U.S. Department of Health & Human Services
Office of the Assistant Secretary for Preparedness & Response

Recommendations from the National Biodefense Science Board (NBSB):

Training and Readiness for the U.S. Health Workforce – Recommendations from the National Biodefense Science Board

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Introduction

Since 2008, the NBSB has issued 16 recommendations that directly address the need for additional education, training, and exercises within the health workforce. A summary of those recommendations is in the following section of this report. In 2022-2023, the NBSB went further in its discussion of the training and readiness needs of the health workforce, focusing on concepts related to the content of such training and a technical framework to support implementation. Without duplicating or seeking to replace existing guidelines or work already underway to train people in disaster management, disaster health response, or humanitarian response, board members envisioned a comprehensive strategy that would bring multiple pieces together to address the variations in training needs (and opportunities) and provide a roadmap to integrate disaster preparedness as an essential competency for the health workforce at large. Rather than strictly separate training, which is essential for the relatively few people who are needed as "disaster experts," the Board discussed ways to integrate disaster preparedness into existing occupational and professional training.

Recognizing that the NBSB had already issued several recommendations related to training (summarized below), the Board held a public meeting on September 29, 2022, during which they heard from a number of national experts in professional health education. In the *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*, the board members concluded that current professional training for disaster response is relatively limited and fragmented, based mostly on "home grown" curricula and with limited resources. Through September of 2023, the R&R Working Group took up this topic and drafted the recommendations that are published in this report.

With inputs from a variety of experts (Appendix 2), the board members sought to better understand the issues through discussion of the following questions (in no specific order):

1. What are the basic competencies or skills in disaster response needed for all physicians and nurses? At what point in professional development should that training occur or begin?
2. What are the competencies or skills in disaster response needed for other professional and vocational workers in the health system? What would be needed for on-the-job or just-in-time training (properly designed and implemented) to be effective in improving overall health worker readiness?
3. What specialized training in disaster medicine is currently offered at U.S. academic institutions? How can existing, accredited education and training programs be leveraged to train (and possibly certify) more of the health workforce?
4. How should disaster training for the health workforce complement or align with training conducted in local health departments?

5. How can additional, formal specialization or accredited continuing education in disaster medicine be made available (and adapted as needed) for workers in all health professions?
6. What are the options to provide incentives for private companies, institutions, and public entities to adopt routine, systematic disaster training programs for health workers?
7. Which agencies of the federal government can/should provide national leadership to sustain and continue to provide guidance for basic, intermediate, and advanced disaster health workforce training programs?

Overview of prior NBSB recommendations

In general, the NBSB views the composition of "health workforce" comprehensively, meaning clinicians and other health professionals, technicians, administrators, and support staff who are proximally involved in the provision of healthcare and health services and sustainment of health facilities, including those who work in a community setting. While connected to and functional aligned with, the health workforce is distinct from the *public health workforce*, which (in the U.S. system) is nearly universally associated with a government managed or publicly chartered health department under the auspices of a recognized public health official. While observing that the health workforce has unique attributes that make it distinct from public health workforce, the Board recognizes that the health workforce is undeniably heterogenous from the pedagogical functional perspectives; individual skillsets, capacity to commit to certain roles in preparedness and response, and personal matters that affect readiness and resilience vary significantly between and within professional and occupational categories. These factors should be considered in programs where the goal is to build readiness and resilience in the health workforce.

The prior recommendations from the NBSB fall into several categories. Four of the recommendations for HHS are more strategic in nature, requiring an assessment of the workforce and workforce needs and a comprehensive approach to ensuring that disaster response specialists are present or available across the health system. One of the strategic recommendations is to engage directly with "health system [corporate] leaders" to ensure that health system business models emphasize disaster preparedness and the role of experts in disaster health, while the final recommendation in this category requires changes to regulation and legislation to establish economic incentives to support adoption of this capability.

Seven recommendations are for HHS to directly provide or support skill building, including infectious disease response, health system emergency management (in general), use of medical countermeasures at the facility and community levels, personal readiness (i.e., home, family, pets), and psychological first aid. Providing "just-in-time" (JIT) training and educational credits, including support for professional certification, is also a common theme among these recommendations.

Five of the recommendations involve engagement with health professionals and professional organizations to ensure the disaster preparedness and response are included in existing curricula for all health workers. This would include a variety of incentives, including more options for physicians (specifically) to become certified in Disaster Medicine and the availability of (unspecified) undergraduate and graduate degrees. These five recommendations overlap somewhat another recommendation that calls for resources for regular, multidisciplinary exercises in all health facilities across the country.

Summarizing those recommendations, the NBSB has previously recommended that HHS:

- Assess the disaster health training and preparedness needs of the health workforce
- Develop programs or mechanisms for more of the health workforce to receive disaster training
- Develop guidelines and incentives for the health system to hire and sustain staff members with disaster skills

Findings and Observations

The topic of training and education in the health workforce in the United States is complex and difficult to navigate, as the "system" is loosely structured based on the long history of public and private education systems, heterogenous standards for training and competency assessment, and variable state-based regulations, all of which having developed in tandem with a healthcare system that is largely private. Health education (primarily at the graduate and post-graduate levels) and the health system receive significant amounts of public funding and are additionally subject to federal and state laws that aim to ensure healthcare quality, safety, accessibility, and affordability. Those requirements come (collectively) with certain requirements that derive from regulations, licensing conditions, accreditation standards, and certification options. Some of those requirements are federal, some are state or locality based, and some are entirely "professional" (i.e. the provenance of a self-organized guild that may be voluntary but seen as the pinnacle of expertise). All in all, the system is patchwork, and the board members' own experience and reports from the people that the board members spoke with indicate that there remain many gaps and inconsistencies.

Underlying the recommendations in this report, the Board makes several other observations. First and foremost, there are no definitive pipelines to develop disaster health professionals and minimal formal education or training in disaster response in most undergraduate, graduate, and post-graduate health professional programs. There are a handful of training programs to professionalize "disaster medicine" or "disaster health" as well as certain specialties, like preventive medicine or emergency medicine, that more frequently include disaster preparedness and response. Of note, the terminology for such residencies, master's degrees, and certificate programs is not standardized; the curricula and qualifications for those programs are highly variable. There seem to be few incentives for early- or mid-career professionals to invest in additional training following their primary occupational diplomas. Additionally, the few training options available come nowhere close enough to training the number of people needed to significantly improve disaster readiness at the facility or regional levels across the country.

Professional pipelines sufficient to meet the need would include opportunities for employment and compensation that lead people onto the career path. For example, there are numerous training programs for physicians, and more being accredited each year, but they typically require the candidate to be residency-trained in Emergency Medicine, as they must continue to work significant clinical hours to justify a salary. There appear to be a few nursing and pharmacist programs that provide additional

skills in disaster preparedness and response, and an increasing number of master's level and certificate programs.[1]

The Board believes that disaster-related training for the health workforce, in general, would benefit from being organized around a common set of principles, skills, and systems to ensure that people trained at different times and places can more easily come together as a team when needed. Additionally, the entire workforce would benefit from some level of practical training in disaster preparedness, response, and recovery, which should be consistent with a common pedagogical framework. Training must be appropriate to each employee's occupational category and the roles they might be expected to take in a disaster situation. Disaster training also needs to evolve as threats to public health emerge and evolve, and those changes need be disseminated relatively quickly, sometimes "just in time", which indicates the need for a more concerted, national, centrally coordinated approach to identifying the essential competencies, skills, and knowledge for disaster health. The Board also believes there need to be federal incentives (carrots and sticks) leading to wide-scale implementation of training, perhaps like the way that basic cardiac life support is taught, to help the health workforce to be better prepared in general for future disasters.

The board members note that the Centers for Disease Control and Prevention (CDC) has a model program for preparing public health departments for public health emergency response, which provides some useful examples for developing guidelines, providing support to partners to conduct training, and exercising readiness in the workforce. There is cross-over and connection between the responsibilities of those who deliver (or support delivery of) healthcare and those who protect public health; such training for the health workforce should reinforce, supplement, and in some ways derive from the experience-informed standards established for public health. Additionally, the Board recognizes that the CDC model succeeds in part due to partnership with national organizations, such as the Association of State and Territorial Health Officials and the National Association of County and City Health Officials, and state health departments. The Board believe that a national approach to providing appropriate training for the health workforce also requires formalization of partnerships with governmental and non-governmental entities, both in establishing expectations as well as driving technical advancements. The NBSB means for public health workers (to the extent those professionals may be functionally separate from other forms of health care) to be included as a component of the health workforce throughout the following recommendations, though without suggesting that new efforts should replace or significantly alter existing HHS programs.

NBSB Recommendations

1. **HHS should establish and lead a federal working group on disaster training and readiness for the health workforce.** The goals of the federal working group would be to coordinate federal resources to set standards for, prepare, and periodically evaluate curricula and training resources, coordinate with other national partners that will develop and conduct training, develop additional goals for the same HHS working group and funding requests as needed, and oversee and coordinate the

[1] The NBSB and administrative team at ASPR collected some information to aid the discussion, but made no attempt at a comprehensive assessment, either quantitatively or qualitatively, of disaster related training programs. The observations made by board members were validated through their conversations with experts inside and outside of the federal government.

recommendations in this report. The working group should consider the alignment and complementarity of clinical and non-clinical professionals (i.e., public health specialists, emergency managers, bioethicists, logisticians, etc.) in the workforce. The NBSB recognizes that substantial additional funding from Congress may be needed to fully implement all the following recommendations.

2. **The federal working group at HHS should utilize the NBSB to continue to obtain and evaluate feedback from stakeholders.** The NBSB feels strongly that the recommendations in this report will lead to significant improvements in the capacity of the health workforce to conduct disaster response, thereby improving community health and resilience, as well as the resilience of health workers (clinicians and non-clinicians) when faced with personal and professional challenges. If no other forum for external feedback is available, the consultation with the NBSB (annually would be ideal) can also be an opportunity for non-federal stakeholders and other members of the public to provide comments and suggestions, which the NBSB will consider in making additional recommendations.

3. **HHS should begin to develop a national strategy and core competency framework for disaster training for the entire health workforce.** The national strategy and competency framework must identify appropriate mechanisms and formats to conduct training at various levels, from frontline practitioners to emergency managers and specialized clinicians, health technicians, and other health facility support staff. The strategy should include goals for the quantity and type of training at each level (and/or within specific occupational groups), tools for local and regional partners to help prioritize training resources, and an initial set of national goals. The strategy should assign responsibilities, where appropriate, and establish a reasonable timeline and milestones. The core competency framework could utilize existing resources, such as the disaster health core competencies develop by the Uniformed Services University in 2012, which are under review in 2023-2024, or other curriculum resources developed by emergency medicine and disaster medicine specialists.

4. **HHS should conduct and publish an initial, national assessment of disaster training for, and disaster response capacities in, the health workforce to identify gaps and needs for disaster-specific training.** The goal of the assessment is to inform metrics and milestones for the national strategy that ultimately lead to sustained, and as needed recurrent, training for a majority of critical health professionals and occupations. The assessment could take the form of a landscape analysis, informed by a variety of interviews with health system leaders, educators, and staff members. Such an analysis should focus on the differences in training needs for different types of disasters (chemical, biological, radiological, nuclear, climate, cyber, etc.) and for people in different occupations. To remain current, the national disaster health workforce capacity and training assessment should be repeated periodically, potentially in concert (and to inform) with the National Health Security Strategy.

5. **HHS should examine the options to support stronger professional development pipelines through policy research, regulations, grants, and/or payments that increase disaster-related training among those in (and going into) the health workforce.** The NBSB believes that there is a strong economic incentive for health facilities and networks to invest in disaster preparedness, which to an extent is already supported in many companies and states, with strong support from ASPR's

Healthcare Readiness Programs. However, there remain significant gaps between the need for clinical and non-clinical staff members who are competent in disaster preparedness and response, especially at leadership levels, and the capacity of existing education and training pipelines. One of the primary challenges is that salaries for providers and others in the health system are frequently based on direct care, rather than preparedness, planning, or training activities. Through policy and economic research (see Recommendation 7), it may become clearer to executives how preparing the health workforce to respond to emergencies and disasters can lead to financial stability. With insufficient, self-sustaining economic drivers in all locations or in preparing for all types of disasters, HHS needs to use existing programs, or develop new programs if needed, to engage with educators at all levels, provide tools and guidelines for curriculum development, and untimely expand the number of professionals who are trained for large-scale medical emergency and disaster response.

6. **HHS should further support professionalization of disaster health care by providing wage, salary, bonuses, or other forms of remuneration that incentivizes preparedness work.** Targeted grants or modified reimbursement models can ensure that clinical professionals spend time on disaster preparedness and receive compensation for time spent in disaster response leadership roles. Staff members who organize and participate in exercises and drills should also be compensated or rewarded for time spent away from direct clinical care, including forms of recognition that support promotion. HHS needs to evaluate the options to develop and support career paths for disaster health professionals that ensures that there are highly trained (and well-practiced) individuals throughout the health system in a variety of occupations who are salaried to conduct disaster planning and preparedness, as well as to lead response activities when needed. One option that seems readily available with additional funding from Congress would be to increase the amount of training, exercises, and drills provided through ASPR's Healthcare Readiness Programs.

7. **HHS should develop a program and incentives for research in disaster medicine and disaster health response and recovery.** A research agenda for disaster health would result in a better understanding of the roles of, and opportunities to improve, community engagement for medical emergency and disaster response. The U.S. needs operational research that informs and guides disaster response measures that ensure continuity of essential health services and maximize equity. One of the critical obstacles to valid operational research are the inflexible processes for the review and approval of study protocols. While preserving the rights of affected populations and protecting individual persons, steps can be taken to allow investigators to collect pre-determine data during a disaster as well as post-disaster health records.

8. **The HHS federal working group should have a subgroup focus on psychological resilience in the health workforce.** The NBSB recognizes, as have many others, that the health workforce has undergone extraordinary stress during the COVID-19 outbreak, which adds to the health impact on the workforce and dis-incentives younger people from choosing healthcare professions. The stress on the workforce also reduces disaster responders' effectiveness and introduces moral hazard for which workers are not prepared. Disaster health training for the health workforce should include education and training specifically focused on psychological resilience and overall well-being which should be supported through a combination of general training as well as resources for more psychiatry and psychology professionals to specialize in the disaster mental health.

Appendix 1: NBSB Roster (as of November 1, 2023)

VOTING MEMBERS

Chair, Prabhavathi Fernandes, PhD, FIDSA
Biotechnology and Pharmaceutical Executive,
Chair of GARDP Scientific Advisory Board and Board Members for OpGen, Ocugen, and Aelin Therapeutics
Chapel Hill, NC

Carl R. Baum, MD, FAAP, FACMT
Professor of Pediatrics and Emergency Medicine
Yale University School of Medicine; Toxicology Consultant, Connecticut Poison Control Center
New Haven, CT

COL John G. Benitez, MD, MPH, USAR
Emergency Preparedness Liaison Officer – TN, U.S. Army North, FEMA Region 4
Nashville, TN

H. Dele Davies, MD, MSc, MHCM
Readiness and Resilience Working Group Co-Chair
Senior Vice Chancellor for Academic Affairs and Dean for Graduate Studies and Professor of Pediatrics and Epidemiology, University of Nebraska Medical Center
Omaha, NE

David W. Gruber, MA
Associate Commissioner for Regional and Local Health Operations, Texas Department of State Health Services
Austin, TX

Craig M. Klugman, PhD
St. Vincent de Paul Professor, Department of Health Sciences, DePaul University
Chicago, IL

Elizabeth Leffel, PhD, MPH
Countermeasures and Operational Research Working Group Co-Chair
President, Leffel Consulting Group, LLC
Eagle Rock, VA

Joelle N. Simpson, MD, MPH
Chief of Emergency Medicine and Medical Director for Emergency Preparedness, Children's National Hospital, and Associate Professor of Pediatrics & Emergency Medicine, George Washington University School of Medicine & Health Sciences
Washington, DC

Tammy Spain, PhD, PMP
Associate Director Project Management, The FlexPro Group/Network Partners
Fruitland Park, FL

Mahmood (Mike) Usman, MD, MMM, MPH
JKHSN, LLC
Cranberry Township, PA

David J. Witt, MD, FIDSA, CIC
Readiness and Resilience Working Group Co-Chair
Infectious Disease Consultant, Regional Epidemiologist, Kaiser Permanente Northern California
Oakland, CA

(currently 2 vacancies)

EX OFFICIO MEMBERS

Department of Health and Human Services (HHS)

Administration for Strategic Preparedness and Response (ASPR)

Aimee Kopolow, PhD
Senior Public Health Analyst, Strategy Division
Washington, DC

Office of the Assistant Secretary for Health

RDML Paul Reed, MD, USPHS
Deputy Assistant Secretary for Health, Director of the Office of Disease Prevention and Health Promotion
Washington, DC

Centers for Disease Control and Prevention

Joanne Andreadis, PhD
Associate Director for Science, Center for Preparedness and Response
Atlanta, GA

National Institutes of Health

Ian Simon, PhD
Senior Advisor, National Institute of Allergy and Infectious Diseases
Bethesda, MD

Food and Drug Administration

Brooke Courtney, JD, MPH
Senior Regulatory Counsel, Office of Counterterrorism and Emerging Threats, Office of the Commissioner
Silver Spring, MD

White House Executive Office of the President

Stephanie Guerra, PhD
Assistant Director for Biosecurity, Office of Science and Technology Policy
Washington, DC

U.S. Department of Agriculture

Jack Shere, DVM, PhD
Associate Administrator
Animal & Plant Health Inspection Service
Greenbelt, MD

Department of Commerce

Dianne L. Poster, PhD
Special Assistant & Associate Director for Laboratory Programs, Office of the Director, National Institute of Standards and Technology
Gaithersburg, MD

Department of Defense

Kevin Wingerd, PhD
Director, Chemical and Biological Medical Program, Office of the Deputy Assistant Secretary of Defense for Chemical and Biological Defense
Alexandria, VA

U.S. Department of Energy

Isaf Al-Nabulsi, PhD
Senior Technical Advisor & Japan Program Manager, Office of Health and Safety, Office of Environment, Health, Safety and Security
Washington, DC

Department of Homeland Security

Herbert O. Wolfe, PhD, MS
Deputy Assistant Secretary for Health & Acting Director, Office of Health Security
Washington, DC

Department of the Interior

vacant

Environmental Protection Agency

Tonya Nichols, PhD
Senior Advisor for Health Security and Biodefense, One Health Coordinator, Center for Environmental Solutions and Emergency Response
Washington, DC

Intelligence Community
Kelly B. Chafin
Office of the Director of National Intelligence
Washington, DC

National Aeronautics and Space Administration
JD Polk, DO, MS, MMM, CPE, EdD, FACOEP
Chief Health and Medical Officer, Office of the Chief Health and Medical Officer
Washington, DC

Marc Shepanek, PhD (designated alternate)
Lead for Extreme Environments and Analogs, Office of the Chief Health and Medical Officer
Washington, DC

National Science Foundation
Mamadou Diallo, PhD, MS
Director of the Environmental Engineering Program, Division of Chemical, Bioengineering, Environmental, and Transport Systems, Directorate for Engineering
Alexandria, VA

Department of Justice
Rosemary Hart, JD
Special Counsel, Office of Legal Counsel
Washington, DC

Department of State
Hillary Carter PhD
Principal Deputy Coordinator
Bureau of Global Health Security and Diplomacy
Washington, DC

Nuclear Regulatory Commission
Patricia A. Milligan, RPh, CHP
Senior Advisor for Emergency Preparedness
U.S. Nuclear Regulatory Commission
North Bethesda, MD

Department of Veterans Affairs
vacant

Administrative Points of Contact

CAPT Christopher Perdue, MD, MPH, USPHS
Designated Federal Official (DFO), Senior Policy Advisor
Office of Strategy, Policy, and Requirements, ASPR
Washington, DC

LCDR Cliffon Smith, MPH, U.S. Public Health Service
Alternate DFO, Policy Analyst
Office of Strategy, Policy, and Requirements, ASPR
Washington, DC

www.phe.gov/NBSB
NBSB@hhs.gov

Appendix 2: List of Experts from Working Group Meetings

(Listed in alphabetical order.)

Rita Burke, PhD, MPH, Associate Professor (Clinical), Department of Population and Public Health Sciences and Department of Pediatrics, Keck School of Medicine, University of Southern California

Richard Catherina, MD, Senior Medical Officer, National Disaster Medical System (NDMS), HHS Administration for Strategic Preparedness and Response (ASPR)

Cherylee Chang, MD, Professor of Neurology, Division Chief, Neurocritical Care in the Department of Neurology, Professor in Neurosurgery

Victor J. Dzau, MD, President of the National Academy of Medicine and Vice Chair of the National Research Council

CAPT Keren Hilger, MD, Chief Medical Officer, USPHS Public Health Emergengy Response Strike Team

Thomas Kirsch, MD, MPH, Adjunct Professor, Dept. of Emergency Medicine, George Washington University

Emily Gabriel, Deputy Assistant Director for the Total Workforce Protection Directorate, Office of Health Security, Department of Homeland Security

Marianne Gausche-Hill, American Board of Emergency Medicine

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

Marie Krousel-Wood, MD, MSPH, President, American College of Preventive Medicine

Roberta Lavin, PhD, MA, RN, Professor, Aladino and Nellie Matteucci Faculty Fellow, Deputy Director, Center for Health Equity and Preparedness, University of New Mexico, College of Nursing

David Martin, CEO/Executive Vice President, Society for Critical Care Medicine

Ryan Maves, MD, Professor of Medicine and Anesthesiology, Sections of Infectious Diseases and Critical Care Medicine, Atrium Health Wake Forest Baptist

Thomas J. Nasca, MD, MACP, President and Chief Executive Officer, Accreditation Council for Graduate Medical Education

Earl Reisdorff, MD, Executive Director, American Board of Emergency Medicine

Marcie Roth, Executive Director and Chief Executive Officer, World Institute on Disability; Chair, National Advisory Committee on Children and Disasters

Mary Russell, EdD, MSN, Working Group Co-Chair on National Advisory Committee on Seniors and Disasters

Reynolds Salerno, Director, Division of Laboratory Systems, CDC Center for Surveillance, Epidemiology, and Laboratory Services

Helga Scharf-Bell, DNP, MSN, National Disaster Medical System, Chief Nursing Officer, ASPR

Carl H. Schultz, MD, FACEP, Professor Emeritus of Emergency Medicine and Public Health, UC Irvine School of Medicine, EMS Medical Director, Orange County Healthcare Agency

Reena Sethi, DrPH, MHS, Uniformed Services University Center for Disaster and Humanitarian. Assistance Medicine

David Schonfeld, MD, Director, National Center for School Crisis and Bereavement at Children's Hospital Los Angeles, Professor of Clinical Pediatrics, USC Keck School of Medicine; Chair, National Advisory Committee on Children and Disasters

Meg Sullivan, MD, MPH, former ASPR Chief Medical Officer

Tener Veenema, PhD, Senior Scholar at the Johns Hopkins Center for Health Security and a Senior Scientist in the Department of Environmental Health and Engineering at the Johns Hopkins Bloomberg School of Public Health

Michael Zanker, MD, NDMS Medical Officer, ASPR