continued delivery of health care and services when disaster strikes. For HPP to continue advancing preparedness and response capabilities among health care stakeholders, additional federal support is needed to strengthen the impact that recipients and sub-recipients can have on building medical surge capacity and preparedness and response capabilities.

The following sections explore areas where HCCs have demonstrated success or strengths as learned from key informant discussions, including:

- Communication and information sharing across HCC members,
- Resource management during disasters,
- Equitable delivery of health care and services, and
- Trainings and exercises.

Communication and Information Sharing Across HCC Members

As emphasized throughout ASPR's *Health Care Preparedness and Response Capabilities* document, HCCs are intended to be well-positioned to serve as a central body that facilitates bidirectional information sharing

²² The Medical Response and Surge Exercise (MRSE) was implemented during the budget period beginning July 1, 2021 and ending June 30, 2022, replacing the Coalition Surge Test (CST) and the Hospital Surge Test (HST). The MRSE assesses HCC's ability to support medical surge capacity through a functional exercise relevant to jurisdiction's unique risks and needs. Data collected through the MRSE is comparable across US jurisdictions regardless of differing geographies, HCC sizes, and other factors.

²³ This dashboard has since been made available for public viewing. Link to the dashboard can be found here: <https://aspr.hhs.gov/HealthCareReadiness/HPP/Pages/about-hpp.aspx>.

across health care organizations and state or local government agencies (i.e., public health departments and emergency management agencies). This study found that many HCCs demonstrated strength in rapidly disseminating critically needed information before and during a disaster and facilitating bidirectional information sharing across membership and with appropriate state government agencies. Some examples of the key pieces of information that flow through HCCs include hospital bed availability and lists of vendors and providers that have specific assets (e.g., supplies, situational awareness) that HCCs can match with a facility or provider in need.

Quote from HCC in Health and Human Services (HHS) Region 3—Mid-Atlantic:

"If we have an event where we activate our HCC, we will also activate an event through our state hospital association so we can manage it similar to a WebEOC. ...So, once their [health facility] is evaluated from the regional level, we will attempt to source that from what we have in our cache. If we can't, we have a list of resources and vendors and providers of specific assets that we can provide to that facility as well so they can reach out privately and try to find some solutions for it. We have a direct relationship with the regional Department of Health and emergency management reps who also work within their networks of health departments or local emergency managers. So, let's say you represent a disaster struck facility. You contact our HCC. You see that one of the first questions we ask is, 'Have you talked with your local emergency manager?' And if they say no, we say, 'Would you like us to make that contact for you?' And at that point, we will contact them and we can directly route any type of resource request to them as well."^{lxiii}

Beyond the health care and public health sectors, HCCs are successful in communicating with other critical infrastructure sectors to identify potential risks that could impact health care delivery. Examples include working with the transportation sector to assess safe evacuation routes, coordinating with the power sector to communicate estimated restoration times with health care facilities, or sharing updates with dialysis facilities about restoration times for water systems that experienced damages. Restoration of power and water is essential for health care facilities, especially dialysis centers, due to the water needs for dialysis treatments. On average, a patient receiving hemodialysis will be exposed to approximately 300–600 liters of water per week.^{lxiv} An HCC's ability to strengthen situational awareness by rapidly sharing critical infrastructure information across health care facilities and utilizing information sharing procedures/platforms can enhance regional capabilities.

Quote from HCC in HHS Region 2—US Territory

"To be more efficient in responses, we have representation in our regional or municipal offices from the water or the water company, [and] the electricity company. And we have been able to build relationships with these representatives and that has helped us tremendously to set priorities and so that they can understand needs. ...I think the coalition has been super helpful and super cool to work with these representatives of these authorities... explaining to them that they need to be more efficient with providing power to our dialysis center or to our psychiatric hospitals. In order for us to have these difficult conversations and to say, 'Hey, we need to deal with these head on and be honest in our conversations,' and the coalition is providing the space for them to do that.... Thank God, we have really great communication, and they understand the importance of supporting health care facilities and the health care system."^{lxv}

Performance Measure 5 assesses the proportion of HCCs that have a complete and approved response plan (i.e., the response plan is approved by the core member organizations of each HCC for every fiscal year).^{lxvi} The emergency plan considers Capability #2, Objective 1, Activities 1 & 2, which speak to how the plans should cover communication and information sharing, demonstrating the observed value in building effective, timely, and

accurate communication mechanisms. As it relates to communication and information sharing, HCC response plans are specifically required to outline, at a minimum²⁴:

- HCC integration with the jurisdiction's ESF-8 lead agency to ensure information is provided to local, state, and federal officials
- The HCC's ability to effectively communicate and address resource needs requiring ESF-8 assistance.

Section 2 of the performance measures collects data that is produced by HCCs from Redundant Communications Drills. These performance measures assess HCCs' abilities to utilize back-up or alternative modes of communications during disasters. While this study did not collect information on Redundant Communications Drills specifically, the emphasis that interviewees placed on their communication and information capabilities demonstrated that significant progress has been made via supporting HCCs.

Resource Management During Disasters

With the intent for HCCs to serve as the central body for coordination, ideally, they would be capable of connecting health care facilities in need with critically needed resources. Operationally, it is understood that not all HCCs can do this; however, this study found evidence that many HCCs can support resource management through internal sourcing or via external partners such as distributors or donors.

Quote from HCC in HHS Region 3—Mid-Atlantic

"[The HCC] has a manager who works with me, whose primary responsibilities include maintaining logistics of our cache supplies and assets that can be deployed to facilities as well as our coordination platform."^{xx}

During discussions with a sample of HCCs, some HCCs reported that they manage a small stockpile or cache of essential supplies that can be distributed to facilities in need during a disaster or emergency. Other HCC membership structures have an agreement in which members will pool or share resources during a medical surge response when a certain area or facility may be in greater need. The COVID-19 pandemic revealed, and at times exacerbated, vulnerabilities in the health care supply chain. The practice of stockpiling—maintaining a stockpile of medicines or medical supplies that exceeds normal levels—aided many regions during times when demand exceeded supply, but the practice also led to spot shortages at the provider level. The ability for regional partnerships (like HCCs) to maintain a stockpile may vary, so diversity in membership is helpful for maximizing opportunities for shared resource agreements to support supply needs for future events.

Quote from HCC in HHS Region 4—Gulf Coast

"If I come across information on a hospital or health system or clinic experiencing an issue, the HCC will contact the facility and ask, 'Hey, are you guys experiencing X? Do you need support? Do you need a resource?' If the Coalition does have operational resources and assets that can be deployed and all of us are all able and willing to go and help anybody—we help out, just like all the other partners helped each other out during the pandemic. ...[An] example: I needed N95s small ... and using the coalition we were able to basically force trade and they took my one hundred of my large, I took a hundred of their small."^{lxvii}

²⁴ While these describe the minimum components of what each HCC's response plan must outline for communication and information sharing capabilities, a full list of required components can be found in the [HPP FOA](#) or the [2017-2022 Health Care Preparedness and Response Capabilities](#).

When HCCs can successfully connect their members with resources, they alleviate the need for facilities to seek state or federal support, a process which can be timely and difficult to navigate for smaller or significantly under-resourced facilities.

Quote from HCC in HHS Region 3—Mid-Atlantic

"We had actually recently re-stocked and refilled quite a bit of our cache. But when COVID-19 actually happened, it took us probably six months or more before we ever ran out, so and then I got a call from the awardee, which is the health department, asking okay, why are you not requesting stuff? How did you survive all this time? I said just because we planned and prepositioned stuff where it needed to be because we saw value in pre-positioning stuff and make sure it's ready to fall in on..."^{lxviii}

As demonstrated above, interviews with HCCs indicated strong regional capabilities in supporting resource management during a disaster, including leveraging stockpiles and/or supporting resource sharing across health care entities. The Strategic National Stockpile (SNS) includes supplies of medicines and medical supplies such as MCMs, personal protective equipment (PPE), ventilators, and more.^{lxix} While it may not be feasible, or necessary, for regional stockpiles to maintain all supplies that can be found in the SNS, it may be beneficial for HCCs to sustain a smaller cache of medical supplies or medicines that support an all-hazards approach to response planning (e.g., PPE, IV fluids and kits, bandages, etc.). All four health care capabilities include objectives and activities that speak to coordinating or distributing resources during an emergency to protect workers, patients, and the community.

Performance Measure 6 (PM 6) aligns most closely with assessing HCCs capabilities to support resource needs during a disaster. PM 6 measures the percent of HCCs that have a complete and approved response plan annex addressing the required annual specialty surge requirements for various disasters, including: pediatrics, burn or infectious diseases, radiation disasters, and chemical incidents.^{lxx, lxxi} PM 6 is intended to assess coalition-level surge plans across various events that would require specific supply needs and resources. At the time of this report, it is unclear how PM 6 is analyzed to assess progress in strengthening HCCs' abilities to provide resource support during emergencies. More broadly, we understand there is a range of capacities across HCCs in the US, and it is not clear how performance measures are being used to identify gaps in areas that are "underperforming" or what technical assistance is being provided to bridge such gaps.

Equitable Delivery of Health Care and Services

Interviews found that some HCCs are increasing efforts to encourage members to approach response planning to ensure equitable delivery of care and services to patients during disasters. HCCs have a strong understanding of their populations' needs and are well-positioned to identify a feasible equity strategy for jurisdiction members to work toward, recognizing that needs may slightly differ by county.

Some HCCs reported expanding their personnel to include a staff member who specifically works with populations in their jurisdiction at highest risk of being disproportionately impacted by a disaster. This position creates a direct line of contact from the HCC to health care facilities who serve higher risk groups (e.g., children's hospitals or LTC facilities). Having a dedicated staff member who can connect these facilities with resources or information during a disaster can strengthen health care and medical response coordination to ensure delivery of care to all populations.

Quote from HCC in HHS Region 3—Mid-Atlantic

[The HCC has] a medically vulnerable populations coordinator. Their responsibilities [involve working] with specifically vulnerable populations, anything from geriatrics, pediatrics, as well as being a primary point of contact for long-term care facilities and dialysis facilities. The HCC has hospitals, freestanding [emergency departments], a Veterans Affairs Medical Center, long-term care, and multiple dialysis [centers] in the spread of the counties and cities. We have a multitude of partner types, so the expanded potential of having points of contact to talk about pediatrics or other vulnerable populations is really the purpose of that position.”^{xx}

While some HCCs have demonstrated progress in approaching their preparedness work through an equity lens, we found that not all HCCs have this ability or are not well-positioned to address the needs of individuals with access and functional needs or other medically vulnerable groups. Other than PM 6, which required surge plans for specific needs, this study found no performance measures, benchmarks, or standards in the HPP that assess how recipients and sub-recipients approach their work with an equity lens to address the needs of individuals in their jurisdictions with at-risk and functional needs. Therefore, while we can highlight successes or leading examples of equitable approaches to health delivery, we cannot expect that all recipients and/or sub-recipients are able or willing to incorporate such approaches.

Trainings and Exercises

One of the essential functions of many HCCs across the nation is their ability to provide comprehensive, frequent, and robust trainings and exercises to their members. Trainings and exercises equip the health care workforce with adequate knowledge and understanding of how they can best engage with their regional systems to deliver care for patients during a disaster.

Quote from HCC in HHS Region 4—Gulf Coast

“Our exercise and training coordinator [looks] for office information after an event and we put it together in an after action report and we actually try to use the information, learn from the after action report to plan for other trainings and exercises moving forward. A lot of our coalition has a program where our active members, they can actually apply for funding based off of lessons learned or a gap that they’ve identified through their after action report so that we can assist them in overcoming that gap. So that’s something that the coalition uses our grant funding for that particular [training] program.”^{xx}

HCCs consistently stated that much of the value they add to their respective regions is their ability to bring together community partners, representatives from federal agencies, local emergency management, state emergency management, and other key entities. Bridging the gap between these key stakeholders not only provides access to resources and information, but also strengthens the connectedness of the partnership by creating networking opportunities and opportunities for engagement.

Quote from HCC in HHS Region 5—Great Lakes

“So, a lot of my hospitals are very small, critical access hospitals. And there is no way they could bring in the training, whether it’s funding-wise or due to the size they are. So, coalition-provided training is instrumental. One is our decon[tamination] training... If the coalition didn’t provide that, they [small hospitals] wouldn’t be able to do it. ... And also, our exercises, you know, long-term care is really exciting now that [long-term care facilities] get to participate and that is part of their CMS requirement. So, they appreciate that because they really don’t understand exercises yet, either. So, I get a lot of requests and it’s usually CMS or Joint Commission

requirements [related], ‘Hey, is the coalition going to do this or offer this, you know, we can participate in?’ That happens quite a bit.”^{lxxii}

Sections 2 and 3 of the HPP Performance Measures include performance measures that assess various benchmarks related to trainings and exercises, including but not limited to redundant communications drills and the coalition surge test. Section 2 includes performance measures 12 and 13; and Section 3 includes performance measures 14–21. Interviews suggest that progress has been made in meeting benchmarks associated with these performance measures, as most interviewees felt the trainings their coalitions provide are extremely beneficial to their members.

5. Opportunities for Improvement

Strengthen Communication Across Levels During an Emergency

This evaluation revealed that while HCCs demonstrate strong performance in communicating with entities in their jurisdiction, there are challenges to timely and accurate information sharing “between” levels. That is, information that flows from the federal government to the state, and then to regions or HCCs, can be inconsistent or inaccurate (sometimes due to latencies in information sharing), making it difficult for HCCs to manage expectations across their membership.

Quote from HCC in HHS Region 5—Great Lakes

“What we’ve identified in our after-action report is a hard time getting information from the state... [the State Department of Health] has many, many different groups. Whether it’s vaccinations, it’s testing, it’s monoclonal. Whatever it is, there’s different groups, long-term care, things like that. If they aren’t on the call to report out, we don’t get the information. Other times, like right now, we have a huge testing issue in our region, the lack of testing, and we’ve been trying for three months to get help from the state for testing. And apparently now I have [an event] starting up on Wednesday in my region, but I can’t get the information on it. I found out through hearsay, and I can’t get the information on it. ... Although they have it all planned, they hold [information] back until the governor can do a press conference on it. And for our regional planning, that causes significant problems. So that’s been a significant barrier that we just haven’t been able to overcome at this point.”^{lxxiiiilxxxv}

This communication challenge is often exacerbated during a response scenario when health care facilities are seeking guidance or updates from their respective local or state officials and/or the federal government, and that information is delayed or incomplete. It can be challenging for health care entities to understand who they can or should turn to for situational updates, especially when a typical response often involves input and participation by various federal agencies (e.g., ASPR, FEMA), state and local entities (public health, emergency management agencies, HCCs, ESF-8), nongovernmental organizations, and others. Breakdowns or failures of communication systems are common during natural disasters, but beyond challenges caused by impacts to communication infrastructure (e.g., power outages, service outages), the added factor of poor communication between responders and across levels (local–state/regional–federal) can severely affect immediate response and longer-term recovery efforts. Hurricane Katrina, Superstorm Sandy, Hurricane Ida, and Hurricane Maria serve as prominent examples of where communication infrastructure failures had cascading impacts, resulting in a delayed flow of support to regional and local entities.

Quote from HCC in HHS Region 3—Mid-Atlantic

"What we have seen is that in the middle of COVID 19, against all of our best wishes about awareness, is that people continue to work within their silos. So, no matter how much we attempted to coordinate and collaborate with others, they may or may not share information with us.... They may change what they're doing, how they're doing it, but not communicate it. ...And I don't mean technology because technology is there. I mean that the practice of sharing information has been an issue. And some of it is a systematic issue, meaning that the system could have been improved and some of it is tied to anything from political issues and aspirations to ego to investment—you name it, we've seen it all, so I think those are some of the constraints that we see." ^{lxxiv, lxvi}

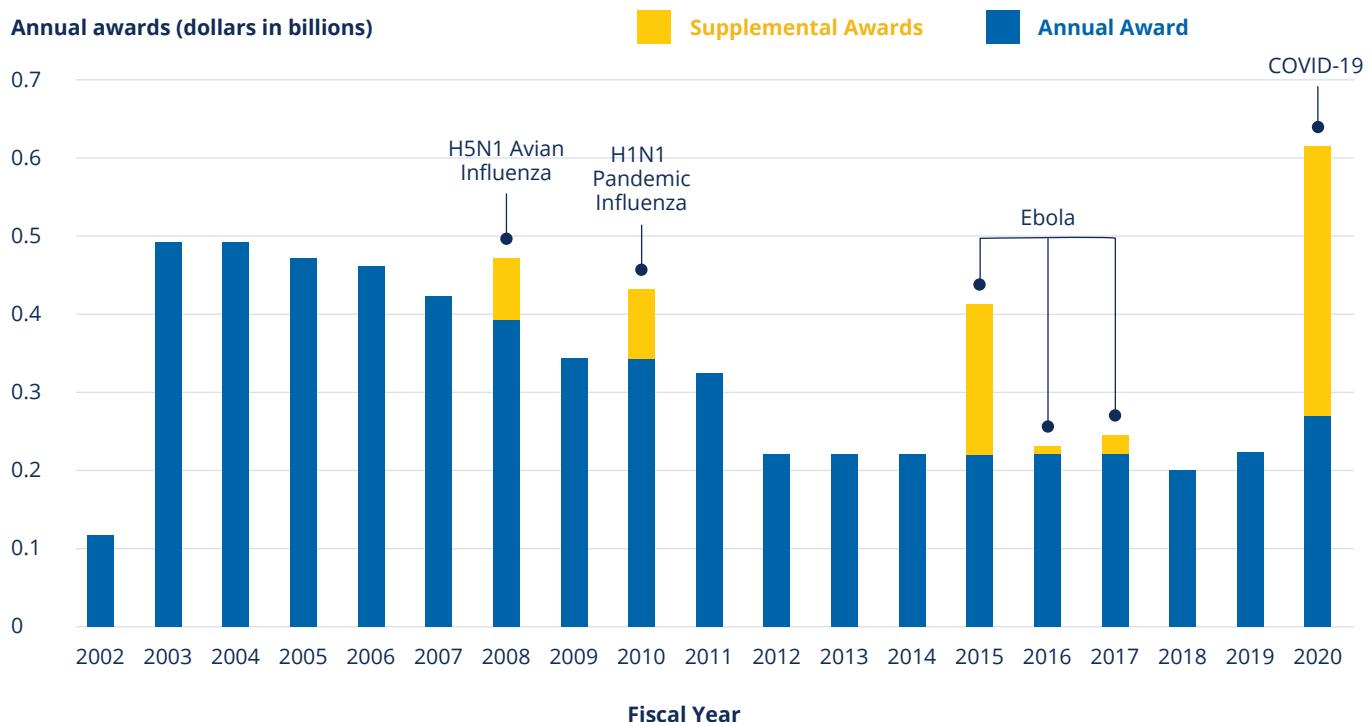
While performance measures help to drive attention around the importance of communication and information sharing, interviews revealed that challenges still persist around achieving optimal levels of information sharing frequency and practices.

Limited Funding and Resources Hinder HCC's Capabilities

Many coalitions do not receive annual funding from sources outside of the HPP Cooperative Agreement. During significant events, such as the COVID-19 pandemic, an influx of emergency funds may become available for recipients and sub-recipients to support emergent needs. Regardless, recipients and sub-recipients remain stretched due to chronic underfunding and understaffing to meet their preparedness needs. According to a 2020²⁵ report by Trust for America's Health, there has been a 50% reduction in HPP funding over the previous 16 years, which is shown in Figure 7.^{lxv} This decrease in funding threatens recipients' and sub-recipients' abilities to build regional preparedness capacities, as they are largely dependent on HPP dollars to help strengthen their jurisdictions' health delivery systems. The operational intent of PM 1 is to assess the association between funding that HCCs receive and progress toward preparedness capabilities. HPP data were not made available for this study; therefore, we were unable to assess how HPP funds (or other types of funding) are allocated to HCCs.

²⁵ Trust for America's Health's most recent [Ready or Not](#) report was published in March 2022.

Figure 7. Administration for Strategic Preparedness and Response Hospital Preparedness Program Cooperative Agreement Funding, 2002–2020



Many preparedness efforts are required of HCCs as part of the HPP Cooperative Agreement. And while some of these requirements have demonstrated success in strengthening jurisdictional readiness, some HCCs reported that tending to the cooperative agreement requirements can make it difficult to address other pressing needs across their region. A report by HHS Office of the Inspector General found a similar finding in which HCCs expressed concern that their already limited resources were being used on developmental activities for new members, which reduced the availability of already limited resources for other priorities.^{lxvi} These findings underscore that funding appropriated to HCCs is not the only perceived challenge; overall HPP Cooperative Agreement funding is suboptimal for addressing the scope of problems that recipients and sub-recipients are charged with to prepare their regional health delivery systems.

Quote from HCC in HHS Region 2—Northeast

"And while the city is directly funded, locality in a high-risk jurisdiction does get a relatively large HPP award, dollar and dollar, getting to the entire health care system, getting to individual facilities, vulnerable populations particularly, and all the different sectors that we realize more and more as we do our preparedness and our response work that we're not having enough penetration and the dollars do not go very far...It's still pennies really compared to the work that they need to do to prepare. ... but ultimately that funding that they get from us might be to support a full-time employee, or not even a full-time. But that's not really equivalent to all the work that they have to do. So certainly, they want to do this work. They understand the preparedness of it. We've had multiple emergencies that affect the health care system. We feel there is no emergency that doesn't involve public health, and there's probably none that doesn't involve health care in some way. So, they want to do these things. There are competing priorities. There are other revenue generating

things to be done and ways to invest in their resources, in their time and their energy. ...We need to do these things. But it's like in no way sufficient to really do everything we need to do...We're sort of at the maintenance phase across the board. I would say for HPP and [the Public Health Emergency Preparedness Cooperative Agreements]."

"... And timeline wise, this comes in the same time that there's increasing regulations as he saw the facilities, and so the HPP funding in many places have been used to take care of those unfunded mandates from CMS and Joint Commission and other regulators. And so, this doesn't even make them whole because there is no funding or revenue stream for security, health care, safety and emergency management that are required at many of the facilities. And so, then we're left not to be able to focus on really health care coalition priorities that are public health based, instead, our partners are asking us to help us fund their unfunded mandates."^{xxxvii}

Insufficient funding also impacts staffing across HCCs, typically resulting in understaffed teams. While not inherently a challenge for all HCCs, during a prolonged disaster like COVID-19, vulnerabilities created by understaffed health departments and HCCs can lead to overworked health care workers and employee burnout. PMs 1 & 4 are intended to serve as "input" PM types; they collect data from recipients and sub-recipients on "resources that are required to support HPP, including staff and volunteers, funding, facilities, and equipment."^{xxxviii} There is evidence that data are collected from HCCs on staff support for reporting on PM 1.5. However, it is unclear how these data are assessed to determine needed additional support for HCCs.

Notably, this performance measure appears to only collect data on labor hours for activities that are funded outside of HPP Cooperative Agreement funds. It is unclear how HPP collects performance measures on HCC staff capabilities—if it does at all—that would indicate gaps/challenges due to underfunding from the cooperative agreement.

Success is Dependent on Member Participation

HCCs vary considerably in their size, structure, and ability to strengthen coordination and communication across their jurisdiction and support medical surge capacities. As an added factor, buy-in from health care leadership, public health departments, emergency management, and other stakeholders is a critical factor in building HCCs capabilities to strengthen regional preparedness. Maintaining buy-in across health care facilities can be particularly challenging, recognizing the many competing priorities they experience. A 2017 OIG report on HCCs found that required trainings for new facilities occasionally pulled resources away from other priorities and reduced incentives for hospitals and other key members from participating in HCC activities.^{xxxix}

In a public–private partnership like an HCC, the success of the partnership often hinges on member participation in exercises, trainings, or real-live events. Thus, certain PM targets may not be attainable if some HCCs do not have high enough participation levels to meet cooperative agreement requirements. Additional investigation is warranted to determine recipients' barriers to meeting these PMs.

PMs 14, 15, 23, and 24 intend to collect data on HCC core member participation, including executive participation, in the Coalition and Hospital Surge Tests, respectively.

These PMs are intended to indicate the extent to which HCC members are engaged in coalition activities, including exercises. Quantitative data from these performance measures were not made available for this study, and therefore we cannot assess the level of engagement in HCCs across the nation. Operationally, however, we have observed a sustained gap in maintaining buy-in from executives in preparedness efforts, including in coalition exercises.

6. Recommendations

Based on these findings, we developed recommendations that focus on 1) operational practices that can be implemented to advance recipients and sub-recipient's preparedness and response capabilities, and 2) opportunities to strengthen performance measure data collection, analysis, and dissemination efforts. The recommendations are as follows:

- Strengthen communication between ASPR and HCCs
- Increase Cooperative Agreement funding
- Develop an equity framework to guide the Health Care Preparedness and Response Capabilities
- Incentivize member participation in coalition preparedness activities
- Proactively seek input from the health care sector to inform HPP Cooperative Agreement requirements
- Increase visibility of performance measures data and subsequent evaluations

Strengthen Communication Between ASPR and HCCs

This evaluation found that communication and information sharing “between levels” (i.e., between HCCs and their members, state officials, and the federal government), was commonly cited as an opportunity for improvement. With so many competing priorities at the local, state, regional, and national levels, it is critically important that ASPR enhances communication between NHPP (or another office or branch, if appropriate) and recipients to ensure that information can more easily flow to sub-recipients (HCCs) and their members can receive timely support. There are a handful of communication mechanisms in which recipients and sub-recipients can communicate with parts of ASPR, including through Regional Emergency Coordinators or Field Project Officers. We recommend that ASPR invest in strengthening the relationships between Regional Emergency Coordinators and/or Field Project Officers and recipients (e.g., state or territorial health departments) to help mitigate communication gaps between regional preparedness and response entities, and, federal stakeholders.

In our review of the PMs, we identified gaps in measurements that assess NHPP’s performance in its ability to support recipients and sub-recipients. We recommend developing performance measures that allow NHPP to collect data on HCC’s engagement with representatives from ASPR to better understand where gaps remain in the agencies’ abilities to support preparedness and response efforts, including across information sharing and communication.

Increase Cooperative Agreement Funding

The HCC model has the potential to be extremely successful in building, strengthening, and sustaining regional preparedness and response capabilities by establishing a network of health care facilities, EMS, and other response organizations that can collaborate with various stakeholders to share and analyze information, manage and share resources, and coordinate strategies to deliver medical care.^{lxix} Unfortunately, public health and health care continue to be woefully underfunded, especially in light of the increased frequency and magnitude in which the US has been experiencing disasters and emergencies in recent years. In 2021, the US experienced 20 separate billion-dollar weather and climate disasters, ranking as the second highest year in terms of number of disasters, only behind 2020.^{lxix} Between 2015 and 2021, the US experienced at least ten separate billion-dollar disaster events each year, marking seven consecutive years of upward trends in high-cost

disasters.^{lxxxii} In addition to ongoing response needs for these major disasters, a 2020 Office of the Inspector General report highlighted how limited resources can impact the strategic growth or activities that HCCs are able to afford and undertake. In the report, among a sample of HCCs, some reported having to direct limited resources on developmental activities for new, ancillary members (i.e., new types of entities) and meeting CMS Emergency Preparedness Conditions of Participation (CoPs), at the cost of funding activities that would foster other improvements in regional preparedness and response capabilities for existing HCC members.^{lxxxiii} During a time in which hurricanes and tropical storms, flooding, severe winter weather, droughts and extreme heat, tornadoes, wildfires, and other disasters are unprecedentedly impacting communities across the nation, HCCs should not be in a position where they have to choose between integrating new members or providing support or services to existing members. To that end, we are recommending that Congress increase funding available via the HPP Cooperative Agreement to ensure adequate resources to support regional health care delivery systems, in addition to meeting cooperative agreement-specific requirements to advance system preparedness.

While the interviews conducted in this study are not representative of all HCCs, they did show that HCCs are overwhelmingly dependent upon HPP dollars compared to other sources. As such, we anticipate that evaluations of PM 1, which assess the percent of funding each HCC receives from the recipient, other federal sources, and non-federal sources, will reveal a large dependence on HPP dollars (i.e., funding from the recipient). We recommend that HPP and SPPR use data from PM 1 to communicate to Congress the need for increased funding available via the HPP Cooperative Agreement.

Ensure Preparedness and Response Capabilities Are Approached Through an Equity Lens

Capabilities 3 and 4 of the Health Care Preparedness and Response Capabilities focus on continuity of health care and service delivery, and medical surge, respectively. In this evaluation, we identified significant gaps in objectives and activities that aim to address the needs of individuals with access and functional needs, medically vulnerable groups, or communities of color who historically experience disparate health outcomes. Additionally, there is a lack of performance measures that assess recipients and sub-recipients' efforts or progress in advancing equity.

We recommend that ASPR NHPP consider encouraging recipients of HPP funding to approach their work through an equity lens by adding a benchmark under PM 5 that assesses whether HCCs' response plans are developed using an equity lens. An equity lens will help advance recipients and sub-recipients' ability to consider the needs of the vulnerable populations across their jurisdictions who may be at higher risk of experiencing worse health outcomes during an emergency. In developing this performance measure, we recommend that ASPR NHPP consider working with, or integrating with FEMA Equity Enterprise Steering Group, or CDC Health Equity Office, who have demonstrated significant efforts in working to evaluate their policies, practices, strategies, and plans to ensure that equity is incorporated into federally funded preparedness and response efforts. Integrating with these federal offices can help to build on the various ways in which HHS, FEMA, and CDC coordinate before, during, and after an event.

Incentivize Member Participation in Coalition Preparedness Activities

The Health Care Preparedness and Response Capabilities are helpful in aligning the nation on a strategic approach to preparedness and response. HPP and the capabilities alone, however, cannot compel engagement across all stakeholders in the health care system—nor are they intended to. Achieving necessary levels of

engagement across the nation's highly diverse network of health care delivery stakeholders,²⁶ requires the right tools, resources, and incentives to increase individual-facility preparedness, and subsequent regional preparedness. Without a means of enforcement to compel engagement from stakeholders who are not HPP sub-recipients, HPP can consider creative ways to encourage non-recipients to participate in whole-of-system preparedness efforts. Offering to provide resources and support in exchange for participation in trainings and exercises, for example, is a non-monetary means of incentivizing engagement in preparedness activities. To help creatively explore other ways of incentivizing engagement from entities that may not be HPP sub-recipients, ASPR NHPP can explore developing an advisory committee composed of private sector stakeholders to provide ideas and suggestions for creating engagement incentives. Findings and recommendations from such convenings can be shared with recipients and sub-recipients of HPP through federally-led trainings, workshops, or guidance documents made available on ASPR Technical Resources, Assistance Center, and Information Exchange.

To assess how this information is advancing participation in coalition efforts, we recommend that SPPR conduct a longitudinal analysis that evaluates the changes over fiscal years in data reported under PMs 15 and 24, which measure executive participation in coalition exercises.

Proactively Seek Input from Health Care Sector to Inform HPP Cooperative Agreement Requirements

This study found that there are few meaningful targets for defining successful preparedness and response across public health and health care systems. At the time of this study, we understand that NHPP and SPPR are in the process of refining targets and benchmarks for the HPP Cooperative Agreement performance measures. To continue advancing our nation's preparedness capabilities and ensuring that the HPP Cooperative Agreement opportunity is meaningfully supporting recipients and sub-recipients, we are recommending that NHPP and SPPR proactively seek input from recipients and sub-recipients on the performance measures process. We recommend that this evaluation process be done annually to continuously collect feedback, guidance, and critiques on how to improve the program.

Increase Visibility of Performance Measures Data and Subsequent Evaluations

Finally, PM assessments reported by HPP recipients and sub-recipients to NHPP and SPPR are not publicly available, and were not shared for this study, which inhibited us from conducting a quantitative analysis on performance measure data. This makes it challenging to conduct an assessment that indicates how current and specific benchmarks, standards, frameworks, and initiatives are facilitating improvements in national preparedness, if at all. We recommend that the reporting and evaluation process be more transparent; data should be shared with researchers, academic institutions, other federal agencies, and the public. Furthermore, if not already a standard practice, recipients and sub-recipients should receive performance assessments and identification of opportunities for improvement. In summary, we recommend using PMs to identify the root reasons why regions are "underperforming," and to devise technical assistance via ASPR Technical Resources, Assistance Center, and Information Exchange to bridge such gaps.

²⁶ Stakeholders include the owners and operators of the nation's health care facilities where patients seek medical care; and also more broadly manufacturers and distributors that produce pharmaceuticals, medical goods, and supplies; as well as the clinical and non-clinical workforce.

Section 5.0 Evaluation of CDC Public Health Emergency Preparedness Cooperative Agreements and Impacts to Public Health and Medical Surge Capacity and Public Health Preparedness and Response

Summary of Recommendations for CDC Public

Theme	Actor	Recommendation
1a. Improve Communication and Coordination: Roles and Responsibilities	CDC	1. Clarify incident management roles, responsibilities, and authorities of CDC and recipients of cooperative agreements and establish accountability mechanisms to ensure roles and responsibilities are being met.
1b. Improve Communication and Coordination: Information Sharing	CDC	5. Support the flow of bidirectional information across FSLTT public health, private sector, and other stakeholders to ensure more informed and cohesive preparedness and response efforts, including the flow of information down to state and local public health departments, particularly tribal and territorial health departments, by: <ul style="list-style-type: none"> Identifying a liaison within federal agencies to speak to all public health departments; Ensuring state health departments are providing sufficient information to local health departments (e.g., situational awareness, technical guidance, demographics data).
1b. Improve Communication and Coordination: Information Sharing	CDC	6. Develop benchmarks and standards to assess recipients' progress toward strengthening information management systems and procedures. The benchmarks should require recipients to conduct an after action report of a scenario that tests their emergency public information warning systems and information-sharing plans with external stakeholders.
1c. Improve Communication and Coordination: Partnerships	CDC	7. Encourage recipients to more frequently identify and proactively engage private sector health care, community partners, and other stakeholders as part of preparedness exercises, such as testing their surge plans, to identify opportunities for improvement.
1c. Improve Communication and Coordination: Partnerships	CDC	8. Develop programmatic benchmarks and targets for: <ul style="list-style-type: none"> Incident management—Performance measures should require recipients to articulate how they will work with neighboring jurisdictions during a widespread disaster or public health emergency within all-hazards preparedness and response plans, and require that these plans be tested with neighboring jurisdictions. Coordination of health care needs during a medical surge event—such benchmarks should seek to measure how recipients coordinate with partners to address public health and health care needs during a medical surge event either during an exercise scenario or a real-world event.

1c. Improve Communication and Coordination: Partnerships	ASPR, CDC	13. Build on the private sector engagement strategies and tactics deployed during COVID-19 and create more opportunities to seek input from and collaboration with private sector stakeholders in medical countermeasure procurement and distribution.
3. Strengthen Efforts to Apply an Equity Lens	CDC	15. Require recipients to utilize an equity lens in their preparedness and response work and add benchmarks to the programmatic requirements to ensure recipients employ an equity lens in response plans.
3. Strengthen Efforts to Apply an Equity Lens	CDC	16. Provide technical training for state and local agencies to help them leverage existing data to analyze, understand, and address the needs of populations with access and functional needs in their jurisdictions.
3. Strengthen Efforts to Apply an Equity Lens	CDC	17. Support and encourage FSLTT public health agencies to expand proactive and sustainable community engagement, including application of an equity lens in preparedness and response work.
4. Increase Funding	Congress and CDC	24. Enhance and expand existing funding for data modernization and public health laboratories through CDC Public Health Emergency Preparedness and Response Cooperative Agreements to strengthen biosurveillance and epidemiologic capabilities. Develop benchmarks and targets for the program to assess how these efforts are strengthening biosurveillance activities.

Legend: CDC = Centers for Disease Control and Prevention; MCM = Medical countermeasures; FSLTT = Federal, state, local, tribal, and territorial

1. Background

The Public Health Emergency Preparedness Cooperative Agreement is managed by the US Centers for Disease Control and Prevention (CDC). Established in 2002 following 9/11 and subsequent anthrax attacks, the Public Health Emergency Preparedness Cooperative Agreement aims to help public health departments strengthen their preparedness capabilities to effectively respond to public health threats, including chemical, biological, radiological, and nuclear events; natural disasters; and infectious disease outbreaks. Serving as a primary and critical source of funding for emergency preparedness at state, local, and territorial public health departments, the Agreement provides essential support to its 62 recipients, including all 50 states, eight US territories and freely associated states, and four metropolitan areas.^{lxixiv} Funding also flows from states to local health departments, further serving as a key funding mechanism for local entities.

The Public Health Emergency Preparedness program seeks improvements in preparedness and response capabilities across six key public health preparedness domains over the course of each five-year performance period.^{lxv} These domains come from the *Public Health Emergency Preparedness and Response Capabilities: National Standards for State, Local, Tribal, and Territorial Public Health* (Capabilities) document, created in 2011 and later updated in 2018 by CDC's Division of State and Local Readiness to incorporate lessons learned

from major responses, updates to preparedness science and guidance or standards documents, and feedback from subject matter experts.^{lxxxvi} These nationally accepted standards establish a framework intended to help jurisdictions execute preparedness plans, effectively respond to a public health threat, and help their communities recover from an event. The 15 Public Health Emergency Preparedness and Response Capabilities are described in Appendix G.

In addition to Public Health Emergency Preparedness Cooperative Agreement funding, CDC also provides annual guidance, technical assistance, and other resources to support health departments in building their strategic plans and strengthening their preparedness capabilities. Resources available to health departments include preparedness field staff who provide boots-on-the-ground support, Connect webinars in which experts share information on preparedness and response topics, and the Online Technical Resource and Assistance Center.^{lxxxvii}

2. Overview: Public Health Emergency Preparedness Capabilities

Within each of the six key public health preparedness domains, associated capabilities are categorized by tiers. According to CDC, “Tier 1 capability standards form the foundation for public health emergency preparedness and response. Tier 2 capability standards are more cross-cutting, and their development relies upon having Tier 1 capability standards established in collaboration with external partners and stakeholders.” Designation of tiers will be noted in Section 5.3.

The six public health preparedness capability domains where recipients must show improvements are described in Table 3.

Table 3. Overview of the Centers for Disease Control and Prevention Public Health Emergency Preparedness Cooperative Agreement Capability Domains

Public Health Emergency Preparedness Cooperative Agreement Domain	Domain Description	Associated Preparedness and Response Capabilities	Associated Strategies and Activities for Public Health Emergency Preparedness Cooperative Agreement Recipients
Domain 1: Strengthen Community Resilience	The ability for public health to support communities in their ability to respond to and recover from disasters by leveraging partnerships across the entire health system including government agencies, private companies, and community-based organizations.	Capability 1: Community Preparedness Capability 2: Community Recovery	<ul style="list-style-type: none"> • Determine risks to the health of the jurisdiction • Coordinate with community partners to disseminate information through all phases of an incident • Identify and support recovery needs for public health and related systems for the community
Domain 2: Strengthen Incident Management	Health departments can rapidly active and coordinate emergency operations before, during, and after an emergency. Health department command structures are consistent with NIMS and any other jurisdictional command structure.	Capability 3: Emergency Operations Coordination	<ul style="list-style-type: none"> • Coordinate emergency operations • Standardize incident command structures • Expedite fiscal preparedness procedures • Plan capability-based drills and exercises
Domain 3: Strengthen Information Management	Information management systems facilitate timely, complete, accurate, and accessible information sharing to appropriate audiences, including ability to support bidirectional information sharing with government partners.	Capability 4: Emergency Public Information and Warning Capability 6: Information Sharing	<ul style="list-style-type: none"> • Disseminate public information, alerts, warnings, and notifications • Exchange emergency and warning information with the public • Share essential information across agencies and stakeholders to determine a common operating picture
Domain 4: Strengthen Counter-measures and Mitigation	Health departments demonstrate ability to distribute and administer MCMs, including ability to support appropriate safety and health measures for emergency responders.	Capability 8: Medical Countermeasure Dispensing and Administration Capability 9: Medical Material Management and Distribution Capability 11: Nonpharmaceutical Interventions Capability 14: Responder Safety and Health	<ul style="list-style-type: none"> • Manage pharmaceutical and nonpharmaceutical interventions • Operationalize response plans • Ensure safety and health of responders

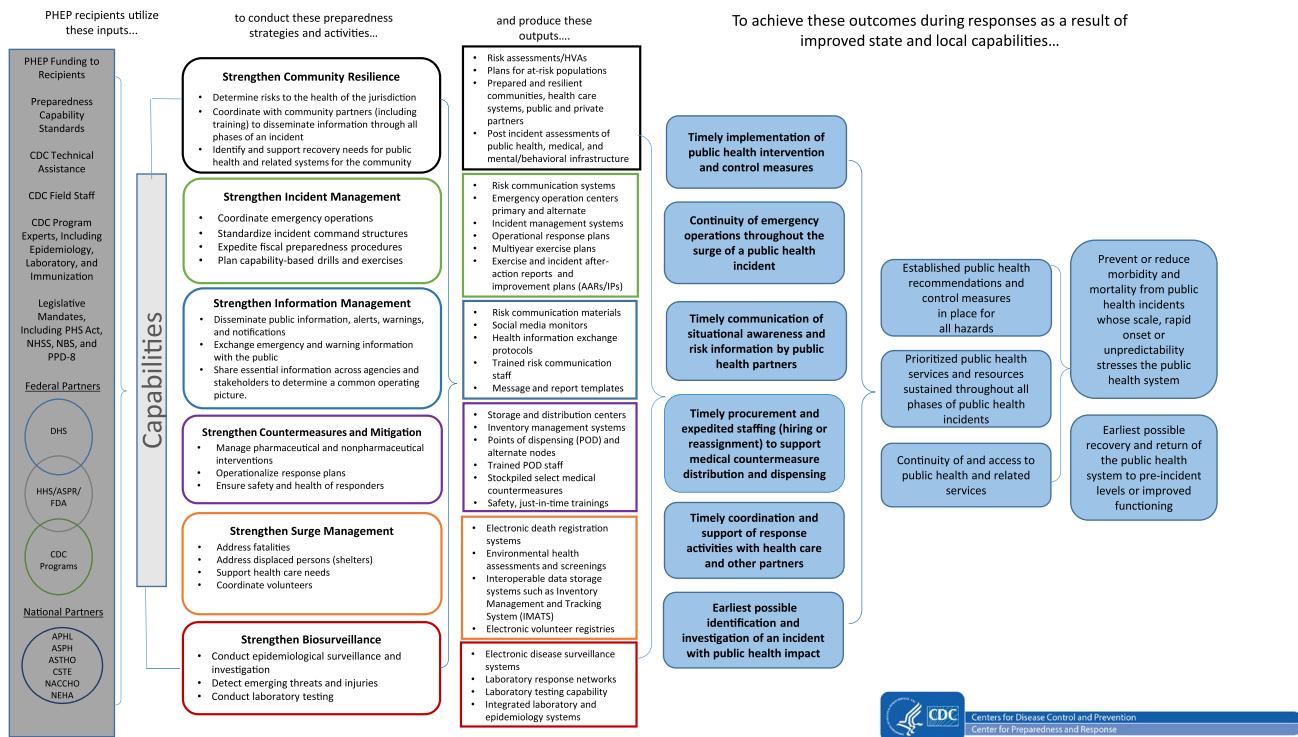
Domain 5: Strengthen Surge Management	Health departments can ensure health care, services, and resources are adequately available during an event that causes an increase in the demand of health care and services, such that is exceeds normal capacities.	Capability 5: Fatality Management Capability 7: Mass Care Capability 10: Medical Surge Capability 15: Volunteer Management	<ul style="list-style-type: none"> Address fatalities Address displaced persons (shelters) Support health care needs Coordinate volunteers
Domain 6: Strengthen Bio- surveillance	Public health facilities can conduct timely and accurate laboratory testing for CBRNE threats.	Capability 12: Public Health Laboratory Testing Capability 13: Public Health Surveillance and Epidemiological Investigation	<ul style="list-style-type: none"> Conduct epidemiological surveillance and investigation Detect emerging threats and injuries Conduct laboratory testing

Legend: CDC = Centers for Disease Control and Prevention; NIMS = National Incident Management System; MCMs = Medical countermeasures; CBRNE = Chemical, biological, radiological, nuclear, and explosive.

3. CDC Public Health Emergency Preparedness Cooperative Agreement Performance Measures

CDC expects Public Health Emergency Preparedness Cooperative Agreement recipients to demonstrate measurable progress across the six capability domains by the end of each performance period. Within the current performance period (2019–2024), CDC expects recipients to achieve the outcomes highlighted in red in Figure 8. CDC uses its operational readiness review evaluation process to measure recipients' progress toward achieving desired outcomes. Evidence of progress is provided by recipients and can include work plans or other documentation, exercise and training plans, annual progress reports, quarterly action plans, after action reports, or other resources.

Figure 8. Centers for Disease Control and Prevention Public Health Emergency Preparedness Cooperative Agreement Notice of Funding Opportunity Logic Model, 2019–2024



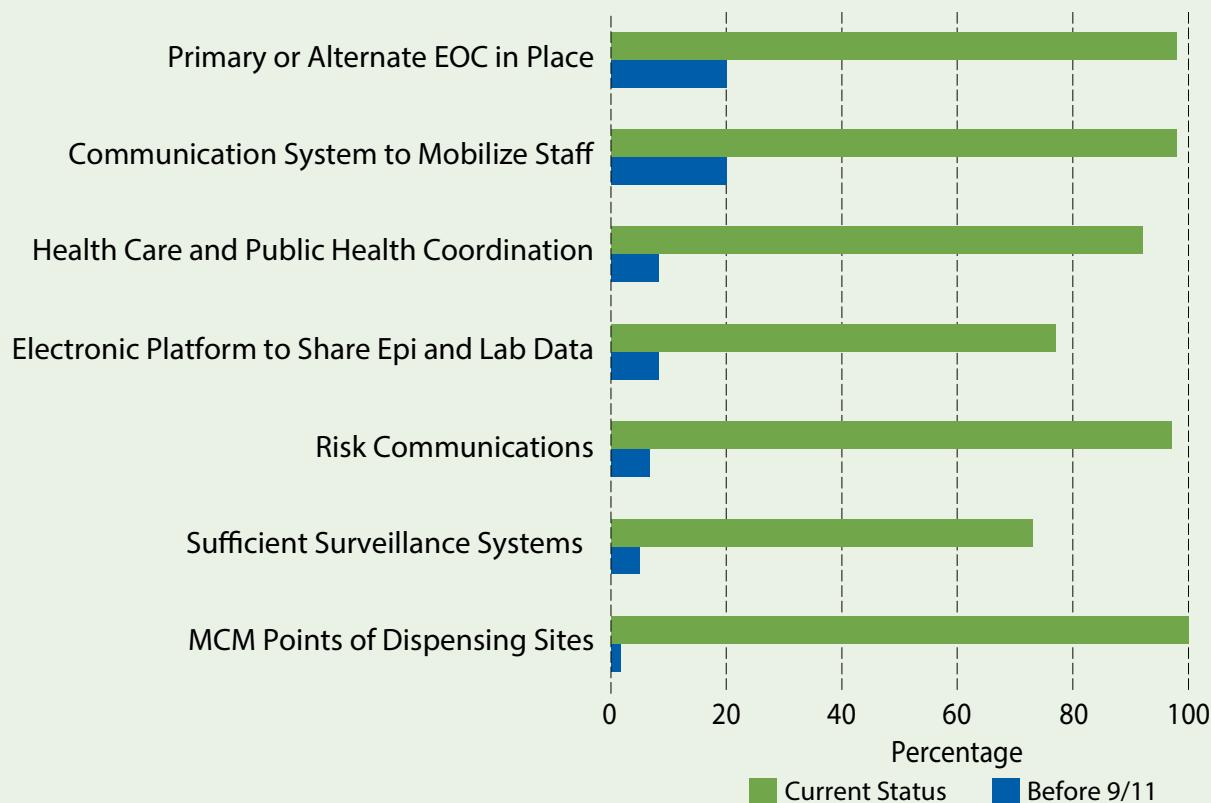
Specific Public Health Emergency Preparedness Cooperative Agreement process and outcome data collected by CDC (e.g., operational readiness review evaluation data and analysis, benchmark measures and select program requirements) were not made available for this evaluation. In the absence of these data, this study conducted a qualitative analysis of publicly available information, key informant interviews, and focus groups to characterize progress that recipients have made in meeting the six key public health preparedness capability domains.

4. Progress Toward Public Health Emergency Preparedness Cooperative Agreement Capability Domain Areas

Since its establishment, the Public Health Emergency Preparedness program has strengthened the nation's preparedness capabilities and enhanced the infrastructure for local, state, and territorial response to a wide range of threats. Select achievements from past years are highlighted in CDC's webpage on [Stories from the Field](#), demonstrating the many ways this program has supported recipients in preparing their jurisdiction for disasters, facilitating efficient responses, and helping communities recover after events. In their 2016 *National Snapshot of Public Health Preparedness*, CDC highlighted seven key advancements made in states' emergency response system capabilities since the events of 9/11, as shown in Figure 9. Similarly, the Public Health Emergency Preparedness Cooperative Agreements have served as a linchpin for progressing the nation toward improved public health preparedness and response.

*Figure 9. Advancements in Public Health Emergency Response Systems:
A National Snapshot of Public Health Preparedness, 2016*

Percentage of Public Health Emergency Preparedness Awardees with Developed Public Health Emergency Response Systems: Before 9/11 and Current Status



Source: CDC, Division of State and Local Readiness, 2015

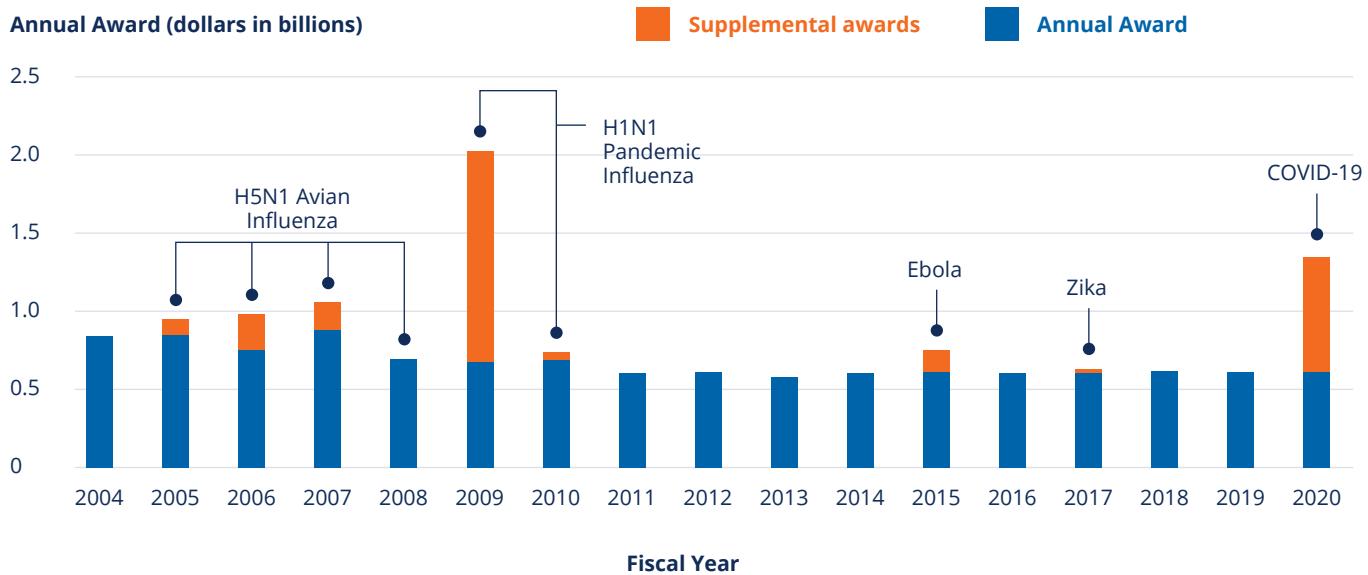
Legend: EOC = Emergency Operations Center; MCM = Medical countermeasure

Before providing an assessment of progress toward capabilities, and for the aforementioned reason, it is important to note the threats of underfunding and underinvesting in public health preparedness. More specifically, we will delineate the consequences of the marked decrease in funding (or level funding when inflation is considered) that the program has received since its launch, and how this has impacted the preparedness and response practices and capabilities of public health departments nationwide.

Public Health Emergency Preparedness Cooperative Agreement program funding has been reduced by more than one-quarter since fiscal year 2003, or by about half after adjusting for inflation (See Figure 10).^{lxviii} Public Health Emergency Preparedness funding is intended to support preparedness efforts that strive to build state, local, and territorial readiness. While the program received additional funds in fiscal years 2020 and 2021 to enhance the response to the COVID-19 pandemic, they were not timely or robust enough to offset

the significant impact of prior decades of funding cuts on preparedness efforts. As noted simply in [Trust for America's Health's report on The Chronic Underfunding on America's Public Health System: Trends, Risks, and Recommendations, 2021](#), "To stand a chance against a threat like COVID-19, the nation needs to sustain higher funding year to year and invest resources in planning, workforce, and infrastructure for years beforehand. Not doing so is akin to hiring firefighters and purchasing hoses and protective equipment amid a five-alarm fire."^{lxix}

Figure 10. Centers for Disease Control and Prevention Public Health Emergency Preparedness Cooperative Agreement Funding, 2004–2017



In addition to reduced funding, the variability derived from differing state, local, and territorial approaches to public health preparedness investments and Public Health Emergency Preparedness Cooperative Agreement spending also impacts the actual degree of preparedness and response capabilities achieved by each state or cooperative agreement recipient. CDC's 2018 *Public Health Emergency Preparedness and Response Capabilities: National Standards for State, Local, Tribal, and Territorial Public Health* document established the fundamental notion that "jurisdictional public health agencies also must be prepared to coordinate with a diverse array of partners and stakeholders, including other government agencies to refine public health lead and support roles, responsibilities, and assignments when other technological, human-caused, or natural disasters occur." It is our understanding that such entities may include the Federal Emergency Management Agency, the Administration for Strategic Preparedness and Response, the Association of State and Territorial Health Officials, the National Association of City and County Health Officials, other state departments (e.g., the Department of Transportation), and other entities that have a role in supporting SLTT health departments. It is essential to recognize that interagency relationship building requires time and resource (financial and human) investment coupled with appropriate funding. Recent public health emergencies like Ebola, Zika, and COVID-19 have underscored the immense barriers created by issues related to poor or underperforming coordination between different response entities.

The following subsections examine areas in which state, local, and territorial health departments that participated in interviews demonstrated success and noted opportunities for improvement that remain in progressing toward the Public Health Emergency Preparedness and Response capabilities.

Domain 1: Strengthen Community Resilience

Community resilience refers to the ability of communities to have the capacity and resources to adapt to, withstand, and recover from a disaster or emergency. Greater resilience can be achieved by engaging and leveraging partnerships across the community including government agencies, private companies, and community-based organizations that can provide services, information, or support. Recognizing that individuals are not equally or equitably protected during a crisis, it is critically important that public health systems have the resources that allow them to invest in and support the development, maintenance, and utilization of emergency plans that help communities respond to and recover from disasters. It is likewise important for communities to be able to leverage partnerships across the entire health system, including government agencies, private companies, and community-based organizations.

This domain consists of two associated Public Health Emergency Preparedness and Response Capabilities: Community Preparedness (Tier 1) and Community Recovery (Tier 2).²⁷ According to the CDC Public Health Emergency Preparedness and Response Capabilities document, community preparedness refers to the ability of communities to prepare for, withstand, and recover from a disaster in the short and long-term. Community recovery is defined as the ability of communities to identify critical assets, facilities and services within public health, emergency management, health care, human services, mental/behavioral health, and environmental health sectors that can guide and prioritize recovery operations and return such institutions to normal functioning levels as soon as possible. To support community preparedness and community recovery, SLTT entities are encouraged to engage in activities including engaging community partners and other stakeholders to support risk-mitigation, defining and implementing strategies for ongoing collaboration with community partners and stakeholders, and coordinating the delivery of essential public health services with partner organizations.

Advancements toward strengthening community resilience

With disasters and public health emergencies increasing in frequency, severity, and at times duration, there is a pressing need for public health agencies to engage with their communities to better understand ongoing challenges, identify program gaps, and develop and implement strategies to mitigate their consequences. State, local, and territorial health departments that participated in this study indicated a strong understanding of community resilience and that efforts to increase engagement with community-based organizations are ongoing, with many citing successes in coordinating with community partners and stakeholders before, during, and after disasters.

²⁷ Tier 1 capability standards form the foundation for public health emergency preparedness and response. Tier 2 capability standards are more cross-cutting, and their development relies upon having Tier 1 capability standards established in collaboration with external partners and stakeholders.

Quote from State Health Department in HHS Region 8—Mountain West:

"Your readiness, your preparedness, planning, organizing, exercising, does that actually minimize the time that a health care system or the health care community spends in a crisis situation?...Does our work with readiness ensure that the time [a community] spends in that crisis is the absolute minimum because they've internally prepared, because their coalition is ready to support them, and because we've developed state resources that are rapid response and able to immediately or within a reasonable time frame come and mitigate that shortage."^{xc}

To understand the needs of a community, Public Health Emergency Preparedness Cooperative Agreement recipients must determine the risks of individuals who may be most vulnerable to experiencing disparate impacts during a disaster or public health emergency. This may be accomplished through various channels, including through after-action reports or risk assessments. A common theme from interviews was that most SLTT agencies leverage available data or evaluation mechanisms (e.g., after-action reports, lessons learned documents) to assess response efforts, program gaps, and ongoing challenges. This allows them to continuously develop and improve partnerships to more effectively meet the needs of the whole community during a disaster.

Quote from State Health Department in HHS Region 4—Southeast:

"One of our [epidemiologists] on our team incorporates a lot of HHS emPOWER data for home-based individuals that are dependent on electricity for their medical equipment and [they] make maps, maps by basically census tracks or zip code. And we provide them to our preparedness planners and our health care, which means they have a better understanding where those populations are, but then also social vulnerability index and being able to generate maps and really leverage that in a lot of our decision-making processes. We did use that quite a bit early on with our vaccine allocation process, and we're recognized as being one of the most equity-focused states when we're looking at over allocating vaccine to [high-risk] counties so they could get to fully vaccinated at a faster rate because they're disproportionately affected populations in those areas. So, that's one practical application of how you use the data...we really identify that as a success because we were able to use the data translated into actionable thing and then actually make an impact on someone's life."^{xcii}

As demonstrated above, Public Health Emergency Preparedness Cooperative Agreement recipients' ability to quickly coordinate with stakeholders across the federal, state, and local levels is critical to ensure the needs of those with access and functional needs are met in times of disaster. To better understand what those needs may be, recipients interviewed for this study described efforts to strengthen partnerships with stakeholders who work closely with communities at higher risk.

Quote from Local Health Department in HHS Region 10—Pacific Northwest:

"You know, at-risk functional needs, as is [is how] we're orienting to this, especially considering emergency management is one of our key public sector partners. And that's how FEMA and others are orienting to this, especially when we think about mass care or evacuation and things like that. I think at the end of the day, ... it comes down to relationships and having trusted people in the community who can tell us what's going on and can be conduits of information to groups that public health might not have a strong connection to. This manifested itself in COVID...working a lot with community and faith-based organizations. There was a huge private sector body of work that was done in COVID with our Community Mitigation Recovery Task Force...and have an equity liaison in our emergency management structure or health and medical area command. We had that prior to COVID and then it just got built out. We also established a group, a Pandemic and Racism Advisory Committee...[so] I think we always have felt that it's important to hear from the community. We have not always been successful in figuring out the mechanisms to do that. In COVID, we established some more official mechanisms to do that."^{xciii}

A notable number of Public Health Emergency Preparedness Cooperative Agreement recipients, community-based organizations, and subject matter experts who participated in interviews underscored the momentum and advancements made toward building community resilience since the start of the pandemic. Many expressed desires to continue and sustain these efforts past the pandemic, to build on efforts to strengthen community resilience.

Quote from Subject Matter Expert (Medical Professional) with Expertise in Health Delivery and Community Resilience:

"And then again, with COVID, I think us having to be very innovative and creative around how we approach this and not just in the insular health center world, but also in the community at large [through] partnerships [has been a highlight], and improved over the course of the last 18 months."^{xciii}

Quote from Subject Matter Expert with Expertise in Health Delivery

"Partnerships with community leaders are really important and I think that COVID has really accelerated those partnerships at the state and local levels because they've had to because of COVID response and COVID vaccine administration. We need to maintain those..... Public health needs to have an investment in the infrastructure of public health so that it's not a bare minimum during peace time. And then the faucet turns on and they have to ramp up and start fresh during an emergency. We need to, you know, elevate the presence and the effectiveness of public health year-round all the time so that communities and individuals and families are healthier, that will benefit us in many, many ways, including during an emergency."^{xciv}

Current challenges and opportunities for improving community resilience

Relationship building between organizations at various levels is needed for building the information sharing/collaboration practices and processes needed to identify and better understand the risks of each jurisdiction and implement plans that support community preparedness. Tactically, this can translate to activities like finding the contact information of a specific individual or department with whom they can establish a communication channel, or—at a bare minimum—form a baseline relationship. For an SLTT department, this may include maintaining contact information of HPP counterparts, including HCCs, to support planning, coordinating, and training efforts. More broadly, SLTT departments should also use a whole-community approach to preparedness, identifying contacts across community-based organizations and engaging with them before, during, and after disasters. Operationally, this can be a challenge, as relationship-building activities require time and resources, including sufficient staffing as well as leadership support for prioritizing related activities among other competing, but related, priorities. Workforce turnover presents many challenges, as it results in not only in a loss of expertise but also of relationships. Investments in sustaining the public health workforce are needed to advance relationship-building activities and sustain whole-community preparedness efforts.

One barrier to being able to build long-term relationships with community-based organizations such as churches or nonprofits offering social services support, is the need for improved infrastructure to facilitate the collection of data as well as maintain engagement at a level that helps entities keep one another well informed during times of disasters.

Quote from Local Health Department in HHS Region 5—Midwest:

"... the challenge is having enough infrastructure there to work with those groups. Often the people don't have the time to spend, you know, at a four-hour preparedness planning meeting. And many of the groups that

serve those populations don't have full-time staff to advocate and plan with them. So it really is meeting those organizations and people as close to where they are as possible."^{xcv}

Quote from State Health Department in HHS Region 3—Mid-Atlantic:

"...private and community-based organizations. You know, our [department] has had less historical collaboration directly with those groups. We often rely on our emergency management colleagues and their network of partners to help us share information to help us collect information from those more nontraditional groups. We also have, you know, other program areas and a new position even within our Department of Health that they created about two years ago...whose job is to be that community liaison to other partners. We've been able to work through other pathways to get information to or share with other entities, but not so much a primary connection with them."^{xcvi}

These statements do not discount the laudable advances that many—if not most—public health departments have made toward improved engagement with community-based organizations. However, CDC (as the manager of the Public Health Emergency Preparedness program) should find ways to support SLTT health departments' continued identification of and proactive engagement with critical community partners to exert meaningful progress in community resilience. In some cases, there is also a need to recognize and elevate certain stakeholders as *essential* within state-and-local-level emergency plans to appropriately leverage their expertise and long-standing role as pillars of trust within communities.

Quote from Subject Matter Expert with Expertise in Community Resilience and Health Delivery:

"...I think a recognition that the health centers are reaching the populations that have not been reached in the past and understanding by the state officials that they are there as an asset and be viewed as that asset so how to bring them into the fold more."^{xcvii}

Quote from Health Care Coalition in HHS Region 10—Pacific Northwest:

"I think at the hospital level, there are not as many barriers to engagement, there's a recognition of that being a critical service. And so, I tend to think of this again through the scope of, how do we prepare and how do we respond? And even, you know, advocating for our services to continue at various levels I think it's less there when we start talking about long-term care and home health type of entities. I think there are more barriers and just even recognizing that those facilities and entities are also priority resources. We do a lot of advocating for long-term care, specifically during various events, and that's where we very much connect with the EOC to do advocating and or trying to bring forward private resources to ensure that those facilities also maintain their operational status...I think it's less of where you can have a priority grid that your number one is a hospital."^{xcviii}

As demonstrated above, interviewees feel there is room for improvement across state, local, and territorial health departments' willingness or ability to engage with community-based organizations and other anchor institutions that support health delivery. Increased engagement would better foster efforts to strengthen community resilience. Beyond just *establishing* these partnerships, Public Health Emergency Preparedness Cooperative Agreement recipients should identify ways to sustain relationships with community-facing groups so that jurisdictions are more resilient for the next disaster. Especially in a post-COVID world, strengthening the trust between communities and public health agencies is more important than ever.

Quote from Subject Matter Expert with Expertise in Health Policy:

"Those kinds of lessons, I think, need to be incorporated into grant²⁸ making moving forward and figure out how to maintain those relationships between public health, health care and community leadership and community-based organizations. So that it's not just, 'Hey, we need your help distributing a vaccine because we're in the middle of a pandemic.' But actually, What are the needs of this community that we can discuss and try to make more resilient, build trust between the community and public health and health care before a disaster?"^{xcix}

Domain 2: Strengthen Incident Management

Incident management refers to Public Health Emergency Preparedness Cooperative Agreement recipients' ability to activate, coordinate, and manage emergency operations over all phases of a disaster including mitigation, preparedness, response, and recovery. The National Response Framework and National Incident Management System (NIMS) serve as the nation's roadmap for how government and non-government entities should manage emergency operations.

This domain consists of one capability: Emergency Operations Coordination (Tier 1). According to the CDC Public Health Emergency Preparedness and Response Capabilities document, Emergency Operations Coordination refers to an SLTT agency's ability to effectively coordinate with emergency management entities during a disaster through means that are consistent with jurisdictional standards and the NIMS. To demonstrate progress toward this domain capability, Public Health Emergency Preparedness Cooperative Agreement recipients are expected to conduct activities that strengthen emergency plans including maintaining all-hazards preparedness and response plans, exercising Continuity of Operations Plans, and maintaining documents that describe fiscal and administrative preparedness plans.^c

Advancements toward strengthening incident management

Through program requirements and real-world experiences, Public Health Emergency Preparedness Cooperative Agreement recipients have demonstrated advancements toward strengthening coordination efforts and management of emergency operations during disasters. In addition to program requirements that mandate recipients to have written emergency plans and procedures to activate, coordinate, manage, sustain, and demobilize public health emergency operations, all health care providers and suppliers are also required to have documented emergency plans per the CMS Emergency Preparedness Final Rule.^{ci} Such requirements help to establish national preparedness requirements and facilitate alignment on coordination efforts across FSLTT systems.

Quote(s) from Subject Matter Expert with Expertise in Health Delivery

"I think starting with the CMS rule was probably the level setting, you know, for the field and allow the field to really have a basis to work from....again, the CMS rule requires that you do those tabletop, those community exercises that, you know, because of that that immediately pulls you into your public service, your hospitals, any other community partners that would need that kind of converge to have a kind of community approach to emergency response."^{cii}

²⁸ In the context of this statement, "grant" refers to federal cooperative agreement programs that fund recipients across the public health and healthcare sectors.

According to CDC, Public Health Emergency Preparedness Cooperative Agreement recipients' all-hazards preparedness and response plans should include designations of primary and alternate locations, including virtual communication structures, for the public health emergency operations center. Additionally, continuity of operations plans should address alternate and virtual work sites. Due to the COVID-19 pandemic, a large portion of the public health workforce transitioned to a remote or virtual work environment to comply with public health safety measures. While at times burdensome, recipients noted in interviews that their departments were able to quickly and efficiently transition to virtual work environments thanks to thorough emergency operations plans, including on virtually based meeting platforms, which were identified as ways to rapidly consolidate information and disseminate it to relevant stakeholders. In addition, virtual meeting platforms allowed recipients to hold ad hoc meetings to effectively respond to the pandemic despite being geographically dispersed and maintaining social distancing.

Quote from State Health Department in HHS Region 3—Mid-Atlantic:

"We had always had the ability to work, what we used to call, virtually because we are responsible for response so a lot of our threats are weather related. And so, we learned how to manage those from wherever we happen to be when the snowstorm hits. So, we had a lot of practice and working teleworking and working separately."^{ciii}

Quote from HCC in HHS Region 5—Great Lakes:

"During COVID, it was [meeting] daily at some points for several months. We have our health multi-agency coordination group, and we've been meeting weekly throughout the COVID response with all of our different sector partners that come together each week...and then, of course, [through] virtual platforms as needed."^{civ}

Current challenges and opportunities for improving incident management

This domain consists of one capability: Emergency Operations Coordination (Tier 1). The National Response Framework and NIMS serve as the nation's roadmap for how government and non-government entities should respond to events. However, during a public health emergency, there are gaps in defining roles and responsibilities for activation triggers and authorities. Governing authorities in a public health emergency, or other types of disasters, may vary between states and localities. For instance, public health departments can find themselves unable to take necessary action amid competing directives from federal authorities and the local community as they wait for the appropriate approvals or direction to carry out a response.

Quote from Local Health Department in HHS Region 5—Midwest:

"We've created our guidance document. But we sit on it because we have to wait until the feds release their [approval]. And so I, as a local, get tasked with answering questions directly from my local counterparts who really need that work. From a planning standpoint, my schools were asking for it since June."^{cv}

Conflicting values and politics between public health departments and elected state, local, and territorial officials also stand as a critical barrier not currently addressed by the Public Health Emergency Preparedness Program. Though the program is not being suggested as the appropriate channel for that engendering that level of alignment, CDC and Congress should recognize the limitations for achieving Public Health Emergency Preparedness and Response Capabilities in the context of this situation and consider a means to address conflicts created between public health departments and local and state elected leaders in future public health emergencies or natural disasters.

Quote from Representative of Community with Access and Functional Needs:

“...it’s hard when the public sector and the public health people and the governor and these public elected officials are the ones implementing the strategies, but it’s the providers that are really on the ground who have the best understanding.”^{cvi}

Quote from Local Health Department in HHS Region 10—Pacific Northwest:

“...the one thing that strikes me sometimes as challenging is when you have that many players in decision-making. And so with policy level elements and again...with maybe elected and public officials rotating in and out—so there may be sometimes a familiarity gap.”^{cvi}

As demonstrated above, interviews indicated that identifying and defining public health, health care, and emergency management’s roles and responsibilities remain a critical challenge for Public Health Emergency Preparedness Cooperative Agreement recipients (and other stakeholders) when coordinating emergency operations. Even in instances where roles and responsibilities are well-defined, interviews revealed that political tensions have implicated response efforts during recent public health emergencies or disasters, in which jurisdictional entities operate divergently. In many regions, there remains a lack of understanding by elected officials of the roles and responsibilities of public health, which is exacerbated by political tensions surrounding COVID-19 mitigation measures such as social distancing, mask use, and vaccines.

Quote from Subject Matter Expert with Expertise in Health Policy:

“...you’re seeing counties that are defying executive orders and then the governor trying to deny funding and things like that. I think that and that’s also a whole another world in terms of the politic of this, where it’s hard to work around the politics when it’s that invasive and that corrosive.”^{cvi}

Quote from Subject Matter Expert with Expertise in Health Policy:

“You know, in an earlier round of [reviewing standards and measures], there was a little bit of an assumption that the state would provide technical assistance to the locals. And so we tried to also build in a little like maybe the state is going to learn from the locals or maybe the role of the state is to support peer learning amongst the entire state so that everyone can learn from each other. And I do think, where that’s happened successfully, you know, that’s been a plus. But maintaining those relationships part of it also just gets back to the politics cause sometimes the politics at the state level are not the same at the local level.”^{cix}

Ultimately, this study found that many Public Health Emergency Preparedness Cooperative Agreement recipients have documented emergency operations plans that indicate how SLTT departments would activate public health emergency operations, develop and maintain an incident response strategy, and manage and sustain the public health response. However, such plans require buy-in at the federal, state, and local levels in order to efficiently strengthen incident management. Without buy-in and willingness to coordinate across levels, operational program gaps will persist.

Domain 3: Strengthen Information Management

Information management refers to the to develop and maintain communication systems and procedures that support timely, accurate, and accessible bidirectional information sharing that leverages a whole-community approach. Such information sharing, including situational awareness, should be shared “between levels” (i.e., across FSLTT partners).

This domain consists of two capabilities: Emergency Public Information and Warning (Tier 1) and Information Sharing (Tier 1). According to the CDC Public Health Emergency Preparedness and Response Capabilities document, Emergency Public Information and Warning is defined as an SLTT department's ability to develop, coordinate, and disseminate information, alerts, warnings, and notifications to the public and other emergency management personnel. Information sharing focuses on the exchange of health-related information and situational awareness data across FSLTT governments and the private sector in preparation for and in response to a disaster.

Advancements toward strengthening information management

Interviews with Public Health Emergency Preparedness Cooperative Agreement recipients who participated in this study revealed state, local, and territorial health departments have demonstrated significant success or improvement in advancing their emergency public information and warning capabilities, as well as their information sharing capabilities. Many interviewees cited various tools and platforms that help them efficiently disseminate information, alerts, warnings, or notifications to the public and other stakeholders. This is likely in part due to technological advancements that have facilitated rapid information sharing, such as social media or online news, as well as sector-specific information sharing platforms. It is important to note, however, that the adoption of these platforms and their integration into other components of the preparedness and response enterprise (that exist beyond public health) varies widely across regions and jurisdictions. Furthermore, because relationship building requires time, resources, and willingness to engage, it also affects opportunities to improve information sharing capabilities.

Interviewees in this study identified several resources that helped to improve or maintain effective communication, including common or low-tech communication methods, such as mailing platforms (MailChimp), Emergency management and response platforms (WebEOC, Everbridge), and video conferencing platforms (Skype, Google Meet, Zoom). They also reported using state-specific platforms, online document storage programs that allow for sharing, federal platforms (CDC Health Alert Network), radios, satellite phones, and cell phones.

This study found that positive examples of mechanisms that foster information sharing were largely made possible due to relationships between people at different organizations, and willingness to engage in such efforts. Relationship building takes time and resources, which are often in short supply at chronically understaffed and underfunded public health departments. Notably, these advancements are not necessarily a result of technology platform availability or improved public health infrastructure.

A few positive examples from interviews that speak to successful information sharing that facilitate stronger situational awareness across preparedness and response efforts are below.

Quote from Local Health Department in HHS Region 5—Great Lakes:

"I think [video briefings and conferencing] is where a lot of the interaction occurred in this [response], [along with] the other modalities that WebEOC within the state has...And that integrated electronic system that is designed to keep everyone on the same page, and your traditional emergency management virtual tools...It's using what works best and what gets the intended outcomes across the discussions – Skype, Zoom, Google Meets, or any other modality that works best."^{cx}

Quote from a State Health Department in HHS Region 8—Rocky Mountains:

"So, for sending information and for information sharing...Let's think about the bigger picture is one excellent use of our health alert network, right? The [Health Alert Network], it's readily available as a push system to push messages, alerts and warnings, CDC HANs all go through that channel, and we use that both for internal like for staff notification.... The second push ..., is how do we look at redundant communications?...we feel the responsibility to ensure that particularly our hospitals and local health departments are a part of the public safety radio network, so not with the purchase of private systems or limited ones, we actually use the 800 system...And we've been able to dedicate some channels for [local health department] coordination by radio and for our coordination with hospitals is absolutely essential. We've walked down the path of like SAT phones and other redundant [communications]. It doesn't seem to work here...But I tell you, during covid, texting has been the thing that is absolutely made the difference...So one of the things that we found, though, is with all of this situational awareness reporting data, if you rely on it to make tactical decisions, it's always yesterday's numbers. There's no tactical usefulness, and that's why I call into to note this idea of text groups is like, yeah, we might be seeing the hospital for you right now. But you know what? If I got a text from the critical care unit director, that says, "we are absolutely going crazy here today." Even though that's not a hard number, that means as much or more than saying, oh, they're 87 percent full. And so, it's a combination of both the hard and the soft data that actually bring you good situational awareness."^{cxi}

Quote from State Health Department in HHS Region 4—Southeast:

"...We basically brought in all the different health associations and did briefings for them, so they were all kind of in the loop as far as what our top line messages were about whatever the event of the day was. And so, they could have the same talking points, whether it's Pharmacists Association, Nursing Association, Medical Hospital Association. But then we also worked really close, hand in hand with the Poison Control Center as well. They did a lot for us. And then, you know, one of our several awardees, our health care coalition, which is, you know, we bring together all the different health and medical entities and EMS, of those kind of folks; they support a lot of the activities that we do as well with those advisory groups to help place on next steps that we are going to."^{cxii}

Quote from State Health Department in HHS Region 3—Mid-Atlantic:

"We work very closely with the [State] Emergency Management Agency, and they do a lot of our data collection from the hospitals for us and we work with them on that. So, we get daily read reports and how we actually utilize. We also have a process within our office where we can email every single licensed professional provider in the state. And so probably over the course of time, that's hundreds of hundreds of thousands of contacts every year as we send out vital clinical information and updates, a lot of survey monkey and different kind of surveys to collect data. [A representative] also sits on the board of the [State] Fusion Center so we can get sort of threat and risk information as we need it. So, there are just lots of platforms that we use to get out to folks. We meet with the local health officers, we meet with the local health planners. [A representative] facilitates those meetings with the hospital planners. We have routine meetings with the hospital association."^{cxiii}

Current challenges and opportunities for improving information management

One of the recurring themes raised during interviews with key stakeholders was the need—and lack of—bidirectional communication between federal, state, and local responders. As outlined in the National Electronics Disease Surveillance System (NEDSS) Base System and the Presidential Memorandum on the Support for National Biodefense, interagency coordination between government and nongovernmental partners undergirds

our nation's ability to assess, understand, prevent, prepare for, and respond to, and recover from disasters.^{cxiv,cxv} Despite such strategies and frameworks, the US continues to struggle with adequate information sharing between agencies and partners, preventing a more informed and cohesive response to large-scale events. Most, if not all, data start locally and are reported up, but oftentimes, local entities do not receive information or updates in return after they send their data to state or federal levels.

Quote from Subject Matter Expert with Expertise in Health Policy:

"...one of the things that we've really been focusing on a little bit more is those relationships within the public health system and in particular, the connections between the states and the locals. We have heard some concerns from the locals about like, 'You're asking for it, like you ask us for stuff all the time, but we don't always get information back from you.' So, we tried to be a little bit more explicit that states do need to ask locals what they need, listen, provide data just in general."^{cxvi}

In addition to experiencing shortcomings in receiving information from state entities (i.e., Public Health Emergency Preparedness Cooperative Agreement recipients), local health departments often face other challenges as it relates to information and data sharing. According to the National Association of County and City Health Officials, many local health departments experience obstacles in their ability to effectively develop data and information sharing capabilities, including dealing with under-resourced technology infrastructure and insufficient or inexperienced workforce.^{cxvii} This not only presents a challenge with critically needed information and data exchanges across FSLTT departments, but also with the private sector, including hospitals and health systems. Limited investments in strengthening the data and information sharing capabilities of recipients, including identification of benchmarks or standards that could help to assess efforts toward advancing such capabilities, will continue to threaten advancements toward Domain 3.

Quote from Subject Matter Expert with Expertise in Health Policy:

"...An example is around the data issue. So, throughout the pandemic, we've seen how difficult it is for hospitals to report and labs and other health care entities to report cases and vaccination numbers to public health, whether that's state level up to the federal level, how there's disconnects between the lab and the health department, or the hospital and the health department, and between the health department and state, the state and CDC, and it's because they're literally using fax machines. Health departments are...And when you're dealing with a small-scale disaster or a small outbreak, the health department can run down those numbers, which they have to do through phone calls and emails and stuff. But that's really hard to do when there's millions of cases. I think that's an example where we would love to see that kind of jurisdictional communication be more seamless, but we have to fund it, so there have been investments through the CARES Act and through the American Rescue Plan Act and public health data modernization, but it's going to take a sustained like 10 year commitment, serious money to really make it if we want to have real-time information."^{cxviii}

Fragmented and inconsistent information sharing poses a threat to weaken ongoing efforts to build and sustain relationships across regional stakeholders, including Public Health Emergency Preparedness Cooperative Agreement and HPP recipients and sub-recipients (HCCs). A recurring theme from interviews with Public Health Emergency Preparedness Cooperative Agreement and HPP recipients, as well as subject matter experts, was that stakeholders felt they frequently shared data and information with other FSLTT governments, but that there was a lack of exchange of health-related information and situational awareness data. Limited bidirectional information and data sharing can hinder entities' preparedness and response efforts.

Quote from HCC in HHS Region 4—Gulf Coast:

The following quote illustrates how information flows between PHEP recipients and HPP sub-recipients from the perspective of one HCC. Bidirectional information sharing is essential to sustaining regional preparedness and response capabilities.

“...we built the relationships with key partners in the state, at the state level, at the local level so that any information they get, they will automatically think of us to share it with. It really would be very different if we were an organization that was just receiving but not sending anything out.”^{cix}

Quote from Subject Matter Expert with Expertise in Health Policy:

“We've tried to build in a little bit more, particularly around data like there are data systems that are routinely maintained at the state level that need to be used by the locals and they need to be responsive to locals needs and we need to be able to get reports out of them. You know, it's still the case where locals might share their data with the state and then they can't get it back in a useful way.”^{cxvii}

Domain 4: Strengthen Countermeasures and Mitigation

Countermeasures and mitigation refer to the ability to distribute, dispense, and administer medical countermeasures (MCMs)²⁹ to reduce morbidity and mortality, and to protect responders during a public health incident. Per Cooperative Agreement requirements, recipients must develop, test, and maintain various plans that address the use of MCMs including, but not limited to, MCM Distribution, Dispensing, and Vaccine Administration plans, anthrax and pandemic influenza plans, scalable staffing plans, and MCM action plans.^{cxxi}

This domain consists of four capabilities: MCM Dispensing and Administration (Tier 1), Responder Safety and Health (Tier 1), Medical Material Management and Distribution (Tier 1), and Nonpharmaceutical Interventions (Tier 2). Definitions for each of the capabilities, per CDC Public Health Emergency Preparedness and Response Capabilities document, are listed below.

- **MCM Dispensing and Administration:** Ability to provide MCMs (vaccines, antiviral drugs, antibiotics, and antitoxins) to targeted populations to prevent, mitigate, or treat potential adverse health effects of a public health incident.
- **Medical Material Management and Distribution:** Ability to acquire, manage, transport, and track medical material during a public health incident, and the ability to recover and account for unused medical material (pharmaceuticals, vaccines, gloves, masks, ventilators, or medical equipment) after an event.
- **Responder Health and Safety:** Ability to protect public health and other emergency responders before, during, and after an event.
- **Nonpharmaceutical Interventions:** Actions that people and communities can take to help slow the spread of illness or reduce the adverse impact of public health emergencies. Focuses on ability of communities, community partners, and stakeholders to recommend and implement nonpharmaceutical interventions (isolation, quarantine, restrictions on movement, social distancing, hygiene, etc.) in response to the needs of an event.

²⁹ Per FDA, [MCMs](#) can include biologics, drugs, or devices that are regulated by FDA and used during a public health emergency, including a CBRN threat or an outbreak of an emerging infectious disease.

Domain 4 includes a Public Health Emergency Preparedness Cooperative Agreement benchmark, which applies to all 62 recipients. This benchmark, titled “Demonstrate MCM Operational Readiness,” requires that recipients demonstrate readiness to receive, store, distribute, and dispense or administer MCMs during a public health emergency. Per this benchmark, or before the end of Budget Period 3 (June 30, 2022, for the current budget period), 100 percent of recipients must achieve an overall “established” status level for MCM operational readiness.^{cxxii}

Advancements toward strengthening countermeasures and mitigation

During COVID-19, the nation (and world) faced shortages with obtaining and distributing medical materials such as personal protective equipment for health care workers, infected patients, and the public. While various federal agencies worked to support state, local, and territorial health departments in their ability to acquire medical materials, efforts ultimately came up short. As such, many public health departments found ways to acquire and distribute supplies to in-state stakeholders without support from the federal government. Departments that had a strong culture of preparedness and demonstrated breadth and depth in their ties to community partners shared the following experiences of relying on their own department’s stockpile or caches instead of waiting for or relying solely on federal sources:

Quote from State Health Department in HHS Region 8—Rocky Mountains:

“...we don’t necessarily rely on the feds. We know that the SNS was a nonstarter as the SNS was never designed to support every state at once...in the absence of a viable supply chain, we did the best job that we could to mitigate the supply chain shortage and ensure protection for the health care and first responder workforce... We didn’t call to the feds and say, ‘Help, help.’ We said, let’s figure out this issue and get through it.”^{cxxiii}

While this does not represent the experience of all public health departments, the resolve and creativity many health departments used to address supply issues in the absence of adequate federal assistance at the height of the pandemic was truly remarkable. Several stakeholders shared how they leveraged existing or past relationships with local partners to procure or distribute supplies across jurisdictions. While some state, local, and territorial health departments were successful in leveraging these partnerships to help procure supplies for their jurisdictions during COVID-19, this is not an ideal system, and many states and counties suffered due to haphazard strategy. Workarounds should only be developed out of necessity, though the nimbleness and ability for state, local, and territorial health departments to identify such opportunities is noteworthy. One interviewee noted how they leveraged volunteer support through the help of a Fortune 100 company within their jurisdiction to further support public health, health care, and emergency response workforces.

Quote from Local Health Department in HHS Region 5—Midwest:

“One of the gentlemen that we got to actually work with, worked on distribution for [Fortune 100 Company], like making sure it’s done in a streamlined way. And so, they created an online resource request for us to track and monitor PPE distribution locally, which is something the state does not have, but was created just for us here locally to utilize, and I would say that was again, it just shows how an EOC is able to then bring in key partners that helped with that response.”^{cxxiv}

In addition to partnerships with companies that were able to support workforce needs, one Public Health Emergency Preparedness Cooperative Agreement recipient indicated partnerships that supported purchasing powers to acquire MCMs was a successful tactic deployed during the pandemic.

Quote from State Health Department in HHS Region 3—Mid-Atlantic:

"We knew that we did not have enough funding within the department to purchase all those antivirals. But through a unique partnership with some of our larger businesses, some of the banks and other folks, we worked with them to purchase caches that would cover them and other folks in the community. So, we do work with private industry as much as possible."^{cxxv}

Another state health department shared how they reactivated existing memorandum of understanding agreements with state agencies with established commercial business distribution channels and the state highway patrol to support mass distribution as well as security for cache sites.

Quote from State Health Department in HHS Region 8—Rocky Mountains:

"And we activated our contracts with the shipping provider. It's just a trucking company that does interstate trucking as part of that distribution mechanism. So, when we started early on, we did everything that we needed to do to not just receive items and purchase them, but to inventory them and to distribute them to those partners to normal supply chain operation."^{cxxvi}

Interviewees also shared positive comments about the impact that COVID-19 funding, available through supplemental funding efforts from the Public Health Emergency Preparedness Cooperative Agreement, had on their ability to support resource management functions during the pandemic. This was especially notable with respect to infrastructure development and temporary personnel hiring to support MCM and medical material management, distribution, and administration.

Quotes from various Local Health Departments in HHS Region 5—Midwest

"Funding allocated through [the Public Health Emergency Preparedness Cooperative Agreement] has definitely been used to its fullest extent to maximize that local integration and local preparedness that we can traditionally resource procurement."^{cxxvii}

"You can see the resource challenges to actually build up the capability to respond not just in personnel, but, you know, having the infrastructure in place and definitely funding to a system that is needed. COVID has definitely helped improve with different avenues of funding to help build our capacity. In a week, we purchased trailers, we purchased cones, and we built up our infrastructure."^{cxxviii}

"It's relatively straightforward we have the space to do what, we found the space to do it. I think one of the challenges generally is funding for steady state access to a building or people or whatever to store that stuff. In COVID, we didn't have that issue, so we were able to rent in a big space, put people to that, have access to people to spend time doing that."^{cxxix}

By late 2020 and early 2021, the COVID-19 pandemic required all states and territories to develop and deploy a vaccine administration plan. Success in a state's ability to vaccinate their population varied significantly, with some jurisdictions effectively vaccinating large proportions of their population quickly and efficiently while other states progressed slowly. West Virginia was a leading example of a MCM administration success story during the pandemic. Promising practices deployed by West Virginia included accessible vaccine education for communities across the state and grassroots efforts to provide easy access to COVID-19 vaccines through health systems, hospitals, medical clinics, pop-up clinics, mobilized vans, and—most notably—the National Guard, who offered logistical support for the receipt, transport, and storage of vaccines.^{cxxx}

Current challenges and opportunities for improving countermeasures and mitigation

As it exists today, the Strategic National Stockpile (SNS), is a federal program designed to support state and local inventories of MCMs during a disaster or public health emergency. The SNS is not a first-response tool, but rather a supplement to state and local medical supplies and equipment. It allows for the rapid delivery of critically needed medicines or supplies to state and local entities when they cannot acquire such items themselves, or when the event exhausts local supplies.^{cxxxii} The SNS is a critical component of the federal MCM infrastructure, as demonstrated during past disasters or emergencies, such as the anthrax attacks, the 2009 H1N1 Influenza pandemic, and the COVID-19 pandemic.^{cxxxiii}

To access medicines or supplies from the SNS, state or territorial officials submit a request to the federal government, who will subsequently decide on whether to deploy resources. If approved, HHS ASPR deploys SNS resources to the state. From there, states are responsible for distributing SNS assets through their jurisdiction.

The COVID-19 pandemic revealed that many state and local health officials, as well as other elected officials (e.g., governors) did not have a clear understanding of the SNS's role and capabilities, or how it is intended to support regional responses to public health emergencies or disasters. Interviews with public health officials suggested that SLTT health departments and regional HCCs expected that the SNS product would provide better support to their jurisdictions than it ultimately did.

Quote from HCC in HHS Region 3—Mid-Atlantic:

"The communication, consistently from federal to state and then into each of the regions or specific subgroups, was that there were resources like the Strategic National Stockpile that are there to assist or the Medical Reserve Corps is a program that's federally funded, federally utilized states utilize it and it's there to assist. And those have been two major disappointments for the partners that we work with in the coalition, the Strategic National Stockpile was in a very dire state when it was deployed and partners who have been messaged repeatedly for years on end that the SNS is there and when we deploy it, we'll have these things in it, but we can't tell you what's in it. And then when it shows up, we have partners receiving assets that are expired, partially perished. Just do not look good. I understand the reality of it is that everything was stretched, and we understand that how things are funded on a federal level, those priorities shift over time. But the partners had come to expect that when SNS was dropped, it was going to be something of considerable aid, and it was not. So, I think that that is going to have a very significant sore spot in how things are done from a federal resource level and what's able to assist."^{cxxxiv}

Interviews also revealed that the actual deployment of SNS product and distribution tactics to move product to state and local health departments was disorganized, and even hindered state and local health department's ability to distribute high quality, safe, and supportive medical materials.

Quote from Local Health Department in HHS Region 2—Northeast:

"And so really what happened at the beginning [of COVID-19] was that everyone was requesting from the SNS, and we had been planning with them and planning a request process. But when this happened, our political leadership did not know about the request process. Our Emergency Management Agency wasn't really aligned on the request process and the state wasn't aligned on the request process. I know that the Hospital Association also made requests for SNS assets on behalf of the hospitals, without going through the state or the city. So, then state was requesting assets, emergency management was requesting assets, and we were requesting assets. So, I can't imagine how confusing it was on the federal side to receive all of these

requests. Frankly, everyone knew we needed stuff, and we were just waiting for them to send us something... And naturally, there was a lot of tension with the federal government at that time. They were very reluctant to fill requests. They kept pushing for more information. It was a very contentious process. ...They basically allocated product to all of the jurisdictions and then pushed out a percentage of what they had in stock. It was loosely a per capita allocation. But, I think, you know, it was woefully lacking. So, when we finally received it, I think the first shipment we got from the SNS, we got something like 12,000 N95s, which was just a drop in the bucket of need. And after a second delivery from the SNS, that was it. They were done. They really had nothing left to distribute except for ventilators...at that point, we were just receiving product in a disorganized manner. Trucks would show up in the middle of the night from some federal partner, FEMA, the military, we'd get a notification. So eventually we moved our warehouse operations to 24/7 warehouse operations where because we had to be prepared to receive all hours, day and night, all days of the week.^{cxxxiv}

The Public Health Emergency Preparedness and Response Capabilities document outlines the ability to have plans that demonstrate readiness to receive, store, distribute, and dispense or administer MCMs, and acquire and distribute medical materials. However, based on recent disasters, it is not realistic to expect state and local health officials to be able to acquire adequate supplies themselves without federal assistance or guidance. COVID-19 experiences shed light on inadequate federal program oversight, such as the absence of the annual review of the SNS in recent years and the resulting disjointed and confusing federal response, which ultimately impacted Public Health Emergency Preparedness Cooperative Agreement recipients at the state, local, and territorial levels. A 2021 Government Accountability Office report found that the Public Health Emergency Countermeasures Enterprise had not conducted the annual SNS review since 2016, which created significant vulnerabilities in the nation's MCM and medical materials preparedness, and consequently resulted in SNS shortcomings in 2020.^{cxxxv}

Domain 5: Strengthen Surge Management

Surge management refers to the ability to coordinate with jurisdictional partners and stakeholders to ensure that appropriate and adequate public health, health care, and behavioral/mental health care services and resources are available during times of surge. This may include, but is not limited to, the ability to coordinate expanded access to health services, mobilizing the use of surge staff or volunteers, conducting surveillance and assessments, and coordinating with relevant stakeholders to provide fatality management services.^{cxxxvi}

This domain consists of four capabilities: Fatality Management (Tier 2), Mass Care (Tier 2), Medical Surge (Tier 2), Volunteer Management (Tier 2). Definitions for each of the capabilities, per CDC Public Health Emergency Preparedness and Response Capabilities document, are listed below.

- **Fatality Management:** The ability of funding recipients to coordinate with relevant partners to provide fatality management services, including recovery and preservation of remains, identification of the deceased, determination of cause and manner of death, release of remains to an authorized individual, and the provision of mental/behavioral health assistance for the grieving.
- **Mass Care:** Ability of public health agencies to coordinate with relevant partners to address the public health, health care, and behavioral health needs of those impacted by an event in a congregate location. Includes the ability to coordinate ongoing surveillance and assessments to ensure that needs are met beyond an event.

- **Medical Surge:** Ability to provide adequate medical evaluation and care during events that exceed the limits of the normal medical infrastructure of an affected community. This includes the ability of a health care system to respond to an event, rapidly recover operations that were impacted, and support the delivery of medical care and services.
- **Volunteer Management:** The ability of funding recipients to coordinate with partner agencies to identify, recruit, register, verify, train, and engage volunteers to support the jurisdiction's preparedness, response, and recovery activities.

For the purposes of this evaluation, interviews primarily focused on challenges around *medical surge*, which includes the support for “the delivery of medical care and associated public health services, including disease surveillance, epidemiological inquiry, laboratory diagnostic services, and environmental health assessments.”^{cxxxvii} While interviews from this study sought to collect information and experiences from all recent public health emergencies and disasters, the experiences shared by interviewees primarily focused on the COVID-19 pandemic given the immense impact the event had on health delivery in terms of both duration and severity.

Advancements toward strengthening surge management

To support medical surge needs of an affected community during a disaster, Public Health Emergency Preparedness Cooperative Agreement recipients should coordinate closely with HPP counterparts, including HCCs, to assess how they can best engage with the health care system. Operationally, this study found that state, local, and territorial health departments, HCCs, and/or ESF-8 leads collaborate on preparedness, response, and recovery efforts before, during, and after events to identify ways they can best support impacted health care facilities in their jurisdictions.

Quote from Local Health Department in HHS Region 5—Midwest:

“With ASPR, so I serve in the regional public health role, but I also have a counterpart that does hospital preparedness. And that’s really more focused on the ASPR side. Together, we usually work together to support our other health care stakeholders, like long-term care, dialysis centers, some of those critical health care infrastructure services that are provided so they can have access to the preparedness information and continuity information. And that source we really promote that the local organizations, a lot of the structures integrate locally first and then regionally. We’re kind of that bridge between the two to make sure that those stakeholders get connected. And then I think that’s fundamental when we look at the state integrating with FEMA or with CDC, that’s the avenue we want to go through that vertical channel unless there’s a specific incident that requires, you know, a federal deployment locally, then we have that relationship that gets developed so that we’re very focused on that formal structure.”^{cxxxviii}

Quote from Local Health Department in HHS Region 3—Mid-Atlantic:

“We worked very closely at the height of the pandemic, with three and four times a day planning for back when we were unsure how bad it was going to get, planning for alternate care centers and things like that. Working very closely with the hospital preparedness program and the health care coalition coordinator, the program manager for the health care coalition. [We] talk probably once a day and then pushing that kind of [information] back down to the locality level during the height of COVID. If we’ve actually reached that, we did, at least for the region we did once weekly conference calls that were basically patterned on weather calls that we do when there’s a hurricane coming. But basically, I would brief to the local emergency managers and then have an opportunity for them to provide feedback not only on the situation, but for response activities

and things like that. And then that pushes down to the local level where each of my locality coordinators or the ESF-8 representative and their EOC. So, the city manager [or] county administrator has the ability to reach back to their local health district and work with them to provide that response on a local level."^{cxxxix}

Overall, there was consensus across interviewees to recognize that disasters are localized events; as such, local health departments are well-positioned to support health care facilities in their jurisdiction during a surge event. To that end, state-level Public Health Emergency Preparedness Cooperative Agreement recipients often supported surge management via local health departments and/or HCCs (whose members typically consist of hospitals, EMS, and other facilities) by facilitating information sharing to identify and address the needs of impacted facilities.

In addition to information sharing, during a surge event, a local health department may be able to procure additional medical materials from other entities including the SNS, an HCC, county or state emergency management, or private sector partners, in turn offering resource and supply support to impacted facilities. However, practices vary depending upon established regional processes and available resources. While interviews from this study sought to collect information and experiences from all recent public health emergencies and disasters, the experiences shared by interviewees primarily focused on the COVID-19 pandemic, given the ongoing response at the time of this report.

Current challenges and opportunities for improving surge management

This study found that, as it relates to surge management, no benchmarks exist to support surge capacity, which makes it challenging to assess how Public Health Emergency Preparedness Cooperative Agreement recipients can support surge management or measure progress toward strengthening surge management over time from the perspective of public health departments.

Quote from Subject Matter Expert with Expertise in Patient Care and Health Care Delivery

"Look, it's a complex sort of implementation pathway, and I think the answers are all over the map, frankly. For the first time in [crisis standards of care] history after, you know, first being conceived 12 years ago, sort of the litany of work that followed after the initial letter report and, you know, COVID made clear that it was pretty close to being right in terms of anticipating what many of the needs were going to be and it was actually used, right? I mean, states across the country that hadn't developed a plan started to develop plans and so on and so forth. Only a handful of states actually implemented their crisis standards of care policies: Idaho, Montana or portions of Montana, Colorado, Alaska, New Mexico. You know, the jury is out in terms of, sort of what did that actually entail? Why did they do it when they did it? What restrictions were they concerned about? What limitations ended up being put into play, et cetera, et cetera. So, I think that the real answer is still TBD. In terms of best practices and what we saw, we saw a lot of mediocre practices, frankly, and we saw a lot of attention to elements of the plan without sort of taking into effect the totality of crisis standards of care planning."^{cxl}

In reviewing the Public Health Emergency Preparedness and Response Capabilities document and the Public Health Emergency Preparedness Cooperative Agreement Notice of Funding Opportunity, this study concludes that significant emphasis across the program is for *jurisdictions* to strengthen their preparedness and response capacities for the health care facilities within their own geographic boundaries. Disasters, however, are not confined to geographic boundaries and can cross county, city, or state lines. Several interviewees cited the lack of existing mechanisms to facilitate interstate coordination for medical surge events as an impediment to meeting the demands created by large-scale events.

Quote from Subject Matter Expert with Expertise in Emergency Logistics:

"...every state should have a compact with their neighboring states that says, I have an ambulance five miles away from a hospital in your state or 30 miles away from a hospital in my state, in an emergency, I should be able to cross that state line and bring it to you."^{cxli}

Quote from State Health Department in HHS Region 8:

"So, there are interstate coalitions like the burn [coalition]...but that's all-in theory, right? We've not had to do a mass interstate movement of burn patients. There is also a federal interstate movement process under the National Disaster Medical System that says if Alaska falls down and the hospitals are being evacuated, we might receive patients from Alaska through the federal patient movement. But with regard to the way that [our state] works, is that's entirely private sector."^{cxlii}

When speaking with representatives of the private sector or subject matter experts with expertise on private sector perspectives, interviewees underscored the need to ensure that private sector industries are involved in strategic discussions on approaches to strengthening medical surge capabilities. While Public Health Emergency Preparedness Cooperative Agreement recipients should support coordination efforts during a surge event to ensure continuity of care, ultimately, private sector entities (e.g., hospitals, supply chain) deliver the needed care and services to patients. When private industry perspective is not represented in preparedness efforts, it becomes difficult for key stakeholders to assess how they can contribute to response needs and where they can engage with public health.

Quote from Subject Matter Expert with Expertise in Health Security:

"Private stakeholders need to be at the strategic table to make sure the strategy is doable, right? And it's not that they need to sit there all the time, but there needs to be some strong input into the strategy and the implementation plan from those who actually have to execute on same ...So if we're going to actually be all-hands in all-hazards, you actually have to have the private sector at the table. And that is very much missing—it's, you know, 'control and command' is 'federal public speakers' to 'state public speakers.'^{cxlvi}

When Public Health Emergency Preparedness Cooperative Agreement recipients do not engage with private sector stakeholders—including providers themselves—to strategically discuss opportunities to strengthen medical surge capacities, it creates a disconnect between public health decision makers and the frontline health care workforce. Not only can this potentially cause tension between entities that deliver health care and services and SLTT health departments, it may also result in unworkable medical surge plans.

Quote from Subject Matter Expert with Expertise in Patient Care and Health Delivery:

"Yeah, so I mean, at the end of the day, back to this disconnect between sort of the boardroom and the bedroom, you know, the bedside and the boardroom. This notion that the state, and really ultimately not just the state health department, but the governor, the executive officer, has the ultimate authority and responsibility, as we've seen play out over many months. And some have been frankly foolish and, you know, inhibiting the fundamental kind of rollout of key protective measures and others have been proactive and supportive and so on...I think the state has a critical role. And to that end, going all the way back to the 2009 letter report on crisis standards of care, that's what we recognized, that ultimately, because health care is regulated at the state level and the executive was really going to have to play a key role. Now that being said, that doesn't allow for abdication of responsibilities at the very local level, even at the hyper local level. And so, I think the state, I believe going forward, the state continues to need to exert leadership and responsibility over

ensuring that its health care system has considered, and understands what crisis standards of care is, has considered what its strategies are going forward and how it coordinates across the rest of the state.”^{cxliv}

A variety of health care perspectives are needed to strengthen medical surge capacities across jurisdictions. Currently, regional preparedness efforts are heavily focused on and invested in hospital preparedness, recognizing the critical services hospitals provide during times of crisis. When FSLTT health departments focus too narrowly on hospitals, the perspectives of other facility types (e.g., community health centers, LTCs, home health agencies, dialysis facilities) that operationally support medical surge needs are excluded. As a result, this hinders the ability of Public Health Emergency Preparedness Cooperative Agreement recipients to build community-based surge capacity.

Quote from Subject Matter Expert with Expertise in Patient Care and Health Delivery:

“I think if anything, for the folks we thought would have been at the forefront of public health agencies to kind of drive how we handled [COVID-19] was definitely exacerbated with the shortages that impacted them. And health centers ended up really just doing all the work anyway. [CHCs] are not getting that level of funding for emergency response that, you know, the public health agencies that are supposed to do it are. So that’s a huge opportunity for kind of expansion of their resources too... But, you know, it needs to be lifted up. Where is this working and how does it replicate? And perhaps there needs to be even incentive dollars from the federal agencies to bring these collaborations together. You know, because that’s oftentimes one of the biggest challenges is that there may be dollars to go around at the response moment, but not the dollars to go around in the planning and coordination part.”^{cxlv}

Domain 6: Strengthen Biosurveillance

Biosurveillance refers to the ability to conduct rapid and accurate laboratory tests to identify CBRNE agents and the ability to identify, discover, locate, and monitor threats, disease agents, incidents, outbreaks, and adverse events to provide relevant information in a timely manner to stakeholders and the public.

This domain consists of two capabilities: Public Health Laboratory Testing (Tier 1) and Public Health Surveillance and Epidemiological Investigation (Tier 1). According to the CDC Public Health Emergency Preparedness and Response Capabilities document, public health laboratory testing is the ability to implement and perform methods to detect, characterize, and confirm public health threats, and provide timely data, provide investigative support, and use partnerships to address actual or potential threats. Public health surveillance and epidemiological investigation is the ability to create, maintain, support, and strengthen routine surveillance and detection systems and epidemiological investigation processes.

Advancements toward strengthening biosurveillance

Public health laboratory testing is conducted by government laboratories that work to detect and monitor health threats to help public health systems respond to novel diseases, CBRNE events, natural disasters, foodborne outbreaks, and other public health emergencies.^{cxvi} As such, state public health labs³⁰ are an integral part of states’ ability to adequately respond to various threats. State public health labs work closely with local, state, and federal agencies including but not limited to CDC, FDA, and the Environmental Protection Agency.

³⁰ Per the [Association of Public Health Laboratories](#), every state and territory of the US has a central public health laboratory that is responsible for performing laboratory services for their jurisdiction.

One of the most significant advancements in strengthening state public health labs' ability to strategically plan for and respond to threats was the establishment of the Laboratory Response Network (LRN). Founded in 1999 by the Association of Public Health Laboratories, CDC, and the FBI, the LRN is a national emergency response system for chemical and biological threats. The system brings together local, state, and federal public health labs with other specialty laboratories—such as clinical, food, veterinary, environmental, and agricultural labs—to support a response to a biological or chemical threat.^{cxlvi} Today, there are two LRNs: biological and chemical.

- LRN-B:^{cxlviii} Provides a rapid laboratory response to biological threats to and emerging infectious diseases to inform critical decisions about public health and safety. Consists of sentinel laboratories, reference laboratories, and national laboratories.
- LRN-C:^{cix} Ensures a local and national asset for laboratory response to chemical threats such as chemical terrorism by testing samples for chemical exposures and communicating critical information to CDC, local health officials, hospitals, poison control centers, and other key stakeholders. Consists of Level 1, Level 2, and Level 3 laboratories.

Operationally, the LRN has significantly improved laboratory capacity across the nation, and therefore strengthened national readiness for biological and chemical threats. To ensure that Public Health Emergency Preparedness Cooperative Agreement recipients are working closely with state public health labs to maintain capabilities, staff, and other resources as necessary for participation in the LRN, there are three Public Health Emergency Preparedness Cooperative Agreement benchmarks related to such efforts:^{cl}

- **Benchmark 2:** Demonstrate proficiency in public health laboratory testing for biological agents—recipients in applicable jurisdictions must demonstrate that biological labs in the LRN-B can pass validated proficiency testing.
- **Benchmark 3:** Demonstrate proficiency in public health laboratory specimen packaging, and shipping exercises for chemical agents—recipients in applicable jurisdictions must ensure that at least one LRN-C laboratory in their jurisdiction passes the LRN-C specimen packaging, and shipping exercise.
- **Benchmark 4:** Demonstrate proficiency in public health laboratory testing for chemical agents—recipients in applicable jurisdictions must demonstrate that LRN-C laboratories can pass proficiency testing.

While this study did not collect data on these benchmarks, and therefore cannot assess proficiency of public health laboratories' operational performance, the existence of these benchmarks can ensure the measurability of progress toward strengthening lab capacity over time. In addition, these benchmarks can identify gaps where CDC and state health departments could support labs in their jurisdiction as needed.

During interviews, Public Health Emergency Preparedness Cooperative Agreement recipients noted close coordination between emergency preparedness, public health, and epidemiology departments, especially during recent events like the COVID-19 pandemic.

Quote from State Health Department from HHS Region 3—Mid-Atlantic:

"Our biggest partner within the agency is the Office of Epidemiology, because we were founded, as you know, primarily for bioterrorism, but are now an all-hands response entity. And the outbreaks are the chief health care and medical threat that we respond to. So the office of Epi is probably our closest partner within agency."^{cli}

Quote from State Health Department in HHS Region 8—Rocky Mountains:

"But additional partnerships include the work with our human services to facilitate mental health, particularly crisis counseling and development of teams to establish mental health crisis response. And then finally, on the internal side, I mean, we work side by side with Epi. And we work side by side with the lab."^{ciii}

Quote from Local Health Department in HHS Region 5—Midwest:

"So our Epi and disease investigation team prior to COVID would host, I think it was quarterly meetings for topics such as like, 'Hey, there is a new treatment course for STIs. Let's review it together with our infection controls from both hospitals [in the jurisdiction].' Or we also did surveillance data where they had to report annual influenza data to the health department, which is not reportable. It's not that they were required to, but we just wanted to monitor it, right?...We were already exercising [reporting] for non-COVID related things. And when it became time not just in our public health side, but even from our surveillance side, those partnerships already existed."^{ciii}

Quote from State Health Department in HHS Region 4—Southeast

"Our team is already part of the wider division that does epidemiology and surveillance.... And so our team often gets plugged in those instances. And then also in instances where maybe there is an existing program that might cover a disease or a pathogen, but the scope or the scale is beyond what they could handle... And because we had relationships already built and we were familiar with each other and the tools that the different teams used, preparedness could step in and say, okay, here's how we're going to collect data this time. And once we collect data now, we can figure out how we're going to respond in terms of how we interface with the wider emergency management and response group."^{civ}

Through close coordination with epidemiological and health care partners, Public Health Emergency Preparedness Cooperative Agreement recipients frequently share population- and geographic-specific surveillance information to facilitate data and information sharing. Following an event, such as a disaster or public health emergency, it is typical for recipients to engage in after-action report discussions to identify opportunities for improvement. Through this process, recipients continuously work to advance their surveillance and information sharing capabilities.

Quote from Local Health Department in HHS Region 5—Midwest:

"We've had two fairly big foodborne outbreaks that we've done improvement plans and after-action reports on that have changed how our environmental health and communicable diseases and epidemiology staff share information, coordinate the response, and how they coordinate with information sharing with the state. So we've made some very specific changes about how that information flow happens."^{civ}

Through interviews with Public Health Emergency Preparedness Cooperative Agreement recipients, this study concluded that close partnerships across epidemiological and public health stakeholders strengthened biosurveillance. Such partnerships aid in the facilitation of investigations, enhanced sharing of relevant information across government and health care partners, and the ability to identify populations at higher risk of adverse health outcomes during and after an event.

Current challenges and opportunities for improving biosurveillance

The most significant shortcoming in the nation's public health system's ability to strengthen biosurveillance is the lack of investment in infrastructure and technology to strengthen systems. Public health systems across the US,

including public health labs, continue to be underfunded. This creates challenges in maintaining preparedness and response capabilities, thereby threatening overall national readiness.

Quote from Subject Matter Expert with Expertise in Health Policy:

"We don't fund cross-cutting public health infrastructure so you could hire somebody who is the chief communications officer or to meet what's considered the foundational capabilities of public health. That's why we've been advocating for public health infrastructure funding that's not tied to a specific disease, which is like [the Public Health Emergency Preparedness Cooperative Agreement], it's actually a non-disease specific program. It funds capabilities, and that's one of the very few ways that public health departments are funded. But we clearly need more so that people can sustain workforce and sustain the technologies they need...We're not funding distribution, we're not funding immunization information systems. Those systems in different states don't talk to each other. So you've got [some people who] got one vaccine in one state and one vaccine in another state [and they] had to send a picture of the vaccine card to prove they had two doses because those systems don't talk to each other. I think we haven't learned that lesson either from this in that we can develop all the drugs and devices we want, but if we don't have a way to find out who needs them and get them to that person, then they're not going to be as effective."^{clvi}

According to TFAH's 2022 *Ready or Not* report, it is recommended that \$4.5 billion be invested in cross-cutting public health capacities to modernize the public health infrastructure to support foundational capabilities across FSLTT levels.^{clvii} This recommended level of investment would bridge the gap between current capabilities and what is needed to achieve adequate public health readiness. This underscores the extent of modernization needed across public health infrastructure, including in surveillance and epidemiology.

Investing in public health infrastructure and data modernization is not the only barrier toward strengthening biosurveillance. Operationally, a significant portion of data for biologic incidents comes from private sector entities, who often have the capabilities to collect, manage, report, analyze, and disseminate large amount of surveillance data. The inability of the private sector and public health to share data during a public health emergency such as COVID-19 results in delayed, inaccurate, and disjointed surveillance. Ultimately, this impacts how public health agencies lead their jurisdiction's response, potentially costing lives.

Quote from Subject Matter Expert with Expertise in Health Care Delivery and Patient Care:

"The hospitals are where the patients were. The hospitals are where the data was coming from, for the most part. The hospitals were really sort of where the rubber meets the road in terms of the response. And yet the authorities were with public health agencies who didn't have the data, didn't have the patients...And so that was a big disconnect, I think, in a large part. I think this notion, look public-private partnership, I've been talking about public-private partnership for 20 years. It's easier to say it's a lot harder to do and especially when you have on the public side municipal entities like public health agencies who are under-resourced, underfunded, overtaxed, overburdened, overworked, and it's just a system that you can talk about public-private partnership all you want, but it doesn't really exist. I actually think that there is the need for a recalibration of what that really means, and I actually think going forward, my sense is that key public health functions around data, around decision-making, around surveillance and detection and so on ought to really lie at the root of the private sector and health care, that's where the patients are. And then basically coordinate with public health to make that happen because the public health agencies, I mean, they're just never going to really achieve that degree of capability."

Without sufficient investments in surveillance systems and data modernization, stakeholders across public health departments at the federal, state, and local levels, as well as private sector stakeholders, will not have access to the data needed to support preparedness and response decision-making.

Quote from Subject Matter Expert with Expertise in Health Care Delivery and Patient Care:

"We live in an age of epidemics. That's quite clear. This is the third coronavirus outbreak in 17 years. We've had a number of Ebola outbreaks. We have Nipah and other emerging diseases that are just on the cusp. I mean, it's a dangerous world out there. We need to double down on the capabilities that are really required around surveillance and detection, around, you know, protecting the healthy, about treating the sick and then putting it on a data pipeline that allows us the visibility to make those kinds of decisions in real-time."^{clviii}

5. Recommendations

Based on this evaluation, recommendations were developed to speak to opportunities for advancing Public Health Emergency Preparedness Cooperative Agreement recipients' operational preparedness and response capabilities, including the identification of potential new benchmarks. The addition of benchmarks will allow CDC to comprehensively measure recipients' progress toward meeting preparedness and response capabilities over time and across jurisdictions. The following recommendations were identified:

- Support and encourage FSLTT public health agencies to expand proactive and sustainable community engagement, including the incorporation of an equity framework
- Strengthen incident management by clarifying roles, authorities, and responsibilities across FSLTT public health agencies
- Support the flow of bidirectional information sharing across FSLTT public health, private sector, and other stakeholders to ensure more informed and cohesive preparedness and response efforts
- Level-set on the roles and responsibilities of stakeholders in the MCM enterprise to include expectations of SLTT health departments
- Strengthen recipients' ability and incentivize their willingness to support surge capacities
- Increase cooperative agreement funding that invests in data modernization to strengthen biosurveillance and epidemiologic capabilities

Support FSLTT Public Health Agencies to Promote and Engage in Proactive and Sustainable Community Engagement, Including the Incorporation of an Equity Framework

Domain 1 focuses on the ability to strengthen community resilience through collaboration with government, private, and community-based organizations. Based on publicly available information provided through CDC Public Health Emergency Preparedness Cooperative Agreement Request for Applications for the budget period from 2019–2024, this study concluded that there are no benchmarks or targets that measure recipients' progress toward strengthening community resilience.^{clix} While CDC requires evidence or strategies and activities that describe how recipients are progressing toward meeting outcomes of the program's logic model, it is unclear whether such data assessments are measured against targets or goals. Therefore, it is our understanding that there is currently no way to truly measure or understand Public Health Emergency Preparedness Cooperative Agreement recipients' efforts to strengthen community engagement or advance community resilience. Not only does this create challenges in CDC's ability to assess progress over time, but it

also suggests there are no accountability mechanisms in place for public health agencies to truly invest in and engage with the communities in their jurisdictions.

We recommend that CDC consider adding benchmarks to Public Health Emergency Preparedness Cooperative Agreement programmatic requirements that require recipients to develop an equity framework or revise existing response plans to include an equity lens.³¹ Such benchmarks should focus on recipients' plans to increase understanding of communities at higher risk of experiencing adverse outcomes during a disaster; identification of tactics for how health departments will support them during preparedness, response, and recovery by leveraging community-based organizations; and ways in which health departments will better integrate equity into future discussions.

Strengthen Incident Management by Clarifying Roles, Authorities, and Responsibilities Across FSLTT Public Health Agencies

This study identified incident management challenges for: 1) disasters that span across jurisdictions, 2) disasters that require federal guidance, and 3) situations when differences in political opinions impact the ability of state and/or local public health and emergency management to lead response efforts.

The CDC Public Health Emergency Preparedness Cooperative Agreement Request for Applications suggests that there are no benchmarks or targets that measure recipients' incident management. To that end, we are recommending that CDC develop programmatic benchmarks and targets that assess progress toward strengthening these practices. Benchmarks should require recipients to: 1) maintain in their all-hazards preparedness and response plans ways they will work with neighboring jurisdictions during a widespread disaster or public health emergency and 2) test these plans with neighboring jurisdictions.

While we do not feel this can be turned into a benchmark, we encourage CDC to develop resources that inform Public Health Emergency Preparedness Cooperative Agreement recipients on ways for aligning preparedness and response efforts and emergency plans that supersede varying political viewpoints. It is critically important that recipients are supported and equipped with tools and resources that help them to navigate difficult situations to respond appropriately during the next emergency. The importance of bipartisanship was seen in efforts during the COVID-19 pandemic, as political tensions impacted response.

Additionally, following the COVID-19 pandemic, we are recommending that CDC consider clarifying the roles, responsibilities, and authorities of CDC and SLTT health departments. This may build trust between the federal government and state, local, and territorial entities, as well as establish accountability mechanisms for CDC by clearly documenting how they are expected to support jurisdictions during the next disaster. There is a strong need for reliance on public education and trust-building to achieve these goals.

Support the Flow of Bidirectional Information Sharing Across FSLTT Public Health, Private Sector, and Other Stakeholders to Ensure More Informed and Cohesive Preparedness and Response Efforts

This study identified notable gaps in public health agencies' abilities to effectively share information "between levels" during a disaster response. That is, Public Health Emergency Preparedness Cooperative Agreement

³¹ This is an area that CDC is reviewing for inclusion in the next five-year Notice of Funding Opportunity. As stated in the Budget Period 4 guidance, addressing health disparities and health equity will continue to be a key component of program development in the future, and recipients can expect more specific guidance on inclusion and expansion of partners in planning for jurisdictional risks in future funding opportunities.

recipients who participated in interviews for this study spoke to challenges in their ability to share and receive timely, accurate, and useful situational information with federal agencies including CDC and ASPR. When speaking with subject matter experts across the emergency management and health care spaces, interviewees also expressed challenges in their ability to effectively communicate with their state health departments during the preparedness and response phases. The lack of a coordinated approach to communications during a disaster has created, at times, a disjointed system.

To better support preparedness and response efforts, bidirectional information sharing can be improved and made more reliable during future events with information sharing practices that are more reciprocal in nature across FSLTT public health, private sector health care, emergency management entities, and other stakeholders.

The CDC Public Health Emergency Preparedness Cooperative Agreement Request for Applications suggests there are currently no benchmarks or targets that measure recipients' information management capabilities. As such, we recommend that CDC develop Public Health Emergency Preparedness programmatic benchmarks and targets to assess recipients' progress toward strengthening information management systems and procedures. Such benchmarks should require recipients to conduct after-action reports of scenarios that tested their emergency public information warning systems and information sharing plans (e.g., training or exercises, real-world responses). The data reported to CDC should signal levels of success achieved by recipients in their ability to leverage systems and procedures that facilitate communication and information sharing, along with a description or plan for continuous improvement.

In light of interviewees specifically speaking to challenges of information sharing "between levels," we strongly encourage CDC to consider how benchmarks or targets for assessing information management could require recipients to test such systems and procedures with external partners and stakeholders including but not limited to community-based organizations, faith-based communities, community health centers or federally qualified health centers, state-level primary care associations, CDC, or ASPR.

Level-set on the Roles and Responsibilities of Stakeholders in the MCM Enterprise to Include Expectations of SLTT Health Departments

At the time of this report, it is our understanding that there are ongoing efforts to develop recommendations for improvement and implement changes to the MCM enterprise, such as codifying the roles and responsibilities of Operation Warp Speed³² and the PHEMCE. In addition to codifying the roles and responsibilities of Operation Warp Speed and the PHEMCE in future legislation, ASPR should consider level setting on the roles and responsibilities of the various federal entities and state entities involved in the MCM pipeline, specifically at the points of distribution and administration.

We recommend that CDC and ASPR develop trainings for SLTT health departments and health care stakeholders that describe in detail how federal agencies and programs, and state health departments, as well as private sector supply chain owners and operators are intended to support the development, distribution, and administration of MCMs. We believe that these trainings will help to strengthen understanding of MCM coordination, which may ultimately help to level-set on expectations for future CBRNE disasters and/or public health emergencies.

³² Now the Countermeasures Acceleration Group.

The CDC Public Health Emergency Preparedness Cooperative Agreement Request for Applications describes a benchmark intended to measure recipients' ability to demonstrate readiness to receive, stage, store, distribute, and dispense materials during a public health emergency.^{32x} Following over two years of response efforts during the COVID-19 pandemic, however, review of current literature and interviews conducted during this study indicate knowledge gaps remain in stakeholders' understanding of the roles, responsibilities, and expectations of the various entities involved in the MCM enterprise. Therefore, we are recommending that the federal government develop and deliver educational trainings related to the MCM enterprise, and that CDC create a programmatic benchmark that measures recipients' participation in an MCM-specific educational training. We anticipate these benchmarks could serve as a proxy to assess recipients' understanding of the roles and responsibilities of stakeholders in the MCM enterprise.

Strengthen Public Health Emergency Preparedness Cooperative Agreement Recipients' Ability to Support Surge Capacities and Incentivize Willingness to Engage With Private Sector Health Care

Domain 5 is focused on strengthening Public Health Emergency Preparedness Cooperative Agreement recipients' abilities to support surge management by coordinating with jurisdictional partners and stakeholders to ensure health care, public health, behavioral services, and resources are available during a surge event. Public Health Emergency Preparedness Cooperative Agreement recipients are required to coordinate routinely with health care partners and community partners, including conducting annual exercises with community partners, and exercises every five years with health care coalitions and emergency management. These requirements, while important, may be made more useful with the availability of benchmarks to measure levels of engagement (both in the form of participation and quality of engagement).

During the COVID-19 pandemic, CDC revised its ORR process to focus on performance measurement specific to COVID-19 response activities. Recipients were required to report (using their response experience) on their joint exercise with HCCs and emergency management agencies, including evidence demonstration inclusion of at least one emergency management and one HCC partner. Participation also has to be documented in an after-action report or equivalent documentation.³³ CDC also requires that funding recipients have written plans in place that define public health roles and responsibilities during surge events. These plans are intended to

³³ In addition, the ORR requires data on how recipients supported surge management during the COVID-19 response:

RSP5.a-m COVID-19 Pandemic Response: Surge Management

- a. *Interim sites used for human remains*
- b. *Vital statistics shared COVID-19 mortality data*
- c. *EDRS used for mortality tracking,*
- d. *Mortality reporting was timely,*
- e. *Death certificates timely issued,*
- f. *Air flow and ventilation monitored at congregate sites*
- g. *Mental/behavioral health routinely monitored for persons under quarantine and isolation*
- h. *Accommodations for persons with AFN at vaccination sites*
- i. *Prevention outreach directed at disproportionately impacted populations (DIPs)*
- j. *Surge staff supported clinical operations*
- k. *Crisis Standards of Care (CSC) triggered*
- l. *Health care and public health exchanged timely information*
- m. *Volunteers were managed*

describe how public health would engage with the health care system to support needs during a surge event.^{cxi} However, this study concluded that no mechanism yet exists to operationally measure how recipients' efforts to support public health and health care needs during mass care operations strengthen surge management.

We recommend that CDC create benchmarks and targets to Public Health Emergency Preparedness Cooperative Agreement programmatic requirements that allow CDC to assess recipients' abilities to coordinate health care needs during a medical surge event. Such benchmarks should seek to measure how recipients coordinate with partners to address public health and health care needs during a medical surge event either during an exercise scenario or a real-world event.

We strongly encourage CDC to identify ways in which these programmatic requirements could incentivize Public Health Emergency Preparedness Cooperative Agreement recipients to engage with private sector health care, community partners, and other stakeholders to test their surge plans and identify opportunities for improvement.

Increase Cooperative Agreement Funding that Invests in Data Modernization to Strengthen Biosurveillance and Epidemiologic Capabilities

This study found that underinvestment in infrastructure and technology to strengthen surveillance systems is a significant barrier to strengthening nationwide biosurveillance capabilities. Without adequate investment, public health and health care stakeholders will continue to lack access to data needed to support preparedness and response decision-making, ultimately threatening national readiness.

The CDC Public Health Emergency Preparedness Cooperative Agreement Request for Applications indicates there are three programmatic benchmarks that measure recipients' abilities to demonstrate that the laboratories in their jurisdiction pass proficiency testing and complete appropriate exercises. However, no benchmarks appear to exist to assess how laboratories and surveillance systems perform when conducting surveillance activities, such as detection, identification, investigation, and response activities related to emerging threats. We recommend Congress increase Public Health Emergency Preparedness Cooperative Agreement funding to allow recipients to invest in data modernization and their public health lab system. This will strengthen biosurveillance and epidemiologic capabilities. As part of this investment, we strongly encourage CDC to develop benchmarks and targets for the Public Health Emergency Preparedness program that allow CDC to assess how such investments are strengthening biosurveillance activities over time.

Section 6.0 Collective Considerations for Medical Surge Capacity

1. Coordination Between ASPR HPP and CDC Public Health Emergency Preparedness Cooperative Agreement Recipients/Sub-Recipients

While the Administration for Strategic Preparedness and Response's (ASPR) Hospital Preparedness Program (HPP) and the Center for Disease Control and Prevention's (CDC) Public Health Emergency Preparedness Cooperative Agreement are two distinct programs, they overlap in their overarching achievement toward strengthening national preparedness to all-hazards. In 2012, HPP and the Public Health Emergency Preparedness Cooperative Agreement were programmatically aligned to improve coordination between health care entities and state, local, and territorial public health. The alignment was intended to help recipients foster collaboration, and streamline communication and preparedness efforts across both sets of recipients and sub-recipients, who operate in the same 62 state, territorial, and local jurisdictions.^{clxii} While HPP and Public Health Emergency Preparedness Cooperative Agreement funds are not interchangeable, recipients address similar issues that impact their jurisdictions, and programmatic alignment supports the integration of public health and private sector health care entities. Table 4 presents a brief comparison of the HPP and the Public Health Emergency Preparedness Cooperative Agreements.

Table 4. Comparing the Administration for Strategic Preparedness and Response Hospital Preparedness Program Cooperative Agreement and Centers for Disease Control and Prevention Public Health Emergency Preparedness Cooperative Agreement

Program	Goal	Recipients and sub-recipients
HPP	To build acute care medical surge capacity through maintenance and growth of strong HCCs. Aims include improving patient outcomes, minimizing the need for federal and supplemental state resources during emergencies, and enabling rapid recovery from catastrophic events through the development of HCCs.	States, territories, certain metropolitan areas HCCs
Public Health Emergency Preparedness Cooperative Agreement	To develop effective public health emergency management and response programs nationwide, and build capacity within public health agencies to assure that the nation's public health system is resilient and prepared to respond to all hazards.	SLTT public health

Legend: ASPR = Administration for Strategic Preparedness and Response; HPP = Hospital Preparedness Program; CDC = Centers for Disease Control and Prevention; HCCs = Health care coalitions; SLTT = State, local, tribal, and territorial

Achievements and Successes

The alignment of these two cooperative agreements has facilitated stronger coordination across private sector health care entities and the public health community. At a minimum, health care coalitions (HCCs) are required to include within their membership acute care hospitals, emergency medical services, emergency management agencies, and public health agencies located within the HCC's geographic boundaries. Coordinating government entities (public health and emergency management) with private sector entities, such as hospitals, creates a direct line of communication that can enhance situational awareness of local needs at the state level, during a surge event.

"Our emergency manager partners have been a huge help in the different items that they [partner] with us on. That all stems back through the health care coalitions, where we've brought the hospitals, the [emergency management agencies], EMTs, local public health, police, our communities that have a college, whether it's a big one or a small one (if it has a medical component)—it's been invited into the HCC because everyone needs medical care or preparedness items at some point in time."^{clxiii}

Streamlined coordination between HPP and Public Health Emergency Preparedness Cooperative Agreement recipients is necessary during wide-scale emergency events that typically test the medical surge capacities of hospitals and other health care facilities. State public health entities may need to coordinate with 1) the federal government to receive information (e.g., guidance, technical assistance), supplies, or medical countermeasures, and 2) local institutions to distribute and allocate such resources to support medical surge capacities or reduce challenges faced by hospitals. For example, during the response to COVID-19, the federal government allocated doses of monoclonal antibodies (used for COVID-19 treatment) to state and territorial health officials. In turn, state and territorial health officials allocated product to treatment sites within their jurisdictions. In this and similar scenarios, Public Health Emergency Preparedness Cooperative Agreement recipients (state public health departments) can leverage their partnerships with HCCs to coordinate directly with hospitals, infusion centers, or other health care facilities to establish efficient processes and more optimally utilize supplies.

"[Our HCC has] a public health regional planner as well, who [is] my counterpart on the public health side. We work extremely well together. So, if we have an event, we actually pull [them] in to discuss the event, whether it's a public health emergency or if it's health care or if it's a community, we'll actually all discuss it on a conference call [to determine what is needed] to respond."^{clxiv}

Gaps and Challenges

While HPP and Public Health Emergency Preparedness Cooperative Agreement programs are intended to be closely aligned, interviews revealed that competing priorities and reliance on a single funding source make coordination between public health and private sector health care communities challenging. For example, HCCs reported difficulties engaging their respective state health department on issues that do not fall specifically under Public Health Emergency Preparedness Cooperative Agreement deliverables or programmatic requirements.^{clxv} This can be exacerbated during a disaster scenario due to the nature of HPP and Public Health Emergency Preparedness Cooperative Agreements that make funding primarily available for preparedness activities. Historically, supplemental response funding (made available by Congress) has been reactionary, only being approved *after* a disaster or public health emergency has impacted communities. Such delays create a downstream effect, further delaying actionable and aligned response efforts to strengthen hospitals and other health care facilities' abilities to manage a surge in patients.

Interviews also revealed how consistent underfunding from federal cooperative agreements can directly impact Public Health Emergency Preparedness Cooperative Agreement and HPP recipients' ability to develop or partake in initiatives beyond required program capabilities or deliverables. This chronic underfunding can limit the degree to which state, local, and territorial jurisdictions invest in building medical surge readiness for hospitals, or other facility types that serve populations with access and functional needs. Such financial shortcomings, combined with HPP's emphasis on strengthening *hospitals'* medical surge capacities (over other facility types) can increase the risk of building a foundation of medical surge readiness that does not meet the needs of *all* communities. Having a "one size fits all" model for strengthening regional medical surge capacities is not realistic, recognizing the unique population characteristics of each jurisdiction. Future programs or activities should be made available to advance public health and HCCs abilities to support the health care facilities in their jurisdictions during future surge events.

"The given funding level we have is used to fund the baseline personnel and a lot of service and maintenance agreements, and then what we need to do to meet annual grant requirements from CDC and ASPR. So, if there is an exercise requirement, we're putting money towards doing that exercise this year. If [on] the HPP side, there's a requirement to write a specific search plan, we're putting money towards that. So, there's not a lot left over in terms of special projects, like funded special projects or innovative or new projects. So, we rely on the staff to complete that kind of work. And we don't necessarily have funding unless we have underspending that we can redirect."^{clxvi}

Another consequence of underfunding is that health departments, HCCs, hospitals, and other health care facilities continue to be understaffed, making it difficult to adequately build medical surge capacities during steady state and effectively staff the health care workforce during disasters. This, combined with the concern of staff burnout across the health care and public health workforce due to COVID-19, is worrisome for the nation's ability to maintain staffing levels to support readiness of the nation's health system.

"I think it's one of the main challenges that we see for a lot of the rural jurisdictions. It's actually paying for dedicated staff to support this. Before COVID-19, our program actually had two other individuals helping preparedness, and that was a little unique for most of the jurisdictions. And that's because we're the [one of the larger jurisdictions] within the state. But for a lot of the rural jurisdictions, you're seeing part time commitments to preparedness, sometimes even less. And it's just the balance of the ability to pay for staff. And I think that's pretty key."^{clxvii}

"...in our response, staffing is probably one of the biggest challenges that we have, at least to make sure that we have enough personnel to handle the actual demand. And setting those priorities around [staffing], that's kind of the biggest thing. So, you see our traditional challenges that we have with funding correspondents or the actual response through staffing."^{clxviii}

2. Coordination with Other Critical Infrastructure Sectors

The Department of Homeland Security Cybersecurity and Infrastructure Security Agency (DHS CISA) defines 16 critical infrastructure sectors that are essential to protecting national security, national economic security, and national public health or safety. The Healthcare and Public Health (HPH) Sector is considered one of these 16 critical infrastructure sectors, with the Department of Health and Human Services serving as the Sector Risk Management Agency.

While each of these 16 sectors are distinct, the operations and capabilities of the HPH Sector often directly depend on the functions of other sectors. For example, the movement of pharmaceuticals from manufacturing sites to health systems is only possible if transportation systems (i.e., the Transportation Systems Sector) is safely and securely moving supplies around the country. As such, it is essential that frameworks, partnerships, or other programs that strengthen medical surge capacities consider how the HPH sector can effectively collaborate with other critical infrastructure sectors during disasters that stretch normal operating capacities of the US health system.

Achievements and Successes

At the federal level, Emergency Support Function (ESF) #8 establishes the mechanism for Federal assistance to support state health departments during a disaster or public health emergency. ESF-8 activities are led (i.e., coordinated) by HHS, and provides support across several core functional area, including close coordination with critical infrastructure stakeholders who have a role in supporting the delivery and maintenance of public health and medical-related services during a response scenario.

ESF-14, which represents cross-sector business and infrastructure at the federal level as a mechanism for federal assistance, is also a key coordination mechanism to ensure systems and operations are maintained during disasters to mitigate downstream impacts. Due to the dependencies and complex networks that exist between critical infrastructure sectors, ESF-14 is an invaluable incident response tool that provides a foundation for cross-sector coordination. At the local level, cross-sector business and infrastructure response is often coordinated (or housed) at fusion centers or Emergency Operation Centers. Through these collaborative networks, local agencies—including public health, emergency management, and HCCs—are better equipped to support hospitals and health care facilities in meeting medical surge needs.

Gaps and Challenges

Even with coordinating bodies and frameworks in place to support local needs during a surge event, it can be difficult to predict how these models will perform during an emergency. Each community's medical surge impacts and needs will vary during a crisis. Before a surge event, it can be difficult to completely understand and plan for how those risks will impact hospitals and other health care facilities.

"You're talking trying to pull together partners who do this every day, the emergency managers, and so we really had to reset our thinking about things. Say you have the hospital under the coalition, who is going to [control] the situational awareness from the ESF-8 side during response in these communities, then coordinating it out and pushing up to the state for requests? It hasn't really played out that way."^{cixix}

Another challenge is that while all critical infrastructure sector-specific activities are coordinated and supported by government (Sector Risk Management Agencies), they are almost always entirely operated and run by private sector companies. At the federal level, government entities, including ASPR, may not always have a direct point of contact or mechanism to engage directly with private sector companies that support critical infrastructure operations needed to address public health and medical needs, or overcome medical surge challenges. This may become particularly challenging during a wide-scale event like COVID-19, where the federal government had a larger operational role in leading the national response and supporting medical surge capacities related to meeting supply or information needs.

3. Coordination with Environmental Health Agencies with Expertise in Preparedness and Response

Incidents involving hazardous materials can damage critical infrastructure, such as power plants, sewer lines, and water systems, which may lead to environmental and public health hazards. To protect this critical infrastructure, public health entities must work with environmental agencies to identify mitigation and response tactics to safeguard medical surge capacities of hospitals and other health facilities. For example, dialysis facilities rely on potable water to ensure continuity of care for patients with kidney disease. During a localized disaster where water systems have been impacted (such as events that have happened in recent years in Flint, Michigan, or Jackson, Mississippi), close coordination with environmental health agencies is essential to supporting medical surge capacities of health care facilities.

Achievements and Successes

In the past, CDC has worked closely with the Environmental Protection Agency (EPA) to enhance interagency coordination and better support community environmental health. In 2007, for example, CDC, EPA, and the Agency for Toxic Substances and Disease Registry signed a Memorandum of Understanding that was intended to improve interagency effort and resource coordination.^{clxx} As part of this partnership, these stakeholders also announced four pilot projects across the country where strategies were implemented to reduce risks of environmental exposures.^{clxxi}

In addition to these pilot projects, EPA and CDC coordinate and manage numerous community-based programs and cooperative agreements that work with local health departments to support their communities. In working directly with local health departments, advancements are being made to ensure communities' needs are being met and their voices heard. Further, their health systems are being amplified and understood when developing or refining preparedness and response programs. In the context of building medical surge readiness, interagency support can better equip hospitals and health care facilities with the information (e.g., guidance, technical assistance, trainings) they need to strengthen their abilities to care for an influx of patients during future environmental disasters.

Gaps and Challenges

This evaluation did not find any specific or unique gaps or challenges in the coordination between public health and health care systems with environmental health agencies within the context of increasing medical surge capacities.

4. Medical Surge Capacity of Health Care Facilities

ASPR, the federal agency designated to lead medical response to public health emergencies within the USG, uses the American College of Emergency Physicians' definition of surge capacity (i.e., "the ability to evaluate and care for a markedly increased volume of patients that exceeds normal operating capability").^{clxxii} Surge capacity and surge capability are defined and differentiated as follows:

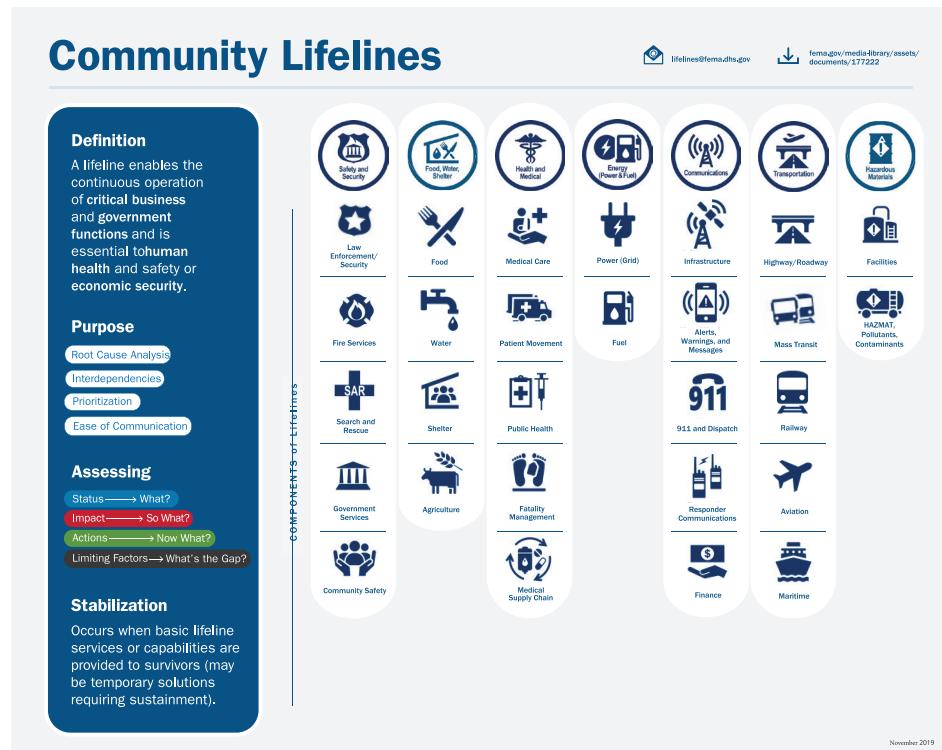
Surge capacity is the ability to manage a sudden influx of patients. It is dependent on a well-functioning incident command system and the variables of space, supplies, and staff. The surge requirements may extend beyond placing patients into beds and should include all aspects related to clinical services (e.g., laboratory studies, radiology exams, operating rooms).^{clxxiii}

Surge capability is the ability to manage patients requiring very specialized medical care. Surge requirements span a range of medical and health care services (e.g., expertise, information, procedures, or personnel) that are not normally available at the location where they are needed (e.g., pediatric care provided at non-pediatric facilities or burn care services at a non-burn center). Surge capability also includes special interventions in response to uncommon and resource intensive patient diagnoses (e.g., Ebola, radiation sickness) to protect medical providers, other patients, and the integrity of the medical care facility.^{clxxiv}

There are many established benchmarks and standards for strengthening medical surge readiness across health care facilities, including but not limited to the Centers for Medicare and Medicaid Services Emergency Preparedness Rule (which applies to 17 different provider types participating in Medicare or Medicaid programs), The Joint Commission, the National Health Security Preparedness Index, and the National Quality Forum, along with capabilities established within the HPP and Public Health Emergency Preparedness Cooperative Agreement programs. While these benchmarks and standards have proven useful to advancing the health care sector's ability to prepare for surge events, a perennial challenge in the field is lack of an agreed upon definition for medical surge capacity. Inconsistent metrics to communicate capacity for various surge scenarios and medical environments also remain a challenge.

Using the National Response Framework's construct for Community Lifelines (as depicted in Figure 11), several USG and non-USG stakeholders are involved in the "health and medical" lifeline. Each stakeholder plays a critical role in supporting hospitals and health care facilities' efforts to maintain medical surge capacities, including maintaining community-level preparedness and response to alleviate demand on hospitals (public health) and ensuring the delivery of adequate care and services to individual patients (medical care). During times of surge, critical components of an effective response will include supporting patient movement, fatality management, and the medical supply chain to mitigate risks related to maintaining systems, space, or supplies.^{clxxv}

Figure 11. Federal Emergency Management Agency Community Lifelines, 2019 ^{clxxvi}



Assessing the medical surge capacity of health care facilities is subject to understanding the policies, frameworks, and initiatives that undergird national health security preparedness, as well as regional capabilities (e.g., HCCs, regional disaster health response systems). Assessments must also consider the coordinating capabilities of local, state, and national level stakeholders in other sectors encompassed in the remaining lifelines:

- **Safety and Security:** Department of Homeland Security (including the Federal Emergency Management Authority and the Cybersecurity and Infrastructure Security Agency), Department of Defense, Department of Justice
- **Food, Water, Shelter:** Department of Agriculture, Department of Health and Human Services, Environmental Protection Agency, Department of Housing and Urban Development
- **Health and Medical:** Department of Health and Human Services (including the Administration for Strategic Preparedness and Response, Centers for Disease Control and Prevention, Centers for Medicare & Medicaid Services, Food and Drug Administration, Health Resources and Services Administration, National Institutes of Health)
- **Energy:** Department of Energy
- **Communications:** Department of Homeland Security, Department of the Treasury
- **Transportation:** Department of Transportation, Department of Homeland Security
- **Hazardous Materials:** Department of Homeland Security, General Services Administration

The Federal Emergency Management Agency's (FEMA) Community Lifelines is a helpful framework for first responders.^{clxxvii} They can help prioritize response efforts to restore or stabilize businesses that are most essential to protect community health, such as medical care or other services that medical care depends upon, including energy and water.

Operationally, there are several federally funded or managed programs or activities that are essential to supporting medical surge capacities for hospitals and other health care facilities.³⁴ As previously discussed, HCCs serve as a critical resource for medical care, often helping their jurisdictions coordinate response efforts to alleviate challenges related to supplies or staffing. Beyond HCCs, ASPR (and other federal agencies) has led to the development of additional regional partnerships that test innovative strategies for improving comprehensive coordination and response to large-scale disasters.^{clxxviii} These systems include:

- Regional Disaster Health Response System (RDHRS) pilot demonstration sites
- National Special Pathogen System
- Pediatric Disaster Care Centers of Excellence
- National Disaster Medical System

A comparison of these regional systems and programs is provided in Figure 12.

³⁴ The National Academies of Sciences, Engineering, and Medicine held a series of expert meetings and public workshops between May and October 2019, titled "Enhancing Private Sector Preparedness for 21st Century Health Threats", sponsored by ASPR, to discuss the state of the US health care system to respond to disasters. The foundational principles that participants agreed upon include: create and support entities to organize and facilitate regional cooperation for health care preparedness and response; develop a system of regional collaborative projects; develop metrics; engage partnerships among regional coalitions and health systems and hospitals to identify needs and mechanisms for training; and engage and collaborate with professional organizations and other non-governmental groups to identify and secure the resources needed to strengthen preparedness in public-private partnership.

Figure 12. Regional Preparedness or Response Programs Highlighted in this Report

Name of Program	Purpose	Who is Involved
NATIONAL	National Disaster Medical System (NDMS)	A network of professionally trained health and planning experts who deploy to impacted communities following a disaster to provide emergency medical care, staff support, logistics management, and other forms of assistance.
	National Special Pathogen System (NSPS)	A national network that strengthens health care infrastructure to prepare for infectious disease outbreaks by supporting the preparedness and response needs of hospitals, health systems, and providers related to treating patients with special pathogens.
	Regional Disaster Health Response System (RDHRS)	A network of regional response systems that have inter-state capabilities to respond to 21 st century health security threats that are not limited to state boundaries.
	Pediatric Disaster Care Centers of Excellence (COE)	A pilot program in which sites are tasked to develop or improve capabilities and capacities to provide highly specialized care to pediatric patients within and outside their own regions.
	Hospital Preparedness Program	A cooperative agreement that provides funding to states, territories, and eligible major metropolitan areas to increase the ability of the health care system to plan for and respond to large-scale emergencies and disasters through the development and sustainment of health care coalitions.
LOCAL	<p>* Hospital associations and HPP recipients/their state and jurisdiction Special Pathogen Treatment Centers (SPTCs) received COVID-19 emergency supplemental funding and may spend down on those funds through FY 2025; however, they have not received funding as part of the NSPS since FY 2020.</p> <p>** Announced on October 5, 2021</p> <p>*** Formerly the Eastern Great Lakes Pediatric Consortium for Disaster Response</p> <p>**** At the time of writing the report</p>	

Legend: HHS = US Department of Health and Human Services; DOD = US Department of Defense; DHS = US Department of Homeland Security; VA = US Department of Veterans Affairs; ASPR = Administration for Strategic Preparedness and Response; NETEC = National Emerging Special Pathogens Training and Education Center.

At the time of this report, there are not enough data publicly available to determine how these regional programs are strengthening medical surge capacities. This finding is corroborated by an August 2022 Government Accountability Office report (GAO), which states:

"HHS has programs and activities underway intended to support medical surge readiness for hospitals and other health care organizations, but it is too soon to know the effectiveness of these efforts. For example, HHS implemented a new medical surge exercise for coalitions in 2021 to test readiness and plans to establish targets to measure performance. It is also considering how to use the findings and lessons learned from its 2021 assessment of coalitions during the pandemic to improve its support of coalitions and their communities. HHS is also funding the development of a regional disaster health response system, which aims to develop effective approaches to medical surge response across multiple states. This includes improving data sharing on resource and capacity issues and developing specialized teams that can respond to a range of hazards. HHS is considering its next steps regarding the expansion of this regional system. Further, HHS is developing regional guidelines for hospitals and other facilities related to treating patients and increasing medical surge capacity during public health emergencies as required by statute. Officials did not provide a date for when the guidelines would be made publicly available."^{clxxix}

Despite this lack of data to draw meaningful conclusions, there are several examples available that highlight achievements in improved regional coordination during the COVID-19 pandemic, as captured on ASPR's webpage "[Stories from the field](#)." These include:

- [RDHRE Supports Critical Information Sharing Among State Partners During COVID-19 Surge](#)
- [Region VII Regional Disaster Health Response Ecosystem Supports Critical Information Sharing Among State Partners During COVID-19 Surge](#)
- [Los Angeles County Uses Hospital Preparedness Program Funds to Expand Surge Capacity and Secure Resources](#)
- [Kentucky Collaborates with Health Care Community during COVID-19 Patient Surge](#)
- [Idaho Uses HPP Funding to Develop a Robust Crisis Standards of Care Plan in Preparation for COVID-19 Case Surge](#)
- [Connecticut Registers 5,000 Volunteers to Mitigate COVID-19 Patient Surge](#)
- [HPP-Funded Crisis Standards of Care Exercise Prepared Nevada for COVID-19 Surge](#)
- [HCC and Medical Reserve Corps Partnership in New Mexico Prevents Hospital Surge](#)

The following section focuses on considerations for improving medical surge capacities based on challenges and gaps observed across health care, and not limited to the preparedness and response functions under ASPR's purview.^{clxxx} While the practice and field of study for medical surge planning has progressed significantly, at the time of this study there is still no single, agreed-upon definition or measurement for surge capacity. The following subsection aims to collectively examine how the national preparedness and response enterprise, as a *system*, contributes to—or constrains—advances toward achieving greater medical surge capacity. Systems are often overlooked in the discussion of the "four S's"³⁵

³⁵ The four S's are systems, staff, stuff, and space.

commonly used to describe medical surge frameworks. Arguably, however, they are the most important part of ensuring a functional regional approach to medical surge capacity. The Systems concept encompasses all integrated policies and procedures that link departments within a health care facility and other entities across the HPH sector including HCCs, emergency medical services, home health care, dialysis centers, other point of care sites and ancillary health care facilities.^{clxxxi}

In addition to preparedness and response programs and activities authorized by the Public Health Service Act and amended by PAHPAIA, this section also considers the impact of other frameworks establishing preparedness and response goals, benchmarks, and quality standards within health care facilities, including the CMS Emergency Preparedness Final Rule, The Joint Commission, the National Health Security Preparedness Index, and others referenced herein.

5. Opportunities to Improve Medical Surge Capacity

This section considers opportunity areas where current practices (or lack of alignment and clarity) can impinge on medical surge capacities for health care facilities. The mitigating strategies or interventions described herein may occur upstream or to the point of patient care. Most of these themes have already been introduced in preceding sections, in particular:

- Sections 4.4–4.6: *ASPR HPP Progress, Opportunities for Improvement, and Recommendations*
- Section 5.4: *CDC Public Health Emergency Preparedness Cooperative Agreement Domain 5: Medical Surge*

Developing A Common Operating Picture (Information /Awareness Capabilities)

According to HPP requirements, recipients and HCCs must coordinate information sharing capabilities to ensure the abilities of hospitals and other health care facilities to meet surge demands, including: establishing key indicators and Essential Elements of Information (EEIs), providing real-time information sharing, and coordinating public messaging.^{clxxxii} In other words, HCC members should work together to establish a “Medical Common Operating Picture” (also another HPP performance measure requirement).^{clxxxiii} Because HPP performance measure data were not available for review for this report, it is difficult to assess the performance of such capabilities across the country—both currently and prior to the recent and ongoing COVID-19 pandemic. It would be worthwhile to explore the factors that may inhibit HPP recipients or HCCs from effectively coordinating information sharing capabilities to advance the medical surge capacities of health care facilities.

Reflecting on challenges experienced by hospitals during the COVID-19 pandemic, concerns have also been shared about the impacts of inconsistent (or at times, conflicting) leadership decisions from across the federal government. For example, during the pandemic, guidance from the White House shifting reporting requirements to new data systems created additional administrative burden for hospitals and health care facilities whose capacities were already stretched as they managed significant increases in patient numbers and limited availability of medical supplies and personal protective equipment. Daily data requests from HHS added to the additional burden on staff. While data collection (and dissemination) is essential to informing a response, a consistent gap observed during the COVID-19 pandemic was *how* the federal government used the data to inform public health measures that could have reduced transmission, and missed opportunities to alleviate some of the added burdens placed on hospitals and health care facilities.

Subject matter experts commented on the link between collected data and federal guidance noting the need for increased communication,

"What's still missing nationally... is a clear link between the data collected and federal guidance. There's this void of connecting the data being reported about the virus and the guidelines and thresholds that go with them. The administration continues to hesitate to share how the guidance that CDC issues connects with the data being reported."^{clxxxiv}

In other words, there continues to seemingly be more data being shared upstream (from facilities to various levels of government), with limited information being shared back to health care facilities. This poses a significant challenge during a surge event when medical care and first responders are seeking guidance and technical assistance. When asked about data that would have been needed to assess medical surge capacity in the first two years of the COVID-19 pandemic, one subject matter expert—a former ASPR employee—shared,

"It's a tough question, because it suggests that we've measured that accurately. We've seen specific initiatives hashed via Congress in particular during the actual pandemic itself, with a whole plethora of federal legislation designed to address some of what you're seeing, but I do not think at this point in time we've accurately measured where and how you've got the greatest outcomes from those legislative interventions . . . not because we can't sort of guess as to where those particular things are, but we've simply not measured it very well at this juncture."^{clxxxv}

To date, the public has yet to see a systematic study of how data flow from HCCs, their membership, and to public health departments to provide timely, useful insights to help inform decision-making processes. Several positive and negative examples of case studies do exist. However, conducting a broader, public investigation would be a worthwhile study into the current practice, feasibility, and challenges in relying on HCCs as a conduit for information sharing between hospitals and other government emergency management entities during a response.

Clarification of Roles and Responsibilities in Supporting Medical Surge Readiness

Part of the concern reflected in the above example, is that existing processes and mechanisms established by current emergency management structures (e.g., ESF-8, National Incident Management System) were ignored or overlooked during the recent COVID-19 pandemic. With the public health and health care workforce already overstretched, the change in data reporting practices was just one of many examples observed where there was widespread uncertainty and confusion among local and state agencies and elected leaders, who often struggled to coordinate response plans and delegate responsibilities to support medical surge needs.

"Certainly during the COVID surge, when ASPR got deployed to FEMA, it sent a clear message that emergency management is in charge. So, I think that it's not so much about interagency—certainly, it is about interagency power struggles and the lack of clarity around the lines—but I think it's clear that we struggle with the over overlapping coordination roles of [our local] Emergency Management Agency versus Health and Medical, which is the ESF-8 coordinator."^{clxxxvi}

"You know, when we create a czar to run the health care response instead of taking the principal adviser to the Secretary on disasters and public health response in the health care space, we create confusion. It would take top-down leadership—White House, Secretary, Congress to say, 'These are the lines.' And I think there were also challenges that came up throughout the COVID response, related to elected officials and executive leadership that weren't quite familiar with the capabilities and with the current plans and procedures of the different state agencies."^{clxxxvii}

The above anecdotes are emblematic of a long-standing issue in national preparedness and response—that well-established response procedures may be ignored or superseded by decisions that are made by individuals or entities who are unfamiliar with existing emergency management practices. The Bipartisan Commission on Biodefense raised this concern in their seminal report in 2015 and again in their 2021 report, *[Biodefense in Crisis: Immediate Action Needed to Address National Vulnerabilities](#)*, stating that, “When the Commission first took up the question of federal leadership in 2015, we looked for a structure that would be able to: (1) guarantee that departments and agencies with biodefense responsibilities work with each other; and (2) provide the constant high-level focus on the biological threat needed in order to ensure our national security. After examining approaches taken by previous Administrations, we recommended that the Vice President take the lead.”^{cxxxviii} As it stands currently, GAO also concluded deficiencies in HHS’s leadership and coordination of public health emergencies, noting issues around the department’s ability to lead medical preparedness and response, further supporting the need for additional evaluations of roles, responsibilities, and leadership.^{cxxxix}

The lack of clarity around roles and responsibilities is not only an issue at the federal level. As noted in Sections 4.0 and 5.0, the roles and responsibilities of local/state public health, HCCs, emergency management, and elected officials in supporting medical surge capacities are contingent on jurisdictional role and incident characteristics. This ambiguity can create strain, confusion, and challenge the health care system’s ability to address medical surge scenarios where the response spans across multiple jurisdictions. One potentially helpful strategy for improving community planning and engagement amid situational uncertainty around public health emergencies, is to invest in trainings where diverse stakeholders can meaningfully build and test disaster medical surge plans. We recommend HHS consider incorporating such trainings into the development of regional disaster health response systems (RDHRSs), an ongoing effort at the time of this report.

Clarifying roles and responsibilities across stakeholders may seem a mundane topic. However, during a large-scale disaster, such confusion can critically slow government and HCCs’ medical surge support response time, and ultimately cost patient lives.

“...the last 12 to 18 months with COVID pandemic has really highlighted the shortcomings of federal response [...] they weren’t really ready and prepared at that level to, for example, when PPE was an issue, distributing PPE appropriately.”^{cxc}

“ASPR and Biomedical Advanced Research and Development Authority (BARDA)—one of their duties as they assumed the stockpile would have been to create a remedy for any shortfalls in that stockpile. They knew what inventory was there and what they were receiving. But they did not take action, and this was huge because it meant that health care workers, essentially in hospitals and state health departments, had to fend for themselves. [...] those problems were known before the pandemic, but because the roles and responsibilities were not clearly defined and the communication between the agencies was impaired, nothing got done.”^{cxi}

Community Planning and Engagement

The 2021 National Health Security Preparedness Index (NHSPI) includes measures of 130 individual capabilities grouped into six domains, one of which is *Community Planning and Engagement*.^{cxcii} This includes actions to develop and maintain supportive relationships among government agencies, community organizations, and individual households; and to develop shared plans for responding to disasters and emergencies. The *Community Planning and Engagement* domain is key to strengthening health care delivery and medical surge

capacities because it generates expertise, resources, and shared understanding of community and patient needs that can support readying medical surge capacities.^{cxcii}

Creating partnerships across the private and public sectors has benefits before, during, and after disasters. They can be useful for clarifying roles and responsibilities, sourcing resources, including medical supplies (when they may otherwise be in short supply), or establishing meaningful relationships and networks for addressing medical surge challenges when needs arise. Notice events, such as hurricanes and snowstorms, allow anywhere between a few hours to a few days to plan for medical surge needs. Providers and health care facilities can mitigate impacts to medical surge by buffering supplies and inventory, pre-positioning resources (e.g., nearby warehouse or volunteer medical providers), or creating plans with partners for how and where to evacuate patients. Such planning is required of hospitals and by other types of health care facilities that are subject to the CMS Emergency Preparedness Rule.³⁶

Another important lesson learned from the COVID-19 pandemic was the importance of community planning and engagement in improving medical surge capacity through alternative care sites (ACS), also known as field hospitals. There were several examples of how ACS increased health systems' available capacity (by one count, 28 free standing ACS were constructed or opened by the end of April 2020), but also several accounts of ACS beds being left unoccupied for reasons like lack of supplies/staff, or locations not convenient to communities who would have benefited most.^{cxciv} Improved planning and greater engagement with the communities (or their advocates), could have prevented underutilization of sites and greater impact on off-setting medical surge capacities.

Several standards exist to prompt greater community engagement (i.e., with patients, community-based organizations, and other entities surrounding a health facility), including benchmarks for developing communication plans under the CMS Emergency Preparedness Final Rule. Additionally, Joint Commission Emergency Management Standards³⁷, released in July 2022, also reference engaging partners through trainings; however, there is no apparent requirement to hold health care facilities (or HCCs who support their membership) accountable in doing so.^{cxcv}

Stakeholders emphasized the importance of the stockpiling process, but also commented that it is not enough. They stated that preparation is most successful when it includes stockpiling and coordination of other resources, such as personnel and facilities.

"You know, not only stockpiling the things you need to stockpile, but also having the personnel ready, having the facilities ready. All that in advance creates access when you when you finally need it."^{cxcvi}

Workforce Challenges

The COVID-19 pandemic has had an indelible impact on the public health and health care workforce. In addition to the pandemic, simultaneous and sustained disasters have significantly burdened the health care workforce, from medical providers to administrative staff, and government response agencies —working under uncertain or stressed conditions amid times of medical surge has taken its toll.

³⁶ Nursing homes are generally not subject to the CMS Emergency Preparedness Rule. This is addressed later in this section.

³⁷ Adoption of The Joint Commission's standards is voluntary, and only applies to some types of health care facilities.

The workforce needed to deliver care during medical surge includes all traditional clinical care staff and emergency medical services, supporting operations staff, volunteer staff such as a Medical Reserve Corps, or health professionals who may be a part of ASPR's Emergency System for Advance Registration of Volunteer Health Professionals. During a surge event, maintaining and increasing staff availability is critical to an effective response. A GAO report found that among a sample of interviewed hospitals, all participants reported experiencing staffing challenges during the COVID-19 pandemic, highlighting the urgent need to address workforce shortages to manage medical care services.^{cxcvii}

NDMS, like the Medical Reserve Corps, it is a source of deployable personnel to assist in a response. However, NDMS' utility in addressing medical surge needs in response to public health emergencies is yet unclear. This may improve with greater alignment between NDMS workforce targets and ASPR's agency-wide goals and objectives, as noted in a past GAO report.^{cxcviii} Notably, NDMS has lacked a strategic plan with specified objectives since 2016. Goal 4 in ASPR's *Strategic Plan for 2020–2023*^{cxcix} may help lead to modernization of NDMS by supporting the expansion of partnerships, improving hiring processes, and enhancing training and skill requirements for medical providers; however the plan for how to evaluate progress toward this goal is unclear. Creating more discrete goals for the NDMS to define its role to meeting the workforce surge capabilities during disasters may improve how NDMS is can be deployed in the future to address workforce needs in public health emergencies.

During COVID-19, there was widespread use of the National Guard to support medical surge response across the nation. In some instances, governors may prefer to utilize the National Guard over other workforce augmentation strategies because of its relative accessibility, ability to deploy quickly, and lower cost. However, there exists some evidence that the presence of uniformed services in health care settings may deter some communities from seeking care. Therefore, a study of whether and under what circumstances deploying the National Guard impacts equitable approaches to increasing medical surge capacities could be beneficial for determining when and if this approach would be warranted in future public health emergency responses.^{cc}

Alternative strategies include ensuring that other health care professionals, such as pharmacists, are practicing "at the top of their license" to meet the sudden influx of patient needs during a disaster. Community pharmacists during the current pandemic, for instance, aided in reducing stress on the health care system by playing a pivotal role in conducting COVID-19 testing and administering vaccines. Other instances where pharmacists expanded beyond their typical role to address medical surge needs include the devastating 2017 hurricane season. Providers such as CVS Health and Walgreens identified innovative ways to support their communities by opening pop-up pharmacies at or near shelter locations. CVS Pharmacy and CVS Caremark also activated a process that allowed pharmacists to administer one-time emergency refills of a 10-day supply of prescription medicines for patients who otherwise could not access their medicines.^{ccI}

As described in the above examples, pharmacists' roles and responsibilities in addressing medical surge needs have expanded, especially since Hurricane Katrina. Key methods^{ccII} of expanding pharmacists' scope of practice include:

- **Collaborative Practice Agreements (CPAs).** which are agreements that can create a formal relationship between a pharmacist and prescribing physician, allowing the pharmacist to take an involved role in a patients' care. They can perform certain functions that could otherwise be disrupted during an emergency, such as authorizing medication refills, modifying or discontinuing medications. This ensures that patients do not experience a lapse in medication adherence.

- **Statewide Protocols.** These protocols are issued by an authorized state regulatory body that specifies the conditions under which pharmacists can prescribe specific medications. Unlike a CPA, where the authorization come through a physician-pharmacist agreement, statewide protocols apply to all pharmacists operating in that state.
- **Standing Orders.** These are medical treatment orders that health care professionals, such as pharmacists, can carry out following an authorized prescriber's order when certain conditions are met. This is used particularly for drug overdoses.

Even with key advancements in the last 15 years, variation between states around prescription practices for emergency events and licensure requirements also present challenges to expanding pharmacists' scope of practice. As many as 21 states do not have a law governing the provision of an emergency refill in the event of a public health emergency, which could delay or prevent patients' abilities to access health care during times of crises, or further overwhelm hospitals that are already experiencing an increased volume of patients. With the appropriate considerations and investments, pharmacies and pharmacists could be increasingly leveraged as a "relief valve" for hospitals enduring medical surge given their designation as one of the most 'accessible' health care facility types for all Americans.³⁸^{cciii} The Emergency Management Assistance Compact (EMAC), a state-led effort administered by the National Emergency Management Agency, is one mechanism by which license reciprocity across states could be facilitated. Although all fifty states are members of EMAC, state licensing boards may still disallow license reciprocity for certain practices unless otherwise directed by executive order from a state governor.

Episodes of Care and Evacuation

There is currently no clear mechanism by which a patient moves through the regional response systems, such as RDHRS. However, as these systems continue to mature and evolve beyond their nascent stages, there would be benefits from the use of explicit targets to ensure positive patient outcomes and quality in specialty patient care. The National Quality Forum (NQF) is an organization that sets primary standards for performance measurement in areas of healthcare performance measures such as quality and resource utilization. In an effort to set standards for a regional model of emergency care, NQF, along with the Steering Committee of national experts, staff from HHS, and the University of North Carolina Chapel Hill, created a working group.^{cciv} The framework developed by the working group discusses how regional systems should be evaluated as a whole, assessing how the discrete parts work together and integrate into the broader system, rather than evaluating specific, individual components. The framework uses an Episode of Care measurement model to evaluate the different settings and transitions for which a patient moves through the system.

Separately, on the topic of evacuation—another type of patient movement—a GAO study on the limitations in federal evacuation assistance for health care facilities recommends that DHS clearly define how the federal government will assist state and local governments with transporting patients out of hospitals and nursing homes, and how to address the needs of nursing home residents during evacuations.^{ccv} Another study found that when comparing the evacuation experiences of nursing homes in Louisiana during Hurricanes Katrina (2005) and Gustav (2008), administrative directors felt more prepared to evacuate before Gustav. Although there

³⁸ Nearly 90 percent of Americans live within five miles of a community pharmacy, making pharmacies among the most "accessible" types of health care facilities in the US.

are still logistical problems with evacuating residents with access and functional needs (AFN) before hurricanes, this greater preparedness was a result of improved communication and collaboration with health care facilities and state agencies ahead of the event.^{ccvi}

Long term care (LTC) includes skilled nursing facilities and nursing facilities that are primarily engaged in providing skilled nursing care and rehabilitation services to residents on a regular basis.^{ccvii}^{ccviii} SNFs are among the nineteen provider and supplier types required to meet CMS Emergency Preparedness Rule requirements because of their enrollment as Medicare providers. Nursing homes, however, are often not.^{ccix} It is important to note these distinctions because of the growing body of evidence connecting challenges around evacuation with institutions like nursing homes and other facilities caring for aging or otherwise vulnerable populations. In the absence of requiring certain facilities (like LTCs) to develop evacuation protocols, HCCs may consider identifying opportunities to alleviate medical surge challenges of facilities in their jurisdiction around patient movement.

One study examined the differential morbidity and mortality associated with evacuation versus sheltering in place, using Medicare claims and nursing home data sources for residents exposed to four hurricanes: Katrina, 2005, Rita, 2005, Gustav, 2008, and Ike, 2008. The observational study compared data over these hurricanes to the same nursing homes over the same time periods during the two non-hurricane years as a control.^{ccx} Hurricane Katrina saw challenges with over 78 deaths at Louisiana nursing homes, which prompted mandates for all nursing homes to create more detailed emergency plans outlining evacuation and shelter in place plans. The study found that universal evacuation as a strategy to safeguard residents during a hurricane had increased the probability of death at 90 days from 2.7%–5.3% and hospitalizations from 1.8%–8.3%, independent of other factors. Healthcare Ready conducted focus groups to hear from subject matter experts (SMEs) with expertise in aging and older adults. Findings showed that consequences of disasters occur over a period of 20–90 days after the event—when effects of trauma, being without medication, and having gone through difficult evacuations can manifest in death. These deaths are ultimately not counted in the list of consequences of the storm and are thus less frequently discussed.³⁹

Nursing homes have been at the epicenter of the COVID-19 pandemic since early 2020. Elderly residents with underlying medical conditions and living in congregate settings led to an observed increase in mortality. One study from the Office of the Inspector General (OIG) found that, according to Medicare claims, mortality in nursing homes increased from 17% in 2019 to 22% in 2020. Additionally, a GAO study found that most nursing homes had multiple outbreaks and weeks of sustained transmission from May 2020 through January 2021.^{ccxi} These data may indicate knowledge gaps across regional health systems' capacity to manage case spikes during public health emergencies, especially among patients with AFN. Extensive research was undertaken to pinpoint the cause of COVID-19 outbreaks in nursing homes. This research was compiled by and consistent with research done by the American Health Care Association and National Center for Assisted Living.^{ccxii} Key findings included:

- Facility location and COVID-19 prevalence in the surrounding community determined outbreaks.
- Asymptomatic spread and delays when facilities relied on symptoms-based screening, asymptomatic patients and delays to vaccine availability exacerbated COVID-19 spread.

³⁹ The Substance Abuse and Mental Health Services Administration (SAMHSA): Disaster Technical Assistance Center Supplemental Research Bulletin, *Greater Impact: How Disasters Affect People of Low Socioeconomic Status*, July 2017, provides significant research on issues of medication use after disasters and/or emergencies.

- Quality ratings and previous citations for prior infection control did not affect how sites fared with COVID-19 outbreaks.
- There was no significant difference based on type of facility ownership (i.e., whether the facility was for-profit or not-for-profit.).

The Joint Commission is a leader in health care facility accreditation and offers unbiased assessments of quality achievement in patient care and safety. Hospitals and health care facilities pursue accreditation because it is required for their organizations to receive payment from federally funded Medicare and Medicaid programs. Losing accreditation could prevent facilities from treating commercially insured patients.^{ccxiii} The standards are developed with input from health care professional, subject matter experts, consumers, and government agencies. Nursing homes, for example, receive accreditation after they have demonstrated their ability to provide quality care and have created special requirements for dementia capable care training that involve recognizing symptoms, communication techniques, and abuse prevention.

The accreditation program continues to help the government make advancements toward ensuring quality medical care during disasters. As early as 2003, the Joint Commission convened an expert Public Policy Roundtable to discuss emergency preparedness issues and to frame specific recommendations for developing and sustaining community-wide preparedness through leadership, funding, and other resource deployment to advance medical surge capacities.^{ccxiv} At the time, they concluded there exists a need for increased collaboration between medical care and public health establishments, as well as other new partnerships that must be forged; issues of accountability and mechanisms for validating readiness; and the appropriate roles of federal and state governments. Today, similar issues remain a challenge to advancing medical surge capacities across the nation.

As mentioned in Section 4.0, HCCs are an important means of integrating health care entities within their jurisdiction, like nursing home facilities or LTC facilities, into community-wide disaster planning practices and medical surge readiness. Presently, HCCs are not required to include nursing home facilities or LTC facilities in their membership, per minimum requirements. We encourage ASPR to consider how health facility types other than hospitals could be incorporated into regional disaster preparedness and response programs and activities to advance medical surge capacities, especially around patient movement and continuity of care throughout the entire disaster lifecycle.

Concerns for Rural or Smaller-Scale Health Care Facilities, Including Pharmacies and Community Health Centers

A leading principle in emergency management is that disaster response is locally executed. Therefore, health care facilities located in more rural areas or smaller-scale facilities that can only hold limited inventory can experience greater challenges in rapidly scaling operations to meet rising demand in care and services.

"Working in a community pharmacy, we have very lean inventories on most things ... the control of even ordering is primarily centralized. It's not held at the store [where] you can do a little bit of influencing, but a lot of it is very central and automatic."^{ccxv}

During COVID-19, when personal protective equipment (PPE) was in short supply nationwide, smaller community health centers experienced significant challenges in procuring supplies, limiting their medical surge capacities. Not only did they have fewer resources on hand, but also faced other constraints, including limited space to store inventory; greater patient demand for services; lack of staffing and resources to support supply

procurement, vetting, and coordination. State and regional Primary Care Associations (PCA) are designated by the Health Resources and Services Administration (HRSA) Health Center Program to provide support to health centers through training and technical assistance across a variety of areas that include enhancing emergency preparedness and response. Several PCAs served their health center members by operating as a key coordinator for procuring, vetting, storing, and transporting personal protective equipment supplies (one of many ways they supported health centers), which provided significant relief to some health centers during a period of prolonged medical surge. However, PCA support during disasters varies by state, like variations observed in HCCs' capacity to support hospitals region-to-region. PCAs are resourced differently across regions, and their experience and level of practice in emergency preparedness and response vary significantly, which can impact the types of support provided to health centers during disasters. While PCAs and HCCs do not provide direct medical care, their role in supporting preparedness and response should not be overlooked. Equitable resources should be provided to such coordinating bodies to ensure consistent development in regional health care delivery systems.

Geographic areas with fewer health care facilities or providers are also at greater risk of being impacted during a medical surge scenario. In areas where there is less access to health care infrastructure or health care providers (sometimes known collectively as "health care deserts"),^{cxxvi} there may be fewer ACS for patients to turn to when hospitals are overwhelmed. Mobile health care operations (e.g., pharmacies, clinics) and telehealth serve as "relief valves" to address surge challenges created by disasters. HRSA's Bureau of Health Workforce tracks Health Professional Shortage Areas to identify areas where there are shortages of 1) providers for an entire group of people within a defined geographic area, 2) providers for a specific group of people within a defined geographic area, and 3) facility shortages of certain types of health care facilities.^{cxxvii} These data can be used to understand geographies where Americans lack adequate access to certain types of health care facilities and services during normal circumstances, and where there may be health care facilities, and therefore patients experiencing greater impacts during disasters or emergencies.⁴⁰

Dialysis centers and the patients they serve—regardless of region—are uniquely and often severely impacted by disasters. Events that disrupt water, power, or transportation can immediately render a facility inoperable. Dialysis and kidney transplant patients that rely on dialysis centers are particularly vulnerable because a delay in treatment can result in death within days or weeks. The Kidney Community Emergency Response (KCER) Coalition is a leading example of a public–private partnership that has successfully saved lives. The Coalition's goal is to maintain medical surge capacities to minimize disruption to life-sustaining dialysis and transplant services during disasters. Members include partners from all parts of the kidney community, including patients, health practitioners, independent dialysis facilities, patient advocacy groups, and local, state, and federal government. KCER operates year-round, and convenes relevant stakeholders on regular calls before, during, and after disasters to coordinate and assess medical needs. Importantly, during disasters, KCER's convening calls are used to help identify damaged or closed facilities requiring patients to be directed to alternative sites of care; understand the needs of dialysis centers, including supply chain disruptions that can impact capacity; and provide support to patients whose treatments may be critically delayed. KCER stands as a leading model for how partnerships can support medical surge capacity of health care facilities by leveraging information sharing and public and private sector engagement in emergency management to save lives.

⁴⁰ The National Rural Health Association also provides significant research and leadership in on rural health issues, including topics related to workforce shortages, rural health care facility closures, and health inequity.

6. Recommendations

We recommend the following strategies to enhance the nation's health care delivery system to manage medical surge capacity and maintain medical services before, during, and after disruptions:

- Proactively seek annual input from recipients/sub-recipients on HPP requirements, performance measures, and benchmarks around information sharing practices and challenges.
- Encourage multi-stakeholder discussions to help clarify incident management roles, responsibilities, and authorities for large-scale events.
- Encourage greater community planning and engagement through the following:
 - Require Public Health Emergency Preparedness Cooperative Agreement and HPP recipients to identify and proactively engage private sector health care, community partners, and other stakeholders as part of preparedness exercises, such as testing surge plans, to identify opportunities for improvement.
 - Identify, track, and continue to implement new strategies that incentivize stronger engagement in HCCs by current and prospective members.
- Invest in and support the development of deployable health personnel via National Disaster Medical System and Medical Reserve Corps.
- Consider existing mechanisms and channels that can be leveraged for long-term care and other facilities to improve planning and coordination around evacuation.
- Require GAO to investigate how key offices adhere to requirements to include populations with access and functional needs in emergency planning. Support data collection and tracking for the availability (and closure) of hospitals and other health care facilities to examine trends on health care infrastructure access, especially in rural or historically medically underserved areas

Section 7.0 Evaluation of Emergency Preparedness and Response Capabilities Related to At-Risk Individuals

Research shows that individuals and communities with certain characteristics are more likely to experience negative outcomes during and after public health emergencies and disasters. A range of terms are used to describe these groups, including people with access and functional needs (AFN), at-risk individuals, and vulnerable populations. The lack of agreed-upon definition, without a widely adopted “case definition” of an equitable emergency preparedness and response plan, is among the many unaddressed barriers to ensuring national preparedness and response strategies are adequately designed to protect the health of communities that are often hardest hit by disasters.

1. Definition of At-Risk Individuals and Vulnerable Populations

Data demonstrate that individuals and communities with certain characteristics are more likely to experience negative outcomes during and after public health emergencies and disasters. ASPR defines at-risk individuals as “people with AFN that may interfere with their ability to access or receive medical care before, during, or after a disaster or emergency.”^{coviii} As described by ASPR, access-based needs require ensuring that resources, like transportation, information, and social services are accessible to all individuals.^{cix} Function-based needs require accommodating or mitigating an individual’s restrictions or limitations that require additional assistance before, during, and/or after a disaster or public health emergency.^{cxx}

The 2013 Pandemic and All-Hazards Preparedness Reauthorization Act defines “at-risk individuals” as children, older adults, pregnant women, and individuals who may need additional response assistance. Other examples of individuals with AFN may include—but are not limited to—individuals with disabilities, individuals who live in institutional settings, individuals from diverse cultures, individuals with limited English proficiency, individuals who are transportation disadvantaged, individuals experiencing homelessness, individuals who have chronic medical disorders, and individuals who have pharmacological or medical device dependencies.^{cxxi}

Vulnerability occurs when physical, social, economic, and environmental factors or processes increase the susceptibility of an individual, a community, assets, or systems to the impacts of public health hazards.^{cxxii} Vulnerability is not a fixed characteristic; it is the result of a complex set of variables, including individual characteristics like age, income, or social networks, neighborhood characteristics like population density, proximity to hazards, or availability of support services, and societal/structural characteristics, like disenfranchisement or discrimination. Individuals and communities that are susceptible to harm before disruptions often experience an exacerbation of their AFN during and after public health emergencies or disasters.

At-risk populations that may be disproportionately affected by incidents or events, including individuals:

- With AFN, such as needs related to communication, health maintenance, independence, support, safety, and self-determination
- At higher risk of severe complications from infectious diseases, such as pandemic influenza, for example, older adults, pregnant women, children, and people with pre-existing chronic medical conditions, such as diabetes or heart disease
- With limitations that interfere with the receipt of and response to information, such as individuals who may not be able to hear, see, understand, or act on safety information
- Relying on personal care assistance to manage or maintain health
- Functioning independently if they have durable medical equipment or other assistive devices, service animals, or personal assistance service providers
- Who find it difficult to cope in a new environment, such as those with autism, dementia, or intense anxiety
- With transportation needs, including those who use public transit or accessible vehicles, such as lift-equipped or vehicles suitable for transporting individuals who use oxygen tanks.

2. Standards and Benchmarks for Public Health Emergency Preparedness and Response Capabilities Related to At-Risk Individuals

As many groups—including the [Presidential COVID-19 Health Equity Task Force](#)—have noted, there are no national equity standards or benchmarks that can be used to set objectives and measure progress toward achieving equity in public health emergencies and disasters, and inadequate data are available to measure the experiences and outcomes of at-risk individuals and vulnerable populations. However, existing national emergency preparedness and response capability standards and federal funding mechanisms include recommendations or requirements related to meeting the needs of at-risk and vulnerable populations. These standards and mechanisms are described in the subsequent paragraphs.

National Standards

Public Health Emergency Preparedness and Response Capabilities: National Standards for State, Local, Tribal, and Territorial Public Health. The Center for Disease Control and Prevention's (CDC) Public Health Emergency Preparedness Cooperative Agreement Capabilities serve as national standards for public health preparedness planning. These capabilities also serve as a vital framework for state, local, tribal, and territorial preparedness programs as they plan, operationalize, and evaluate their ability to prepare for, respond to, and recover from public health emergencies. The framework includes capability definitions, critical functions, specific action steps, and considerations for policies, protocols, resources, workforce, and technology. The Public Health Emergency Preparedness Cooperative Agreement Capabilities provide operational support for the Federal Emergency Management Agency (FEMA) National Preparedness System, which outlines an organized process for community stakeholders to advance their preparedness activities and achieve the National Preparedness Goal.

The Public Health Emergency Preparedness Cooperative Agreement Capabilities describe at-risk individuals as people with AFN who may be disproportionately impacted by an incident or event. The framework includes specific references to at-risk and vulnerable individuals in nine of the 15 capabilities (Table 5). Recommended actions relate to the assessment of AFN experienced in a jurisdiction, targeted information sharing and communication, and engagement of AFN groups in planning activities.

Table 5. Centers for Disease Control and Prevention Public Health Emergency Preparedness and Emergency Response Capabilities that Reference Individuals with At-risk and Functional Needs

Capability (#)	Description	Reference to Individuals with At-risk and Functional Needs
#1 Community Preparedness	Community preparedness is the ability of communities to prepare for, withstand, and recover from public health incidents in both the short and long-term.	<p>Identify at-risk individuals with AFN that may be disproportionately impacted by an incident or event.</p> <p>Promote awareness of and access to public health, health care, human services, mental/behavioral health, and environmental health resources that help protect the community's health and address the AFN of at-risk individuals.</p> <p>Engage in preparedness activities that address the access and functional needs of the whole community as well as cultural, socioeconomic, and demographic factors.</p>
#2 Community Recovery	Community recovery is the ability of communities to identify critical assets, facilities, and other services within public health, emergency management, health care, human services, mental/behavioral health, and environmental health sectors that can guide and prioritize recovery operations. Communities should consider collaborating with jurisdictional partners and stakeholders to plan, advocate, facilitate, monitor, and implement the restoration of public health, health care, human services, mental/behavioral health, and environmental health sectors to at least a day-to-day level of functioning comparable to pre-incident levels and to improved levels, where possible.	<p>Notify the community of available public health services. In coordination with jurisdictional partners and stakeholders, communicate recovery services available to the community, with attention to the AFN of populations that may be disproportionately impacted.</p>
#4 Emergency Public Information and Warning	Emergency public information and warning is the ability to develop, coordinate, and disseminate information, alerts, warnings, and notifications to the public and incident management personnel.	<p>Identify, protect, and ensure information exchange with disproportionately impacted populations.</p> <p>Disseminate approved messages to the public through multiple mechanisms and ensure that languages and formats of information account for the AFN of individuals.</p>

#5 Fatality Management	<p>Fatality management is the ability to coordinate with organizations and agencies to provide fatality management services.</p>	<p>Support the assembly of personnel and resources trained to provide mental/behavioral health services that are non-intrusive and culturally appropriate to accommodate the AFN and religious or cultural practices of incident survivors, family members of the deceased, and responders.</p>
#7 Mass Care	<p>Mass care is the ability of public health agencies to coordinate with and support partner agencies to address within a congregate location (excluding shelter-in-place locations) the public health, health care, mental/behavioral health, and human services needs of those impacted by an incident. This capability includes coordinating ongoing surveillance and assessments to ensure that health needs continue to be met as the incident evolves.</p>	<p>Address the AFN of at-risk individuals. Coordinate with ESF-6, ESF-8, and ESF-11 partners to conduct infectious disease surveillance and environmental health and safety assessments, provide support for addressing the access and functional needs of at-risk individuals, and support decontamination to assist in a mass care response.</p> <p>Coordinate with partner and stakeholder agencies to provide access to health care, mental/behavioral health, and human services; medication, immunization, and consumable medical supplies, such as hearing aid batteries and incontinence supplies; durable medical equipment for the impacted population; and specialized support to address the AFN of individuals who may be disproportionately impacted by the incident.</p>
#8 Medical Countermeasure Dispensing and Administration	<p>MCM dispensing and administration is the ability to provide medical countermeasures to targeted population(s) to prevent, mitigate, or treat the adverse health effects of a public health incident. This capability focuses on dispensing and administering medical countermeasures, such as vaccines, antiviral drugs, antibiotics, and antitoxins.</p>	<p>Alternate approaches for providing effective communication in multiple formats to account for the AFN of at-risk individuals who may be disproportionately impacted by a public health incident or event, including children, pregnant women, older adults, and others with AFN, as well as communities that may be disproportionately impacted by public health emergencies.</p>
#10 Medical Surge	<p>Medical surge is the ability to provide adequate medical evaluation and care during events that exceed the limits of the normal medical infrastructure of an affected community. It encompasses the ability of the health care system to endure a hazard impact, maintain or rapidly recover operations that were compromised, and support the delivery of medical care and associated public health services, including disease surveillance, epidemiological inquiry, laboratory diagnostic services, and environmental health assessments.</p>	<p>Provide information to educate the public regarding available health care services and adapt messaging for populations that may be disproportionately impacted by the incident, including individuals with access and functional needs.</p>

#11 Non-pharmaceutical Interventions	Nonpharmaceutical interventions are actions that people and communities can take to help slow the spread of illness or reduce the adverse impact of public health emergencies. This capability focuses on communities, community partners, and stakeholders recommending and implementing nonpharmaceutical interventions in response to the needs of an incident, event, or threat.	Assessment of the AFN of at-risk individuals who may be disproportionately impacted by the incident and plans to address identified AFN.
#15 Volunteer Management	Volunteer management is the ability to coordinate with emergency management and partner agencies to identify, recruit, register, verify, train, and engage volunteers to support the jurisdictional public health agency's preparedness, response, and recovery activities before, during, and after deployment.	Support provision of just-in-time, initial, and ongoing emergency response training, including AFN training, for registered volunteers in partnership with jurisdictional MRC unit(s) and other partner groups.

Legend: AFN = Access and Functional Needs; ESF = Emergency Support Function; MCM = Medical countermeasure; MRC = Medical Reserve Corps

Federal Funding Mechanisms

Administration for Strategic Preparedness and Response (ASPR) Hospital Preparedness Program

(HPP) Cooperative Agreement. For the latest Fiscal Year (FY) 2019–2023, HHS has provided funding through the HPP Cooperative Agreement to 62 entities, including all 50 US states, eight territories and freely associated states, Los Angeles County, Chicago, New York City, and Washington, D.C.

According to ASPR, to obtain this funding, entities “must address and comply with the requirements for the strategies and activities listed in the FY 2019–2023 HPP Cooperative Agreement Funding Opportunity Announcement, subsequent continuation guidance (i.e., FY 2020 Continuation Guidance, FY 2021 Continuation Guidance, etc.), and other requirements associated with the statute and US Department of Health and Human Services cooperative agreement guidance.”^{cxxxiii} While many requirements were adjusted due to the COVID-19 pandemic, they remained sufficiently intact to hold recipients accountable for supporting the needs of at-risk individuals and vulnerable populations.

One such requirement is that recipients must perform the Annual Joint HPP–Public Health Emergency Preparedness Cooperative Agreement At-Risk/Vulnerable Populations Exercise. Since 2020, COVID-19 response activities have been allowed to be used to meet this requirement if the inclusion of vulnerable populations based on COVID-19 parameters set by CDC can be verified. HPP requires that recipients document their strengths and weaknesses in the following year’s funding application.^{cxxxiv}

In addition, HPP contains specific performance measures (PMs) pertaining to at-risk individuals and vulnerable populations. PM 7, Part A, requires measurement of the percent of recipients that access the de-identified emPOWER data map at least once every six months to identify the number of individuals with electricity-dependent medical and assistive equipment for planning purposes. PM 7, Part B, requires measurement of the percent of health care coalitions (HCCs) that obtain the de-identified emPOWER data map at least once every six months to identify the number of individuals with electricity-dependent medical and assistive equipment for

planning purposes. PM 9.1 describes jurisdictional risk assessments, where recipients are required to identify potential hazards, vulnerabilities, and risks within the community, including inter-jurisdictional (e.g., cross-border) risks as appropriate, specifically relating to the public health, medical, and mental/behavioral systems and the functional needs of at-risk individuals.^{cxxv}

To develop these metrics, the Office of Strategy, Policy, Planning, and Requirements (SPPR) within ASPR incorporated the lessons learned from previous responses to emergencies, literature on program evaluations, environmental scans, and extensive stakeholder engagement. Stakeholders and partners included in the development process included SPPR and HPP field project officers; recipients and HCCs; the ASPR At-Risk Individuals Program; and external partner working groups.

CDC Public Health Emergency Preparedness Cooperative Agreement. CDC's Public Health Emergency Preparedness Cooperative Agreement funds public health emergency preparedness initiatives in all 50 states, four localities, and eight territories and freely associated states related to building and sustaining CDC's 15 preparedness and response capabilities. The cooperative agreement aligns with the National Response Framework, which states that all levels of government should develop detailed, robust, all-hazards response plans inclusive of persons with disabilities.^{cxxvi}

The Public Health Emergency Preparedness Cooperative Agreement stipulates that jurisdictional risk assessments include the identification and location of persons with AFN, limited language proficiency, or other vulnerabilities such as socioeconomic status, education, or cultural barriers. The Public Health Emergency Preparedness Cooperative Agreement also highlights the Americans with Disabilities Act of 1990 requirements in jurisdictional public health preparedness and response plans; accentuates the importance of community partnerships, including tribes and native-serving organizations in public health preparedness and response activities; and promotes the integration of community partners to support the restoration of community networks and social connectedness to improve community resilience.^{cxxvii}

In addition, the Public Health Emergency Preparedness Cooperative Agreement calls for the establishment of avenues for public interaction and information sharing specifically related to disproportionately impacted populations. The Public Health Emergency Preparedness Cooperative Agreement recommends the use of geographic information systems, demographics, and epidemiological data to understand the complexities of the emergency and the response. These systems and data help to identify appropriate methods and sources, such as trusted spokespersons to protect, reach, and engage at-risk individuals with AFN who may be disproportionately impacted by an incident.^{cxxviii}

3. Evaluation of Current Emergency Preparedness and Response Capabilities Related to Meeting the Needs of At-Risk and Vulnerable Populations

Given the lack of national benchmarks for health equity in public health emergencies and disasters and limited access to accurate and complete data, it was challenging to systematically evaluate the extent to which the needs of at-risk individuals are met effectively and efficiently during public health emergencies.

Evidence of Capabilities

Data about cooperative agreement recipient compliance with ASPR HPP and CDC Public Health Emergency Preparedness Cooperative Agreement funding requirements related to at-risk and vulnerable populations were not available for this report.

Public Health Accreditation Board Standards and Measures is a national voluntary accreditation program that aims to advance continuous quality improvement among public health departments. One requirement for accreditation is to provide a public health emergency operations plan that includes emergency operations for the entire population, including special needs and vulnerable populations. As of early 2022, 40 state, 299 local, 5 tribal, 1 statewide integrated local public health department system, and 2 Army Installation Departments of Public Health had achieved accreditation. These public health departments serve 91 percent of the US population.

Project Public Health Ready (PPHR) is a voluntary, criteria-based recognition program created by the National Association for County and City Health Officials that assesses local health department capacity and capability to plan for, respond to, and recover from public health emergencies. The criteria align with federal guidelines and national initiatives, including CDC Public Health Preparedness Capabilities, Public Health Accreditation Board Standards and Measures, and ASPR HPP metrics. Applicants must provide an all-hazards plan that describes the at-risk populations in their jurisdiction, provides evidence of collaboration with at-risk individuals and describes how the needs of at-risk populations will be met in preparedness activities, emergency public information and warning, and mass care/sheltering. Since 2004, more than 500 local health departments have been recognized as meeting all the PPHR requirements individually or working collaboratively as a region.^{cxxxix}

Examples of National Initiatives, Guidance, and Resources

The New Mexico Department of Health recently utilized the [Social Vulnerability Index (SVI)] to support their COVID-19 vaccine distribution across the state's most vulnerable populations. Using the tool, public health leaders were able to prioritize vaccinating individuals who live in counties with high SVIs and were therefore most vulnerable to COVID-19.^{cxxxx} Public health agencies across the country can similarly leverage the SVI in preparing for and responding to future health emergencies. While this tool is valuable, interviews with subject matter experts revealed a few shortcomings and suggested that CDC partner with the US Census Bureau to ensure timely, accurate data.

The North Carolina Office of Public Health Preparedness and Response (NC PHPR) leveraged CDC's Planning for an Emergency: Strategies for Identifying and Engaging At-Risk Groups toolkit to develop their own Vulnerable and At-Risk Populations Resource Guide. The newly created guide was distributed to local health departments so that at-risk groups would be incorporated into local-level preparedness planning. The creation and implementation of these toolkits catalyzed the inclusion and consideration of at-risk and vulnerable populations in emergency planning, leading to improved outcomes for these populations. NC PHPR using CDC toolkit is emblematic of the reason these tools are created.

Since its inception, emPOWER's data and tools have been used for over 220 events and have been accessed by 85,000 users in response to these events.^{cxxxvi} The Florida Department of Health has used emPOWER to perform outreach to over 40,000 at-risk individuals that were in the path of Hurricane Mathew.^{cxxxvii} While emPOWER has been used in response efforts the data has also been used in preparation. A regional partnership was formed between Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin where they used the emPOWER database to help develop FEMA's multistate regional power outage plan.^{cxxxviii} This plan is used to address the needs of at-risk individuals at the local level in the event of a severe widespread power outage.

The Emergency Prescription Assistance Program (EPAP) has been activated in response to multiple disasters and emergencies to protect at-risk individuals^{cxxxiv} across US jurisdictions. Following severe storms in Kentucky on December 23, 2021,^{cxxxv} EPAP activation was filed for 16 counties, providing eligible individuals access to essential pharmaceuticals, vaccines, medical supplies, and other durable medical equipment.^{cxxxvi} After Hurricane Ida made landfall in August 2021, EPAP was activated in Louisiana.^{cxxxvii} While EPAP is useful for assisting at-risk and vulnerable populations following disasters, it only covers certain prescription items.^{cxxxviii} The gap in coverage for items such as over-the-counter smoking cessation drugs can lead individuals who are attempting to quit to relapse, especially given an already stressful, disaster-stricken environment.^{cxxxix}

In particular, Medical Reserve Corps Unit #2544's Preparedness Pals Home Health Partnership worked with local home health agencies to expand preparedness initiatives in an elderly community in rural Connecticut that was isolated, less mobile, and unable to access care during the severe winter storms and hurricanes that affect the New England region.^{cxl} After assessing the community's health needs, the Quinnipiac Valley Health District (QVHD) engaged home health agencies to serve as community-based partners that had pre-established relationships with the home-bound residents.^{cxli} QVHD developed a toolkit for home health agency staff to use for patient and self-education regarding disaster preparedness. Additionally, educational events were held at community centers to reach targeted community members. It is unclear if the MRC collects, analyzes, and disseminates benchmark data and/or findings on how their activities support at-risk individuals and vulnerable populations.

4. Considerations for Enhancing Capabilities to Meet the Needs of At-Risk Individuals and Vulnerable Populations

Drivers of Inequity in Emergency Preparedness and Response

Existing public health emergency preparedness and response standards, funding mechanisms, frameworks, and guidance documents contain language regarding meeting the needs of at-risk individuals and vulnerable populations. However, little consideration is given to how structural and systemic inequities contribute to the differences in how marginalized and oppressed communities prepare for, are affected by, and recover from public health emergencies and disasters. Addressing these disparities requires an explicit acknowledgment of how past and current systems, policies, and practices have generated and perpetuated inequities.

Furthermore, the public health and the preparedness field at-large have an opportunity to better address the cumulative effect of co-occurring or rapid-succession disruptions. For example, Hurricane Ida (2021) made landfall in areas of Louisiana that were still in various states of recovery from Hurricanes Laura and Delta in 2020; these areas were also responding to the COVID-19 pandemic.

There is extensive debate within the public health emergency preparedness and response community regarding the extent to which addressing the social determinants of health and systemic drivers of health inequity fall within its authority or practice.^{cxlii} Factors like housing, education, access to health care, employment, environment, and transportation can influence how an individual experiences a disaster, but responsibility for addressing these issues typically falls outside the scope of public health emergency preparedness and response funding and workplans.

Role of Risk Reduction and Community Resilience

Historically, the US has taken a passive approach to disasters. In other words, a community is aware of a potential hazard, waits for the hazard to occur, and then activates plans and procedures to react to the aftermath of the hazard. For decades, governmental agencies in the US have invested resources in the development of “downstream” assets and plans that would result in an effective and efficient response following a disaster.

Disaster risk reduction (DRR) offers an alternative approach of investing in the reduction of risk for disaster through systematic efforts to analyze and alter the causal factors of disaster through interventions such as reducing exposure to hazards, lessening vulnerability of people and property, wise management of land and the environment, and improving preparedness and early warning for adverse events. The United Nations’ Sendai Framework for Disaster Risk Reduction 2015–2030 (Sendai Framework) advocates for the substantial reduction of disaster risk and of community loss. The Sendai Framework prioritizes 1) understanding disaster risk in all its dimensions, 2) fostering public–private collaboration and partnership, and 3) investing in the economic, social, health and cultural resilience of persons and communities.

While interest and investment in DRR have spread globally, US audiences have been slow to adopt this approach. Instead, US agencies have focused on community resilience, which is defined by ASPR as “the ability of a community to use its assets to strengthen public health and health care systems and to improve the community’s physical, behavioral, and social health to withstand, adapt to, and recover from adversity.”^{cxxliii} The issue with resilience, however, is that there are limited incentives to motivate communities to incorporate it into their approach to public health disasters.

The [Disaster Resilience Framework](#)^{cxxliv} was created by GAO to evaluate federal programs and opportunities to support and encourage resilience in communities affected by disasters. This framework includes a series of principles to guide those who have oversight and supervision of federal efforts on actions they might take before, during, and after a disaster to improve their community’s resilience. Though this framework provides meaningful recommendations of reforms to the approach and narrative surrounding resilience in emergency preparedness and response, the recommendations are not mandated to be adopted into laws or federally binding frameworks.

Representation in Planning Processes

Public health emergency and disaster responses repeatedly fall short of meeting the needs of all members of a community. While preparedness standards and guidance call for the inclusion of representatives of at-risk individuals and vulnerable populations and for the consideration of AFN, jurisdictions seem to fall short. For example, “Getting it Wrong: An Indictment with a Blueprint for Getting it Right,” an after action report from the Partnership for Inclusive Disaster Strategies, found that FEMA failed to properly engage disability stakeholders in planning discussions on making disasters services equitably available to persons with disabilities. Similarly, FEMA’s 2020 National Preparedness Report details an example in 2017 when Hurricanes Harvey and Maria hit the US and emergency communications (e.g., evacuation orders) were delivered through the radio, unintentionally excluding the deaf and hard of hearing.

5. Recommendations

We recommend the following strategies to enhance the nation's capacity to meet the needs of at-risk individuals and vulnerable populations before, during, and after disruptions.

- Develop national standards and benchmarks for equitable public health emergency preparedness and response.
- Leverage data to conduct accurate, thorough, and complete assessments of risk and protective factors for both full jurisdictions and specific subgroups.
- Resource jurisdictions to assure representation of people/places at higher risk for harm in planning processes and to engage the community in the adaptation of processes and approaches to specific local need.
- Foster a culture of continuous learning and accountability.
- Shift focus of funding mechanisms from "downstream" response to "upstream" prevention, mitigation, and resilience.

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Appendix A: PAHPAIA Legislative Language

PUBLIC LAW 116-22—JUNE 24, 2019

133 STAT. 929

(2) APPLICATION.—This section shall apply to a claim for harm only if the act or omission that caused such harm occurred on or after the effective date described in paragraph (1).
(b) GAO STUDY.—Not later than one year after the date of enactment of this Act, the Comptroller General of the United States shall conduct a review of—

Deadline.
Review.

(1) the number of health care providers who register under the Emergency System for Advance Registration of Volunteer Health Professionals under section 319I of the Public Health Service Act (42 U.S.C. 247d-7b) in advance to provide services during a public health emergency;

(2) the number of health care providers who are credentialed to provide services during the period of a public health emergency declaration, including those who are credentialed through programs established in the Emergency System for Advance Registration of Volunteer Health Professionals under such section 319I and those credentialed by authorities within the State in which the emergency occurred;

(3) the average time to verify the credentials of a health care provider during the period of a public health emergency declaration, including the average time pursuant to the Emergency System for Advance Registration of Volunteer Health Professionals under such section 319I and for an individual's credentials to be verified by an authority within the State; and

(4) the Emergency System for Advance Registration of Volunteer Health Professionals program in States, including whether physician or medical groups, associations, or other relevant provider organizations utilize such program for purposes of volunteering during public health emergencies.

SEC. 209. REPORT ON ADEQUATE NATIONAL BLOOD SUPPLY.

Not later than 1 year after the date of the enactment of this Act, the Secretary of Health and Human Services shall submit to Congress a report containing recommendations related to maintaining an adequate national blood supply, including—

Recommendations.

(1) challenges associated with the continuous recruitment of blood donors (including those newly eligible to donate);

(2) ensuring the adequacy of the blood supply in the case of public health emergencies;

(3) implementation of the transfusion transmission monitoring system; and

(4) other measures to promote safety and innovation, such as the development, use, or implementation of new technologies, processes, and procedures to improve the safety and reliability of the blood supply.

SEC. 210. REPORT ON THE PUBLIC HEALTH PREPAREDNESS AND RESPONSE CAPABILITIES AND CAPACITIES OF HOSPITALS, LONG-TERM CARE FACILITIES, AND OTHER HEALTH CARE FACILITIES.

(a) STUDY.—

(1) IN GENERAL.—Not later than one year after the date of enactment of this Act, the Secretary of Health and Human Services shall enter into an agreement with an appropriate entity to conduct a study regarding the public health preparedness and response capabilities and medical surge capacities of hospitals, long-term care facilities, and other health care

Contracts.

(Continued)

133 STAT. 930

PUBLIC LAW 116–22—JUNE 24, 2019

facilities to prepare for, and respond to, public health emergencies, including natural disasters.

(2) CONSULTATION.—In conducting the study under paragraph (1), the entity shall consult with Federal, State, local, Tribal, and territorial public health officials (as appropriate), and health care providers and facilities with experience in public health preparedness and response activities.

(3) EVALUATION.—The study under paragraph (1) shall include—

(A) an evaluation of the current benchmarks and objective standards, as applicable, related to programs that support hospitals, long-term care facilities, and other health care facilities, and their effect on improving public health preparedness and response capabilities and medical surge capacities, including the Hospital Preparedness Program, the Public Health Emergency Preparedness cooperative agreements, and the Regional Health Care Emergency Preparedness and Response Systems under section 319C–3 of the Public Health Service Act (as added by section 203);

(B) the identification of gaps in preparedness, including with respect to such benchmarks and objective standards, such as those identified during recent public health emergencies, for hospitals, long-term care facilities, and other health care facilities to address future potential public health threats;

(C) an evaluation of coordination efforts between the recipients of Federal funding for programs described in subparagraph (A) and entities with expertise in emergency power systems and other critical infrastructure partners during a public health emergency, to ensure a functioning critical infrastructure, to the greatest extent practicable, during a public health emergency;

(D) an evaluation of coordination efforts between the recipients of Federal funding for programs described in subparagraph (A) and environmental health agencies with expertise in emergency preparedness and response planning for hospitals, long-term care facilities, and other health care facilities; and

(E) an evaluation of current public health preparedness and response capabilities and medical surge capacities related to at-risk individuals during public health emergencies, including an identification of gaps in such preparedness as they relate to such individuals.

(b) REPORT.—

(1) IN GENERAL.—The agreement under subsection (a) shall require the entity to submit to the Secretary of Health and Human Services and the congressional committees of jurisdiction, not later than 3 years after the date of enactment of this Act, a report on the results of the study conducted pursuant to this section.

(2) CONTENTS.—The report under paragraph (1) shall—

(A) describe the findings and conclusions of the evaluation conducted pursuant to subsection (a); and

(B) provide recommendations for improving public health preparedness and response capability and medical

Recommendations.

(Continued)

PUBLIC LAW 116–22—JUNE 24, 2019

133 STAT. 931

surge capacity for hospitals, long-term care facilities, and other health care facilities, including—

- (i) improving the existing benchmarks and objective standards for the Federal grant programs described in subsection (a)(3)(A) or developing new benchmarks and standards for such programs; and
- (ii) identifying best practices for improving public health preparedness and response programs and medical surge capacity at hospitals, long-term care facilities, and other health care facilities, including recommendations for the evaluation under subparagraphs (C) and (D) of subsection (a)(3).

TITLE III—REACHING ALL COMMUNITIES

SEC. 301. STRENGTHENING AND ASSESSING THE EMERGENCY RESPONSE WORKFORCE.

(a) NATIONAL DISASTER MEDICAL SYSTEM.—

(1) **STRENGTHENING THE NATIONAL DISASTER MEDICAL SYSTEM.**—Clause (ii) of section 2812(a)(3)(A) (42 U.S.C. 300hh–11(a)(3)(A)) is amended to read as follows:

“(ii) be present at locations, and for limited periods of time, specified by the Secretary on the basis that the Secretary has determined that a location is at risk of a public health emergency during the time specified, or there is a significant potential for a public health emergency.”

(2) **REVIEW OF THE NATIONAL DISASTER MEDICAL SYSTEM.**—Section 2812(b)(2) (42 U.S.C. 300hh–11(b)(2)) is amended to read as follows:

“(2) **JOINT REVIEW AND MEDICAL SURGE CAPACITY STRATEGIC PLAN.**—

“(A) **REVIEW.**—Not later than 180 days after the date of enactment of the Pandemic and All-Hazards Preparedness and Advancing Innovation Act of 2019, the Secretary, in coordination with the Secretary of Homeland Security, the Secretary of Defense, and the Secretary of Veterans Affairs, shall conduct a joint review of the National Disaster Medical System. Such review shall include—

“(i) an evaluation of medical surge capacity, as described in section 2803(a);

“(ii) an assessment of the available workforce of the intermittent disaster response personnel described in subsection (c);

“(iii) the capacity of the workforce described in clause (ii) to respond to all hazards, including capacity to simultaneously respond to multiple public health emergencies and the capacity to respond to a nationwide public health emergency;

“(iv) the effectiveness of efforts to recruit, retain, and train such workforce; and

“(v) gaps that may exist in such workforce and recommendations for addressing such gaps.

“(B) **UPDATES.**—As part of the National Health Security Strategy under section 2802, the Secretary shall update

Deadline.
Coordination.

Evaluation.

Recommendations.
Recommendations.

Appendix B: PAHPAIA Study Interview Questions for Public Health Coalitions and Departments

Federally Funded Entities Question Set: State and Local Health Departments

1. Briefly introduce yourself and **describe the overall structure and goals** of your public health emergency preparedness and response efforts?
 - a. How has your department balanced the priorities of preparedness and response over the past 5 years?
 - b. Does federal funding offer any flexibility to address shifting priorities?
2. Think about other healthcare and public health entities that you interact with during a public health emergency.
 - a. Which entities do you work closest with and how? (Public, Private, Community-based)
 - b. What is your relationship with healthcare coalitions (HCC) and Local Health Departments (LHD) in your state?
 - c. What barriers or challenges do you encounter when coordinating with other healthcare and public health entities?
3. Think about **other critical infrastructure** that you interact with during a public health emergency
 - a. How do you coordinate with critical infrastructure during a public health emergency?
 - b. What barriers or challenges do you encounter when coordinating with other critical infrastructure entities?
4. Think about **federal agencies or departments** that you interact with during a public health emergency
 - a. Which federal entities do you work with and in what context?
 - b. What barriers or challenges do you encounter when coordinating with federal agencies or departments?
5. We're interested in learning **how information is shared** during a public health emergency
 - a. What are your primary methods or platforms for facilitating bi-directional information sharing among entities during a public health emergency?
 - b. Describe your role in communicating the needs of partners in your jurisdiction to federal partners.
 - c. What barriers or challenges do you encounter with providing or receiving information?
6. Think about your role in **providing resource support** during a public health emergency.
 - a. What is your role in maintaining any stockpile of essential medical counter measures or other supplies?
 - Is it the state's stockpile, or is it SNS product?
 - Please describe how this stockpile was managed during the COVID-19 pandemic, including any challenges or best practices.

- b.** What is your role in distributing resources to partners in your jurisdiction?
 - For example, during COVID-19, how did your department distribute products to /
 - facilities or LHDs?
 - c.** What barriers or challenges do you encounter with managing or distributing resources and supplies?
- 7.** ASPR has a working definition for “at-risk and vulnerable populations”.
- a.** How do you define “at-risk and vulnerable populations”?
 - b.** How do you assess who is at risk or vulnerable?
 - c.** How do you ensure you are addressing the needs of “at-risk and vulnerable populations”?
 - d.** What barriers or challenges do you encounter when address public health preparedness and response with an equity lens?
- 8.** Think about how you **make improvements** in your preparedness and response efforts during and after a public health emergency.
- a.** How do you define “success” for a response to a public health emergency?
 - b.** What monitoring and evaluation strategies do you employ? (e.g., After Action Review)
 - c.** What barriers or challenges do you encounter with continuous improvement efforts and evaluation?

Federally Funded Entities Question Set: Healthcare Coalitions

- 1.** Briefly introduce yourself and **describe the overall structure and goals** of your public health emergency preparedness and response efforts?
 - a.** How has your HCC balanced the priorities of preparedness and response over the past 5 years?
 - b.** What resources do you receive to support preparedness and response efforts (e.g., HPP)
 - c.** Does federal funding offer any flexibility to address shifting priorities?
- 2.** Think about **other healthcare and public health entities** that you interact with during a public health emergency.
 - a.** Which entities do you work closest with and how? (Public, Private, Community-based)
 - b.** What is your relationship with state and local health departments in your state?
 - c.** What barriers or challenges do you encounter when coordinating with other healthcare and public health entities?
- 3.** Think about **other critical infrastructure** that you interact with during a public health emergency
 - a.** How do you coordinate with critical infrastructure during a public health emergency?
 - b.** What barriers or challenges do you encounter when coordinating with other critical infrastructure entities?

4. Think about **federal agencies or departments** that you interact with during a public health emergency
 - a. Which federal entities do you work with and in what context?
 - b. What barriers or challenges do you encounter when coordinating with federal agencies or departments?
5. We're interested in learning **how information is shared** during a public health emergency
 - a. What are your primary methods or platforms for facilitating bi-directional information sharing among entities during a public health emergency?
 - b. Can you describe your coalition's role in communicating the needs of facilities in your network to state or federal partners? We're interested in learning how the needs of healthcare facilities are routed to the government.
 - c. What barriers or challenges do you encounter with providing or receiving information?
6. Think about your role in **providing resource support** during a public health emergency.
 - a. What is your role, if any, in maintaining any stockpile of essential medical counter measures or other supplies?
 - Is it the state or coalition's stockpile, or is it SNS product?
 - Please describe how this stockpile was managed during the COVID-19 pandemic, including any challenges or best practices.
 - b. What is your role in distributing resources to members in your coalition?
 - c. What barriers or challenges do you encounter with managing or distributing resources and supplies?
7. ASPR has a working definition for "at-risk and vulnerable populations".
 - a. How do you define "at-risk and vulnerable populations"?
 - b. How do you assess who is at risk or vulnerable?
 - c. How do you ensure you are addressing the needs of "at-risk and vulnerable populations"?
 - d. What barriers or challenges do you encounter when address public health preparedness and response with an equity lens?
8. Think about how you **make improvements** in your preparedness and response efforts during and after a public health emergency.
 - a. How do you define "success" for a response to a public health emergency?
 - b. What monitoring and evaluation strategies do you employ? (e.g., After Action Review)
 - c. What barriers or challenges do you encounter with continuous improvement efforts and evaluation?

Appendix C: PAHPAIA Study Interview Questions for Subject Matter Experts

Question List for Subject Matter Experts

1. Briefly introduce yourself including your background and expertise and perspectives from you'll be speaking from today.
2. Think about **current frameworks and initiatives** for preparedness and response.¹
 - a. What frameworks or initiatives have demonstrated success in moving us closer to tactical preparedness and response?
 - b. How do current frameworks or initiatives address – or not address – concerns around interagency coordination for preparedness and response?
 - *If applicable: What about coordination between states (i.e., multijurisdictional efforts between two or more states)?*
 - 1. *Or coordination between states and federal government?*
 - c. How do current frameworks or initiatives facilitate – or complicate – public-private coordination for preparedness and response?
 - *How can public-private coordination be improved?*
 - d. What other opportunities exist to harness the role, scope, and responsibilities of the private sector, government, and the medical enterprise to move our nation towards tactical preparedness?
3. Think about the current capabilities of ASPR in the context of the Office's duty to lead the nation's medical and public health preparedness and response efforts.
 - a. How does the field assess how ASPR works with other federal agencies, such as CDC, FDA, FEMA, EPA, CMS to coordinate and streamline preparedness and response efforts?
 - b. What would help ASPR more successfully achieve their mission and enhance interagency work?
4. *If applicable:* Think about the medical countermeasure (MCM) pipeline – starting from the enabling environments that support interagency coordination, to the actual development of MCMs, through to the point of distribution.
 - a. What infrastructure, or partnerships, enable the development and distribution of MCMs, particularly for novel and emerging threats?
 - b. How did the National Biodefense Strategy support the capabilities of the private sector in COVID?
 - c. Also thinking to COVID and the novel strategies deployed during the pandemic, such as Operation Warp Speed, what opportunities do you see to create a nimbler MCM infrastructure in the future?

5. Recognizing that emergency events and MCM distribution strategies can create or worsen inequitable health outcomes, how does the field identify communities or groups that are at higher-risk of disparate impacts?
 - a. What are some leading examples that you have seen for addressing the needs of these communities or groups?
 - b. How is – or should – the field assess the capabilities of the medical enterprise in meeting the needs of these communities or groups during a disaster?
 - *If applicable:* How well did you see this working in COVID-19?
 - c. What could be done to improve an equitable approach to preparedness and response?
6. Any final thoughts or recommendations you would like to share?

¹ Examples: 2006 PAHPA, [2013 PAHPRA](#), [2019 PAHPAIA](#), 2018 National Biodefense Strategy, 2019-2022 National Health Security Strategy (NHSS), Urban Areas Security Initiatives Program (UASI), FEMA National Preparedness Report, National Health Security Preparedness Index (NHSPI), [ASPR National Strategy for a Resilient Public Health Supply Chain](#)

Appendix D: PAHPAIA Study Interview Questions for Focus Groups

Question list for Focus Groups

1. Recognizing there has been significant research to date about some of the challenges that the community you represent may face during a disaster, can you tell us your greatest concerns when a disaster strikes? What areas are you concerned about to make sure your communities are prepared and can have their needs tended to during a disaster?
2. What resources or programs do you and your organization turn to, or leverage to help your communities prepare for and get support during disasters?
3. We'd like to talk about the challenges and observed pain points in health delivery for the communities you represent.
 - a. Can you describe what you or your members experiences have been in the preparedness phase? To what extent is public health involving you or your members in preparing for disasters? What are the challenges in the preparedness phase?
 - b. Can you describe what you or your members experiences have been in the response phase? To what extent is public health involving you or your members in responding to disasters? What are the challenges in the response phase?
4. What might help to alleviate these challenges or observed pain points in the preparedness and response phases? What are the opportunities to improve health delivery for the groups your organizations represent before, during, and after a disaster?
5. How do you see efforts to strengthen community resilience show up in your space?
6. How do you see health equity and equitable approaches to preparedness and response showing up in your space?

Appendix E: Anchor Frameworks

Framework	Author	Description	Intended Audience
2019-2023 Hospital Preparedness Program Performance Measures Implementation Guidance	HHS ASPR	This document outlines five performance measures designed to evaluate and track program progress.	Individuals responsible for collecting and reporting data on recipient and HCC progress
A National Blueprint for Biodefense	Bipartisan Commission on Biodefense	This document identifies systemic weaknesses in the Nation's biodefense and provides 33 steps to mitigate these vulnerabilities.	Federal officials
Evidence-Based Practice for Public Health Emergency Preparedness and Response	NASEM	This document provides an evaluation of the public health emergency preparedness and response system to identify strengths and weaknesses.	Federal, state, tribal, territorial, and local public health systems
Health care System Readiness Measurement Framework	NQF	This document outlines a series of guiding principles to assist with analyzing health care systems' readiness for disasters and emergencies.	Federal, state, tribal, territorial, and local public health systems
National Preparedness Report (2020)	FEMA	This report highlights the risks facing the Nation and the country's ability to address those risks.	Federal, state, tribal, territorial, and local public health systems
Public Health Emergency Preparedness and Response Capabilities	CDC	This document describes 15 capability standards that are intended to advance the preparedness and response capacities of public health systems at the state and local levels.	Federal, state, tribal, territorial, and local public health systems
Ready or Not: Protecting the Public's Health from Diseases, Disasters, and Bioterrorism	TFAH	This report includes a series of measurements to assess states' level of preparedness and then ranks states based on their performances.	Federal and state officials
Regionalized Emergency Medical Care Framework	NQF	This framework includes measurements to guide the identification and assessment of gaps for health care systems as a whole.	Federal, state, tribal, territorial, and local public health systems

Appendix F: ASPR Healthcare and Preparedness Response Capabilities

The U.S. Department of Health and Human Services (HHS) Office of the Assistant Secretary for Preparedness and Response (ASPR) developed the *2017-2022 Health Care Preparedness and Response Capabilities* guidance to outline what health care systems have to do to effectively prepare for and respond to emergencies that impact the nation's health.¹

Capability	Goal	Objective
1: Foundation for Health Care and Medical Readiness	The community's health care organizations and other stakeholders – coordinated through a sustainable HCC – have strong relationships, identify hazards and risks, and prioritize and address gaps through planning, training, exercising, and managing resources.	<ol style="list-style-type: none"> Establish and operationalize a HCC Identify risk and needs Develop a HCC preparedness plan Train and prepare the health care and medical workforce Ensure preparedness is sustainable
2: Health Care and Medical Response Coordination	Health care organizations, the HCC, their jurisdiction(s), and the ESF-8 lead agency plan and collaborate to share and analyze information, manage and share resources, and coordinate strategies to deliver medical care to all populations during emergencies and planned events.	<ol style="list-style-type: none"> Develop and coordinate health care organization and HCC response plans Utilize information sharing procedures and platforms Coordinate response strategy, resources, and communications
3: Continuity of Health Care Service Delivery	Health care organizations, with support from the HCC and the Emergency Support Function-8 (ESF-8) lead agency, provide uninterrupted, optimal medical care to all populations in the face of damaged or disabled health care infrastructure. Health care workers are well-trained, well-educated, and well-equipped to care for patients during emergencies. Simultaneous response and recovery result in a return to normal or, ideally, improved operations.	<ol style="list-style-type: none"> Identify essential functions for health care delivery Plan for continuity of operations Maintain access to non-personnel resources during an emergency Develop strategies to protect health care information systems and networks Protect responders' safety and health Plan for and coordinate health care evacuation and relocation Coordinate health care delivery system recovery
4: Medical Surge	Health care organizations—including hospitals, emergency medical services (EMS), and out-of-hospital providers—deliver timely and efficient care to their patients even when the demand for health care services exceeds available supply. The HCC, in collaboration with the Emergency Support Function-8 (ESF-8) lead agency, coordinates information and available resources for its members to maintain conventional surge response. When an emergency overwhelms the HCC's collective resources, the HCC supports the health care delivery system's transition to contingency and crisis surge response and promotes a timely return to conventional standards of care as soon as possible.	<ol style="list-style-type: none"> Plan for a medical surge Respond to a medical surge

¹ <https://www.phe.gov/preparedness/planning/hpp/reports/documents/2017-2022-healthcare-pr-capabilities.pdf>

Appendix G: CDC Preparedness Capabilities

The Centers for Disease Control and Prevention (CDC) updated the former 2011 *Public Health Emergency Preparedness and Response Capabilities* in 2018. This CDC developed these standards to advance the emergency response capacity of state and local public health systems. Each capability outlines a priority resource element that is pertinent to routine public health activities and vital public health services.¹

Capability	Definition	Functions
Capability #1: Community Preparedness	Ability of communities to prepare for, withstand, and recover from public health incidents. Through engagement and coordination with stakeholders at various levels, the public health role in community preparedness is to support systems that develop community preparedness, participate in awareness training, identify at-risk individuals, promote access and awareness of public health services, engage in preparedness activities, and convene or participate with community partners.	<ol style="list-style-type: none"> Determine risks to the health of the jurisdiction Strengthen community partnerships to support public health preparedness Coordinate with partners and share information through community social networks Coordinate training and provide guidance to support community involvement with preparedness efforts
Capability #2: Community Recovery	Ability of communities to identify critical assets, facilities, and other services within public health, emergency management, health care, human services, mental/behavioral health, and environmental health sectors that can guide and prioritize recovery operations. Communities should consider collaborating with jurisdictional partners and stakeholders to plan, advocate, facilitate, monitor, and implement the restoration of the aforementioned sectors to at least a day-to-day level of functioning comparable to pre-incident levels and to improved levels, where possible.	<ol style="list-style-type: none"> Identify and monitor community recovery needs Support recovery operations for public health and related systems for the community Implement corrective actions to mitigate damage from future incidents
Capability #3: Emergency Operations Coordination	Ability to coordinate with emergency management and to direct and support an incident or event with public health or health care implications by establishing a standardized, scalable system of oversight, organization, and supervision that is consistent with jurisdictional standards and practices and the National Incident Management System (NIMS).	<ol style="list-style-type: none"> Conduct preliminary assessment to determine the need for activation of public health emergency operations Activate public health emergency operations Develop and maintain an incident response strategy Manage and sustain the public health response Demobilize and evaluate public health emergency operations

¹ https://www.cdc.gov/cpr/readiness/00_docs/CDC_PreparednesResponseCapabilities_October2018_Final_508.pdf

(Continued)

Capability	Definition	Functions
Capability #4: Emergency Public Information and Warning	Ability to develop, coordinate, and disseminate information, alerts, warnings, and notifications to the public and incident management personnel.	<ol style="list-style-type: none"> 1. Activate the emergency public information system 2. Determine the need for a Joint Information System 3. Establish and participate in information system operations 4. Establish avenues for public interaction and information exchange 5. Issue public information, alerts, warnings, and notifications
Capability #5: Fatality Management	Ability to coordinate with partner organizations and agencies to provide fatality management services. The public health agency role in fatality management activities may include supporting: recovery and preservation of remains, identification of the deceased, determination of cause and manner of death, release of remains to an authorized individual, and provision of mental/behavioral health assistance for the grieving.	<ol style="list-style-type: none"> 1. Determine the public health agency role in fatality management 2. Identify and facilitate access to public health resources to support fatality management operations 3. Assist in the collection and dissemination of antemortem data 4. Support the provision of survivor mental/behavioral health services 5. Support fatality processing and storage operations
Capability #6: Information Sharing	Ability to conduct multijurisdictional and multidisciplinary exchange of health-related information and situational awareness data among federal, state, local, tribal, and territorial levels of government and the private sector. This capability includes the routine sharing of information as well as issuing of public health alerts to all levels of government and the private sector in preparation for and in response to events or incidents of public health significance.	<ol style="list-style-type: none"> 1. Identify stakeholders that should be incorporated into information flow and define information sharing needs 2. Identify and develop guidance, standards, and systems for information exchange 3. Exchange information to determine a common operating picture
Capability #7: Mass Care	Ability of public health agencies to coordinate with and support partner agencies to address, within a congregate location (excluding shelter-in-place locations), the public health, health care, mental/behavioral health, and human services needs of those impacted by an incident. This capability includes coordinating ongoing surveillance and public health assessments to ensure that health needs continue to be met as the incident evolves.	<ol style="list-style-type: none"> 1. Determine public health role in mass care operations 2. Determine mass care health needs of the impacted population 3. Coordinate public health, health care, and mental/behavioral health services 4. Monitor mass care population health

(Continued)

Capability	Definition	Functions
Capability #8: Medical Countermeasure Dispensing and Administration	Ability to provide medical countermeasures to targeted population(s) to prevent, mitigate, or treat the adverse health effects of a public health incident, according to public health guidelines. This capability focuses on dispensing and administering medical countermeasures, such as vaccines, antiviral drugs, antibiotics, and antitoxins.	<ol style="list-style-type: none"> Determine medical countermeasure dispensing/administration strategies Receive medical countermeasures to be dispensed/administered Activate medical countermeasure dispensing/administration operations Dispense/administer medical countermeasures to targeted population(s) Report adverse events
Capability #9: Medical Material Management and Distribution	Ability to acquire, manage, transport, and track medical materiel during a public health incident or event and the ability to recover and account for unused medical materiel, such as pharmaceuticals, vaccines, gloves, masks, ventilators, or medical equipment after an incident.	<ol style="list-style-type: none"> Direct and activate medical materiel management and distribution Acquire medical materiel from national stockpiles or other supply sources Distribute medical materiel Monitor medical materiel inventories and medical materiel distribution operations Recover medical materiel and demobilize distribution operations
Capability #10: Medical Surge	Ability to provide adequate medical evaluation and care during events that exceed the limits of the normal medical infrastructure of an affected community. It encompasses the ability of the health care system to endure a hazard impact, maintain or rapidly recover operations that were compromised, and support the delivery of medical care and associated public health services.	<ol style="list-style-type: none"> Assess the nature and scope of the incident Support activation of medical surge Support jurisdictional medical surge operations Support demobilization of medical surge operations
Capability #11: Nonpharmaceutical Interventions	Nonpharmaceutical interventions are actions that people and communities can take to help slow the spread of illness or reduce the adverse impact of public health emergencies. This capability focuses on communities, and community partners, and stakeholders recommending and implementing nonpharmaceutical intervention in response to the needs of an incident, event, or threat.	<ol style="list-style-type: none"> Engage partners and identify factors that impact nonpharmaceutical interventions Determine nonpharmaceutical interventions Implement nonpharmaceutical interventions Monitor nonpharmaceutical interventions
Capability #12: Public Health Laboratory Testing	Ability to implement and perform methods to detect, characterize, and confirm public health threats. This capability supports passive and active surveillance when preparing for, responding to, and recovering from biological, chemical, and radiological public health threats and emergencies.	<ol style="list-style-type: none"> Conduct laboratory testing and report results Enhance laboratory communications and coordination Support training and outreach

(Continued)

Capability	Definition	Functions
Capability #13: Public Health Surveillance and Epidemiological Investigation	Ability to create, maintain, support, and strengthen routine surveillance and detection systems and epidemiological investigation processes. It also includes the ability to expand these systems and processes in response to incidents of public health significance.	<ol style="list-style-type: none"> 1. Conduct or support public health surveillance 2. Conduct public health and epidemiological investigations 3. Recommend, monitor, and analyze mitigation actions 4. Improve public health surveillance and epidemiological investigation systems
Capability #14: Responder Safety and Health	Responder safety and health is the ability to protect public health and other emergency responders during pre-deployment, deployment, and post-deployment.	<ol style="list-style-type: none"> 1. Identify responder safety and health risks 2. Identify and support risk-specific responder safety and health training 3. Monitor responder safety and health during and after incident response
Capability #15: Volunteer Management	Volunteer management is the ability to coordinate with emergency management and partner agencies to identify, recruit, register, verify, train, and engage volunteers to support the jurisdictional public health agency's preparedness, response, and recovery activities during pre-deployment, deployment, and post-deployment.	<ol style="list-style-type: none"> 1. Recruit, coordinate, and train volunteers 2. Notify, organize, assemble, and deploy volunteers 3. Conduct or support volunteer safety and health monitoring and surveillance 4. Demobilize volunteers

Appendix H: Core Study Questions

Core Study Questions	
Benchmarks and Standards	<ul style="list-style-type: none"> • What are the current benchmarks and objective standards for Healthcare and Public Health (HPH) Sector preparedness and response? • Do the current benchmarks and objective standards facilitate improvements in HPH Sector preparedness and response capabilities, including State, Local, Tribal and Territorial (SLTT) public health preparedness and response, and medical surge capacities of hospitals, long-term care (LTC) facilities, and other health care facilities (i.e., Community Health Clinic [CHC]/Federally Qualified Health Center [FQHC], pharmacies, dialysis centers)? • How can the current benchmarks and objective standards be improved?
Gaps in Capabilities	<ul style="list-style-type: none"> • What are the gaps in HPH Sector preparedness and response capabilities to address future potential public health threats?
Coordination	<ul style="list-style-type: none"> • How are recipients of Federal funding for US Center for Disease Control and Prevention (CDC) Public Health Emergency Preparedness (PHEP) coordinating with other HPH Sector entities during a public health emergency? • How are recipients of Federal funding for CDC PHEP coordinating with other critical infrastructure sectors (e.g., FEMA lifelines) during a public health emergency to ensure a functioning critical infrastructure, to the greatest extent practicable, during a public health emergency? • What is the nature of coordination efforts during a public health emergency between recipients of Federal funding for HPH PHEP and environmental health agencies with expertise in emergency preparedness and response? • How can coordination be improved? • What are best practices for coordination?
Needs of At-Risk Individuals	<ul style="list-style-type: none"> • What are the current HPH Sector preparedness and response benchmarks and objective standards related to “at-risk individuals?” • To what extent are current HPH Sector preparedness and response benchmarks and objective standards addressing the needs of “at-risk individuals?” • How can the current benchmarks and objective standards be improved? • What are best practices for addressing the needs of “at-risk individuals”¹.

Appendix I: PAHPAIA Codebook

Descriptors

A descriptor set is a collection of information that describes the source of the data at a particular level of analysis. Each document uploaded should be assigned a label within each of the following descriptor sets:

- 1.** Perspective Type
- 2.** State/Territory
- 3.** US Department of Health and Human Services (HHS) Region
- 4.** Data Collection Method

Perspective Type

Assign a label based on what perspective the data collection is intended to capture. If you are unsure, check the interview guide used or designation in master participant spreadsheet.

Label	Description
Healthcare Coalition	Data collection intended to capture the perspective of a healthcare coalition (HCC)
Subject Matter Expert	Data collection intended to capture the perspective of a subject matter expert (SME)
Federal Government Stakeholder	Data collection intended to capture the perspective of a federal division leader or program leader regarding at the national jurisdiction level
State Stakeholder (Public/Private)	Data collection intended to capture the perspective of a public agency or private stakeholder at the state jurisdiction level
Tribal/Territorial Stakeholder (Public/Private)	Data collection intended to capture the perspective of a public agency or private stakeholder at the tribal or territorial jurisdiction level
Local/Regional Stakeholder (Public/Private)	Data collection intended to capture the perspective of a public agency or private stakeholder at the regional or local jurisdiction level
Other	

State/Territory

Assign a label based on the jurisdiction served. Federal stakeholders and SMEs will likely be assigned "Not applicable – NA."

Label	Description
NA	Not Applicable
AL	Alabama
AK	Alaska
AS	American Samoa
AZ	Arizona
AR	Arkansas
CA	California
CO	Colorado
CT	Connecticut
DE	Delaware
DC	District of Columbia
FM	Federated States of Micronesia
FL	Florida
GA	Georgia
GU	Guam
HI	Hawaii
ID	Idaho
IL	Illinois
IN	Indiana
IA	Iowa
KS	Kansas
KY	Kentucky
LA	Louisiana
ME	Maine
MH	Marshall Islands
MD	Maryland
MA	Massachusetts
MI	Michigan
MN	Minnesota
MS	Mississippi

Label	Description
MO	Missouri
MT	Montana
NE	Nebraska
NV	Nevada
NH	New Hampshire
NJ	New Jersey
NM	New Mexico
NY	New York
NC	North Carolina
ND	North Dakota
MP	Northern Mariana Islands
OH	Ohio
OK	Oklahoma
OR	Oregon
PW	Palau
PA	Pennsylvania
PR	Puerto Rico
RI	Rhode Island
SC	South Carolina
SD	South Dakota
TN	Tennessee
TX	Texas
UT	Utah
VT	Vermont
VI	Virgin Islands
VA	Virginia
WA	Washington
WV	West Virginia
WI	Wisconsin
WY	Wyoming

HHS Region

Assign a label based on the jurisdiction served. Federal stakeholders and SMEs will likely be assigned “Not applicable – NA.”

Label	Description
NA	Not applicable
1	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont
2	New Jersey, New York, Puerto Rico, and the Virgin Islands
3	Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia
4	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee
5	Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin
6	Arkansas, Louisiana, New Mexico, Oklahoma, and Texas
7	Iowa, Kansas, Missouri, and Nebraska
8	Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming
9	Arizona, California, Hawaii, Nevada, American Samoa, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Guam, Marshall Islands, and Republic of Palau
10	Alaska, Idaho, Oregon, and Washington

Data Collection Method

Assign a label based on the data collection method used. If you are unsure, check the interview guide used or designation in master participant spreadsheet.

Label	Description
Interview - Single Individual	Not applicable
Interview - Multiple Individuals	Data collected via group interaction; all individuals represent the same jurisdiction and perspective (e.g., healthcare coalition)
Focus Group	Data collected via group interaction; each individual represents a different jurisdiction but discuss a common topic (e.g., health equity)
Other	Data collected via other means (e.g., report, transcript of non-project event)

Qualitative Coding

For this project, qualitative data are the words generated by the interviewers and participants. Because we have a particular research focus for our project, we are exploring these data with an eye for identifying the key themes/concepts in the data that can provide a deeper understanding of the research questions. These themes/concepts are the conceptual framework that we will use to organize and understand what is meaningful in the data. Together we will review the data, identify portions (excerpts) that contain content meaningful to our research questions, block these portions, and then apply appropriate code(s)/tag(s). Then we will analyze and synthesize all the excerpts and the codes/tags to understand the phenomenon of interest and how patterns in the data expose the deeper and more complex meaning as communicated by the participants.

Inputs

Inputs are resources, programs, initiatives, and approaches used by stakeholders to achieve public health and healthcare preparedness and response. Select an excerpt and assign a code when a speaker mentions or describes an input. Inputs codes are intended to capture objective information. Note that subjective information will also be coded under outputs/outcomes and characteristics.

Child Code 1	Definition	Example
Frameworks/ Initiatives (Benchmark/ Standard)	A structured system, program, or set of objectives intended to improve healthcare and public health preparedness and response. (e.g., US Center for Disease Control and Prevention [CDC] Public Health Emergency Preparedness [PHEP] Cooperative Agreement, Hospital Preparedness Program [HPP] Cooperative Agreement/HCC, Administration for Strategic Preparedness and Response's [ASPR] regional approach, National Biodefense Strategy, National Health Security Strategy [NHSS], Urban Areas Security Initiatives Program [UASI], FEMA National Preparedness Report, National Health Security Preparedness Index [NHSPI]) Note: Looking for frameworks/initiatives that are explicitly called out or are being described by name	<ul style="list-style-type: none"> • HPP • PHEP • National Response Framework (NRF) • Public Health Accreditation Board (PHAB)
Workforce	The people engaged in or available for public health and healthcare preparedness and response work.	
Policy/ Legislation/ Regulation	A course or principle of action codified by a government, institution, or business.	<ul style="list-style-type: none"> • PAHPAIA • Centers for Medicare & Medicaid Services (CMS) Emergency Preparedness Rule • Regulations set forth by local health departments
Interactions (Coordination/ Collaboration)	Engagement in working together (e.g., human interactions) to accomplish a shared goal or mission	

(Continued)

Child Code 1	Definition	Example
Child Code 2	Partnership that is unique or novel in advancing preparedness, collaboration, or medical surge capacity	
Communication (Info/Data Sharing)	Engagement in the exchange of information or data Reminder: Where appropriate, double code with characteristics or outputs / outcomes codes	
Resource Management	Engagement in the exchange of tangible resources (supplies, materials) or lack thereof	
Child Code 2	<p>National stockpiles The planning, scheduling, and allocating of national stockpiles of supplies and materials to persons and organizations</p> <p>State stockpiles/cache The planning, scheduling, and allocating of state stockpiles and caches of supplies and materials to persons and organizations</p> <p>HCC stockpile/cache The planning, scheduling, and allocating of HCC stockpile and caches of supplies and materials to persons and organizations</p> <p>Organizational stockpile/cache The planning, scheduling, and allocating of organizational stockpiles and caches of supplies and materials to persons and organizations</p>	
Funding	Financial resources used to support activities and initiatives Reminder: Where appropriate, double code with characteristics or outputs / outcomes codes	
Medical Counter Measures	Engagement in the development of Food and Drug Administration (FDA)-regulated products (biologics, drugs, devices) that may be used in the event of a potential public health emergency stemming from a terrorist attack with a biological, chemical, or radiological/nuclear material, or a naturally occurring emerging disease	
Performance Improvement	Engagement in a systemic process of identifying the root causes of a performance issue and implementing solutions to resolve that issue (e.g., After Action Review/Report)	
At-risk and Vulnerable Populations/ Equity	Engagement in activities that identify and or strive to address the needs of populations at risk for negative outcomes in the event of a disaster or emergency (doesn't have to be activities by the entity). Note: This can be any reference about strategies / actions to support groups experiencing disparate impacts from health or an emergency	
Definition of Success	The way an entity defines their accomplishment of an aim or purpose (whether it's said implicitly or explicitly)	

Outputs/Outcomes

Outputs are the results of inputs, usually described by quantity or quality. Outcomes are the short, mid, and long-term effects of the inputs intended to achieve public health and healthcare preparedness and response. Select an excerpt and assign a code when a speaker mentions or describes an output or outcome. Outputs and outcomes may be objective or subjective. Note that subjective information will also be coded under characteristics.

Code
Positive impact on public health preparedness capability/capacity
Negative impact on public health preparedness capability/capacity
Positive impact on public health response capability/capacity
Negative impact on public health response capability/capacity
Positive impact on medical surge capability/capacity (Hospital, Long Term Care [LTC], Community Health Clinic [CHC]/ Federally Qualified Health Center [FQHC], pharmacies, dialysis centers)
Negative impact on medical surge capability/capacity (Hospital, LTC, CHC/FQHC, pharmacies, dialysis centers)

Characteristics

Characteristics are the speaker's subjective perspective on inputs, outputs, and outcomes. Select an excerpt and assign a code when a speaker reflects or provides an opinion about an input, output, or outcome.

Code	Definition	Example
Strength	A quality, attribute or characteristic of an organization or partnership that benefits or contributes to the overall success of the organization or partnership	
Weakness	A quality, attribute or characteristic of an organization or partnership that inhibits the overall success of the organization or partnership	
Challenge/Gap/ Threat	A barrier, action or quality that inhibits or pauses the progression of work	<ul style="list-style-type: none"> • Multiple priorities / requirements with limited resources • Interference from politics • Lack of staffing / funding / resources • See Brainstorm section below
Opportunity	A circumstance or set of circumstances that makes it possible to progress or do something	

(Continued)

Code	Definition	Example
Technical Platform	Specific tools or platforms used by organizations to perform specific actions	
Practice/Program	A specific action/protocol or set of actions/protocols performed by the organization	
Case Story	Personal stories or experiences shared by organizations or persons that can be useful anecdotes to share in the report to demonstrate a specific impact or scenario	<ul style="list-style-type: none"> • Examples from COVID-19 pandemic or other past disasters that changed the way they worked or the paved the way for future response • Case stories are often disaster-specific, but does not have to be associated with a specific disaster



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