

Board of Scientific Counselors (BSC)
Center for Preparedness and Response (CPR) Meeting
November 15- 16, 2022
Hybrid (Virtual/In-person)

Contents

Roll Call, Welcome	4
CPR Welcome and Update	5
CPR Division Updates and Discussion	9
<i>Chris Brown, PhD, MPH, CPH, Director, CPR Division of Emergency Operations</i>	9
<i>Christine Kosmos, RN, BSN, MS; Director, Division of State and Local Readiness</i>	11
<i>Samuel S. Edwin, PhD, Director, CPR Division of Select Agents and Toxins</i>	13
CPR Diversity, Equity, Inclusion and Accessibility (DEIA) Update: Where We Have Been and Future Directions	16
<i>Henry Walke, MD, MPH; Director CPR, CDC</i>	16
<i>James Nelson, PhD, Chief Diversity Officer, CDC</i>	16
<i>Magon M. Saunders, DHSc, MS, RDN, LD, Senior Diversity, Equity and Inclusion Consultant</i>	20
<i>Jennifer N. Johnson, MPA, CEM, CDC Senior Preparedness Field Assignee</i>	22
Data Modernization and Outbreak Forecasting Analytics	25
<i>Center for Forecasting and Outbreak Analytics (CFA) Support for Current Responses Dylan George, PhD, Director of Operations, CFA</i>	25
<i>CPR DMI Activities: Update Ian Williams, PhD, MS, Deputy Director, CPR</i>	27
Public Health Extreme Events Research (PHEER) – a National Network to Support Public Health Disaster Research and Perishable Data Collection	29
Public Comment Period	32
Meeting Recap and Adjourn	32
Roll Call, Welcome	34
CDC Response Updates	34
<i>Ian Williams, PhD, MS, Deputy Director, CPR; COVID-19 Incident Manager</i>	34
<i>Jonathan Mermin, MD, MPH, Director, National Center for HIV, Viral Hepatitis, STD, and TB Prevention; Monkeypox Incident Manager</i>	35
Risk Communications during Public Health Emergencies	38
<i>Betsy Mitchell, PhD, MA, Director, Division of Communication Science and Services, OADC, CDC</i>	38
<i>Kellee Waters, MPS, Senior Health Communications Specialist, Emergency Risk Communications Branch, DEO, CPR</i>	40
<i>Keri Lubell, PhD, Behavioral Scientist, DEO, CPR</i>	40
<i>Chris Voegeli, PhD, MPH, Behavioral Scientist, NCIRD, CDC</i>	42
<i>Lynn Sokler, BS, BS, Senior Communication Advisor, OADC, CDC</i>	44

U.S. National Authority for Containment of Poliovirus (NAC) and Polio Containment Workgroup (PGWG):
Update 46
 Lia Haynes Smith, PhD, NAC Director 46
 *Cathy Slemper, MD, MPH; PCWG Co-Chair and CPR BSC Jennifer Horney, MPH, PhD; PCWG Co-Chair and
CPR BSC* 47
Strategic Capacity Building and Innovation Program Review Workgroup (SRWG): Update 49
Public Comment Period 52
BSC Discussion of Future Meeting Topics 52
Closing Remarks and Adjourn 53
APPENDIX A: CPR BSC Membership Roster 54
APPENDIX B: Acronyms 58

**BOARD OF SCIENTIFIC COUNSELORS (BSC)
CENTER FOR PREPAREDNESS AND RESPONSE (CPR) MEETING
TUESDAY, NOVEMBER 15, 2022
VIRTUAL/IN-PERSON**

Roll Call, Welcome

Kimberly Lochner, ScD; Deputy Associate Director for Science, CPR and Designated Federal Official, CPR BSC

The BSC meeting began with roll call by Dr. Kimberly Lochner to ensure quorum was established. Dr. Lochner monitored attendance and quorum was maintained throughout the meeting.

Dr. Lochner also reviewed the BSC responsibilities, as per its charter, and the conflict-of-interest waivers. Members were requested to identify any conflicts and no conflicts were identified.

If voting was required only the Special Government Employee (SGE) Members would vote.

BSC Members present:

Dr. Catherine Slempp
Dr. David Fleming
Dr. Paul Halverson
Dr. Jennifer Horney
Dr. David Lakey
Dr. Marissa Levine
Dr. Brent Pawlecki
Dr. Kathleen Tierney
Dr. Kasisomayajula Viswanath
Dr. Paula Bryant
Dr. Kristin DeBord
Ms. Michele Askenazi
Ms. Emily Burke
Dr. Benjamin Chan
Dr. Christina Egan
Dr. Alexia Harrist

CPR BSC Chair, Dr. Cathy Slempp, called the CPR BSC Meeting to order at 10:30 AM EST.

CPR Welcome and Update

Henry Walke, MD, MPH; Director, CPR, CDC

Dr. Walke began his remarks to the Board by acknowledging the month of November as American Indian and Alaska Native Heritage Month.

Coronavirus Disease 2019 (COVID-19), cases and hospitalizations have decreased but unfortunately COVID-19 may become part of the public health landscape. The Center for Disease Control and Prevention's (CDC) Emergency Operation Center (EOC) continues to actively lead emergency response activities focusing on COVID-19 as well as other issues. The EOC has continually operated to support the response of the pandemic since January 20, 2020. On June 28, 2022, the 2022 Multinational Monkeypox Response was added to support public health partners locally and internationally. CDC also is supporting Uganda's Ministry of Health and international organizations to stop a current outbreak of Ebola in Uganda. This is the fifth outbreak in the region since 2000. Approximately thirty staff members are currently deployed to assist with the response. CDC also supports the airport screening efforts for all air passengers arriving to the United States from Uganda. The agency also continues to monitor the current hurricane seasons in the Atlantic and Pacific Oceans.

CDC is in the process of addressing structural and systemic operational challenges caused by the COVID-19 pandemic. The CDC Director, Dr. Rochelle Walensky, launched the CDC Moving Forward Initiative, a review of the Agency with the aim of better positioning CDC for the future. CDC is moving forward with an aggressive program that will capture and incorporate the lessons learned from the COVID-19 response. This will help reposition the Agency for success in an unpredictable future. New systems and processes are being created to deliver all of CDC's science and program activities in an equitable manner. Much of the emphasis for this initiative is on optimizing the Agency's core capabilities that apply to each of the centers and programs. It will accelerate data modernization efforts, enhance laboratory capacity, and increase the capacity to respond to disease outbreaks in the U.S. and around the world. This will move the agency culture towards integrating preparedness and response into every activity.

CDC is focusing on the responder workforce and sustainability during long and complex responses, such as COVID-19. The Agency is working to enhance processes to mobilize CDC responders from its different centers and divisions as well as strengthening our early warning and surveillance system and intergovernmental communication and coordination. Health equity principles are being incorporated into the planning and strategy processes, and key partnerships will continue to be strengthened while also adding and developing new ones.

Diversity, Equity, Inclusion, and Accessibility (DEIA) is central to ensuring the incorporation of the lessons learned from the pandemic. Dr. Walensky along with others have improved the DEIA plan for the CDC. CPR was tasked with developing its action plan this fall. DEIA efforts will ensure CDC staff reflect the populations it serves and will drive needed innovation, creativity, and improvement in performance. The improvements will strengthen the capacity to

understand and address the specific health needs of all communities including those who have been disproportionately affected during recent emergencies. CDC is also supporting efforts to attract, retain, and develop the talent needed to keep up with current and future public health demands of an increasingly diverse society. The DEIA Action Plan will position CDC and CPR to effectively address these and other issues.

After reviewing the meeting's agenda, Dr. Walke welcomed new members and those in new roles to the BSC. Dr. Catherine Slemp is the new BSC chair after serving as a member since 2016 and co-chairing several workgroups. Drs. Paul Halverson and Kathleen Tierney are new SGE members to the BSC. After welcoming the new members, Dr. Walke received questions and comments from the BSC.

Comments from the BSC:

- There should be a systematic process to gain public input particularly pre-event and probably during an event. CDC needs to be attuned to what is happening in the real world. This would be a way to inform the agency.
- Often what has not gone well is used to make restructuring decisions, but what has gone well is not studied to ensure that those processes stay in place. As restructuring takes place, ensure those processes that have gone well are considered for preservation in any new practices.
- Not enough time is spent on capabilities. Determine how CDC can invest in staff, teams, and the training to build capabilities.

Lovisa Romanoff, MS, MPH; Deputy Director, Management & Operations, CPR

At the June 2022 meeting, CPR provided the BSC an update on the new CPR Strategic Plan, which has been finalized for fiscal year 2023. This plan will bolster alignment with the agency-wide plan and its core capabilities. It also adds health equity as a center-wide value. Across the strategies, 19 new or refreshed key annual focus areas were added and action plans that will enable strategic progress with corresponding countermeasures that provide accountability and gage success. The core capabilities are:

1. World-class data and analytics
2. State-of-the-art laboratories
3. Rapid response to outbreaks at their source
4. Strong global capacity and domestic preparedness

The capabilities align to the four new CPR Strategies.

Strategy 1: Modernize and integrate data systems across multidisciplinary public health entities to support real-time information sharing, risk/situational awareness, effective decision making and to support emergency operations.

Strategy 2: Enhance the readiness and capacity of the nation's laboratories and laboratory networks to detect and characterize threats and maintain the highest level of biosecurity and biosafety.

Strategy 3: Support and advance CDC and State, Territorial, Local, and Tribal (STLT) health departments' response capability and lead in ensuring effective federal response and interagency collaboration in public health responses.

Strategy 4: Conduct continuous assessment of public health risks and prepare the Nation to address identified and emerging threats.

A diverse public health workforce is woven into all of the strategies.

The strategic planning process originally began in 2019 and CPR is now in a cyclical process of yearly reviewing goals and key annual focus areas before they are launched and implemented. Afterwards progress is reviewed and the process begins again to drive continuous improvement.

There is a strategic imperative to modernize CDC so that it can consistently deliver public information and guidance to Americans in real-time. CDC's Moving Forward Initiative aims to strengthen and strategically align systems and processes to drive public health action and enhance accountability, collaboration, communication, and timeliness. The cultural piece to this initiative is an important element and one of the most challenging because organizational changes in theory are easy, but the cultural aspects require much more scrutiny in order to foster the best culture. There are four processes to CDC's Moving Forward initiative. The first is to improve how CDC operates through agency-wide systems, processes, and governance. The second is to develop and submit a reorganization package. Third, delineate flexibilities, authorities, and programs to improve public health. And the fourth process is to improve how the Agency develops and delivers its science. Implementation plans will be delivered to the Moving Forward Team by early December 2022 for further implementation.

The following strike teams have been implemented:

- Public Health Data
- Global Health
- External Affairs
- Laboratory Science, Safety, Quality, and Capacity
- Public Health Readiness and Response
- Advancing Equity
- Public Health Infrastructure, including Workforce Capacity
- Science
- Policy
- Communications

The initial recommendations for each of the strike teams were provided to leadership in September 2022. Roughly a month of engagement and discussion took place in October across staff and the leadership team regarding those recommendations. A final decision from Dr. Walensky will come sometime in November 2022. By the end of the calendar year, a proposed package will then be put forth.

Comments from the BSC:

- In order for preparedness to work at the state and local level, it needs to be that all-agency and programs are categorically funded. So think of ways to incent at least partial funding for those who are categorically funded so some of their performance and review can be based on their preparedness abilities as opposed to just their category.
- Fellowship programs can assist in workforce development and retention efforts in state and local public health. The Council of State and Territorial Epidemiologists (CSTE) has fellowship programs that have been very instrumental in building not only interest but experience in applied public health at the state and local level. There is a range of opportunities available to help with training or post-graduate training.
- It is important to maintain long-term, sustainable funding so that state and local public health agencies can appropriately implement workforce development for the future.
- CDC should create a certification process that guarantees that state health officials have the requisite skills and abilities for their role. States are able to choose who will be in those positions, but there needs to be a process that assures that they are prepared for their position.
- CDC used to have individuals embedded in the state leadership team, portfolio managers, who were very seasoned individuals that examined the variety of investments that CDC was putting in place. They had the connections with the CDC and facilitated the conversations with the director when needed, and for whatever reason, those positions were eliminated. Bringing this role back might be something to reexamine and consider. These senior individuals leveraged CDC assets to the state and were instrumental in the bidirectional communication that took place. They also made sure all the investments from the CDC were being managed correctly.
- There are schools besides schools of public health that can be helpful like medical and nursing schools, public policy, media communication studies, public interest communications, etc. CPR should wholistically think through ways to partner with those type of academia.
- There is a need to balance the urgent matters versus the important matters. During a response, some of the other important programs, not directly involved in the response event, may get overlooked. Areas such as maternal-fetal health and HIV are examples of programs that may have been placed on the back burner due to the COVID response. Determine ways to leverage other federal agencies to develop some mechanism where they can assist CDC so that these important programs continue to function efficiently and effectively during a response.
- Everyone needs to be aware that the crisis response dimension is the new normal and should be considered important by state politicians and leaders because their

performance will be judged by how well processes functioned in their districts during the emergency.

- With the incredible amount of turnover occurring and loss of institutional knowledge, mechanisms should be developed to retain the lessons learned and institutionalizing those lessons into processes.

CPR Division Updates and Discussion

Chris Brown, PhD, MPH, CPH, Director, CPR Division of Emergency Operations

The Division of Emergency Operations (DEO) is a mostly internal-facing division at CDC that supports multiple response efforts. Some examples of response support activities include:

- Deployments
- Emergency travel
- Equipment issuance
- Subject matter expert (SME) connections via EOC

In addition to these functions, DEO also offers emergency risk communication support such as Clinical outreach and communication activity (COCA) calls and newsletters, the Health Alert Network (HAN), partnership outreach, webinars, and EPIC Exchange. Other activities supported are data management, situational awareness products, analytics, training and planning. As of this meeting, the division was supporting six responses including three agency-wide responses, the 2011 polio response, the 2019 Novel Coronavirus, and the 2022 Monkeypox, as well as one center-led response, 2022 Ebola.

There are several efforts and activities occurring that are aimed at improving preparedness and response across the agency.

- Graduated Response Framework (GRF) - *Manage responses at the right level with consistent, standard practices*
- EOC IT Modernization - *CDCReady, CDCResponder, Common Operating Picture*
- Global Emergency Management - *In-country technical assistance and PHEM fellowships*
- Responder Training – *Incident Management Training and Development Program (IMTDP)/RELAy and practical trainings for responding*
- Preparedness Exercises - *Preparing and testing CDC's ability to respond to all threats*
- Response Workforce - *Identifying and managing CDC staff for response roles*
- Response Evaluation - *AARs, Improvement Plans and Corrective Actions*
- Operations and Logistics - *Multi-use response space, equipment, processes, and transportation needs*
- Science and Data - *Collection, analysis, and visualization of response data*
- Emergency Risk Communication - *Development, clearance, and dissemination of messages*

Dr. Brown focused in on the EOC IT Modernization efforts and the Response Workforce to provide an update on activities occurring since the last meeting.

DEO has been modernizing its operational and data systems that support EOC operations and is launching CDCReady. This system will replace the previous 12-year-old system and modernize operational systems in a cloud-based platform. Modules will be built to improve the functions that support both the EOC and the responder. CDCReady will integrate response operations, support applications, data analytics, and data warehousing. It is expected that staff and CDC Chief Information Officers (CIOs) will be able to engage with these modules before the end of the calendar year 2022.

Over the course of several responses in the last decade, we have realized that the voluntary opt-in method for bringing people into the EOC was not sufficient. The longer a response goes on, personnel needs grow. For example, across the duration of COVID-19, CDC has assigned more than 6,000 staff, in which a deep bench was needed to sustain rotations. The 2022 Multi-National Monkeypox Response quickly grew to the size of more than 400 personnel leading to competing for “known” responders with COVID-19 and other activities. There also has to be backfill individuals to compensate for those currently involved with the response.

The vision for a Response-Ready Cadre is to have a pre-identified and ready-to-go workforce at all times who can assist not only with the startup of a response but also the sustainment, feeding, and care of long-term public health emergency responses. This process will also eliminate the arduous and time-consuming tasks of recruitment during responses.

Currently response leadership positions consist of approximately eighty people who have graduated from IMTDP. Many recent leaders only possess on-the-job experience from previous responses. The plan is to augment IMTDP for leadership positions by providing the skills necessary to be successful in the EOC and training that is more operationally-focused and role-specific.

Similarly, for the response positions at large, currently emergency response is not a key part of most CDC position duties. Responders had a much lower level of training, with a reliance on incident command system training or EOC Day 1 training. Now, there will be practical, operations-based, role-specific training to help individuals at every level from entry and fellows to those right below the taskforce level in knowing their role in an emergency scenario, IMS position, or field deployment so that they are successful from day one.

Once the prepared cadre of responders is assembled, DEO also wants to improve its process of identifying personnel for responses. Currently for leadership positions, there is a heavy dependency on peer networks and lists of leaders in similar response roles, which is not efficient. The same is true for response positions at large. Going forward, DEO wants to be in a better position to target individuals who meet the specific requirements needed with specialty distinctions.

Much of the work has begun. CPR has initiated and completed several objectives, which are listed below.

- Initiated foundational responder workforce requirements analysis, evaluation of best practices, and cross-agency collaboration
- Developed and presented to senior leadership a plan for establishing a response-ready cadre at the agency
- Redirected funding and identified organizational changes to support response-ready cadre program development and management
- Partnered with the Human Resource Office and CIOs to across CDC fill nearly 600 vacancies with readiness and response participation requirements from the start

By the end of 2022, DEO will continue to move forward in a number of areas.

- Policy and Performance Management
 - Operational policy updates to support response-ready cadre program
 - Emergency response participation performance standard(s) across CDC
- Identifying and Rostering Response Positions
 - Establish cross-CIO implementation working group
 - Analyze requirements and map business processes and necessary system enhancements to support responder enrollment and cadre management
 - Identify specific qualification criteria and evaluation process for participation in proposed discipline-specific cadres and enroll the first 200 ready responders
- Training Program Development
 - Begin planning curriculum development to address role-specific training needs

Christine Kosmos, RN, BSN, MS; Director, Division of State and Local Readiness

The Division of State and Local Readiness (DSLRL) is commemorating the 20th anniversary of the Public Health Emergency Preparedness (PHEP) Program. This program was initiated after the events of 9/11. Since 2002, CDC's PHEP cooperative agreement program has supported and advanced preparedness and emergency response nationwide. PHEP changed the landscape of emergency preparedness by the many advances it has caused and the investments that have been put into preparedness. These have translated into real capabilities. CDC provides guidance, funding, technical assistance and workforce support to state, local and territorial public health departments to support response readiness. The PHEP program works to improve the readiness of public health systems for emergencies that impact the health and safety of communities.

At a recent Association of State and Territorial Health Officials (ASTHO) meeting, CDC recognized those that have been instrumental in helping to shape, build, and envision preparedness at the state, local, and territorial levels. Three different groups were acknowledged. There were 48 PHEP Trailblazers, which are those who charted the path, and 53

PHEP Pathfinders, who are new individuals bringing new skills and vision to PHEP. There were 193 PHEP Champions, and these are the individuals who may not be as visible, but they make the engine move.

DSLRL has taken special interest in building workforces at the state and local level. One of the division's goals was to build the Career Epidemiology Field Officer (CEFO) Program up to a nationwide program. Previously, only those who had enough funding in their cooperative agreement could afford to have a CEFO, which created an inequity across the country. The Fiscal year 2021 PHEP budget increase provided opportunity to implement a DSLRL strategy to expand its preparedness field staff. The new national CEFO network goal is to support the emergency preparedness and response activities of every state, locality, and territory directly funded by the PHEP cooperative agreement, where centralized or core funding will support one CEFO in each PHEP-funded state or locality, including three regional CEFOs supporting Pacific and Caribbean territories. When fully implemented, national network will include 57 CEFOs directly funded by CDC. This is not the total sum of all CEFOs. Some jurisdictions still elect to use some of their grant funding to support additional CEFOs.

CEFOs are the boots on the ground and first line of defense at the state and local level. They serve as a liaison between CDC and the state and local jurisdictions, as well as provide situational awareness information. As of the meeting, there are 46 CEFOs, which is an increase of 13 since the announcement of the expansion in spring 2021. Of those, 38 are centrally-funded, six funded by recipients through PHEP direct assistance, and two directly funded by their host jurisdictions. DSLRL is also embarking on an International CEFO (I-CEFO) Program. For now, this is a pilot program aimed at strengthening a country's public health emergency preparedness and response capabilities and public health workforce. DSLRL is close to having I-CEFOs assigned to Bangladesh and Zambia for two-year terms. At the end of the pilot, the pilot will be evaluated to see if it will continue to move forward in the future.

Another group expanding is the Preparedness Field Assignees (PFA). These are junior-level, graduates of the Public Health Associate Program (PHAP). The program was established in 2013. Assignees provide support across all 15 preparedness and response capabilities to PHEP jurisdictions. Since the program's inception, 66 PFAs have served in 36 PHEP jurisdictions. PFAs currently support 27 PHEP jurisdictions. DSLRL is expanding PFA Program to includes 11 new placements.

Ms. Kosmos introduced the draft 2024-2029 PHEP Framework, which will be used to advance the PHEP program and move DSLRL and hopefully state and local public health forward.

Before ending the presentation, Ms. Kosmos posed questions to the BSC that DSLRL would like their input:

1. Are we focusing on the most critical priorities for advancing domestic response readiness? Does these resonate with you? Is this the correct framework?

2. These are admittedly broad areas in which many other CDC programs have a stake. Do you have any advice for how we narrow the focus to target state, local, and territorial response readiness?

Samuel S. Edwin, PhD, Director, CPR Division of Select Agents and Toxins

The Division of Select Agents and Toxins is the national regulatory overseer of two programs. The first program is the Federal Select Agent Program (FSAP), which regulates the possession, use, or transfer of biological agents or toxins that have the potential to pose a severe threat to public health and safety. The FSAP is managed jointly with the Division of Agricultural Select Agents and Toxins (DASAT), Animal and Plant Health Inspection Service (APHIS), U.S. Department of Agriculture (USDA). This program has been in place for twenty years now. It continues to adapt and enhance to meet the day's demands and requirements. The key responsibilities of the FSAP are to do the following:

- Promulgate the select agent regulations
- Provide oversight of possession, use, and transfer of select agents
- Conduct inspections
- Approve registrations
- Approve individual access to select agents and toxins
- Receive reports of a theft, loss, or release
- Take appropriate enforcement actions
- Serve as a resource on compliance with the regulations

There are currently 233 entities registered with the FSAP. In 2021, the program conducted 206 inspections and over 8,000 individual security risk assessments, which include background checks and continuous monitoring by the Federal Bureau of Investigation (FBI). There have been no potential exposures that have resulted in illness, death, or transmission in laboratories or the community in the last 20 years.

Due to COVID, there were changes made to the inspection process. When there were travel restrictions, inspections were conducted remotely to ensure continuity of operations and FSAP oversight. Division of Select Agents and Toxins (DSAT) has developed a bidirectional, high-security information system, where information can be shared between DSAT and the entities being inspected. All programmatic function such as registration, dissemination of reports are occurring in the system.

FSAP also utilized a hybrid inspection format that was geared toward allowing a comprehensive review of records remotely –either fully or in combination with a more focused inspection of onsite operations. Any combination of remote and on-site program review are used to complete these types of inspection.

Regulatory updates are made to FSAP as they are needed. FSAP Regulatory Updates include:

- Interim Final Rule – Addition of SARS-CoV/SARS-CoV-2 Chimeric Viruses to Select Agents and Toxins List
- Federal Register Notice – Draft of FSAP Policy Statement on BSL-4/ABSL-4 Laboratory Verification for Public Comment
- Federal Register Notice – Venezuelan Equine Encephalitis Virus (VEEV) strain TC-83(A3G)
- Exclusion of the attenuated *Brucella melitensis* strain Δ norD Δ znuA *Brucella melitensis*-mCherry

Training is also a critical element to FSAP. The program holds an annual multi-day in-person workshop that brings FSAP staff and the regulated community together. Since the beginning of COVID-19, the workshops have been conducted on the web. Agenda topics generally include discussions related to compliance with the select agent regulations.

The second program overseen by DSAT is the Import Permit Program (IPP). This program regulates the importation of infectious biological materials that could cause disease in humans in order to prevent their introduction and spread into the U.S. IPP ensures that the importation of these agents is monitored and that facilities receiving permits have appropriate biosafety measures in place to work with the imported agents. There are more than 2,000 import permits issued by the program annually with most issued to laboratory facilities at government agencies and universities, or to private and commercial laboratories conducting research studies or diagnostic activities. As of October 14, 2022, the program has issued 2,378 import permits and conducted 79 total inspections.

The IPP is also being modernized using the eIPP Information Systems. The following updates have been made to the system.

- Smart Agents – Section D, entry 5, is replaced with a dropdown list of standardized human infectious biological agents
- Expanded File Uploads – The upload feature in the Inspection Module and Application system accepts different file formats
- Permit Expiration Notifications – Permittees receive a system generated notification in the General Discussion 30 days prior to permit expiration
- Application Updates – IPP Phone number and mailstop and Laboratory Safety Level (BSL-3Ag)

Additional models are also being developed for IPP. The Safety Assessment Follow-up Evaluation (SAFE) Inspection Module provides data analytic and risk assessment capabilities. It also assists inspectors in conducting a more targeted and efficient inspection, while focusing on mitigation procedures for high-risk agents and streamlining the IPP work processes thereby protecting the nation from accidental release and exposure of infectious, biological materials.

Comments from the BSC:

- Determine if there are other creative approaches to partnering with other organizations, in advance of an emergency, for external workforce supports or using those as opportunities to build partnerships. For example, community-based organizations can be instrumental in building trust within the community and aiding with communication.
- Breaking down silos helps create career paths, stretch assignments, provides skill development, and will help build resilience for the organization because it causes people to get out of their comfort zones and take on assignments they normally would not have undertaken.
- Thank you to Chris and your team for all of the intentional and thoughtful work DSLR has undertaken to bring engagement across the board. It has been incredible. The only piece that is needed is finding ways to weave and engage elected officials into the various levels. Better training, experience, and expertise are needed to navigate that area.
- Engaging the private sector, particularly on skills such as data science, artificial intelligence, and machine learning, is worth thinking about.
- Sustainability is a concern. If you build a system, how do you sustain it? What kind of personnel do you have particularly around data science. It is difficult to recruit and retain people, so that is a challenge worth considering.
- Once you operationalize the framework, developing metrics would be very helpful.
- Continue to develop a culture that will allow for both sustainability and adaptability. I view the future of public health as a distributed model. Think of ways to work strategically to disseminate public health activities throughout and without boundaries. We cannot sustain the current model but there must be the ability to have public health activities and actions done throughout communities. Everybody has a role and understands their role.
- There must also be the agility to adjust to the circumstance and for CDC that is an internal focus. Consider bringing in the private sector because we watched the private sector adapt to COVID, at least the ones that were successful, and they learned how to be agile. They learned it was not so much about control and organizational structure but rather taking away those elements so that people could do the work they needed to do. Learn the lessons from those who were able to be agile and adaptable.
- Bring in people who will help examine the wellbeing aspect, which is much bigger than physical health. This perspective may also be helpful in the political arena as well.

CPR Diversity, Equity, Inclusion and Accessibility (DEIA) Update: Where We Have Been and Future Directions

Moderator: Magon M. Saunders, DHSc, MS, RDN, LD, Senior Diversity, Equity and Inclusion Consultant

Panelists:

Henry Walke, MD, MPH; Director CPR, CDC

James Nelson, PhD, Chief Diversity Officer, CDC

Jennifer N. Johnson, MPA, CEM, CDC Senior Preparedness Field Assignee

Henry Walke, MD, MPH; Director CPR, CDC

Dr. Walke provided opening remarks to the Diversity, Equity, Inclusion, and Accessibility (DEIA) session. Dr. Walke stated that DEIA is central to incorporating the lessons from the pandemic and that CDC staff must continue to reflect the populations it serves. The Agency has put a significant focus on DEIA in a number of different areas, for example, to increase the recruitment of underrepresented persons, improve retention and opportunities, eliminate barriers, and create equity and job opportunities within CPR and within CDC as a whole. DEIA is also being incorporated into CDC's support to state and local public health.

James Nelson, PhD, Chief Diversity Officer, CDC

Dr. Nelson began the session with enterprise-level updates. On June 25, 2021, President Biden published, Executive Order 14035, the most expansive DEIA executive order that has ever been published to date. The order mandated the publication of a government-wide DEIA strategic plan. On November 23, 2021, the Strategic Plan to Advance Diversity, Equity, Inclusion and Accessibility in the Federal was released. It required all department-level agencies, such as Health and Human Services (HHS), to publish their own DEIA strategic plan with a target date of March 23, 2021. HHS released its Diversity, Equity, Inclusion and Accessibility Strategic Plan for 2022 by the deadline. Listed below are the three key benefits of DEIA.

- Serving our communities and being socially responsible - The communities we serve are diverse. Diversity and inclusion increase an agency's capacity to serve and protect people who have different experiences or backgrounds and enhance its ability to be receptive to different traditions and ideas.
- Increasing innovation - Increased creativity is another by product of capitalizing on differences. Many scientific discoveries and inventions have been developed such as by and for people with disabilities. More recently, research has shown that effective diversity management coupled with inclusive work environments improves organizational performance and innovation. Employees from varied backgrounds bring different perspectives, ideas and solutions to the workplace that result in new products and services, challenge to the status quo, and new collaboration.

- Getting a return on investment - Diversity and inclusion initiatives improve the quality of an agency's workforce and are the catalyst for a better return on investment in human capital. The result is faster resolution to conflict which avoids costly litigation and settlements. These environments where all employees feel included and valued are yielding greater commitment and motivation, which translates into fewer resources spent on employee turnover, grievances, and complaints.

Executive Order 14035 has eight focus areas.

1. **Data Collection:** review existing policies and provide guidance to improve the collection of workforce demographic data.
2. **Promoting Paid Internships:** issue guidance to increase the availability of paid internships, fellowships, and apprenticeships; reduce reliance on unpaid internships and similar programs; and improve outreach to and recruitment of individuals from underserved communities.
3. **Partnerships & Equitable Recruitment:** facilitate the recruitment of individuals who are members of underserved communities for Federal employment opportunities recognition, appreciation, and use of the talents and skills of employees of all backgrounds and beliefs.
4. **Professional Development, Advancement, Training, and Learning:** issue guidance for tracking demographic data for professional development programs. Implement and increase DEIA training, issues related guidance and best practices.
5. **Advancing Equity for Employees with Disabilities:** assess current hiring practices, evaluate equity in employment opportunities and financial security and improve the process for requesting reasonable accommodations.
6. **Advancing Equity for LGBTQ+ Employees:** improve equitable access to employee services and health/medical benefits, update employee identification standards, expand availability of non-binary facilities, and mitigate barriers to security clearance.
7. **Pay Equity:** OPM to review government-wide regulations and guidance to address any pay inequities and report recommendations to advance equal pay.
8. **Expanding Employment Opportunities for Formerly Incarcerated Individuals:** evaluate whether formerly incarcerated individuals face any barriers in accessing Federal employment opportunities and consider establishing new hiring authorities

All of the focus areas are important, but Dr. Nelson felt the first and third were paramount. CDC has been working across the agency to improve its data information. Before the executive order was published, CDC had undertaken efforts to improve outreach and partnering with other organizations. Another common theme is equity, which is addressed in several ways in focus areas five, six, and seven.

The Government-wide DEIA Plan states the following:

The plan offers a roadmap for implementing Executive Order 14035: Diversity, Equity, Inclusion, and Accessibility in the Federal Workforce, and lays out key

steps that agencies can take to strengthen DEIA in their workforce policies, practices, and culture. The Government-wide DEIA Plan:

- *Provides vision and mission statements*
- *Establishes five operating principles to advance and sustain DEIA within agencies*
- *Further outlines the DEIA priorities expressed in the Executive Order*
- *Details strategies for advancing DEIA*
- *Provides an example maturity model to support growth*
- *Outlines steps to create a comprehensive framework to address workplace harassment*
- *Explains next steps for advancing DEIA*

The principle and priorities found in bullets two and three are based on the eight focus areas from the executive order. HHS has created workstreams that addressed the focus areas. They then delve further into its other agencies that it oversees and developed subordinate workstreams, creating a cascade.

The DEIA plan has seven components or sections.

1. **Vision and Mission Statements:** includes a vision statement to advance DEIA and a mission to collaborate across the Federal government.
2. **Operating Principles for DEIA:** five (5) operating principles includes focus on data, decision-making, continuous improvement, prioritization of accountability and understanding perspectives of employees and customers.
3. **Government-wide DEIA Executive Order Priorities:** includes eleven (11) priorities of focus for all Federal agencies to advance DEIA policies and practices across all aspects of employment such as data collection, safe workplaces, DEIA training and advancing equity for employees with disabilities.
4. **DEIA Roadmap for Agency Action:** includes four (4) separate roadmap examples for Diversity, Equity, Inclusion and Accountability for agency action designed to improve policies and practices that advance DEIA.
5. **A Maturity Model is a Tool to Advance DEIA:** Encouraging federal agencies to considering using a DEIA Maturity Model, which enables agencies to identify their DEIA maturity along a continuum, from building foundational capacity for DEIA work to leading and sustaining practices.
6. **Framework to Promote Safe and Inclusive Workplaces and Address Workplace Harassment:** Agencies will adopt a comprehensive framework to prevent and address workplace harassment, including updating policies and practices through a three-phased approach of a) assessment, b) implementing promising practices with milestones and c) focus on supporting sustainability and continued improvement, assess evidence, and adopt evidence-based policies, practices, and processes such as climate surveys.

7. **Advancing DEIA in the Federal Workforce -Next Steps:** Agency DEIA Strategic Plans will address each requirement of the Executive Order, building on the government-wide DEIA priorities identified above, and will include annual goals to improve DEIA, potentially through practices illuminated in the promising practices survey. As agencies progress, they will build in reporting and evaluation processes on a quarterly basis to track progress. Agencies should conduct an internal quarterly review to assess their progress toward achieving their goals.

Dr. Nelson found the fourth component helpful because it provides examples of roadmaps for diversity, equity, inclusion, and accessibility. He then showcased each of the roadmaps from the fourth section.

SECTION FOUR: DEIA Roadmap for Agency Action – Diversity Roadmap

The federal government must be able to hire and promote the nation’s best talent and build a diverse and representative workforce through an open and fair process consistent with merit systems principles. Building a representative workforce includes appropriately identifying talent, using multiple means to announce vacancies, supporting a pipeline of new members of the workforce, mitigating bias in the promotion process, and addressing any potential barriers in accessing job opportunities.

SECTION FOUR: DEIA Roadmap for Agency Action – Equity Roadmap

The term “equity” means the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities. The federal government must ensure that all employees, including employees who may experience multiple forms of discrimination, have equal opportunities to advance in their careers and grow as leaders by mitigating any potential biases or barriers to professional development and promotion. Internally, the government has the responsibility to take steps to ensure fair outcomes and access to services.

SECTION FOUR: DEIA Roadmap for Agency Action – Inclusion Roadmap

To advance DEIA, all agencies should provide opportunities for employees to learn, develop, and grow, so that employees’ talents are supported, utilized, and embraced to create an engaged and high-performing workforce. This strategy focuses on ensuring employees feel supported in an inclusive workforce and that agencies strengthen feedback loops for employee input, including through listening sessions and climate surveys. Federal agencies should advance equitable access to employee benefits, including health and retirement benefits, employee services, work-life programs, and pay and compensation policies.

SECTION FOUR: DEIA Roadmap for Agency Action – Accessibility Roadmap

The federal government must consistently design, construct, develop, and maintain facilities, technology, programs, and services so that all people, including people with disabilities, can fully and independently use them. The federal government's commitment to accessibility should include proactive engagement with users and efforts to modernize infrastructures to support the rapid adoption of technological innovations. To support this work, OMB, in consultation with the General Services Administration (GSA), U.S. Access Board, and the Chief Information Officer (CIO) Council, will review existing accessibility guidance and best practice resources and make updates as necessary to help agencies build and sustain an accessible federal technology environment. In addition, agencies should seek to bring together DEIA Implementation Teams, including CIOs and Chief Procurement Officers (CPOs), in decisions affecting accessibility.

The HHS DEIA Strategic Plan's structure is overseen by an Executive Council, Action Committee, and Council. The DEIA Action Committee will have their first meeting in the first week of December 2022. This encompasses HHS leadership with different members from all of the different operational divisions within HHS. There is also a DEIA Council, and this council exists within each of the operational divisions within HHS. CDC's DEIA Council is co-chaired by a chief operating officer and a director of Minority Health.

CDC created a CIO Assessment Scorecard, which reaches out to all of the different units of CDC to assess its effectiveness for each activity. The Agency also engaged a partnership in public service, where training and action planning has occurred with all of the CIOs. Those action plans from the training are in the process of being executed. Recently, the Diversity Executive Steering Committee held a briefing where all the units showcased their DEIA plans. Following the briefing, Dr. Nelson facilitated a group where data and other activities were reviewed with the Executive Council to inform next steps.

Magon M. Saunders, DHSc, MS, RDN, LD, Senior Diversity, Equity and Inclusion Consultant

Dr. Saunders provided an update on CPR's DEIA activities. CPR's Diversity and Inclusion Council, formed in 2007, initially focused on DEIA-related training, but with the death of George Floyd in 2020, CPR, like a lot of American agencies, realized a call to action was needed. Therefore, the Strategic Initiative for Justice and Equity (SIJE) was formed. SIJE created 12 action steps that were adopted and have been used to guide future endeavors related to DEIA.

The 12 SIJE Recommendations fall into three buckets: data collection; hiring, promotion, and retention; and learning and professional development and form the framework for DEIA work in CPR.

Data Collection

1. Create a customized Diversity Dashboard/Scorecard to focus on diversity progress over time
2. Analyze/monitor PMAP scores stratified by race, grade level, occupational series, and rate of promotion
3. Leverage focus groups and surveys to measure and monitor employees' work experience
4. Assess available data related to EEO complaints and grievances stratified by race and frequency

Hiring, Promotion, and Retention

5. Ensure all vacancies are advertised and competed across CPR with vetted plans for future of the opportunity
6. Standardize CPR's hiring process by developing hiring guidance, procedures, and policies
7. Leverage professional associations representing Black Americans to increase representation in higher grades
8. Develop plan to ensure consistency and accuracy of position descriptions and performance plans across CPR

Learning and Professional Development

9. Develop a central platform for CPR staff to find mentoring and professional development resources
10. Ensure awareness and utilization of career opportunity training programs (e.g., COTAs)
11. Develop a new professional development/shadowing program for CPR employees
12. Include specific justice, equity, and equality performance standards in all supervisor performance plans

Dr. Walke led CPR into the creation of its DEIA Action Plan. The committee was instructed to use the following principles when developing the plan.

- Increase diversity
- Improved retention and opportunity creation
- Develop a climate of equity, Inclusion, and accessibility
- Leadership-driven DEIA culture reform
- Strengthened DEIA insights through improved data

CDC's DEIA Action Plan also aligns with these principles. CPR's plan along with those of the other CIOs within the agency helps to advance CDC's plans that are reported back to HHS.

The committee is made up of leaders, supervisors, and employees. There are five overarching goals for CPR's plan. The first is to weave DEIA into the fabric and culture of CPR using evidence-

based strategies. Next is to increase the diversity of the workforce to reflect the America it serves. Another goal is to provide a safe space for all CPR staff to share concerns without retaliation. The fourth goal is to better CPR's environment by reducing discrimination, racism, and other barriers, so everyone can achieve their full potential. And the last goal is to enhance a sense of belonging at CPR so that everyone feels valued and respected for their contributions.

CPR's DEI also has a mission and vision statement. The mission is to better the CPR work environment so that employees can show up as their authentic selves and contribute to the progress of the CIO. The vision is for CPR's workforce to look like the America it serves and that all employees thrive in a culture of mutual respect and trust. Dr. Saunders noted DEIA issues or the lack thereof have been 75 years in the making at CDC; therefore it was imperative that the plan must be impactful with audacious goals.

The 2022-2023 DEIA Action Plan has been developed and approved by CDC. A work plan is being created, which will be socialized across the CIO. A presentation was provided to the Diversity and Inclusion Executive Steering Committee (DIESC) on September 23, 2022. DEIA planning will continue for 2023 through 2025, and a formal DEIA Strategic Plan will be developed for CPR. Lastly, monthly updates are provided to all of CPR, with information presented to senior leadership biweekly. Employees are also offered office hours where they can come and present their concerns and issues anonymously or they may present them by email.

Jennifer N. Johnson, MPA, CEM, CDC Senior Preparedness Field Assignee

After SIJE delivered their recommendations to CPR, the Inclusion, Diversity, Equity, Alliance (IDEA) took up the mantle of DEIA work. SIJE addressed race-related inequities with CPR. Conversely, IDEA's work is comprehensive across all of the DEIA measures. IDEA was chartered as the DEIA Council in 2021. Members come from each of the divisions of CPR, including the Office of the Director. Current leadership are Jennifer Johnson, Chair; Todd Heath, Co-Chair; and Lauren Manning, Secretary and DEIA Ambassador. The immediate past chair serves as the Post Chair Advisor, continuing to help the IDEA and maintain the institutional knowledge from year one into year two.

IDEA serve as the DEIA advisory body for CPR and is the sounding board for all DEIA matters. Its responsibilities are to do the following:

- Promote opportunities for employees to communicate workplace issues to management
- Foster communication and cooperative activities with DEI groups
- Provide CPR leadership with recommendations to enhance the effectiveness of existing DEI plans
- Promote CPR DEI special events, education, community outreach programs, training, etc.

- Assist CPR leadership in the development and implementation of policies, plans, and activities to promote a more inclusive workplace culture

There are several objectives for year one. The first is to create a partner database in SharePoint that will serve as a planning IDEA DEIA resource. The group is also working with the Management Resources Office (MRO) to determine existing practices that address DEI issues and will begin a root cause analysis regarding the most common DEI issues. They are also working with MRO to develop a speed mentoring session that will increase diversity in leadership. And the last objective is to examine data regarding employee participation in detail opportunities, conferences, workshops, educational trainings, COTAs and deployments.

Communication and coordination is a large part of IDEA's work. The group shares diversity dashboard results, workforce visualizations, scorecards on diversity, and focus group data compiled within CPR. There were a series of national-level hate crimes that IDEA promoted acknowledgement. The group presented at two CPR all-hands meetings and delivered 15 presentations which include agency-wide presentations at the DEIA Council Shares Meeting. IDEA connected with representatives from 16 DEIA groups and exchanges resources with three other CIOs. It also interacted with eight employee workgroups all in an effort to glean lessons learned as it moves forward.

An area IDEA is really proud of is its mentorship and leadership efforts around hiring, retention, and promotion. On July 27, 2022, IDEA held its initial Speed Mentoring Event. During this event, mentees connect with senior leaders, where the leaders share their career journey and mentees were able to obtain career advice. Contact information was also shared and options to follow up was at the discretion of the participant, so there is no long-term commitment necessarily. Positive reviews were received from attendees. Another even is planned for December 2022.

A large part of DEIA work is knowledge and expertise. There have been over 45 opportunities provided to train up DEIA skills across the council. These are offered through workshops, courses, presentations, and other training activities either center-sponsored, CDC-sponsored, or beyond the Agency, as in the case of the Cornell University Diversity and Inclusion Certificate Program. So far, Ms. Lauren Manning has completed the program making her an ambassador.

Concerns at the center level were elevated to the division level to help develop understanding. IDEA worked together with MRO to address CPR's focus group findings. Different forums were also utilized to capture feedback such as the CPR DEIA Town Hall, DEIA leadership retreats, Tiger Team Collaboration, Ambassador Service, and CPR DEIA Action Planning Support.

Several challenges were identified during this first year of work which include the following:

- Restricted access to employee data (accessing personnel information)
- Members and leaders often lacked sufficient time to commit to IDEA activities
- Limited progress in activities to which IDEA intends to contribute

- Lack of engagement by some IDEA members

Comments from the BSC:

- Hopefully, this will be a part of the BSC meetings going forward with regular updates provided.
- There are so many reports and so many committees that talk about these issues, but we have yet to see progress anywhere. Five years from now if we come back and have the same presentation, what would we like to see different from what is occurring today? This is a good exercise to think through.
- NIH started a program called Faculty Institutional Recruitment for Sustainable Transformation (FIRST), which assist schools of public health and medical centers with funds to recruit diverse faculty members. The program also insists that the institutions match the funding equally. Now, numerous schools have applied or are applying for the grant, making recruitment of diverse faculty a priority item for institutions. Think of an incentive structure, similarly, to promote DEIA.
- What are the metrics? It would be nice to see the metrics. Be sure to track those metrics for the next few years.
- Determine ways to extend DEIA efforts into state and localities as well. To what extent has PHEP funding been made available for the same kinds of DEIA activities in the state and local health departments and what kind of uptake is occurring?
- Community engagement and empowerment is important. Historically, many of the provisions of notices of funding opportunities (NOFO) within CDC have prevented that from effectively happening because of short times for applications that do not enable community engagement and procurement practices can prevent the engagement of small community-based organizations because they do not have the track record or funding to be competitive in a federal environment. To what extent is CPR combatting those issues?
- CPR is a cross-cutting program in a categorical agency. There needs to be common, consistent, metrics and measures for states and localities around capacity and community assets. If each program at CDC defines those in a different way, a house of babble will be created. To what extent can CPR take leadership within CDC and ensuring an agency-wide approach to a common definition of capacity and measurement such that states and localities can invest their resources across cooperative agreements in common measures?
- DEIA efforts should be broadened to also include morality and socioeconomics.

Data Modernization and Outbreak Forecasting Analytics

Center for Forecasting and Outbreak Analytics (CFA) Support for Current Responses Dylan George, PhD, Director of Operations, CFA

Data analytics are used to inform response activities during an epidemic. Some examples of data analytics that can be useful during an outbreak include the following:

- Prospective scenario analyses
- Pathogen characterization
- Risk assessment tools
- Disease risk mapping
- Parameter estimations
- Burden-impact assessments
- Disease forecasting
- Outbreak management scenario analyses
- Phylogenetics
- Vaccine effectiveness
- Therapeutic effectiveness

CFA is working on making the analytic toolbox bigger, better, and more broadly available to programs across CDC and to state and local jurisdictions. This will result in improved evidence that drives decision-making during a response.

The first step to characterizing an epidemic is to find the commonalities and anomalies. How is it spreading? To whom is it spreading? What are the risks groups? What is the clinical severity of the outbreak or the pathogen? What interventions need to be put into place? How do you think of those interventions in a systematic way while also tracking the effectiveness of efforts? CFA is trying to refine the analytical tools needed in all of those spaces.

CFA is also thinking through the development of several products. CFA is considering forms of qualitative support that will help anticipate the dynamics of future outbreaks and epidemics on the horizon. Qualitative support forms that are helpful during this stage are risk assessments and technical reports. The technical reports for Monkeypox have been shared externally and can be found on the CDC website. There are four available to date and an updated draft is in progress.

There are also some quantitative capabilities that can be instrumental during outbreaks, such as parameter estimates, scenario models, forecasts, and Question X. CDC must be ready for the Question X with tools and teams available to assist.

In the midst of addressing Ebola, Monkeypox, and COVID-19, the Omicron Variant of COVID-19 emerged. CFA with a range of academic colleagues put together assessments on the Omicron

variant that showed a combination of increase spread occurring as well as immune evasion of the variant. Using scenario models, CFA was able to predict that much higher cases of COVID-19 were on the way.

Assessing the clinical severity of the Omicron variant was another task where analytics played an instrumental part. Using information from Kaiser Permanente Southern California, CFA was able to use assays to distinguish those affected with the delta variant versus omicron and observe clinical outcomes over a period of time. Understanding spread and severity helped CFA measure the impact on healthcare systems from a granular level as the epidemic progressed.

Technical reports were also utilized by CFA for acute hepatitis and Monkeypox. These reports highlighted how utilizing the finest data available can be used to inform key decision-making and bring about better understanding. The reports are garnered much positive feedback.

CFA is working with the Office of the Chief Information Officer on a pilot project to develop a CDC Public Health Data Cloud. There are three phases to the development of the final product.

Phase 1: Virtual Analyst Environment

- Cloud-first scalable virtual desktop infrastructure for data analysis that integrates file sharing and software and artifact version control and management
- Is now accessible to HHS partners
- In testing (Azure, CDC 'External Tenant'), nearing production

Phase 2: Large-Scale Computing

- Develop initial infrastructure for running and managing large, parallelized workloads including large-scale simulation
- In scoping and early prototyping

Phase 3: External Collaboration

- Bring in external academic, government, private sector, and international partners to work in the virtual environment while still maintaining privacy and security
- Planned

The project is currently being tested with CFA staff, ASPR Modeling Group, and the Monkeypox response. People have found the desktop useful. Individuals that were a part of the Monkeypox response have used the desktop to leverage higher-performance workstations that support the sexual network model calibration and experiment execution.

The Data Modernization Initiative (DMI) is the national effort to create modern, integrated, and real-time public health data and surveillance available that can protect the public from any health threat. Dr. Williams' presentation described some of the processes being utilized to reach this goal.

COVID-19 revealed many of the flaws of the public health data systems being utilized. The reality is that systems have historically been reactive, and data is occasionally not available when needed. The COVID-19 pandemic underscored the need to be able to gain access to real-time data at every level, federal, state, and local, on the numbers of cases, hospitalizations, deaths, etc. Unfortunately, the systems were unable to supply those statistics.

Data systems have historically been siloed therefore making it harder to pull data together across multiple systems. There were even instances of data having to be hand-entered or only available through paper-based processes or transmitted via fax. These systems were inefficient. COVID-19 highlighted the many opportunities available if systems were modernized. Data at the right place and time allows for better predictions of future health crisis and prevention of infections. It also help CDC map out its future direction positioning the agency for better decision making and a better provider of data and information to its partners in public health at all levels during a response. Public health at one time was left out of healthcare data modernization efforts, but this initiative will bring public health into the healthcare system evolution that has occurred in the last 10 to 20 years.

DMI is aligned to CDC's overall mission. First, it helps with the detection of emerging and ongoing threats and trends by using multidisciplinary, modern methods to aggregate various data sources. Then it tracks health and safety utilizing non-siloed, integrated applications to access and evaluate the impact of illness and interventions. This leads to effective responses where entities are able to evolve and pivot as the public health circumstances changes by utilizing scalable outbreak response capabilities at CDC and in STLTs.

The priorities of DMI are:

- Build the right foundation – provide new information infrastructure and automated data sources for response-ready data sharing
- Accelerated data into action – create faster more integrated data to provide a more real-time, 380-degree view of health and forecasts of health threats for greater prevention and response
- Develop a state-of-the-art workforce – identify, recruit, and retain experts in health IT, data science, and cybersecurity to generate meaningful public health insights
- Support and extend partnerships – engage with state, territorial, local, and tribal partners to address policy challenges and create new strategic partnerships to amplify knowledge

- Manage change and governance – provide the necessary structure to support modernization and aid adoption of unified technology, data, and data product

There are numerous activities occurring across the agency that fall under the DMI umbrella. The goal is to make data sharing easier through common policies, practices, and standards. This process also incorporates academic and private partners. The system will evolve over time to meet data needs.

This is a journey and it will take a number of years to arrive at the desired system, but the processes to move the system towards the goal are occurring not only at the program-level, but also from the top down of the infrastructure. STLT partners will also be instrumental in helping CDC succeed in this endeavor.

Comments from the BSC:

- There were some critical lessons learned at the local level during COVID that may be helpful to incorporate into your thinking. One is the concern from the public around privacy. Cell phone data was utilized to produce maps, and that closed off all possibility of using that type of data in the manner that the county and public health departments wanted to use it.
- The weather forecasting metaphor brought understanding to the public. We predicted similar to how weather forecasters predict, and the public could understand that analogy much better.
- Response needs also drive what the analytics need to be and the analytics drive what the data need to be. In many instances of an outbreak, including COVID-19, even with the best data collection, the actual data needed were data that were not being collected by anyone. So, that may be the Question X.
- In COVID, many of the biggest misses were not as a result of inaccurate data but the fact that the right data were not rapidly being collected, for example, how much asymptomatic infections were present at the outset of COVID or how much infectivity was there in vaccine recipients. Nobody was collecting that information.
- Most people in the community do not know how to interpret data and use it to make decisions for their health. A data modernization strategy should take into account communication and data literacy.
- Another thing to consider is the cost of data systems, infrastructure, and software. Some term-limited funds were provided to state and local public health during COVID but once the money is no longer available, how do you sustain a modern system? How will these localities stay current, particularly in the data science world?
- Part of the science agenda should be a social justice and equity agenda. It is puzzling why it took having the COVID pandemic to occur before conversations around health inequalities became more frequent particularly given the fact that anyone that knows anything about social determinants of health would have predicted this would occur. The same occurred around vaccine inequalities. It is as if we have not learned any of the

lessons over the last 30 years. Part of the agenda should be exclusively looking at ways to collect data that illuminate these inequalities.

- Think through what is needed at the local level in terms of using the data that is being generated.

Public Health Extreme Events Research (PHEER) – a National Network to Support Public Health Disaster Research and Perishable Data Collection

Jennifer Horney, MPH, PhD, Professor, Epidemiology Program, University of Delaware

In July of 2020, the National Academies of Science, Engineering, and Medicine released a report highlighting gaps in the evidence base for public health emergency preparedness and response (PHEPR). It stated, “...the science underlying the nation’s system of response to public health emergencies is seriously deficient, hampering the nation’s ability to respond to emergencies most effectively to save lives and preserve well-being.” They proposed a new science framework for PHEPR science. The priorities of the framework include the following:

- Commitment to PHEPR researcher and practitioner training and education
- Capacity building for translation, dissemination, and implementation
- Cross-cutting, forward-looking research agenda with focus on innovation and systems-level approaches
- Mechanisms to build partnerships among practitioners, communities, and researchers
- Common evidence guidelines and standards with a focus on research and evaluation
- PHEPR evidence-based guidelines group to develop guidelines for PHEPR practices and communicate key evidence gaps
- Recognition of PHEPR science as a unique discipline within public health

Dr. Horney spotlighted one of the elements of the framework, which is mechanisms to build partnerships among practitioners, communities, and researchers. Public Health Extreme Events Research (PHEER) comes at a time when broad agreement exists on the need to reinvest in the evidence base, building on, and going beyond the legacy of the Public Emergency and Response Research Centers (PERRCs). The public health emergency preparedness evidence base has continued to advance through training and exercises, as well as individual PI- and center-based post-disaster research around public health and disasters. However, a more formal space for collaboration and rapid research support is needed.

The PHEER Network is a unique researcher-led network that can mobilize rapidly, inform evolving disaster research agendas and funding decisions, and advance the field of public health disaster science. Seed funding for the network has been provided to CPR through an Interagency Agreement with the National Science Foundation and is coordinated via a collaboration with four academic institutions and their researchers: New York University, Dr. David Abramson; University of Washington, Dr. Nicole Errett; University of California – Los Angeles, Dr. David Eisenman; and University of Delaware, Dr. Horney.

This effort is unique and has the potential for success because it is joining a framework of interdisciplinary disaster science already in existence. The project is funded by the National Science Foundation under an umbrella called Converge, which is housed at the University of Colorado at Boulder.

A few examples of how the Converge Network functions in a disaster setting were given. In the case of the Boulder County fires, a multidisciplinary forum of researchers and practitioners was convened, as well as connected response and recovery officials with research protocols and priorities. This group coordinated around perishable data needs, ethical considerations, and other impacts that require cross-disciplinary and academic/practice collaboration.

PHEER will provide a coordinated mechanism for STLT to engage with the research community around subjects like evidence informed practice, generalizable and novel data about public health impacts of disasters, and a community of practice to bridge the gap between the disaster research community and the practitioner community. This will happen through collaboration with academic and STLT health departments.

Some other areas that this network could potentially contribute to are data ecosystems, where local data could be integrated with existing data including the development of community-driven data standards, common data elements, or addressing access issues.

There are several benefits that could result from the development, implementation, and ongoing support of the PHEER Network.

- Shift from just-in-time / opportunistic research to science-driven, robust investigations conducted by a trained and prepared workforce
- Shift from competitive to collaborative funding model
- Offer opportunities to train the next generation
- Apply lessons learned from other disciplines
- Priority access to NHERI facilities (CONVERGE, cyberinfrastructure, equipment/instrumentation, coordination, etc.)
- Enhance interdisciplinary data collection, analysis, and conceptual framing

Since this is a new project, Dr. Horney solicited thoughts from the BSC around the following questions as well as any additional comments and recommendations:

1. What is needed from a national level COP that would coordinate efforts to collect perishable data and better measure public health impacts, inform preparedness, response, and recovery through research translation?
2. How can STLT be best supported and engaged in this work? How can PHEER best support the practice community (e.g., bridging research and practice?)
3. Are there better ways to integrate research into STLT response structures and processes that PHEER should support ?

4. Are there data domains that should be cultivated, curated, or synthesized for rapid community of practice access?

Comments from the BSC:

- Often during an emergency, a health officer may receive a call from a federal employee wanting to do a research study on the emergency. However, at that moment the health official is so busy with response efforts, that they do not have the time to create protocols, gain IRB approval, and orchestrate the other necessary steps for research to occur. If there are research studies that need to be conducted during an emergency, now is the time to think through those questions. How will they be addressed and what IRB approval will be needed?
- Another aspect that could be established ahead of time is that sense of trust, which comes from building personal relationships with the state health officials. Think of who in the state could be potential partners so that the relationship can be built in advance.
- There are wonderful pockets of activities that are happening that can be discovered in advance and utilized during emergencies. For example, establishing connections with schools of journalism, where there are communications labs. Their whole focus is on how to produce effective communication in disaster, and they are looking for opportunities to test their theories. They would be a great partner.
- People have not come to the research enterprise with a common set of knowledge or understandings. The goal is to hold on to the knowledge that has been gained while also moving forward in a way that creates a systematic knowledge and an evidence base for practice.
- Another piece that needs to be a part of this is a literal or inherent pledge that the research will be translated back to the communities from which it was collected. Otherwise, data collection was just extractive, and it can leave the community feeling bitter and exploited.
- Implementation science is also important. How is the research implemented in real world settings and information disseminated more broadly?
- There is a need for better data about the individual decisions that are made during an emergency. It is complex and hugely impactful to understand this better and it is integral to response planning, particularly if we are talking about equity. This can be done ahead of emergencies that occur often, like hurricanes, and to collect data on the behavioral aspect of individuals and how they make their individual decisions because we have to take into account the societal context that we live in which is very much about individuality, freedom, and not being told what to do.
- CDC has to be invited in by the state to take part in response activities. Operationally, we need to figure out how does CDC get involved with a network like this so that it can collaborate and be at the table during the conversation.
- Maybe a role that CDC can play in predictable events is to furnish some of the research questions that need to be answered. Working with a group like PHEER and having an IRB and vetted protocols prepared beforehand would be beneficial, and when the researcher reaches out to the state official and lets them know that they are working

with the CDC to answer these questions with those IRBs and protocols already established, it would more than likely be greenlighted to go forward.

- Gain the states input on some of the research questions.

Public Comment Period

No public comments.

Meeting Recap and Adjourn

Cathy Slemp, MD, MPH; Chair, BSC

Dr. Slemp asked the group to voice some of the key, cross-cutting themes, takeaways, or ideas of next steps.

- The framework from DSLR looked good. There needs to be some tweaks to the language in some areas. Miscommunication and misinformation, Box 5, is a big deal and may need to be called out and addressed, as well as administration, Box 9, legal framework. It is also important.
- There was a lot of discussion around workforce, diversity, inclusion, accessibility, and equity in the organization and at the community level. Structures are needed to perpetuate equity.
- Workforce and the people is something we heard several times today. Often much of the attention is on the response but we must remember that we cannot do it without the workforce. As we go forward, workforce should be a pillar and a part of the conversations of how we are moving forward. Workforce is the most important resource.
- Equity has been a part of the PHEP grant all along, but I appreciate it being specifically called out. It would be helpful to hear that part of the agenda more flushed out in future meetings—about how you would be working within PHEP to create equity. The challenge, as a state health official, is determining how the PHEP activities interact and collaborate with all of the other equity activities that are a part of our funded activities. Also, what does health equity look like from a preparedness standpoint and what is the role there? At the state level and also at the federal, how can we partner with the private sector and academic centers? What partnerships should be in place before the next event and how can those other sectors be used to help in preparedness efforts?
- It is critical to take stock of where we are at and look at the real infrastructure that exists in this country, particularly in many of the states. For example, in Indiana, 90% of local health departments spend less than the 25th percentile of the distribution or level of investment in public health. And a huge number of the health departments have three people or less. Very few have any training in public health. This is occurring in a lot of states. At the end of the day, we are only as strong as our weakest link. As we consider the design of a system that focuses on building public health preparedness for the nation, we need think through ways to really strengthen the capacity of public health at a local level beyond adapting to the current situation. There is a need for real

current-based research that allows us to better understand what works, what does not, what our optimal size, for example, so that we can work towards a redesign effort that allows us to know that we have the capability to protect the nation no matter where they reside. There should always exist a certain level of public health protection.

- This is more than about building our own workforce from within but also building the environment and structures that will allow and support the workforce being developed. Some of the state structure and administrative systems are a barrier to that. This can be overcome with other partners across the sectors like the National Governors Association (NGA), the National Association of County and City Health Officials (NACCHO), and others to build the understanding of what can be achieved together and how the structures, systems, and our own bureaucracies can get in the way with every day and emergency activities.
- Often we think of who to bring to the table, as far as partnerships, but also we should think of ways to be public health evangelists and go to other people's tables to contribute a public health component. Then you send those folks out into the world to do some of the work. What other tables do we need to find ourselves at so that we can change the environment and the culture to bring transformative change?
- There is a lot of talk about prevention and recovery, but is there a way to go broader to resiliency? There will be more events, and at the end of the day the economic stability of families, social determinant of health, and equity make us more resilient. What is our role in shaping some of that environment? How do we see that work as preparedness and resiliency work for society?

Before closing, Dr. Walke thanked the BSC and all of the presenters for their thoughts and discussion. Many questions and issues for public health were discussed that need to be addressed for the community, as well as issues with workforce, resiliency, health equity, and social determinants of health.

With respect to DEIA, some of the issues with the workforce reflect those of society. CPR is a cross-cutting group, and it has to work along with the agency to break down the silos and pull people together so that it can tackle the latest public health threat. CPR is constantly thinking through ways to utilize its staff and resources to address these issues, while also leveraging its partners and other agency. This can be both daunting and exciting.

It is also important to measure the impact of the work, which is where metrics play an important part. This is not done through PHEP alone, but with the EOC and other categorical funding across the agency and federal government. How does CPR link those activities together and be able to show that it is making progress year to year? This is generational change. Dr. Walke said he needs help identifying the priorities of the moment to be sure that CPR is focused on those priorities strategically going forward and invested in the future to make a difference.

After reviewing day two logistics, with no further comments, day one of the meeting was adjourned at 4:51 PM EST.

**BOARD OF SCIENTIFIC COUNSELORS (BSC)
CENTER FOR PREPAREDNESS AND RESPONSE (CPR) MEETING
WEDNESDAY, NOVEMBER 16, 2022
VIRTUAL/IN-PERSON**

Roll Call, Welcome

Kimberly Lochner, ScD; Deputy Associate Director for Science, CPR and Designated Federal Official, CPR BSC

Dr. Lochner conducted roll call. A quorum was present. Dr. Slemp called the meeting to order at 9:06 AM.

CDC Response Updates

Ian Williams, PhD, MS, Deputy Director, CPR; COVID-19 Incident Manager

Dr. Williams provided an update on the COVID-19 response.

In the spring of 2021, there were ten taskforces with sixty different teams each, and close to 2,000 people deployed to the response. Over the course of the last six months, that number has been reduced to two task forces and ten teams as 400 activities have to be assigned back to programmatic areas and a new division created that will be responsible for a majority of the activities. The role of incident management will transition to Dr. Brendon Jackson and will be a part of the new division. However, CPR will still maintain a strong presence in the response. Dr. Sara Vagi, the Associate Director for Science with the Division of Emergency Operations, is the Principal Director to Dr. Jackson and will be closely engaged with the response. Dr. Williams is CPR's Responsible Official for COVID activities happening in their centers.

Dr. Williams showed current COVID-19 surveillance data, which shows general declines in cases, hospitalization, and deaths due to COVID-19 over the last six or eight months. Currently, there are approximately 40,000 cases a day with a seven-day average. This is down from over 100,000 cases a day on a seven-day average, as seen in May of 2021, and drastically down from the 800,000 cases per day in January 2020. There are on average 3,400 hospitalizations per day, which is down from the more than 21,000 a day in January 2021. And deaths have declined to anywhere between 300 to 350 deaths a day. More research is being conducted to identify and classify the individuals that are still dying from COVID. It is believed that these individuals are older with multiple underlying conditions and therefore more medically fragile. This indicates the need for more discussions around vaccination efforts and post-exposure prophylaxis for this population.

As of November 12, 2022, the majority of the COVID-19 variants are variants of Omicron BA.5 and Omicron BA.4.6: Omicron BQ.1.1 (24%) followed by Omicron BQ.1 (20%) and Omicron BF.7 (8%). These data indicate that vaccines are still effective, as well as post-exposure prophylaxis. The new variants do, however, have impact on monoclonal antibodies or pre-exposure

prophylaxis. This “variant soup” is being watched carefully, as well as what is happening abroad.

COVID-19 community levels are a tool to measure of the impact of COVID-19 illness on health and healthcare systems and is combination of three metrics: cases, hospital admissions, and the burden from those hospitalized. As of November 10, 2022, most of the country (76.4%) is in the low community level for COVID-19 and 20.99% at the medium level. These numbers continue to trend down. In August 2022, the Morbidity and Mortality Weekly Report (MMWR) Published the [Summary of Guidance for Minimizing the Impact of COVID-19 on Individual Persons, Communities, and Health Care Systems](#). This report provided guidance on how to protect the most fragile in the community and will be instrumental in assisting with long-term efforts to minimize COVID transmission. Guidance covered knowing your risk, how to protect yourself, what actions to take if exposed, and what steps to take when sick or have tested positive.

Planning has pivoted to thinking longer-term with regards to COVID. The bivalent booster doses was made available in the fall, but uptake is not where it needs to be. Only 26.9% of individuals 65 years and older have received the booster. More data will be released in the next couple of weeks that examines vaccine effectiveness, but preliminary data shows bivalent boosters work relatively well for hospitalizations and deaths.

Paxlovid, which is an oral antiviral for COVID-19, is being underutilized, and the data show racial and ethnic disparities when it comes to who is receiving the antiviral. There needs to be a continued focus on ensuring that those eligible for Paxlovid are receiving the antiviral treatment as well as thinking about the social vulnerabilities and the programs needed that will provide access.

Ventilation is an underlying piece to all of this. There have been studies conducted in school settings, one of which can be viewed in the MMWR. There have been some efforts on ventilation within specific settings and communities as a whole. More work is needed in this space to bring about improvements.

Jonathan Mermin, MD, MPH, Director, National Center for HIV, Viral Hepatitis, STD, and TB Prevention; Monkeypox Incident Manager

Monkeypox (MPOX) is an Orthopoxvirus and falls in the same family as variola virus or smallpox. The virus was first discovered in 1958 following two outbreaks of a pox-like disease in colonies of research monkeys, which is why it developed the name Monkeypox. However, monkeys are not the natural host for the virus. Over the past few decades, there have been increasing numbers of individual cases and outbreaks attributed to reduced smallpox vaccine-derived immunity and changing geographic distribution of human populations coming in contact with animals. To date, none of the cases or clusters have been of the size of the recent outbreak of 2022.

Monkeypox lesions usually start as macules and papules and then grow into pustules and eventually typical pox lesions. However, the clinical presentation of the current outbreak is slightly different. The rash often starts in mucosal areas, such as the genital, perianal, or throat. The normal “prodromal” symptoms seen in typical outbreaks can, for this outbreak, be absent or follow the rash onset. The duration is usually 2-4 weeks. Case progress varies. Some people can have a worsening course of the disease that leads to multisystem organ failure after eight to ten weeks, while others may improve for a while, but then worsen again.

Although most cases of Monkeypox are self-limiting, they are extremely painful lesions. Severe disease can occur, with persistent or recurring lesions, sometimes over 100 despite treatment with Tecovirimat and other antivirals. The lesions can lead to obstructive scarring in the urethra, bowels, or on the face. It can also result in a secondary bacterial or fungal infections, sepsis, unstable blood pressure, and organ failure. Such severities most often occur in immunocompromised persons.

There have been close to 29,000 cases in the U.S. since the onset of the outbreak. In early to mid-August 2022, there was a decline in case moving from 500 cases per day to now roughly 25 cases per day. Data indicate that the decline can be attributed to changes in sexual behaviors. Communications targeted towards gay, bisexual and other men who have sex with men (MSM) through platforms such as digital media and dating apps provided information on potential risk factors from sexual behavior. These communications also put an extra emphasis on reaching African American and Latino MSM. There was a 50% reduction in the number of sex partners immediately following the distribution of this information. In many ways gay and bisexual men took it upon themselves to reduce their risk and the risk for their partners.

Because of previous preparedness practice, CDC was able to respond with the JYNNEOS vaccine. This vaccine was available in the stockpile but more was manufactured to be able to meet the demands of the outbreak. The number of individuals vaccinated peaked at the end of July and early August 2022. First doses of the vaccine have declined since then. The vaccine is a two-dose vaccine. Second dose numbers have also declined and is now roughly 50% of the doses provided. Guidance was expanded in September 2022 to include anatomical sites for intradermal administration, for example subscapular, deltoid regions.

An informal analysis was conducted on the performance of the vaccine. The study examined the rate of infection in those who have not been vaccine versus those who have. Data showed people who had not been vaccinated were 14 times more likely to get Monkeypox than those who had been vaccinated starting 14 days after their first dose when immunity had reached a reasonable amount. More studies are underway to measure the effectiveness of the vaccine, as well as the difference in immunity following a second dose and use of intradermal and subcutaneous routes of administration.

Data show that Monkeypox is not affecting every region in the U.S. It has become concentrated in certain jurisdictions, and furthermore only in certain communities in those jurisdictions. Even within a state, it may not be the entire state but only certain counties in the state that are

affected. Response requires a two-pillar approach. One is to respond traditionally, as in the case of other infectious outbreaks, where the public health system helps infected individuals and supply vaccines to the community. The second is to reach the social and sexual networks of those predominately affected and increase vaccine uptake to hopefully stop transmission. CDC has been working closely with health departments in those affected areas.

Health equity is an important part of the outbreak. A unit within the Incident Management Systems (IMS) focused on health equity and integrated this component into the response activities. The biggest inequity in this outbreak is that the vast majority of those affected are gay, bisexual, or other MSM given that MSM only make up roughly 2% of the population. Within MSM, there are growing disparities, particularly for African Americans, who initially made up 15% of the cases and now are close to 40%. Under vaccination of African Americans appears to be the cause of this. Second dose vaccination was also low. Vaccine equity events are occurring to try to reduce the disparities. However, regardless of race and ethnicity, there has been an 80% reduction in Monkeypox incidents.

The outbreak response has involved multiple agencies such as many of the entities under HHS, the U.S. Government, White House, and other partners. Ongoing meetings occur to discuss essential research questions, logistical issues, and longer-term predictions for the outbreak.

Fact-based messaging was utilized to reduce stigma as well as focused digital media and other channels to reach MSM. CDC continues engagement with communities, leaders, influencers and provides guidance to integrate equity into distribution and access to the vaccine. Dr. Mermin said misinformation and disinformation are public health's quandaries, where the field has been several steps behind in its effort. These areas need to be tackled because once they are engrained, it is hard to overcome the misconceptions.

On the global front, most of the cases have been diagnosed in Europe or Central and South America. The big space has been the African region, where there are endemic clusters and the driving risk factor for many of the cases is sexual contact; however, little information exists about those contacts. There are also higher cases among women in Africa compared to other regions. There is concern that the epidemiology of the infection may be different. There is interest by WHO and CDC to work with countries to get a better understanding of what is occurring on the ground.

There are some key Issues for the public health response, which are listed below.

- Expand efforts
 - Focused response to cases and clusters of infections
 - Increase vaccine use by ensconcing routine Monkeypox vaccination in clinics that provide HIV, STI, PrEP services, and link with community-based organizations
- Nurture engagement with community organizations and leaders

- Continue research in treatment, vaccine effectiveness and mode of administration, animal reservoirs and zoonotic risk, viral shedding and transmission dynamics, diagnostics, surveillance
- Investigate situation in countries that have ongoing cases
- Continue to monitor and support global efforts to prevent infections

Several lessons have been learned through this epidemic. One is to anticipate the future and act fast. Also, focus on equity and work with communities. The third is to bring services to people and make prevention easy. And lastly, as societal concern decrease, public health needs often increase.

Comments from the BSC:

- There is not a comprehensive primary care system. If anything, it is splintered without a comprehensive approach. If it was comprehensive and robust, we could institutionalize a lot of preparedness and response activities.

Risk Communications during Public Health Emergencies

Moderator: John P. Anderton, PhD, MPA, Associate Director for Communications Science, CPR

Panelists:

*Betsy Mitchell, PhD, MA, Director, Division of Communication Science and Services, OADC, CDC
Kellee Waters, MPS, Senior Health Communications Specialist, Emergency Risk Communications Branch, DEO, CPR*

Keri Lubell, PhD, Behavioral Scientist, DEO, CPR

Chris Voegeli, PhD, MPH, Behavioral Scientist, NCIRD, CDC

Lynn Sokler, BS, BS, Senior Communication Advisor, OADC, CDC

Betsy Mitchell, PhD, MA, Director, Division of Communication Science and Services, OADC, CDC

Dr. Mitchell's presentation focused on unpacking some of the communication principles through a theoretical perspective, which draws on communication science and risk communication. Long gone are the days of mass communication whereby messages from the government appeared to uniformly impact a homogenous audience with far reaching impacts on their attitudes and behaviors. Media was for the masses, top down, and seen as opposition to high culture and an engine of powerful change, promotion, education and innovation. Mass society theory emphasized the interdependence of institutions and the exercise of power therefore the integration of media into sources of social power and authority. The understanding of mass media continued to evolve through scholars such as George Gerbner with his cultivation theory, where he posited that media shaped reality through messages and the consistency of those messages over time. Later, a deeper understanding of persuasion through media emerged. Scholars, such as William McGuire suggested in the context of

influence between the source, message, and receiver, there were steps that individuals must pass through in order to fully arrive at a behavior, such as exposure to a message, tending to a message, comprehension, yielding, retention, and ultimately behavior. How people moved through these processes was a function of their investment in the topic.

Effective risk communication and successful emergency responses require an understanding of the factors that influence engagement and health behavior. Critical to effective risk communication is an understanding of sender attributes like perceived expertise, likeability, honesty, and trustworthiness. Moreover, asymmetry principles says that it is more difficult to earn trust than to destroy it, so if a person does not trust an organization, then negative information associated with the organization will only amplify distrust and any positive information will be discounted. The biggest contributor to building trust and credibility is an organization's ability to show empathy and care. Facts and data alone will not increase this. COVID-19 showed that message development becomes more difficult when science is nuanced, changing, and uncertainty exists. Very often in COVID, there was an emergence of false equivalence and the appearance of opposing messages both touted as true and delivered by authority figures, which ultimately added to the public's confusion.

Risk communicators must also understand the receiver from many perspectives such as demographics and psychographics like initial position, values, culture, lifestyle, and perceived-susceptibility and perceived severity of risk. There is a complex interplay between individuals, groups, and their community and the societal factors that shape perceptions and risk and behavior. When faced with a risk, people can adopt the behaviors and attitude of the individuals around them and their social network as a response to the risk. Who people spend time with greatly affects how they see the world and how they respond. It could also be a function of social cohesiveness, which means examining individuals, social leaders, and communities is also vital.

In today's world, mis- and disinformation are a part of the mental noise. Mis- and disinformation are change the world and many sectors are racing to develop systems that monitor channels and seek out bad actors' messages utilizing strategies and emerging practices. One way to counteract mis- and disinformation is to improve people's confidence to make their own informed choices or boosting strategies. Nudging strategies are also being utilized, where people are warned about misinformation and directed to accurate information.

Risk communication should be iterative, continuous, and a long-term process in which values, culture, experience, social background of both the organization and the audience are considered and modified. The audience must be involved in the process, and this process must be a dialogue. Interpretation is necessary for communication to be effective. Preparedness and public health are more complex than it has ever been and will require multidisciplinary, multisectoral, innovative, and sustained strategies in order to see progress.

Kellee Waters, MPS, Senior Health Communications Specialist, Emergency Risk Communications Branch, DEO, CPR

CDC's Crisis and Emergency Risk Communication (CERC) has been around since 2002 and has gone through iterations based on changing science, experiences, and evolving best practices in emergency responses. These are guidelines, not a rigid set of rules, based in communication science, psychology, studies in issues management, and the experiences of communicators, subject matter expert, and those in the field. It is also not a substitution for media training. There are six principles of CERC that can be applied to almost any emergency or situation, domestically or internationally. The principles have to be tailored to the event in which they are utilized. CERC teaches ways to overcome psychological barriers, to perform audience segmentation, develop key messages and empathy statements, tailor messages, and build credibility and trust.

1. Be first
2. Be right
3. Be credible
4. Express empathy
5. Promote action
6. Show respect

Since 2018, the program has worked with its partners to conduct 46 in-person training events and presentations for close to 1,800 individuals. It has also held 43 online training events and presentations for 34,484 persons, and provided web-based asynchronous training for more than 7,800 persons. The program is in demand and has received positive feedback. Well over 90% of in-person and live virtual course participants readily agree or strongly agree that the training effectively meets professional needs and that they will be able to apply knowledge gained. In the future, CERC should continue to form a central pillar of CDC's overall risk communication framework, address mis- and disinformation, and included evaluation of CERC usage during emergencies.

Keri Lubell, PhD, Behavioral Scientist, DEO, CPR

Dr. Lubell's presentation highlighted three projects addressing communication during emergencies. One works with people with limited English proficiency. The second is around data for state and local health department communication, and the third subject is a pilot evaluation of CDC's emergency communication.

There are limited evidence-based practices to guide public health communicators during emergencies, and the knowledge gap only enhances inequities in response communication. Individuals with limited English proficiency make up nearly 10% of U.S. population over the age of five, and these individuals are disproportionately negatively affected by public health

emergencies. The two largest language groups after English are Spanish and Chinese. DEO's Emergency Risk Communications branch in collaboration with Harvard University surveyed those speakers regarding their experiences with information and communication during COVID-19. Data collection has been completed and is now being analyzed, with key findings published in the *Journal of Health Security*.¹ These surveys are the first nationally representative surveys of Spanish speakers in U.S. and of Chinese speakers, including Cantonese and Mandarin. Surveys were collected in the preferred language. Below are a few of the findings with respect to Spanish and Chinese speakers' experiences with information during COVID.

- Survey respondents
 - Obtained information from multiple sources, including friends/family outside US
 - Used social media for news but platforms differed (FB vs WeChat)
 - Perceived US news as disrespectful/discriminatory, but Chinese speakers more likely to agree - 86% vs. 58% for Chinese and Spanish speakers, respectively
- Local health departments (LHDs) have primary responsibility for messaging health protection information to their communities
- LHDs work closely with community-based organizations (CBO) who are known, trusted in communities
- Based on this, CPR funded LHD "adaptation"

The second project focuses on data for state and local health department communications. Data gains most of its traction in state and local health departments, but there are challenges with collecting, using, interpreting, and then applying the data to communication strategies. Data for communication matters, and understanding people's knowledge, attitudes, values, beliefs, and behaviors is critical to effective health protection. During the COVID-19 response, a collaborative group composed of CDC, ASTHO, the Harvard School of Public Health, and colleagues at the National Public Health Information Coalition (NPHIC) create resources, such as one-page summaries, "Ask the Expert" presentations, and an ASTHO-hosted webpage to provide data and information. Another product was the formation of a learning community, which involved bringing together all of the organizations that were involved to focus on the data Harvard collects, analyzes and shares. The project started in 2020 covering areas such as travel, contact tracing, views on wearing masks, and receiving vaccination. In the second year, the health departments ask the group to focus on trust, ways to rebuild trust, and understanding the drivers of trust in public health. Despite challenges, trust in public health organizations is not in freefall. Many of the levers to increase trust are grounded in communication. Other factors include following the science, having experts, and providing services like vaccination clinics.

The last project is a pilot evaluation of CDC's emergency communication. There is a lack of evaluation approaches for measuring effectiveness of communication during emergencies. DEO's Emergency Risk Communication branch is investigating topics such as tailored messages,

¹ GK SteelFisher, et al. Getting Critical Information During the COVID-19 Pandemic: Experiences of Spanish and Chinese Speakers With Limited English Proficiency. *Health Security*. Aug 2022.273-285

reach, and timeliness. The first phase of the pilot included framework development, identification and vetting key constructs. In the second phase, measures were developed for the evaluation and some were implemented as a “proof of concept” test during the COVID-19 response. Focus was placed on the most proximate CDC audiences, such as communicators in STLTs, health care providers, and health care provider associations. One of the goals was to see if a survey-based approach would be feasible as opposed to other kinds of data collection for evaluating communication. It was found that partnering with NPHIC and CDC’s Clinician Outreach and Communication Activity (COCA) network was critical for outreaching. Future steps include refining measures, response categories, and piloting additional items with specific partner groups.

More emergency communication research is needed before, during, and after emergencies. The health departments need and want support from CDC. Creative approaches can help. Evaluation is critical but underdeveloped.

Chris Voegeli, PhD, MPH, Behavioral Scientist, NCIRD, CDC

Dr. Voegeli’s presentation focused on misinformation. The term infodemic was first popularized in 2003 in a Washington Post column during the SARS epidemic, but the term saw a resurgence after Dr. Tedros Adhanom Ghebreyesus, WHO’s Director-General, used the term during the Munich Security Conference in February 2020, stating, “We’re not just fighting an epidemic; we’re fighting an infodemic. Fake news spreads faster and more easily than this virus, and is just as dangerous.” The term infodemic may be relatively new but the concept is not. Information overloads have been documented throughout history any time technology advances thereby increasing the production and availability of information. Currently, the amount of information the public is exposed to and the amount of time spent absorbing it is unprecedented in human history. In addition, the information landscape is complex and wide and provides opportunity for misinformation, disinformation, and rumors to become a part of the mix.

Constantly changing public health guidance and mixed messages from authorities contribute to a noisy, crowded information environment making it difficult for an individual to identify which information is not only accurate and credible, but also fresh and valid. Misinformation spread during the COVID-19 infodemic led to increased calls to poison control centers, in the U.S., due to misuse of household cleaning products, ingestion of bleach, and improper use of hydroxychloroquine. It also hindered the progress of vaccination efforts.

In an infodemic, credible, authoritative voices must compete against misinformation that is packaged to provoke strong emotion. The information environment is shaped by the media, social media platforms, and social networks. Approaches to address this problem must be reactive and proactive. Comprehending the themes of misinformation and the information gaps that exist, as well as developing programmatic and communications approaches that address these underlying narratives, are critical to better addressing the challenges of the infodemic.

There are two approaches to monitoring misinformation. One is human-based content monitoring and the second is artificial intelligence and machine learning monitoring. Human-based content monitoring is the monitoring of traditional social media and news media, surveys, focus groups, and interviews. Artificial intelligence and machine learning monitoring creates and uses data-trained models to identify misinformation with relatively minor human oversight.²

There are some intervention strategies to dealing with misinformation, which can be either pre-emptive or reactive. Pre-emptive interventions seek to help people recognize and resist misinformation, and reactive interventions emphasize responding to specific misinformation after exposure to demonstrate why it is false. Examples of pre-emptive approaches include prebunking and psychological inoculation. Prebunking is a pre-emptive correction or a generic misinformation warning that comes before the misinformation. Psychological Inoculation is a combination of two elements: warning the recipients of a threat and identifying the techniques used to mislead or the fallacies used in forthcoming misinformation.³

Other pre-emptive approaches to misinformation include literacy interventions, which are interventions that work to improve the way people process and are critical of their own thought processes. Another approach is building societal resiliency. These are population-based interventions that aim to develop misinformation-detering systems, such as fact-checking networks, or increasing societal protective factors like trustworthiness of institutions.⁴

The reactive approaches to misinformation include the following:

- Debunking – Providing a factual account that ideally includes an alternative explanation for why something happened.
- Tagging – Placing a warning label on misinformation such as “Disputed” or “Rated false” tag
- Removal – Removing content or the bot and misinformation networks
- CDC is problem through several activities, such as:
- Creating tools and frameworks for CDC and other public health agencies

² Guo, B., Ding, Y., Yao, L., Liang, Y., & Yu, Z. (2019). The future of misinformation detection: new perspectives and trends. arXiv preprint arXiv:1909.03654.

Purnat, T. D., Vacca, P., Czerniak, C., Ball, S., Burzo, S., Zecchin, T., ... & Nguyen, T. (2021). Infodemic signal detection during the COVID-19 pandemic: development of a methodology for identifying potential information voids in online conversations. *JMIR infodemiology*, 1(1), e30971.

³ Roozenbeek, J., Suiter, J., & Culloty, E. (2022). Countering Misinformation: Evidence, Knowledge Gaps, and Implications of Current Interventions. PsyArXiv Preprint: 10.31234/osf.io/b52um

⁴ Norri-Sederholm, T., Norvanto, E., Talvitie-Lamberg, K., & Huhtinen, A. M. (2020). Misinformation and Disinformation in Social Media as the Pulse of Finnish National Security. In *Social Media and the Armed Forces* (pp. 207-225). Springer, Cham.

Roozenbeek, J., Suiter, J., & Culloty, E. (2022). Countering Misinformation: Evidence, Knowledge Gaps, and Implications of Current Interventions. PsyArXiv Preprint: 10.31234/osf.io/b52um

- Providing support and coordination within CDC and to other federal health agencies and international partners
- Actively collecting data, mitigating, and researching misinformation ⁵

Lynn Sokler, BS, BS, Senior Communication Advisor, OADC, CDC

Ms. Sokler’s presentation focused on developing a new CDC risk communication framework. As background on CDC risk communication activities, Ms. Sokler described that after the anthrax attacks and 9/11, in 2001, CDC realized that its communication efforts were not adequate and instead, a more systematic approach was needed for communications during crisis outbreak events in order to respond efficiently and effectively. CDC developed the CERC approach in 2002 to address this gap. CERC was made for time-bound, short-duration, urgent threat. In 2019, representatives across CDC and communications came together and formed the Risk Communication Council. The council identified the need to move beyond CERC and into a larger risk communication framework approach. COVID unfortunately hampered progress for a while, but now that the COVID has moved into a long-term risk communication event, efforts to enlarge the communication framework are resuming.

The world of communication in the past decade has become more complex and more needs to be done to gain an understanding of public attitudes and behaviors and how communication science can aid the public making the best decisions for themselves. In order for CDC to do better at-risk communication, the agency performed a self-assessment regarding its communication efforts.

CDC made missteps in COVID-19 communication, but it tried to do the best it could during a huge and changing emergency? CDC tried to follow its own CERC playbook, but changing and nuanced science, and political divides and misinformation created challenges. But CDC CERC communications for COVID-19 has moved to a risk communications framework. The following questions can help health communicators and scientists assess their gaps.

- Do I have a set of risk science organizing principles?
- What do I know about the risk and risk perception?
- What do our audiences need to know
- What other communications science can I apply to get it across?
- How can I test messages?
- What tools do I have ready to use?
- What channels for distribution and how to expand them?
- How do I run the gauntlet to clear and distribute?

⁵ Chan, M. P. S., Jones, C. R., Hall Jamieson, K., & Albarracín, D. (2017). Debunking: A meta-analysis of the psychological efficacy of messages countering misinformation. *Psychological science*, 28(11), 1531-1546.

Ecker, U.K.H., Lewandowsky, S., Cook, J. et al. The psychological drivers of misinformation belief and its resistance to correction. *Nat Rev Psychol* 1, 13–29 (2022). <https://doi.org/10.1038/s44159-021-00006-y>

- How to measure and adjust?⁶

Building a Risk Communication Framework, including CERC will require expanding the CERC evidence base, incorporating the latest risk communication science and learnings from climate and COVID health threats, and identifying approaches and tools that are practical and easy to use. In addition, there are societal changes that have occurred in the past 3-5 years that must be addressed or taken into consideration, i.e., social media and mis/disinformation, inclusive communications, behavioral science, trusted messengers, and community resiliency and equity.

A timeline of activities has been created. In the first year, the plan is to assess the risk science and best practices; create a risk communication framework and the tools; pilot test with CDC and state and local health departments; and to gather real-world applicability. In the second year, the goal is to refine the framework; develop trainings; and roll the risk communication framework out broadly to CDC and its partner: state and local, as well other partners of the agency. In year three, the plan is to evaluate the use and utility and add more refinement where needed.

Before concluding, the BSC was queried on the following:

1. What is some of the most pertinent research you suggest we look at?
2. Have you seen good tools for us to consider? (e.g., risk message framing, changing public perceptions, dealing with reticence?)
3. Who would you suggest (2-3 persons) to advise us?

Comments from the BSC:

- Education and academia can be a strong partner in addressing health literacy and gaining insight around how to identify misinformation.
- State, local, and tribal agencies would welcome involvement as you develop and roll out the new framework. CSTE, NACCHO, tribal agencies—all have a stake in this and would be interested in working with you as you develop and pilot test the framework.
- There are data scientists who are looking into these issues: Professor Kate Starbird at the University of Washington and Joan Donovan at the Harvard Kennedy School.
- Include representation from the various geographic areas and political climates.
- Find ways to provide the best guidance at the time but leave room for change so that it does not appear that CDC is incompetent on the matter.
- The Public Health Communication Collaborative may be helpful. It was created in the midst of COVID by a group of foundations including CDC Foundation, Kaiser, Robert Wood Johnson Foundation, and others to fill the gap identified.
- Those in the field, particularly local health departments, are expressing a huge amount of urgency to move now because the crisis of mistrust in public health is upon them, and

⁶ Source: 2020 risk metanalysis, The Evolving Field of Risk Communication (Balog-way, et al)
<https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/risa.13615>

they are challenged with resource restraints. So, as you learn, point out to those folks the most important steps they can undertake given their restricted resources.

- Consider utilizing communication firms in the private sector.
- Partner with community-based organizations that are reflective of the communities, as well as any influencers. Influencers may not necessarily be professional entities, but they influence messaging and can be used across communities locally. Find a way to bring those individuals into the fold so that you can reach all of your priority populations in a meaningful way.
- Media partners are important.
- There have been a wealth of public perception surveys over the last few years that may be helpful to utilize as part of the lessons learned and inform your next steps.
- Think of nontraditional partners and with diverse backgrounds, for example schools of journalism and the faith community.
- Work with those who take a systems perspective because there are evolving tools in that arena that would be able to see the issues in a different way and give better insight on where to find leverage.
- Remember there is a business out there for disinformation, and people are profiteering off of it. There may even be some political benefit, which also leads to profit and power. Somehow disinformation has to be disrupted and a systems approach would be critical to finding ways to accomplish that goal. Individuals who have expertise in systems and the use of systems tools would be instrumental in that space.
- Promote storytelling that allows you to connect with people as people.

U.S. National Authority for Containment of Poliovirus (NAC) and Polio Containment Workgroup (PGWG): Update

Lia Haynes Smith, PhD, NAC Director

The U.S. National Authority for Containment of Poliovirus (NAC) is responsible for identifying facilities that have poliovirus materials. This information is collected through a national survey with facilities known to have or possibly work with potentially infected materials (PIM). The NAC also audits and certifies facilities working with and storing eradicated poliovirus, as well as conducts root cause analysis in the event of a breach of containment.

Dr. Haynes Smith provided a high-level overview of the recent response investigation of a case of paralytic polio caused by vaccine-derived poliovirus type 2 (VDPV2) that was confirmed in an unvaccinated adult in Rockland County, New York on July 21, 2022. The New York State Department of Health is leading the response and is working with the local health departments and CDC to mitigate risks and increase polio vaccine uptake.

Wastewater samples collected from six New York counties identified circulating vaccine-derived polioviruses (VDPV) genetically related to the virus isolated from the Rockland County patient and there is evidence of ongoing circulation in 5 counties (Orange, Rockland, Sullivan, Kings and Queens). The viral genome sequences from wastewater samples collected in Israel, New York,

and the United Kingdom (UK) show genetic linkage. To date, fortunately, there are no new paralytic polio cases that have been identified in the U.S.

CDC's National Center for Immunization and Respiratory Diseases (NCIRD) along with the NAC and SMEs across the agency developed a draft national polio response plan, which was put in place when the New York case was identified. NCIRD served as the lead on a Center-led response, while the NAC served as the liaison to the response. Three scenarios were anticipated as a part of the plan: there might be a response activated if there was a breach in containment at a facility; if there was an importation of poliovirus; or if there was a poliovirus case of unknown source. Due to this polio case, there is a need to develop guidance for not only laboratories who work with PIM, but also for non-laboratory facilities, such as healthcare practitioners and wastewater treatment plants. The national survey has also been modified with questions that are more broadly applicable to non-laboratory settings.

The U.S. has also been placed on the World Health Organization's (WHO) list of countries with circulating (VDPV) as a result of the New York event. This new classification would mean that the U.S. in its entirety would have to deem all specimens collected from either stool, respiratory, or wastewater as being potentially infectious. NAC met with regional colleagues to identify an approach that would be acceptable for a developed country, like the U.S., and advocated for a risk-based approach for handling containment of VDPV PIM in the U. S. A risk-based approach to classifying this sort of PIM has been created, as well as a definition for geographic areas showing transmission. A document was disseminated to regional and WHO colleagues for review, which they are supporting. Part of the work will help with targeting and crafting messages to facilities. The NAC website is being updated to include previously approved policies, interim guidance, and infographics.

Cathy Slemp, MD, MPH; PCWG Co-Chair and CPR BSC Jennifer Horney, MPH, PhD; PCWG Co-Chair and CPR BSC

The policies developed by the Polio Containment Work Group (PCWG) help to decrease the number of poliovirus essential facilities (PEF) and provide governance of poliovirus and PIM in an effort to minimize the risk of reintroduction of the virus into the community. The policy development process is iterative, as input and feedback are solicited regularly from a variety of groups, both internal to CDC, SMEs, NAC, and PEFs.

Several policies have cleared the BSC and are in different stages of the publication process. In May of 2022, the Occupational Health, Emergency Response, and PPE and Hand Hygiene are now on hold awaiting CDC clearance. The Storage Outside of Containment has been cleared by CDC but has not been published. Today, the PCWG presented the Draft PIM Guidance for U.S. Laboratory Facilities. This has received approval from the PCWG and is now being presented to the BSC for their approval. The Interim PIM Guidance for Non-Laboratories is being introduced to the BSC but will be brought back before the board for approval at a later meeting. Examples of PIM are environmental samples, fecal or respiratory secretion samples, and uncharacterized

enterovirus-like cell culture isolates. It can also include material collected in a time and place when wild poliovirus (WPV) or VDPV was circulating and oral polio vaccine (OPV) was administered.

WHO developed PIM Guidance in April 2018, but it was later updated in 2021. The guidance outlines general biosafety and security guidance on handling and storing OPV PIM. WPV and VDPV are not addressed because it proposes that those materials should be maintained in containment. This does not apply well to developed countries, like the U.S., where there are high levels of vaccination and strong sanitation systems. The U.S. NAC considered ways to more appropriately apply this guidance in the U.S.

The Guidance for U.S. Laboratory Facilities to Store and Work with Poliovirus Potentially Infectious Materials is specific to U.S. laboratories. It expands the WHO PIM guidance by adapting for WPV and VDPV PIM using a risk-based approach. Risk is based on the material, type of activity, and the virus types. No modifications were made to the OPV PIM risk levels. All WPV and VDPV was placed at one risk level higher than OPV. Included in the guidance are the types of inventions proposed based on the different risk strategies. The BSC received a copy of the guidance prior to the meeting. Only one change was made to title of the policy making it an interim guidance because there are some anticipated lessons learned to come that would warrant changes to be made in the near future. There were also clarifications to the definition of WPV and VDPV.

Dr. Slemp opened the floor for discussion before asking for a vote. Below are comments from the BSC:

- Triage samples coming in from certain zip codes and separating them from the other samples is going to be a challenge to manage. Laboratories agree with recommendations from the guidance but some of the implementation of what is being prescribed may be difficult. In addition, some of the samples sent for specialty testing, for example parasitology, are kept for validation, and this makes it even harder to abide by all of the guidance.

With no further questions, Dr. Slemp called for a motion to approve the Interim Guidance for U.S. Laboratory Facilities to Store and Work with Potentially Infectious Materials. The motion was made by Dr. David Lakey and seconded by Dr. David Fleming. The vote was passed unanimously.

The next subject presented was on non-laboratory facilities, who could possibly interact with PIM. Facilities that come in contact with concentrated sewage or wastewater, fecal or respiratory secretion samples, and uncharacterized enterovirus-like cell culture isolates samples are requesting guidance on how to collect, handle, store, or transport PIM. The goal of the NAC and PCWG is to create interim guidance for these facilities. The guidance would also address personal protection equipment, doffing and donning procedures, handwashing, decontamination, disposal, primary containment, and limitations and recommendations on

access and immunization. More updates regarding non-laboratory guidance will be presented at future meetings.

The PCWG is coming towards the end of its policy development tasks, but there are discussions occurring on the broader role it could play within its terms of reference including moving into implementation of policies, feedback, evaluation, adaptation, research agendas, and sustainability of the program longer-term with broader partners and materials. The PCWG is also interested in having other members on the BSC be a part of their work. Any interested persons were instructed to contact Drs. Haynes Smith, Horney, or Slemph. One recommendation was made before concluding the topic.

- In future reports, it would be helpful to understand which portion of the recommendation is something that is not done routinely in wastewater sampling. Much of the recommendations presented would make sense to do regardless of whether or not poliovirus was present, given the infectious nature of wastewater.

Strategic Capacity Building and Innovation Program Review Workgroup (SRWG): Update

David Fleming, MD, SRWG Co-Chair and BSC, CPR

David Lakey, MD, SRWG Co-Chair and BSC, CPR

The Strategic Capacity Building and Innovation Program (SCIP) was instituted in 2002 after the Anthrax attacks. The purpose of the program is to build CDC capabilities and capacity to respond to chemical, biological, and radiological threats. Today, the program supports work in areas such as surveillance, epidemiology, laboratory science, and medical countermeasures. It sustains long-term programs, as well as annual short-term projects that address gaps or pilot new ideas.

The Strategic Capacity Building and Innovation Program Review Working Group (SRWG) is charged to provide findings, observations, and outcomes to the BSC/CPR regarding CPR efforts to improve and ensure SCIP is coordinating preparedness and response efforts across the agency, making informed funding decisions, and encouraging accountability. SRWG activities include the following:

- Review of SCIP's annual process including the business plan and funding strategy
- Input on SCIP's goals and priorities and suggest revisions to the current funding model
- Input on enhancing the process of cross-agency collaboration and engagement

It is co-chaired by Drs. Lakey and Fleming and are joined by eight additional members, who have expertise in emergency response, data preparedness, laboratory, science, incident management, non-pharmaceutical medical countermeasures, epidemiology, and public health.

Recommendations suggested by the SRWG that can be broken into three categories: separation of funding streams, flexibility in approaches to address day to day operations, as well as emergencies, and continued prioritization assessment. The working group has provided an interim report in a previous meeting, and at the last BSC presented initial findings and suggested recommendations. Those recommendations were conceptually endorsed by the BSC. The full report was provided to the BSC members prior to this meeting. Today the SRWG is presenting the final findings for the Board's recommendations.

Separation of Funding Streams

1. Separate the long-term and short-term program elements of SCIP to disentangle, clarify, and simplify the assessment of program needs and implementation of project funding.
 - CPR should clearly define the intended purpose, priorities, and duration of support for each funding stream. To realize the goal of modernizing SCIP and to meet the current and future needs of the CDC, more funds will need to be available.

CDC Preparedness and Response Needs

2. Establish a process to define, determine, monitor, and update CPR's long-term preparedness and response program needs, including ongoing financing needs.
 - The process CPR establishes should
 - Clearly define the desired level of core preparedness and prioritized ranking of identified preparedness needs and gaps, and
 - Ensure programs continue to align to the prioritized agency-wide preparedness needs by requiring CPR's approval for proposed statements of work and budgets
 - Long-term funding should shift from an undefined to defined duration of time, and need should be assessed on a routine basis.
 - CDC should consider both increased flexibility of CPR funding (within established priorities) and opportunities to cost-share and leverage other currently existing and/or new funding sources to best meet these prioritized needs.
 - Prioritized programs should meet the following criteria-
 - Address cross-cutting agency preparedness and response priorities
 - Address health equity needs, and lessons learned from COVID-19 pandemic and other responses
 - Substantially enhance agency response capabilities and infrastructure necessary for medium to large scale incidents
 - Support a unique capability that could not be supported without SCIP funding
 - Provide significant value to STLT response
 - Support capability or outcomes that will directly inform decision-making during a public health event

Modernizing CDC Readiness and Response

3. Establish a process for a forward-looking approach to make short-term investments in enhancing capabilities for current and future preparedness needs.
 - Develop a forward-looking approach that
 - Emerges from a current assessment (influenced by COVID-19 lessons and learnings and an equity focus) of the specific activities and programs for which innovation is most critical for the agency.
 - Proactively identifies emerging drivers of change, plausible scenarios, and opportunities/challenges to inform investments.
 - Leverages cross-sector partnerships to foster innovation, cost-share, and buy-down risk.
 - Prioritize short-term investments: The process should be informed by health equity needs and lessons learned from COVID-19 pandemic. Creating opportunities to leverage external partners in development and enhancement of critical preparedness functions will better position the agency in subsequent adaptation.

Modernizing CDC Readiness and Response

4. Conduct external assessment of SCIP's current portfolio and business model to identify improvement opportunities, program limitations, and identify ways to streamline operations on a routine basis.
 - Institute a systematic, external review process to consider issues and challenges that need to be addressed, assess the impact of programs supported by SCIP, foster coordination, and obtain a wide range of perspectives from cross-sector partners.

The work conducted by the SRWG has completed its charge, and therefore further work is not needed by the group and it will be sunset. Before a motion was taken to accept the recommendations, the floor was open for discussion among the BSC members. Below are comments from the BSC:

- If these recommendations are accepted, there needs to be some next steps created that define topics such as who will implement the recommendations, will there be periodic reporting, how they will they be adopted and implemented.
- The short-term piece will require unleashing creativity in CDC, which ties back to culture issues. Some of the current challenges in emergency preparedness and response are new territory. I hope as you move on these recommendations and create processes that you think intentionally about the creativity piece. Nobody has answers to some of the problems currently being encountered. I like the idea of bringing in external partners with the perspective of unleashing creativity and becoming more innovative.

With no further comments, a motion was made by Dr. Paul Halverson and seconded by Dr. Jennifer Horney to accept the recommendation as set forth, as well as for the sunsetting of the working group. The motions were passed unanimously.

Public Comment Period

No public comments.

BSC Discussion of Future Meeting Topics

During this session, the BSC listed possible topics for future meeting meetings. Below is their list of proposed topics, comments, and recommendations:

- Equity is the intersectionality of place, class, race, ethnicity and gender. How can these areas be addressed from a CPR perspective and what partners will need to be involved?
- Examine the different axes of inequity and inequality and how they intersect for things like race, class, gender, disability, citizenship status, literacy, and so on. Also examine the other dimensions of inequity and inequality simultaneously.
- Discuss results and metrics related to inequity and inequality from a preparedness, response, and possibly recovery perspective because there may not be consensus there.
- Send pre-reads as you have been doing but put the expectation out there that they should be read in advance so that more time can be spent on answering the questions being posed to the board.
- Be careful of demographic data that is presented without context. Contextual information is needed because it provides a direction for action on the determinants and the drivers.
- Create a working group around health equity, practical applications, strategies, and metrics.
- Think beyond measuring the disparities that are likely to occur in the next crisis at an individual level. Instead consider an equity perspective. What are the community measures that need to be built in advance that reflect community assets? Define those measures, and enable the state and localities to also be able to work from that space.
- CPR is one of the few centers at CDC that has to work across the agency. That is an asset that could be leveraged and make CPR the primary force for assuring integration within CDC and approaches to equities. This can also be used at the state level to integrate, influence, and foster the approaches to the broader world.
- If a working group is created around inequity and inequality, it needs to be connected with other work that is occurring in the Agency so that it is not siloed and can be leveraged outside of CPR.
- The agenda is very focused on biological events but many of the events that occur are nonbiological. There are many equity issues in response efforts to nonbiological events, like hurricanes. Are there other realms of preparedness that it would be helpful to have a group weigh in on and help advise to address equity issues in those events?
- Nonpharmaceutical interventions and increasing uptake of those interventions

- Supply chain and vulnerabilities that may exist
- The intersection of preparedness and response and policies particularly as it relates to a post-COVID environment, given that there are fractured systems across the country, and how to prospectively think about decision making and policy implications of preparedness, infrastructure, and decisions
- What are the systematic processes that should be in place that will give the greatest flexibility to respond to various types of emergencies?
- Leadership as it pertains to preparedness and response to ensure future leaders have the resources needed to be successful including resilience
- CPR's role and engagement with other federal partners with regards to the type of partnership, relationship, areas of responsibility and the intersections. What can be done differently? Where can collaboration be strengthened?
- Understand what is not being learned from the after-action reports so that we are not just assessing but also making the necessary changes that are long-lasting, sustainable, and impactful.

Dr. Walke felt it may be useful to meet together before March 2023, possibly in January, to review the new CDC mission and components. Dr. Slemple instructed members to notify her if they would like to take a leadership role in any workgroups to be identified. Dr. Walke proposed the equity workgroup be moved forth as soon as possible. In January, the BSC could be given information on the new structure of CDC.

Closing Remarks and Adjourn

Cathy Slemple, MD, MPH; Chair, BSC

Before adjourning, Dr. Slemple thanked Dr. Walke, CPR and its staff for all of their hard work to put together this meeting and allowing board members to have an input on the work of CPR. She also thanked the BSC for giving their time and rich insights and perspectives on the topics and issues presented. With no more comments, the meeting was adjourned at 2:02 PM.

CERTIFICATION

I hereby certify that to the best of my knowledge, the foregoing minutes of November 15-16, 2022, virtual/in-person meeting of the Center for Preparedness and Response (CPR) BSC are accurate and complete.

2/7/2023

Date

/s/

Catherine C. Slemp, MD, MPH
Chair, CPR BSC

APPENDIX A: CPR BSC Membership Roster

DESIGNATED FEDERAL OFFICIAL

Kimberly Lochner, ScD
Deputy Associate Director for Science, CPR
Centers for Disease Control and Prevention
Atlanta, Georgia

CHAIR

Catherine C. Slemm, MD, MPH
Public Health Policy and Practice, Consultant
Milton, West Virginia
Term: 2/08/2019 – 9/30/2022

MEMBERS

David Fleming, MD
Distinguished Fellow, Trust for America's Health (TFAH)
Bainbridge, Washington
Term: 11/07/2019 - 9/30/2023

Paul Halverson, DrPH
Founding Dean, Professor of Policy and Management
Richard M. Fairbanks School of Public Health
Indiana University
Indianapolis, Indiana
Term: 6/08/2022 – 9/30/2025

Jennifer A. Horney, MPH, PhD
Professor, College of Health Sciences
STAR Health Sciences Complex
Newark, Delaware
Term: 5/13/2021 – 9/30/2022

David Leroy Lakey, MD
Vice Chancellor of Health Affairs and Chief Medical Officer
The University of Texas System
Austin, Texas
Term: 5/13/2021 – 9/30/2024

Marissa J. Levine, MD, MPH
Professor, College of Public Health
University of South Florida
Tampa, Florida
Term: 5/13/2021 – 9/30/2024

Brent Pawlecki, MD
Chief Health Officer
Wells Fargo
New York, New York
Term: 2/12/2019 - 9/30/2022

Kasisomayajula Viswanath, PhD, MA, MCJ
Lee Kum Kee Professor, Health Communication
Department of Social and Behavioral Sciences
Harvard T.H. Chan School of Public Health
Boston, Massachusetts
Term: 2/15/2019 – 9/30/2022

EX OFFICIO MEMBERS

Assistant Secretary for Preparedness and Response
Kristin L DeBord, PhD
Director, Strategy Division
Office of the Assistant Secretary for Preparedness and Response (ASPR)
U.S. Department of Health and Human Services
Washington, District of Columbia

National Institutes of Health (NIH)
Paula Bryant, PhD
Director, Office of Biodefense, Research Resources, and Translational Research
Division of Microbiology and Infectious Diseases
National Institute of Allergy and Infectious Diseases
Rockville, Maryland

LIAISON REPRESENTATIVES

Christina Egan, PhD, CBSP
Association of Public Health Laboratories (APHL)
Chief, Biodefense Laboratory, Wadsworth Center
New York State Department of Health
Albany, New York

Alexia Harrist MD, PhD
Association of State and Territorial Health Officials (ASTHO)
State Epidemiologist and State Health Officer
Wyoming Department of Health
Cheyenne, Wyoming

Laura Magana, PhD
Association of Schools and Programs of Public Health (ASPPH)
President and CEO
Washington, District of Columbia

Benjamin P. Chan, MD, MPH
Council of State and Territorial Epidemiologist (CSTE)
State Epidemiologist
New Hampshire Department of Health and Human Services
Division of Public Health Services
Concord, New Hampshire

Michele Askenazi, MPH, CHES
National Association of County and City Health Officials (NACCHO)
Director of Environmental Health, Communicable Disease and Emergency Preparedness and Response
Arapahoe County Public Health
Littleton, Colorado

A. J. Schall, Jr., BS
National Emergency Management Association (NEMA)
Director, Delaware Emergency Management Agency
Department of Safety & Homeland Security
Smyrna, Delaware

APPENDIX B: Acronyms

APHIS	Animal and Plant Health Inspection Service
ASPR	Administration for Strategic Preparedness and Response
ASTHO	Association of State and Territorial Health Officials
BSC	Board of Scientific Counselors
CDC	Centers for Disease Control and Prevention
CEFO	Career Epidemiology Field Officer
CERC	Crisis and Emergency Risk Communication
CFA	Center for Forecasting and Outbreak Analytics
CIO	Chief Information Officer
COCA	Clinician Outreach and Communication Activity
COVID	Coronavirus Disease
COVID-19	Coronavirus Disease 2019
CPR	Center for Preparedness and Response (CDC)
CSTE	Council of State and Territorial Epidemiologists
DASAT	Division of Agricultural Select Agents and Toxins
DEIA	Diversity, Equity, Inclusion, Accessibility
DEO	Division of Emergency Operations
DIESC	Diversity and Inclusion Executive Steering Committee
DMI	Data Modernization Initiative
DSAT	Division of Select Agents and Toxins
DSLRL	Division of State and Local Readiness
EOC	Emergency Operation Center
FDA	U.S. Food and Drug Administration
FIRST	Faculty Institutional Recruitment for Sustainable Transformation
FSAP	Federal Select Agent Program
FY	Fiscal Year
HAN	Health Alert Network
IDEA	Inclusion, Diversity, Equity, Alliance
GRF	Graduated Response Framework
HHS	United States Department of Health and Human Services
I-CEFO	International Career Epidemiology Field Officer
IMS	Incident Management Systems
IPP	Import Permit Program
IMTDP	Incident Management Training and Development Program
KAFA	Key annual focus areas
MMWR	Morbidity and Mortality Weekly Report
MRO	Management Resources Office
MSM	Men who have Sex with Men
NAC	U.S. National Authority for Containment of Poliovirus
NACCHO	National Association of County and City Health Officials
NCIRD	National Center for Immunization and Respiratory Diseases

NGA	National Governors Association
NIH	National Institutes of Health
NPHIC	National Public Health Information Coalition
NOFO	Notice of Funding Opportunity
OPV	Oral Polio Vaccine
PCWG	Polio Containment Work Group
PEF	Poliovirus Essential Facilities
PFA	Preparedness Field Assignee
PHAP	Public Health Associate Program
PHEER	Public Health Extreme Events Research
PHEP	Public Health Emergency Preparedness
PHEPR	Public Health Emergency Preparedness and Response
PIM	Potentially Infectious Material
SAFE	Safety Assessment Follow-up Evaluation
SCIP	Strategic Capacity Building and Innovation Program
SIJE	Strategic Initiative for Justice and Equity
SME	Subject Matter Expert
SGE	Special Government Employee
SRWG	SCIP Review Working Group
SSEER	Social Science Extreme Event Research
STLT	State, tribal, local, or territorial
USDA	U.S. Department of Agriculture
VDPV	Vaccine-Derived Poliovirus
WHO	World Health Organization
WPV	Wild Poliovirus