U.S. Department of Health & Human Services

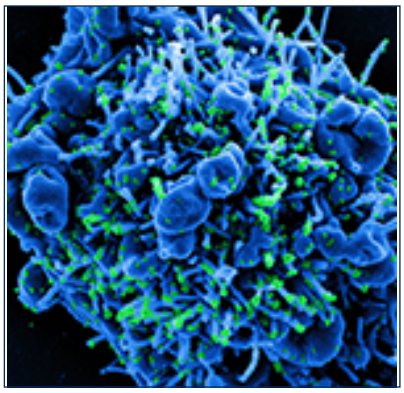
Administration for Strategic Preparedness & Response

National Biodefense Science Board

Public Meeting Summary

September 29, 2022

ASPR



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U.S. Department of Health and Human Services (HHS) Administration for Strategic Preparedness and Response (ASPR)

National Biodefense Science Board
Public Meeting Summary

September 29, 2022 (virtual)
11:00AM -3:00PM ET

Board Member Roll Call

Voting Members

Prabhavathi Fernandes, PhD, FISDA (retired), Biotechnology and Pharmaceutical Executive, NBSB Chairperson
Carl R. Baum, MD, FAAP, FACMT, Professor of Pediatrics and Emergency Medicine, Yale University School of Medicine
John G. Benitez, MD, MPH, Emergency Preparedness Program Medical Director, Tennessee Department of Health
H. Dele Davies, MD, MSc, MHCM, Senior Vice Chancellor for Academic Affairs and Dean for Graduate Studies, University of Nebraska Medical Center
David W. Gruber, MA, Associate Commissioner for Regional and Local Health Operations, Texas Department of State Health Services
Laura H. Kahn, MD, MPH, MPP, FACP, Independent Consultant
Craig Klugman, PhD, Vincent de Paul Professor of Health Sciences, DePaul University
Elizabeth Leffel, PhD, MPH, President, Leffel Consulting Group, LLC
Joelle N. Simpson, MD, MPH, Chief of Emergency Medicine and Medical Director for Emergency Preparedness, Children's National Hospital
Tammy Spain, PhD, PMP, Senior Project Manager, The FlexPro Group/Network Partners
Mike Usman, MD, MMM, MPH, Medical Director, Beacon Health Options of Pennsylvania
David J. Witt, MD, FIDSA, CIC (retired), Independent Consultant

Ex Officio Members and Alternates

Joanne Andreadis, PhD, Associate Director for Science, Centers for Disease Control and Prevention
AC Camacho, Senior Advisor (CTR), Department of Defense Chemical and Biological Defense Program
Maryann Edwards, Senior Medical Program Analyst, Department of Defense Chemical and Biological Defense Program
D. Chris Hassell, PhD, ASRP Senior Science Advisor ASPR
Camille Hopkins, DVM, PhD, MS, Wildlife Disease Coordinator, U.S. Geological Survey
J.D. Polk, DO, MS, FACOEP, Chief Health and Medical Officer, National Aeronautics and Space Administration
Marc Shepanek, PhD, National Aeronautics and Space Administration
Herbert O. Wolfe, PhD, MS, Deputy Assistant Secretary for Health, Department of Homeland Security

Federal Attendees and Invited Experts

Meg Sullivan, MD, MPH, ASPR Chief Medical Officer
Victor J. Dzau, MD, President of the National Academy of Medicine and Vice Chair of the National Research Council
Thomas J. Nasca, MD, MACP, President and Chief Executive Officer, Accreditation Council for Graduate Medical Education
Reynolds Salerno, Director, Division of Laboratory Systems, CDC Center for Surveillance, Epidemiology, and Laboratory Services

Rich Catherina, Supervisory Medical Officer, ASPR National Disaster Medical System (NDMS)
Michael Zanker, NDMS Medical Officer
Emily Gabriel, Deputy Assistant Director for the Total Workforce Protection Directorate, Office of Health Security, Department of Homeland Security
Sara Kinsman, Director, Division of Child, Adolescent, and Family Health, Maternal and Child Health Bureau, HHS Human Resources and Services Administration (HRSA)
Elizabeth Kittrie, Senior Advisor to the Associate Administrator, HRSA Bureau of Health Workforce
Megan Lincoln, Project Officer Public Health Training Centers (Preventive Medicine), HRSA Bureau of Health Workforce
Lorah Ludwig, Project Officer for the Regional Pediatric Pandemic Network, HRSA Maternal and Child Health Bureau
Theresa Morrison-Quinata, Branch Chief for Emergency Medical Services, HRSA Maternal and Child Health Bureau

ASPR Staff

CAPT Christopher L. Perdue, MD, MPH, U.S. Public Health Service, NBSB Designated Federal Official, ASPR Policy Division
Kristin DeBord, PhD, Acting Director, ASPR Office of Strategy, Policy, Planning and Requirements
Darrin Donato, Chief of the Domestic Policy Branch, ASPR Policy Division
Mariam Haris, MPP, Policy Analyst (CTR), ASPR SPPR
Megan Hoffman, Policy Analyst (CTR), ASPR SPPR

Opening Remarks

CAPT Perdue opened the NBSB public meeting, conducted roll call, and reviewed administrative and operational requirements specific to the NBSB charter, the Federal Advisory Committee Act (FACA), the General Services Administration (GSA) FACA Final Rule, and the HHS ethics rules for special government employees (the voting members appointed by the HHS Secretary). American Sign Language interpretation and live captioning were provided by contract staff. None of the voting members declared any conflicts of interest. Public attendees participated in the meeting via Zoom (webinar) with access to the "Q&A" feature. They were also encouraged to send comments or questions via email to NBSB@hhs.gov.

Dr. Sullivan welcomed the board members and public meeting participants. She highlighted the importance of ASPR's change from a staff division in the HHS Office of the Secretary to the Administration for Strategic Preparedness and Response, a new operating division announced by Secretary Becerra in July 2022. This administrative change recognizes the growth of ASPR since it was created in 2006. In keeping with its primary mission, ASPR has expanded and added programs that promote and support all-hazards medical and public health emergency preparedness, response, and recovery. The full implementation of administrative functions will take several years, while operational activities will continue as before. Noting the agenda for this meeting, Dr. Sullivan echoed the importance of further developing and expanding systems to collect, analyze, and share operational health data for disaster response, using virtual healthcare in disasters while ensuring that such technologies support the needs of communities that have reduced access to care, and developing a strategic approach to disaster training in the health workforce.

Dr. Fernandes provided welcoming remarks, noting that the NBSB's two standing working groups – "Readiness and Resilience" and "Countermeasures and Operational Research" – have met regularly since July and would be reporting on their progress during the meeting. Dr. Fernandes opened the floor for questions and discussion with the board members.

Additional points made during the discussion:[1]

- With respect to collecting and sharing health system data, ASPR's authorities remain the same following the transition to an Administration. From a strategic perspective, there is still much work to be done to ensure that ASPR and other agencies involved in emergency response have the health and health system data that are needed; interoperability among data systems is critical, as are digital security and privacy protections.
- The United States will face challenges sustaining public health programs and activities that are funded through COVID-19 special appropriations; lessons from COVID-19 could help to continue to innovate and refine key activities despite changes in funding levels.
- Coordination with state governments allows state officials to provide inputs into federal decision-making during a public health response. During the COVID-19 response, coordinating equitable deployment of medical countermeasures with the states was an example of a specific challenge that could be addressed through improved coordination mechanism, which remains one of the goals for ASPR.
- Operational data systems could include more information from animal and environmental sources, a goal that requires more discussion among federal partners, and potentially recommendations from NBSB.

Summary of Presentations and Discussion

Public Comments

Ryan Maves, MD, Professor of Medicine and Anesthesiology at Wake Forest School of Medicine and a member of the Society of Critical Care Medicine COVID-19 Advisory Panel, presented his personal perspectives on improving and strengthening critical care systems for disaster response. Although critical care specialists are trained to deal with crises and periodic surges, as well as the inherent emotional burden associated with treating critically ill patients, COVID-19 was exceptional in that it reduced the capacity of existing facilities and staff to provide normal levels of care. Effective critical care relies on highly trained staff, many of whom appear to be leaving the profession, and pipelines of trainees in many disciplines, as well as specialized medical supplies, laboratories, and pharmacy services. Certain medications, such as those used for anesthesia and neuromuscular blockade, are indispensable; the supply of those drugs was severely impacted by the outbreak. Other factors, such as the closure of rural facilities, consolidation of specialty care in urban centers, and pay imbalance for many staff (nurses specifically), have diminished the availability of critical care. Dr. Maves recommended several areas where work is needed to improve overall disaster response:

1. Additional training for acute (emergency) care surge
2. Research to understand and enhance workforce resilience
3. Enhanced resilience in the medical supply chain, including modernization of personal protective equipment and national stockpiles
4. Focus on the needs of rural areas and the underserved
5. Harmonization of policies for crisis standards of care
6. General scientific literacy

[1] This section and subsequent sections combine individual remarks and synopsize the discussion among board members and other attendees, including comments from the public "Q&A" feature.

Kevin N. Nicholson, RPh, JD, Vice President for Public Policy, Regulatory, and Legal Affairs at the National Association of Chain Drug Stores (NACDS), presented his organization's perspective on the utilization of pharmacies during public health emergency responses. Because of their numbers and locations, pharmacies are uniquely available to rural, minority, and underserved populations. Because of PREP Act's flexibilities during the COVID-19 outbreaks, patients can receive a variety of healthcare services in one setting and in one visit at their local retail pharmacies, including testing, vaccinations, and antiviral medications. Pharmacies are often highly cost-effectively, though additional legal flexibilities are needed to increase the scope of pharmacy practice on a routine basis, which could enhance emergency response capability at the community level.

Jacquelyn McRae, PharmD, MS, Director of Policy and Research for Pharmaceutical Research and Manufacturers of America (PhRMA), presented observations and perspectives on health data systems. Granular data on equity measures, such as race and ethnicity, are missing for many COVID-19 outcomes. Improving data collection is critical to improving future pandemic preparedness and data challenges. Dr. McRae emphasized the importance of community-centered practices and underscored the importance of collecting disability status and the diverse needs of disability stakeholders. Robust data collection must be accompanied by community-sensitive data practices.

Dr. Fernandes summarized written comments submitted via email by **Mr. Mitchell Berger**, a current, federal public health advisor who provided his personal perspectives, not those of the federal government or his agency. In his letter to the NBSB, Mr. Berger noted that COVID-19 resulted in a significant interruption in the continuity of care for those who require mental health services and substance abuse treatment. He suggested that emergency management planning needs to include considerations related to behavioral health, further extension of prescription drug coverage to allow for a 90-day supply for chronic conditions, improved use of telehealth in support of behavioral health treatment, and integrated, multisectoral recovery planning that includes social services and housing needs.

NBSB Working Group Presentations

In July 2022, ASPR senior staff members suggested that the NBSB develop recommendations based on lessons from COVID-19. In discussing the numerous issues, the NBSB agreed to focus initially on three general topics:

- Collecting, analyzing, and sharing operational health data;
- Using virtual healthcare during disaster response while ensuring equity for rural and underserved communities;
- Support for the health workforce.

Leading up to the public meeting, both standing working groups gathered information primarily on the first two topics (health data and virtual healthcare). During the public meeting on September 29, 2022, board members highlighted observations, key findings, and lessons identified during working group meetings, but are not offering recommendations at this time. Dr. Davies, Dr. Witt, and Dr. Klugman provided a readout from the Readiness and Resilience (RnR) and Countermeasures and Operational Research (COR) Working Groups.

TOPIC: Operational health data collection, analysis, and sharing

Subject matter experts invited to working group discussions:

- **Morgan McDonald, MD**, Tennessee State Health Commissioner

- **Diane Dubinski, MEM, BSN, RN, NHDP-BC**, Tennessee State Healthcare Preparedness Coordinator
- **Catherine Cella, MPH**, Kaiser Permanente (KP) Regional Director for Quality, Population Health, Technology Integration
- **Eric Dilda, MD, FACEP**, Medical Legal and Risk Director, *KPHealthConnect* and Information Technology Chief, KP South San Francisco Medical Center
- **Alison Kelly, MPIA**, Deputy Director, CDC Center for Forecasting and Outbreak Analytics (CFA)
- **Jennifer Adjemian, PhD**, CAPT, Director, Division of Health Informatics and Surveillance, CDC Center for Surveillance, Epidemiology and Laboratory Services

Highlights from the working group's discussions on operational health data systems:

- Initial federal reporting requirements established in July 2020 resulted in considerable confusion, with multiple different reporting channels and duplicative reporting.
- Human resources for information management at the state and local levels were limited, resulting in delays in reporting; changing and expanding reporting requirements required some health facilities to use employees for data requirements rather than patient care.
- The absence of a consensus on essential data elements and clearly delineated chains of reporting also resulted in many additional requests for data at the local and state levels, sometimes to address legitimate public concerns but reportedly also for *ad hoc* research not directly related to public health operations.
- Changes to data collection and national reporting from the federal level disrupted the existing relationships between health system operators and state officials; ultimately, recognition of the national effort and incentives based on deployment of medical countermeasures helped with compliance.
- The utility of certain data fields required by the federal government was sometimes uncertain, and (from the local level) not clearly indicative of the health system "overload" or surge capacity; an agreement on the minimum essential elements of information to gauge capacity and strain on the health system is needed.
- Health-related operational data would ideally flow from each state to the federal government through a single reporting channel, though such data elements need to be chosen carefully to reduce the overall burden and prevent federal operational decisions based on data that are quickly outdated.

TOPIC: Virtual healthcare for disaster response

Subject matter experts invited to working group's discussions:

- **Tehnaz Boyle, MD, PhD**, Assistant Professor, Boston University School of Medicine, HHS Region I Regional Disaster Health Response System (RDHRS) Telehealth Working Group
- **Jeffrey Dichter, MD**, Associate Professor, University of Minnesota Medical School, Executive Committee Member on the Task Force for Mass Critical Care
- **William England, JD, MD**, Senior Advisory, Office for the Advancement of Telehealth, HHS Human Resources and Services Administration (HRSA)
- **Alva O. Ferdinand, DrPH, JD**, Director, Southwest Rural Health Research Center
- **Chris Fore, PhD**, Director, TeleBehavioral Health Center of Excellence, HHS Indian Health Service (IHS)

- **Richard Hunt, MD, FACEP**, Senior Medical Advisory for the National Healthcare Preparedness Program, ASPR
- **James Lawler, MD, MPH**, Associate Professor, Division of Infectious Diseases, Director of International Programs and Innovation, Global Center for Health Security, and Director of Clinical and Biodefense Research, Nebraska Medicine
- **CDR Dina Passman, MPH, USPHS**, Chief of the National Emergency Tele-Critical Care Network Branch, ASPR Readiness Division
- **Susy Postal, DNP, RN-BC**, IHS Chief Health Informatics Officer
- **Michelle Schwedhelm, MSN**, Executive Director of Emergency Management and Biopreparedness, Nebraska Medicine

Highlights from the working group's discussions on **rural health and regional coordination**:

- The "hub-and-spoke" model developed by the HHS Region VII Regional Disaster Health Response Ecosystem (RDHRE), based at the University of Nebraska Medical Center (Omaha, NE) and sponsored by ASPR,[2] promoted coordination with major health systems and leaders across rural and urban settings; key lessons for regional coordination include building trust among partners, maintaining transparency, communicating frequently, and ensuring that everyone has a voice in the conversation.
- During COVID-19, the Medical Emergency Operations Center (MEOC)[3] for Region VII provided communication channels and transparency among partners, with contributions from leaders in all jurisdictions and sectors, though more work is needed to develop a consistent information-sharing dashboard and systems to coordinate regional resources for specialty care.
- A published study based on a survey of rural and urban residents[4] showed that COVID-19 mitigation strategies were less likely to be effective for rural residents as compared to urban residents.
    - Wearing a mask in public, home sanitization, avoiding dining in restaurants and bars, changing travel plans, and working from home were all less likely for rural residents as compared to urban residents.
    - Self-reported survey data indicated that multiple factors were statistically associated with fewer prevention behaviors, including sex, education, age, income level, political stance, religious beliefs, trust in experts (in general), and personal concern about COVID-19.
    - Additionally, targeted outreach may have been beneficial for rural residents to encourage them to adopt specific behaviors during COVID-19, including identifying locally trusted communicators for key public health messages.

Highlights from the working group's discussion on the use of **virtual healthcare systems**:

- The National Emergency Tele-Critical Care Network (NETCCN), funded jointly by ASPR and the U.S. Army's Telemedicine & Advanced Technology Research Center (TATRC), was launched for COVID-19 in 2020 to alleviate some of the limitations in accessing critical care for smaller hospitals.

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[2] ASPR Regional Disaster Health Response Systems.

[3] ASPR TRACIE. Medical Operations Coordination Cells Toolkit.

[4] Callaghan T, Lueck JA, Trujillo KL, Ferdinand AO. Rural and Urban Differences in COVID-19 Prevention Behaviors. Journal of Rural Health. 2021 Mar;37(2):287-295. Accessed online 10/17/2022.

- Experience with NETCCN suggests that utilizing an all-hazards approach would ensure that the systems are used and maintained, such as routinely mobilizing trauma networks and identifying other standard practices to leverage the technologies.
- ASPR's new disaster telemedicine program, evolving from NETCCN, will focus on providing a telehealth service that can support NDMS, though there are recognized challenges with connectivity during large-scale events.
- The HHS Region I RDHRS Telehealth Working Group developed a tiered system that builds on the existing local medical surge capacity and capability to enhance coordination and integrate key clinical and administrative capabilities.
- The experience in Region I during COVID-19 suggests several key considerations:
    - Design to allow adaptations across regions
    - Establish regional registries for experts
    - Use the system in "steady-state" to be prepared for disasters
    - Alleviate liability concerns
    - Develop sustainable funding
- In an internal Region I survey, 81% of hospital emergency departments were willing to use teleconsultation services, though credentialling providers across jurisdictions and introducing new technologies and interfaces remain challenging.
- IHS implemented a program to provide telehealth services for routine care, which is largely well-received by patients, though access is limited by the gaps in broadband internet and cellular telephone coverage.
- While funding has been made available to expand access to high-speed internet, the impacts on the availability and use of virtual healthcare services have yet to be determined.
- Existing Center for Medicaid and Medicare Services (CMS) payment rules and waivers that allow extended reimbursement for telehealth services will remain in place only for as long as there is a declaration of a public health emergency.[5] Future rulemaking and sources of funding need to be considered.

Special Session: Disaster and Public Health Emergency Training Needs, Challenges, and Opportunities for the Health Workforce in the United States – A Review of Recommendations from the National Biodefense Science Board

Invited experts:

- **Victor J. Dzau, MD**, President of the National Academy of Medicine (NAM) and Vice Chair of the National Research Council
- **Thomas J. Nasca, MD, MACP**, President and Chief Executive Officer, Accreditation Council for Graduate Medical Education (ACGME)

Ahead of the meeting, Drs. Dzau and Nasca received a copy of the supplemental document for the public meeting that was posted on the NBSB meeting webpage, which contained an extract of recent NBSB recommendations related to disaster training for the health workforce. The same

[5] Update since the NBSB public meeting, the HHS Secretary renewed the public health emergency declaration for COVID-19 for another 90 days on October 13, 2022.

recommendations are in Appendix 1 of this summary. Drs. Dzau and Nasca provided individual remarks, followed by periods of open discussion.

Dr. Dzau stated his support for the prior recommendations made by the NBSB, noting that implementation would require a strong national framework and a related research agenda. He highlighted several recent NAM studies that support disaster readiness training for the health workforce. Evidence-Based Practices for Public Health Emergency Preparedness and Response: Assessment of and Recommendations for the Field (2020) points out the fragmentation and challenges in the field of disaster research. The report's authors recommend that public health emergency preparedness and response (PHEPR) research be treated as a unique discipline, requiring multidisciplinary partnerships and government support, which could ultimately develop evidence for the effectiveness of public health measures and provide technical assistance when needed. Such work would lead to better training and curricula.

In Ensuring an Effective Public Health Emergency Medical Countermeasures (2021) report, NAM committee members highlighted the need to improve systems and methods for collecting and integrating data in an equitable manner that will lead to transparent, evidence-based guidelines and help to establish an agenda for further research; external partnerships and connections to global organizations are critical. The 2022 publication, Building Public Trust in Public Health Emergency Preparedness and Response (PHEPR) Science: A Workshop, dives further into equity issues and the ongoing challenges caused by structural racism. Solutions to those long-standing problems require community engagement as a component of workforce development, systemic protections against health-related misinformation, and capacity building for public health agencies that facilitates partnering with community stakeholders.

With respect to disaster training for the health workforce, Dr. Dzau gave examples of common medical interventions that most trainees already learn over the course of their professional development. At a universal level, it seems sensible to include basic skills in disaster management as early as possible. There are also opportunities to develop and integrate more advanced training for residents and fellows in every specialty, with a final "tier" of certified disaster medicine professionals who have the most extensive training. Some of this happens already, but it remains fragmented and requires additional funding for a national approach.

Dr. Nasca began with an overview of existing training programs in the United States that are accredited by ACGME (Data Resource Book, Academic Year 2020-2021):

- Emergency Medicine (EM) Residency
  - 276 programs, 8,642 residents, 2,455 graduates in 2021
- EM Subspecialty Programs
  - Addiction Medicine (new)
  - Clinical Informatics (5 programs, 10 fellows)
  - Emergency Medical Services (EMS) fellowship provided by 27% of EM residency sponsors (75 programs, 86 fellows)
  - Medical Toxicology (27 programs, 79 fellows)
  - Pediatric Emergency Medicine (27 programs, 134 fellows)
  - Sports Medicine (9 programs, 16 fellows)
  - Undersea and Hyperbaric Medicine (8 programs, 11 fellows)

He stated that currently, the emergency medicine specialty is the focal point within organized medicine for disaster preparedness and the primary interface with public health systems. Typically, an EM residency provides some understanding of disaster management, though typically little practical

experience. The EMS fellowship, a one-year program following an EM residency, includes a significant interface and integration with local and regional disaster systems. In addition to the EMS fellowships accredited by ACGME (list above), there are now 14 Disaster Medicine fellowships that are approved by the Society for Academic Emergency Medicine, resulting in a total output of roughly 100 fellows per year who are formally trained in disaster preparedness, response, and recovery.

Additional points made during the discussion:

The public health system remains chronically underfunded, which contributes to the challenges in coordinating a public health response. Additionally, the U.S. lacks organization for community-based approaches to health emergency preparedness – akin to the civil defense units that were common from World War I through the Cold War – which, if recreated in modern context, could support the overall preparedness of the health workforce. There are opportunities to use modern technologies to connect and engage across the community and workforce while improving trust and compliance with public health measures. Additionally, research and evidence are needed to identify disaster skills training that is effective in the field.

In addition to the EM subspecialty programs, there are an additional 55 pediatric emergency medicine programs that are a subspecialty of pediatrics, which also contribute to the disaster management capacity in the health system. Continuing to improve disaster management capabilities within the emergency medicine specialty should not be to the exclusion of training and specialization among other disciplines. There may be opportunities to train more physicians to manage highly pathogenic infectious diseases and/or nuclear threats, using the emergency medicine sub-specialization as a model, but ultimately, there is a limit to what an individual person can learn and do. Advanced response training could be a valuable adjunct to other specialties, whether as an addition to residency programs or through expansion of eligibility for disaster medicine fellowships. An overarching goal could be broad-based training for all health professionals (at some point in their development) as well as expanding the eligibility for disaster medicine fellowships to those who complete a non-EM residency.

There could be challenges adding disaster training to existing professional curricula, but there is an opportunity now to bring stakeholders together to agree on common elements for various levels of "familiarization" with disaster management, from the most basic training for all health workers to the most advanced fellowships with specific competency assessments. Training material could be disseminated with support from the federal government and ideally added to medical schools, pharmacy and nursing programs, and other preparatory graduate and undergraduate curricula, ensuring that the human resource pipeline is inherently better prepared and more resilient. Health professionals' resilience and flexibility are key attributes in disaster response; no one can be trained for every scenario, but the capacity to adapt to new situations can be strengthened by understanding basic principles.

Training in disaster management currently occurs based on local interest and availability of resources, rather than systematically. Once there is consensus on the core elements of disaster management, those would need to be integrated into existing accreditation systems to be included in formal education. Aside from formal training, there are other points in the healthcare delivery system where disaster training might be feasible and effective. On-the-job or other types of informal training could expand the capacity of the health workforce to better support disaster response.

- Formal education in disaster management at the undergraduate and graduate levels require expensive infrastructures, such as faculty and teaching space, and job opportunities are limited.

- Forms of advanced training that supplement existing specialty training, such as the fellowships that Dr. Nasca described, do not necessarily result in supplemental remuneration; graduates typically must maintain their core clinical activities to receive reasonable pay.
- Incentives for disaster preparedness come from corporate entities in the health system with the capacity to invest in robust capacities for disaster response because high cost of infrequent but very high-impact events.

In addition to preparedness and training for acute disasters, more training and planning are needed for long-term, chronic, and slowly evolving disasters, such as those caused by climate change. For example, the White House recently convened a stakeholder meeting to approach nutrition, diabetes, and obesity as national health crises, which is an example of a complex problem that could be approached using disaster management principles. Many disasters have longer-term impacts that require generalizable skills in public health, family practice, and behavioral health. Training in skills needed for long-term crises and recovery, for example, would be distinct from the typical training for acute disaster management, though an important adjunct to be considered.

Additional Public Comments

Several public attendees submitted comments relevant to the discussion during the meeting that could not be addressed in the time available. Those are recorded here, edited minimally for typographical errors and to explain abbreviations. The Board may consider these in future working group meetings.

Submitted using the Zoom Q&A feature:

"What about dealing with the misinformation that was rampant in the COVID-19 situation? How is that being dealt with? It seems to me that the pre-coordination could also deal with some of this."

"I hope that the NBSB will consider addressing an enhanced focus on older adults in relation to the existing NBSB Findings and Recommendations for the 2023-2026 National Health Security Strategy such as:

1. Effective responses to and recovery from inevitable, concurrent disasters and health emergencies require expansion of and effective redundancy in the capacities of public health departments and health systems, with expansion and strengthening of the existing health coalition strategy to include integration of experts in geriatrics and long-term care medicine, nursing and related disciplines into overall health emergency preparedness, while evaluating the HHS funding to achieve greater efficiency and appropriate funding for capacity building activities.
2. The integration of data from relevant information systems across the United States, with the ability to include data on older adults, to provide rapid situational awareness is needed. An integrated data platform for health and social determinant data in the United States, coordinated by the HHS, would effectively combine data from public health and healthcare systems with appropriate non-health data. It should also provide insights into the impacts on older adult populations that are more vulnerable to a particular threat, as well as include measures to address systemic inequities."

"We saw with the pandemic that emergency medical services (EMS) were at the tip of the spear, but often overlooked when it came to funding. If we review federal support for public safety agencies, the Bureau of Justice supports law enforcement, the U.S. Fire Administration supports fire services, but for EMS, it is a small group at [the National Highway Transportation Administration] under [the Department

of Transportation]. As a matter of fact, if you look at the recently proposed legislation addressing workplace violence against healthcare workers, EMS is not included, even though, according to the Bureau of Labor [Statistics], [EMS providers] are one of the top three victims of healthcare workplace violence. My question, how can we better support EMS, like how we support law enforcement and fire?"

"Another thing I think that could have helped the response is that medical-related announcements (drug approvals, changes in guidance) should come from the relevant medical leadership (CDC, FDA, etc.) and not from elected politicians. When politicians make announcements, unfortunately, it makes things more political."

"CDC's Anne Schuchat did a fantastic job of the "here's what we know today; what we knew yesterday was wrong" type of communication [in the daily] press conferences during the 2009 H1N1 influenza outbreak. That might be a good example to study when developing future incident communication strategies."

Submitted with online registration:

"Family physicians, physician assistants, and nurse practitioners can function as sole emergency department (ED) providers in low-volume rural EDs as long as they receive proper onboarding [and] education and have the availability of [tele-emergency medicine] (virtual) support by an emergency medicine trained/boarded physician. COVID taught us many lessons about preparedness and the need for adequately trained clinicians in all EDs, because you may end up needing to manage patients for much longer periods of time than usual. Proper early diagnosis and treatment will help assure the best clinical outcomes and will make rural patient care more equitable compared to patients in urban EDs.

Appendix 1. National Biodefense Science Board (NBSB) – R*ecommendations related to disaster training for the health workforce, 2019-2021*

Published Report Title[6]	Publication Date	Serial Number[7]	Recommendation Group[8]	Recommendation
Recommendations for the 2023-2026 National Health Security Strategy	Dec 2021	3	Establishing a national investment strategy for the public health and medical emergency response workforces	Conduct a comprehensive assessment of the public health and medical emergency response workforces and establish an investment plan that modernizes and stabilizes the national human resource capacity for health emergency response.
Filling Critical Gaps: Comprehensive Recommendations from the NBSB	May 2021	3e	Enhancement of Medical Countermeasures Development, Domestic Manufacturing, and National Supply Chain	Increase federal funding for appropriate laboratory facilities, programs, training, and field work to increase the understanding of the natural history of zoonotic infectious diseases.
Filling Critical Gaps: Comprehensive Recommendations from the NBSB	May 2021	4a	Health Workforce Readiness and Resilience	Coordinate among key professional groups and stakeholders to ensure that every health worker in the United States receives training in disaster preparedness and the principles of effective emergency response, including (among other topics) epidemic infection control and use of personal protective equipment for high-risk infectious diseases.
Filling Critical Gaps: Comprehensive Recommendations from the NBSB	May 2021	4b	Health Workforce Readiness and Resilience	Promote and coordinate development of standardized curricula for health professionals (appropriate to their most likely role during a public health emergency) and promote disaster preparedness, response, and recovery education and accreditation in undergraduate and graduate health and public health programs.

[6] The first entry for each report is hyperlinked to the ASPR website and the full report.
[7] Some number/letter combinations have been assigned for administrative recordkeeping and do not necessarily appear in the published report.
[8] Some groups were created for administrative recordkeeping and do not necessarily appear in the published report.

Published Report Title[6]	Publication Date	Serial Number[7]	Recommendation Group[8]	Recommendation
Filling Critical Gaps: Comprehensive Recommendations from the NBSB	May 2021	4c	Health Workforce Readiness and Resilience	Expand the absolute number of infectious disease specialists who are ready to support an emergency response by increasing training and employment activities, incentives, and funding, as well as by supporting income opportunities that attract pre-professionals to the field.
Integrating Clinical Disaster Response Training with Community and State Based Emergency Planning	May 2020	1	-	Include public health professionals, medical practitioners, and emergency management representatives in the training of clinicians and cover specific content about how clinicians can function effectively within the public health response to disasters.
Integrating Clinical Disaster Response Training with Community and State Based Emergency Planning	May 2020	4	-	Strengthen engagements with health system leaders, communicate return on investment from emergency preparedness programs at the facility level, and establish incentives where needed to ensure that front-line practitioners are involved in preparedness activities and receive the training needed to provide skilled care during a disaster.
Integrating Clinical Disaster Response Training with Community and State Based Emergency Planning	May 2020	5	-	Address ongoing gaps identified through joint exercises…of disaster events, provide reimbursement for joint simulations of disaster events to heighten awareness, and provide follow up support at the local, regional, and national levels to address such gaps [as identified through joint exercises of disaster events, with an emphasis on patient populations with special needs and vulnerabilities.

Published Report Title[6]	Publication Date	Serial Number[7]	Recommendation Group[8]	Recommendation
Integrating Clinical Disaster Response Training with Community and State Based Emergency Planning	May 2020	6	-	Provide "Just-in-Time" Training. National "Just-in-Time" Training opportunities, tools, and reference materials-combined with capacities for remote consultation-should be made available to coalitions from ASPR and allied HHS organizations.
Integrating Clinical Disaster Response Training with Community and State Based Emergency Planning	May 2020	10	-	Formalize, organize, and promote disaster medicine as a specialty.
Recommendations from the National Biodefense Science Board	Sep 2019	4a	Community-based providers should also be prepared to serve as "first responders" during a protracted disaster while resuming and maintaining usual care functions.	Community-based providers should be provided with **CE and JIT training [personal wellbeing]**; ready access to PPE and associated training/drills; ready access to MCMs including pre-exposure vaccination; personal and professional practice preparedness plans, such as contingency plans for healthcare providers' family and pets; support systems for families while practitioners are "deployed" during a disaster.
Recommendations from the National Biodefense Science Board	Sep 2019	4b	Community-based providers should also be prepared to serve as "first responders" during a protracted disaster while resuming and maintaining usual care functions.	Community-based providers should be provided with **CE and JIT training [unique needs of vulnerable populations]**; exercises and drills to promote skills, team trust-building, and competence; certification and other means to recognize additional training/competency; knowledge and dissemination of local, regional, and national resources for information and support; and incentives that link preparedness to reduction in cost for medical liability coverage, practice insurance, or maintenance of certification.

Published Report Title[6]	Publication Date	Serial Number[7]	Recommendation Group[8]	Recommendation
Recommendations from the National Biodefense Science Board	Sep 2019	4c	Community-based providers should also be prepared to serve as "first responders" during a protracted disaster while resuming and maintaining usual care functions.	Community-based providers should be provided with **continuity of operations plans**; local, regional, and national resources for support; disaster and crisis modifiers for health insurance reimbursement and other payment means to temporarily increase practice reimbursement during disaster; MOU and licensure and/or insurance coverage modification in disasters to temporarily increase workforce and improve surge capacity; and mechanisms to be reimbursed for "lost productivity" during participation in selected training/drills/exercises.
Recommendations from the National Biodefense Science Board	Sep 2019	5a	What are possible topics for ongoing research to help with the NDMS?	There need to be subject matter experts designated to assist during disasters, either available locally or remotely through consultative services or active deployment during the disaster.
Recommendations from the National Biodefense Science Board	Sep 2019	5c	Specialists related to disaster medicine fields are invaluable and should be promoted.	The number and distribution of disaster specialists should be considered more in terms of "availability and access" than "physical presence" within a facility as persons with such training may be hard to sustain within different communities based on population size, cost, and ability to attract such persons.
Recommendations from the National Biodefense Science Board	Sep 2019	5d	Specialists related to disaster medicine fields are invaluable and should be promoted.	There should be redundancy and backup for the possibility of systems failures (e.g., cell phones going down) that clearly delineate how SMEs who are only remotely available can be activated quickly.
Recommendations from the National Biodefense Science Board	Sep 2019	5e	Specialists related to disaster medicine fields are invaluable and should be promoted.	Establish and incentivize certification for Disaster Medicine SMEs.