

CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC)

Office of Public Health Preparedness and Response (OPHPR)
Board of Scientific Counselors (BSC) Meeting

Summary Report/ Record of the Proceedings
Wednesday, May 9, 2018
Atlanta, Georgia

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Roll Call, Introductions, Review of Federal Advisory Committee Rules

**Samuel Groseclose, DVM, MPH; Associate Director for Science, OPHPR
and Designated Federal Official, OPHPR BSC**

Dr. Groseclose began the meeting by explaining some complications that have made obtaining quorum a challenge. In March 2018, Dr. Ian Mitroff resigned from the board due to changes in his University role. Replacement candidates to replace Dr. Mitroff are being identified and will be selected by Dr. Redd.. Dr. Bradley Dickerson has left the Department of Homeland Security (DHS). OPHPR is working through the Department of Health and Human Services (HHS) to request a replacement ex Officio member from the Department of Homeland Security. Dr. Marissa Levine has left the Virginia Department of Health. The Association of State & Territorial Health Officials (ASTHO) has been asked to identify a state health official as her replacement. Mr. Gerrit Bakker (ASTHO) is representing ASTHO at today's meeting.

Also, Dr. Suzet McKinney and Dr. Dawn Wooley are attending today's meeting. However, they are, at this time, unable to participate as BSC members due to delays at CDC and HHS with review and approval of their member re-nomination packages. Their membership lapsed at the end of March 2018, but the BSC looks forward to their membership renewal and participation in future BSC meetings.

Dr. Kim Lochner has joined OPHPR as the Deputy Associate Director for Science. This position has been vacant for three and half years. Some BSC activities will be transitioned to Dr. Lochner in the coming months. Dr. Christye Brown, who was the former BSC Committee Management Official, has taken a position with the National Authority for Containment. Candidates to fill her former role are being interviewed by Drs. Lochner and Groseclose later this week.

In the atrium of Building 19, posters created by staff from the OPHPR and presented at the 2018 Preparedness Summit are displayed. Abstracts from the posters were given to members. BSC members were encouraged to examine the posters during breaks in the meeting.

Roll call was conducted. Quorum was present. OPHPR leadership introduced themselves to the Board and meeting attendees.

Quorum must be maintained, and members must be present during any voting periods; therefore, members were asked to notify Dr. Groseclose before leaving portions of the meeting to ensure that quorum is maintained. The meeting was led by Dr. Inglesby, the Chair. Discussions and deliberations during the meeting are limited to BSC Special Government Employee members, Ex Officio members, and Liaison Representatives. Voting is conducted only among the BSC and Ex Officio Members. The public will be allowed to comment only during the Public Comment portion of the agenda. All speakers were asked to identify themselves and all participants agreed to have their comments monitored and recorded.

Dr. Groseclose reviewed the BSC responsibilities as per its charter. All Confidential Financial Disclosure Status Reports Updates Forms should have been completed and returned to Dr. Groseclose prior to the meeting, if there have been any changes made since last submitted. Members were asked to identify any conflicts of interest. Dr. Inglesby is working on two projects that are funded by CDC for resilience and risk communication. Dr. Slemp is working on the CoPE-WELL Project.

Welcome, Call to Order, and Opening Remarks

Thomas Inglesby, MD; Chair, OPHPR BSC

The Spring BSC Meeting was called to order at 8:40 AM. Dr. Inglesby emphasized the important role the BSC plays in helping OPHPR in its thinking, particularly in light of all the changes that are taking place in preparedness.

Interval Updates – OPHPR Director and Division Directors

Jeff Bryant, MS, MSS; Director, Division of Emergency Operations

Mr. Bryant began with an update on the polio eradication response. For the last three years, wild poliovirus cases have been reduced by 50%. The vast majority of remaining cases are reported from Pakistan and Afghanistan. Almost all of the cases are type II poliovirus. There was a spike in polio case reports in 2017 attributed to the humanitarian crisis in Syria. In 2018, four cases were found in Nigeria; prior to that Nigeria had gone three years without any wild poliovirus transmissions. CDC's emergency operations center-based polio response is still worked on daily, and the EOC supports situation awareness reporting. There are two incident manager updates a week and multiple other meetings in the EOC regarding the polio response. The EOC also still supports the travel and equipment logistics for the staff that deploy.

DEO has streamlined its data collection and reporting process for both the individuals that deploy and with the staff in Atlanta that collect, analyze, and report data. Of the 520 deployments of 371 individual responders, almost a third of those were first-time deployers. In the last three to four years, there's been an increased number of first-time responders. A voluntary post-deployment survey was given to deployers. The survey had a 61% completion rate. Roughly 95% of those that filled out the survey said that they would participate again in a response in the future. The speed at which staff were deployed in advance of the hurricanes meant that some staff did not have travel orders or reporting instructions and had to receive those later via email. So, it's exciting to see that 95% would deploy again in spite of logistical complications. The post-deployment survey has been modified and completion time has gone from 20 minutes a respondent to three minutes. This was accomplished by pulling in already existing data on the responder and asking responder to only fill in missing data.

In nine days, the 82nd fellow will be graduating from the Public Health Emergency Management Fellowship. The July cohort is full at 17. Next January's cohort is also full and has a waiting list. Countries around the world send senior Ministry of Health officials to Atlanta to spend four months gaining an understanding of how to run an emergency management program. Of the 17 Global Health Security Agenda phase-one countries, 14 have activated their EOC for a real-world event or an exercise.

The DEO is also trying to gain some economies with its global health work as well. Instead of staff working bilaterally with a country, regional training opportunities will be emphasized. The same number of DEO staff will be utilized for training but five to six countries can be engaged at one time. This allows countries to gather together and learn from one another. There is also a real or perceived increase in status for those countries that host the regional training. DEO will conduct as many of these trainings as possible in collaboration with the World Health Organization (WHO) regions in their respective parts of the world. There will be 14 country-level exercises conducted between now and the end of September 2018.

Three years after its inception, the Incident Manager Training & Development Program cadre has been increased from 18 to 58. A third of the current cohort, pilot year, or prior year graduates have been able to serve as incident managers in an active response including the recent hurricane response. This program began

three years ago with only two modules; with recognition of additional competencies needed by incident managers, the curriculum has grown to seven modules. Forty of the agency’s most senior staff helped to design and vet the curriculum and also serve as faculty.

Figure 1. EMAP Criteria

EMAP Current Status

EMAP Standards	EMAP Element Compliance Status									
3.1: Program Administration and Evaluation	3.1.1									
3.2: Coordination	3.2.1	3.2.2								
3.3: Advisory Committee	3.3.1	3.3.2								
3.4: Administration and Finance	3.4.1	3.4.2	3.4.3							
3.5: Laws and Authorities	3.5.1	3.5.2								
4.1: Hazard ID, Risk Assessment	4.1.1	4.1.2	4.1.3							
4.2: Hazard Mitigation	4.2.1	4.2.2	4.2.3	4.2.4	4.2.5					
4.3: Prevention	4.3.1	4.3.2	4.3.3							
4.4: Operational Planning and Procedures	4.4.1	4.4.2	4.4.3	4.4.4	4.4.5	4.4.6	4.4.7	4.4.8	4.4.9	
4.5: Incident Management	4.5.1	4.5.2	4.5.3	4.5.4	4.5.5	4.5.6	4.5.7			
4.6: Resource Mgmt, Mutual Aid and Logistics	4.6.1	4.6.2	4.6.3	4.6.4	4.6.5	4.6.6				
4.7: Communications and Warning	4.7.1	4.7.2	4.7.3	4.7.4	4.7.5	4.7.6				
4.8: Facilities	4.8.1	4.8.2	4.8.3							
4.9: Training	4.9.1	4.9.2	4.9.3	4.9.4						
4.10: Exercises and Evaluations	4.10.1	4.10.2	4.10.3							
4.11: Emergency Public Information	4.11.1	4.11.2	4.11.3	4.11.4	4.11.5					

DEO received its initial Emergency Management Accreditation Program (EMAP) Certification in 2015. The next EMAP re-certification inspection starts the week of June 4, 2018. This is a time-intensive process and the agency is scrambling to get ready for the inspection. Figure 1 illustrates the criteria that will be reviewed during the re-certification process. The DEO will provide an update report in the Fall 2018 BSC meeting on the results of the inspection.

Mr. Bryant reviewed some emerging technologies that DEO is investigating to support its work. The first was blockchain. This is a technology that has been used very successfully by the financial sector. DEO is viewing ways to utilize this practice for public health preparedness and response. Mr. Bryant talked about an article regarding a large grocery store chain in France that has put their poultry on the blockchain. The blockchain provides a permanent record of transactions that’s immutable. Using this mechanism, the grocery store can trace the timeline of the poultry from the time the egg hatches to the day the chicken is sold to the customer. This has been a beneficial feature according to customer feedback. The store will now began to do the same with produce. Mr. Bryant wants to apply this same practice to tracking emergency response deployment. Multiple parts of the CDC contribute to safely deploying individuals to the field and then recovering them. This idea has been briefed to the Chief Information Officer at CDC. Some internal coordination will be done with leadership before this is implemented.

The second emerging technology is artificial intelligence and machine learning. As processes are placed on the blockchain, DEO would like to incorporate machine learning into the algorithms. This will allow for the automation of decisions that don't require human involvement. He used an example from the Treasury Department. There are 22 IT systems used for awarding contracts to vendors. Those systems have now been placed on the blockchain. Transaction times were reduced from 110 days to 10 days. The individual who created the process, Jose Arrieta, now works for the Department of Health and Human Services (HHS). Currently, HHS is creating a blockchain, which CDC will be a node on.

DEO will be meeting with the IBM-Watson Team next week. The Watson Team has placed MMWR data into a database and applied machine learning algorithms. As a result, an association was found between carbon monoxide poisoning and natural disasters. For CDC, that association is intuitive, but Watson was able to determine this on its own. With a data rich agency like CDC, the DEO is wondering if it should be thinking about compiling databases to a degree where it represents a big dataset that's deep, complex, and unique enough to preparedness and response. Those datasets can then be used for machine learning algorithms to identify patterns and associations that humans are not able to on their own.

Steven Adams, MPH; Deputy Director, Division of Strategic National Stockpile

Mr. Adams discussed some of the priorities and initiatives that the SNS has been undertaking, as well as some transition updates. For 2018, the SNS will engage its state and local partners in an effort to enhance medical countermeasures (MCM) distribution capacity. This will require collaboration with the Division of State and Local Readiness (DSLRL) to ensure that the right training, information, and guidance is available before and during a response. Another way to achieve this goal is to work directly with Urban Area Security Initiative Cities to refine and evaluate the MCM assumptions and to expedite shipping. This work will require a higher level of data detail and planning with state and local colleagues. Each jurisdiction will complete a tabletop exercise to validate planning assumptions. So far, eight jurisdictions have completed tabletop exercises: Los Angeles, San Diego, Anaheim, Santa Ana, Riverside, Virginia, Maryland, and the District of Columbia. More will occur this year.

The Division will also continue to work with its commercial partners on an integrated emergency MCM supply chain capability. It's necessary to understand what their current capabilities are so investments can be focused on areas that cannot be met by the commercial sector. SNS has had longstanding relations with the Health Industry Distributors Association (HIDA) and has recently established a relationship with the Healthcare Supply Chain Association. The collaborative group serves as a forum and helps SNS work through scenarios. This helps inform the Division's planning.

With the SNS transitioning to the Office of the Assistant Secretary for Preparedness and Response (ASPR), it is important to always maintain capability and allow nothing to cause degradation on the response requirements. Moving the stockpile to ASPR has required the creation of workgroups to look at areas such as contracts, budgets, operations, communications, and state and local support. SNS has also established employee workgroups that help to identify gaps and ensure transparency, while tackling transition issues. Uncertainty creates tension. Therefore, transparency is very critical to debunk rumors and bring assurance.

In the initial review of the transition process, there are some key capabilities that need to be either sustained, replicated or replaced. The following are those that were highlighted thus far:

- Replicate \$1 million Purchase Card ceiling for contracting officers with check writing capability during emergencies
- Sustain expedited acquisitions

- Sustain CDC Drug Service support –currently replenish Quarantine stations and ship Anthrax Vaccine Adsorbed and Smallpox vaccines
- Sustain/Replicate Occupational Health Clinic support – supports deployer program
- Sustain access to subject matter expertise (SMEs)
- Sustain relationship with Regulatory Affairs

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

DSAT oversees the laboratory work with select agents and toxins that occurs throughout the United States. This encompasses roughly 300 laboratories. Dr. Edwin reviewed some recent program updates and DSAT's continuing efforts.

The Federal Select Agent Program (FSAP) is focusing on improving four areas: entity oversight (which includes facility inspections and inspection reporting), customer service, incident response, and transparency and engagement. Every year, DSAT hosts a Responsible Official Workshop for responsible officials (RO) and alternate responsible officials (ARO). Last year, it was held in Riverdale, MD from November 28th to the 30th at the APHIS headquarters. Topics included:

- FSAP's new electronic information system (eFSAP)
- Regulatory requirements for inactivation of select agents

This year's workshop will be held in Atlanta, GA in August 2018.

Several improvements have been made to incident response. The Division has revised the APHIS/CDC Form 3 used by entities to report theft, loss, or release of a select agent or toxin. The revised form further clarifies what needs to be reported as a release and a loss. It also includes fields to assist with categorizing the type of release, type of exposure, and the understanding of safety and security risk levels relative to human illness.

FSAP has transitioned to a new secure information system, called eFSAP. It is used to submit and receive select agent program information. This is a portal-based system that will increase efficiency by greatly enhancing information exchange and collaboration with registered entities. In order for a facility to work with select agents and toxin, a unique ID is assigned. This process used to take two weeks but now is immediate due to some of the efficiency changes. The Division can also see in real-time entity changes or request for changes. eFSAP also keeps the agencies from having to maintain their own databases. They can input all their information, including submissions of theft, loss and release, transfer forms, and things of that nature. The goal is to go from paper to paperless reporting and information management and continue to increase efficiencies in other areas. There are over 600 registered users.

DSAT has reviewed some of the language of the Public Health Security and Bioterrorism Preparedness and Response Act. These are changes to the §73.19 Notification of Theft, Loss, or Release. Changes were made due to confusion around reporting of releases. Changes were made in conjunction with the National Biocontainment Labs and regional biocontainment lab directors. The new language reads as follows:

- a) *Upon discovery of the theft or loss of a select agent or toxin, an individual or entity must immediately notify CDC or APHIS and appropriate Federal, State, or local law enforcement agencies. Thefts or losses must be reported even if the select agent or toxin is subsequently recovered or the responsible parties are identified.*

- b) *Upon discovery of a release of an agent or toxin causing occupational exposure or release of a select agent or toxin outside of the primary barriers of the biocontainment area, an individual or entity must immediately notify CDC or APHIS.*

FSAP has considered changes to the regulations to clarify the word “release,” but upon further discussion, believes the best way to address any potential confusion surrounding “release” reporting requirements is through improved guidance. FSAP is currently working on enhanced guidance, which will include revising the guidance document on how to complete the APHIS/CDC Form 3 to improve clarity and update examples that describe when submitting an APHIS/CDC Form 3 report may be required. Once the guidance has been updated, the drafts will be shared with the regulated community for feedback to improve clarity and avoid unintended consequences.

Going forward, DSAT will continue to develop and increase the capabilities of the eFSAP and eIPP information systems. There will be a biennial review of the select agents and toxins list and an annual report of the Federal Select Agent Program. Also, to come are guidance and tools on entity internal inspections required by the select agent regulations.

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

Ms. Kosmos’ presentation covered three areas: a public health preparedness capabilities status update, the implementation of modified MCM risk planning parameters, and the new resources to improve technical assistance.

The National Standards for State and Local Planning document of 2011 defined the basic public health preparedness capabilities that each state needed to possess in order to protect the health and safety of their communities. The program has matured quite a bit since its inception due to new evidence and guidance; therefore, the document was updated. The BSC, in the past, provided its comments on the proposed updates. Over 200 external reviewers as well as internal CDC SMEs also vetted the document. DSLR is in phase three now of the refinement of the capabilities. In this phase, the capabilities are submitted to CDC for clearance and hopefully the new document will be available sometime in the summer of 2018.

Even though there were originally 15 capabilities, 19 capability workgroups were needed to factor in new areas added, like pandemic influenza planning, resources on vulnerable and at-risk populations, guidance for working with tribal nations, and environmental health. So, the new document reflects some of the maturity of the program, less on the planning side but more on the operational side. For each capability, a summary is given of the changes made. The two examples below summarize changes made to two of the capabilities.

Summary of Changes

Capability 6: Information Sharing

- Increases alignment with National Strategy for Biosurveillance and CDC Surveillance Strategy
- Emphasizes the need to implement data security and cybersecurity protocols
- Promotes adherence to certified electronic health records (EHR) technologies and standards
- Strengthens information sharing to decrease reporting time and increase collaboration through the use of electronic information systems (e.g., electronic death registration [EDR], electronic laboratory reporting [ELR], and syndromic surveillance systems)
- References the need for inventory data exchange depending on medical countermeasure type
- Encourages information sharing with fusion centers and intelligence

Capability 13: Public Health Surveillance and Epidemiological Investigation

- Increases alignment with National Strategy for Biosurveillance and CDC Surveillance Strategy
- Includes immediate notifications concerning public health emergencies of concern identified on National Notifiable Diseases Surveillance System (NNDSS) list
- Strengthens surveillance systems for persons in isolation or quarantine and persons placed under monitoring and movement protocols
- Emphasizes syndromic surveillance and situational awareness of healthcare utilization systems (e.g., participation in CDC’s National Syndromic Surveillance Program – BioSense platform)
- Improves surveillance and epidemiological information sharing by incorporating informatics/surveillance modernization initiatives
- Expands data sources and types for collecting and using surveillance data (e.g., poison control centers, fusion centers, and hazardous materials)

The PHEP Cooperative Agreement has a carve out that assists state and local partners with MCM readiness. It provides dedicated funding to 72 local jurisdictions around the country that were felt to be more at risk. Every state has at least one of these cities within their jurisdiction. It is meant to prepare state and local jurisdictions for an anthrax-type of event. However, many jurisdictions felt that anthrax was not their most pressing need and other planning scenarios should be considered.

The modified approach now reflects the feedback from the local jurisdictions. The plan establishes two planning scenarios for the state and local partners using a modified risk-base approach (Figure 2).

Figure 2. Modified Risk-Based Approach Parameters

Modified Risk-based Approach Parameters

Group A		Group B	
Anthrax Model – Primary	Pan Flu Model	Anthrax Model	Pan Flu Model – Primary
Full anthrax preparedness including full-scale exercise	Pan flu planning and operational preparedness	Anthrax planning and operational preparedness	Full pan flu preparedness including full-scale exercise

All PHEP recipients and Cities Readiness Initiative (CRI) jurisdictions will maintain base planning for both an intentional release of a Category A agent such as anthrax and an emerging infectious disease such as pandemic influenza. They will also sustain baseline operational capacity for both scenarios and demonstrate full operational readiness for one scenario.

A lot of discussion occurred with internal CDC anthrax experts, DHS, and state and local partners to inform this approach. It was decided the Cities Readiness Initiative (CRI) Operational Readiness Criteria would be utilized. All CRI local planning jurisdictions with the following criteria will be required to demonstrate full operational readiness for an intentional release of anthrax.

- Population of more than 1 million people

- Population density of more than 750 people per square mile
- Receive Urban Areas Security Initiative (UASI) grant funds during most recent funding cycle

There are 16 jurisdictions that will use anthrax as their primary planning scenario. All other jurisdictions will demonstrate full operational readiness for an influenza pandemic or other emerging infectious disease. CDC recognizes that some jurisdictions may want to focus on developing readiness for an anthrax response based on their own identified risks. Those jurisdictions must officially notify CDC if they want to be added to the list of jurisdictions planning for the anthrax scenario. Georgia made a special request to include Atlanta in anthrax scenario planning.

All jurisdictions have been notified and this is now a part of the funding opportunity announcement (FOA). The guidance document is being developed. There have been feedback and listening sessions with state and local partners to refine the approach moving forward. The modified plan will allow DSLR to zero in on threats that matter the most in the jurisdiction, provide a deeper dive to those localities that are most at risk for anthrax, and improve responses on emerging infectious diseases.

The last area covered were the improvements to jurisdictional technical assistance. DSLR wanted to have a more evidence-based approach moving forward. The MCM readiness review with state and locals revealed gaps that need to be addressed. DSLR wanted to create a more organized approach to providing the technical assistance in addition to the one-on-one technical assistance it already provides. The Online Technical Resource and Assistance Center (On-TRAC) tool was created.

The tool was designed to improve timely technical assistance from subject matter experts and provide easy access to public health emergency preparedness resources for DSLR's public health partners. The tool was expanded in November 2017 to represent all 15 public health preparedness capabilities. It includes Improved technical assistance query functionality, an added search function, and frequently asked questions. Information being disseminated can be tracked by DSLR.

One of the most exciting features is the Peer-to-Peer Information Exchange. The exchange is divided by the capabilities to assisting with searching topics. It also gives the regions the ability to collaborate among themselves.

Recommendations/Comments from the BSC:

- With regard to blockchain, there's value in documentation but not sure how it increases efficiency and would improve the effectiveness of a response.
- For all the presenters, be sure to look across all of the different silos and identify those ideas, concepts, mechanisms, etc. that are performing well that can be adopted rather than bringing in something new so that there's consistency across all the different areas.
- With regards to AI, there's real value to mining the data but be mindful of privacy issues that could arise. How would CDC balance privacy issues that could arise from creating the "big data" and applying data mining?
- Recommend that DEO evaluate the Public Health Emergency Management Fellowship to determine its impact and reach – both for peer-to-peer interactions and as a network.
- Develop a mechanism for tracking the impact of the On-TRAC system. Could the BSC see a demonstration of the On-TRAC tool at a future meeting?
- Has DEO considered using the On-TRAC system during emergency response, e.g., to track and monitor field requests for assistance?
- There's opportunity in the SNS transition to ASPR to determine ways to bring in a better perspective from state and local colleagues regarding the PHEMCE.

- Please retain the state and local field assignees from DSLR. They are a valuable resource and have, in a number of cases, exceeded expectations and proven to be extremely helpful.
- Recommend updating the BSC on the status of the Operational Readiness Review (ORR) and Version 2.0 including the tool used and the evaluation results.

RADM Stephen C. Redd, MD; Director, OPHPR

Dr. Redd reviewed some of the changes in OPHPR and recent CDC activities. OPHPR has had 1,479 days of EOC activation going back to the Ebola response in 2015 through the present hurricane responses. Since the Board last met, staff from OPHPR have participated in four Congressional hearings. Dr. Redd has assumed an additional role as Director of the Office of Services and Implementation Science (proposed), reporting to the CDC Director. Since our last meeting, Dr. Redd served as the Acting Principal Deputy of CDC prior to Dr. Redfield's appointment as CDC Director. Moreover, it was confirmed that the SNS is moving from CDC to ASPR.

From a budget standpoint, there was a 20% decrease in the budget for OPHPR in the President's Budget, but the enacted budget increased the budget amounts: \$25 million for the stockpile and \$10 million for state and local programs. The President's Budget for FY19 is fairly similar to the FY18 budget, so it seems the enacted budget and the President's Budget are going in different directions.

The aim of OPHPR is respond efficiently and effectively. The Office has had to respond to predictable emergencies like hurricanes, forest fires, and earthquakes. These are typically led by FEMA. ASPR has the medical care component of the federal response framework. In response to natural disasters, CDC's role is subordinate to those agencies' roles. A key mission is to understand what CDC needs to do to be effective to support the overall response.

OPHPR also responds to unpredicted emergencies, like anthrax, bioterrorism, and nuclear detonation. The scale of the event will determine the response structure.

The third type of response CDC assists in are emerging disease responses, like Ebola, Zika, and the opioid crisis. In these emergencies, there's a need to move quickly and the EOC is always activated.

OPHPR needs to work in the space that is between the original approach of responding to a select number of emergencies to the current approach, which is all-hazards. Emergency response plans and response staff need to be flexible so that plans can be applied to different types of emergencies.

CDC's after action review process has changed recently and is now similar to 90-day Select Agent Program Review. Tracking will occur along the lines of a risk management approach. There's been a pendulum swing in our planning approach: from the DHS 15 emergency scenario-based planning and preparedness to all-hazards capability planning. OPHPR needs to be somewhere in the middle. There needs to be flexibility to use existing plans to respond to events for which they may not have been designed. CDC, as a whole, will be convening a pandemic influenza exercise in September 2018, and there are some internal preparedness activities occurring in regard to our response to an anthrax release event.

OPHPR's third priority is to work in partnership. Big emergencies require work to occur across the agency and teamwork is a critical requirement. The key ingredient is to be able to trust those you're working with and to be honest and transparent. OPHPR is working to build trust across CDC and with its partners.

Recommendation/Comments from the BSC:

- The trust and relationships with partners have continued to evolve and improve as well as OPHPR’s expertise and credibility. Is there a framework that you use to engage with or map out OPHPR’s partners? If so, does it allow the Office to weight and interpret partner input to determine what is more/less meaningful or effective and what’s just a momentary distraction during the emergency response? Congratulations on all the incredible work.
- OPHPR should continue to develop organizational relationships and partnerships to build trust and to solicit feedback for OPHPR. Are there opportunities for partner feedback across the range of diverse OPHPR partners?

Excellence in Response Operations (ERO) Initiative

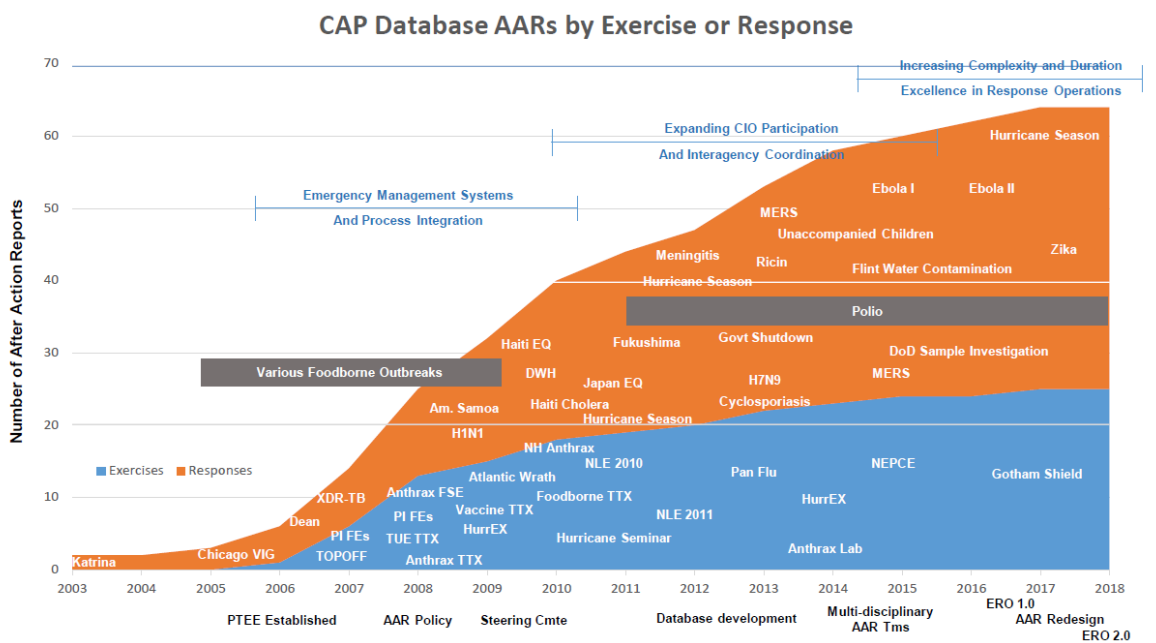
Jeff Bryant, MS, MSS; Director, Division of Emergency Operations (DEO)

Mr. Bryant keyed up the presentations to be given by Mr. Kennedy and Dr. Kuwabara. There were roughly 165 observations from the After Action Report (AAR) following the Ebola response that were turned over for CDC program review and response. From Zika, there were 65 AAR observations that were identified. This task of reviewing after action reports (AAR) is a large burden. To address this challenge, DEO is adopting a more systems-level approach. The hurricane response will be deactivated in nine days (May 19) and a draft AAR will include only ten observations because action items are now being made at a system-level instead of a detailed level. This new approach is completed through a collaboration between the Plans, Training, Exercise, and Evaluation (PTEE) Branch and the Office of Risk Management and Operational Integrity, both in DEO.

David Kennedy, MBA; Chief, Plans, Training, Exercise, and Evaluation Branch, DEO

Mr. Kennedy spoke on the After Action and Corrective Action Program (CAP) and its evolution. Figure 3 provides a cumulative snapshot of after action reports and tasks since 2003.

Figure 3. After Action Report by Exercise or Response



Response AARs are illustrated in orange; in blue are the Tier-one exercises across the agency. H1N1 was the first long-term CDC activation and was then followed by several more long-term activations. The duration of the activations did affect the AAR process causing a plateau.

In the early years, there were short-duration response observations around mostly food-borne disease outbreak responses. The AAR and Evaluation Team, at that time, was mostly comprised of emergency management specialists. There weren't many cross-disciplinary experts on the team. The focus at that time was on emergency management systems and improving emergency management practices, processes, and process integration.

The H1N1 response marked a change in normal practices. More than 3,000 CDC staff members from across the agency came together to support the response. This is known as the expanding CIO participation period. There was more emphasis on training across the agency and operating in the IMS system. There was also a focus on interagency coordination for some of the responses. The responses in 2014 were increasing in complexity and duration. These responses generated large numbers of AAR observations.

In 2005, the PTEE Branch was established in DEO. The first CDC-wide AAR and Evaluation Policy was created in 2008, which was generated using steering committees comprised of staff from across the agency. In 2012, an AAR database was created that allowed analysis of tasks by CIOs and core capabilities. It was decided in 2014 to integrate more SMEs from across the agency into the AAR process. Now, the process has evolved to Excellence in Response Operations (ERO) workgroups.

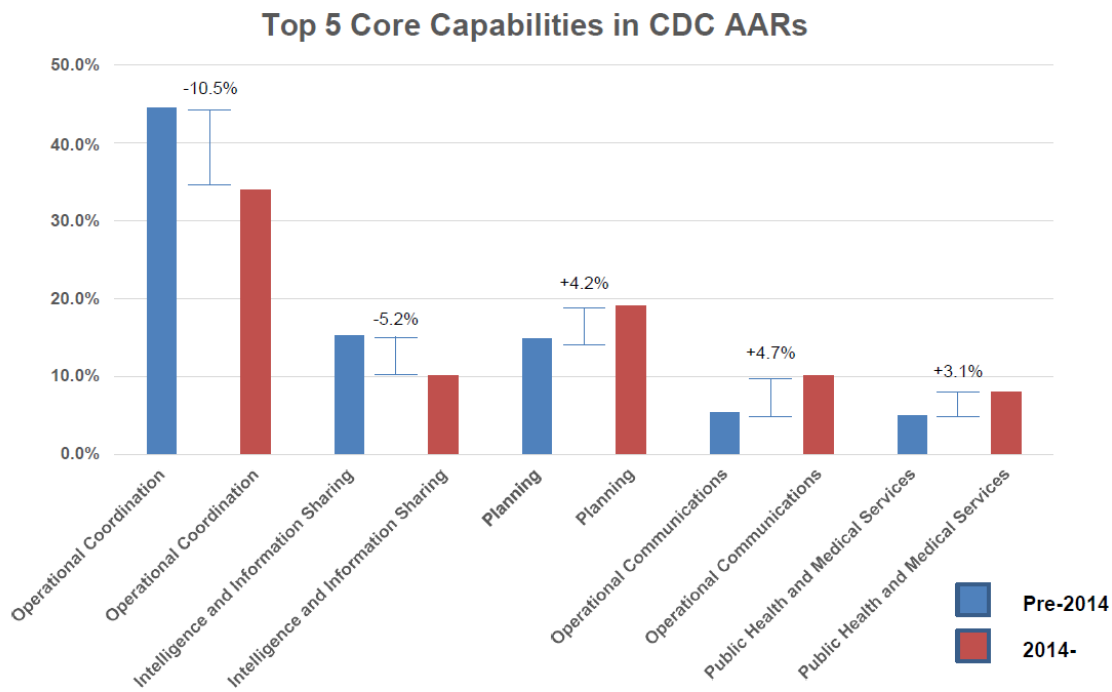
The new ERO process has yielded 1,527 tasks. Of those, 1,350 tasks have been closed. The majority of tasks were assigned to OPHPR (53%), the Office of Infectious Disease (OID) (28%), and the Office of Noncommunicable Diseases, Injury and Environmental Health (ONDIEH) (7%). Figure 4 provides an overview of recent response and exercise events that CDC has supported categorized by hazard. Figure 5 illustrates the top five core capabilities based on the AAR tasks identified during CDC program emergency response. Part of the emphasis on building a multidisciplinary evaluation team is to focus more on the scientific response activities. As a result, public health and medical services, as well as operational communications, although still low in number, have doubled in percentage.

Figure 4. AAR & CAP: Overview of Recent Events

AAR & CAP: Overview of recent events

2014-2017		Hazard				
Event Type	Event (n=10)	Biological	Chemical	Natural Disaster	Nuc/Rad	Other
Response	2011 Polio – Global Polio Eradication Initiative (ongoing)	X				
Exercise	2014 National Exercise Program Capstone Exercise (NEPCE)			X		
Response	2014 MERS CoV	X				
Response	2014 Unaccompanied Children					X
Response	2014 Ebola Response	X				
Response	2015 Multi State DoD <i>Bacillus anthracis</i> Sample Investigation	X				
Response	2016 Flint Michigan Water Contamination Response		X			
Response	2016 Zika Virus Response	X				
Exercise	2017 Gotham Shield (not distributed)				X	
Response	2017 Hurricane Response (ongoing)			X		
TOTAL		5	1	2	1	1

Figure 5. Observations by CDC IMS Core Functions



Observations by CDC IMS core functions from 2014 to the present are mostly around emergency operations (58%). The next three top categories are epidemiology/surveillance and laboratory (15%), emergency health communications (8%), and worker safety and health (7%). Key themes identified included the following:

- Planning
- Operational Coordination
 - IMS roles, responsibilities, and task force structure
 - New and/or enhanced IMS functions to validate (Vulnerable Populations, Risk Management and Operational Integrity (RMOI), Medical Inquiries Team, Data Scientist role)
 - Adequate trained response staff, especially during prolonged responses
- Logistics and Supply Chain Management
 - New finance and resource management structure/processes
- Public Health, Healthcare, and Emergency Medical Services
 - Data management and coordination
 - Data sharing and reporting
 - Lab testing, Emergency Use Authorizations, and lab surge planning
- Intelligence and Information Sharing
 - Refining clearance procedures

Early this year, senior leaders contemplated ways to streamline the AAR/IP process as well as make it more effective. The AAR documents were split into two documents to make the process easier, AAR and Record of the Events (RoE). The AAR identifies the high-level, across-agency observations. The most recent exercise, Gotham Shield, was the first pilot of the revised AAR process. It garnered 11 observations. The RoE contains administrative pieces and a formal timeline much like a narrative executive summary. It's important to keep this information for records, but it's not the purpose of the AAR.

In the AAR/CAP legacy process, the time between activation and deactivation was where the response was evaluated. In-progress reviews, hot washes, automated observation forms, surveys, and questionnaires were

utilized to develop the draft AAR. It was then vetted with the incident management leadership. At the end of the pipeline, individual tasks were assigned to a Center and a memorandum would be signed delegating those tasks to the CIOs. In the AAR/CAP 2.0 process, the AARs are still developed, but now the focus is on overarching, enterprise-level (system) observations. These observations are turned over to the ERO workgroups. The ERO workgroups are made up of staff members from across CDC. However, there will still be some unique functions still assigned to a CIO. The observations and tasks were condensed into 39 themes, which were transitioned to the ERO workgroups.

Sachiko Kuwabara, PhD, MA; Director, Office of Risk Management and Operational Integrity, DEO

Dr. Kuwabara provided a high-level overview of the intersection of emergency preparedness and response as well the integration of enterprise risk management into the federal government. She focused on the use of risk management principles.

Through the ERO Initiative, three areas have been highlighted. Those areas are collaboration, innovation, and data-drive and risk-informed decision making. These guide organizational learning. The Ebola outbreak taught the agency significantly and changed our response processes in many ways. It spotlighted the strengths and weaknesses and exposed gaps in the agency's preparedness and response capabilities. In 2017, OPHPR launched the ERO Initiative in an effort to better understand and address risks to CDC's ability to prepare and respond to public health emergencies.

The aim is to identify and mitigate risks to the agency and personnel through the work of a series of workgroups. There were nine multidisciplinary ERO workgroups that help the agency move from a reactive posture to a more proactive stance. The first step to achieving this goal was to identify risks. AAR observations from 2012 to the Ebola response were grouped into manageable categories. From those categories, risk statements were created. There were 110 risks identified through the process that were then disseminated to the nine workgroups. The workgroups were asked to complete four tasks:

- Confirm risk statements
- Develop risk response strategies
- Implement risk response strategies
- Monitor risks and report

Of the risks identified, emergency response risk management is one of the four areas of high risk. Next are budget environment, lab safety and quality, and information security. Risks were scored according to impact and likelihood. Thirty-one strategies were identified to address some of the risks and then prioritized for development. By the time of the hurricane response last fall, nine risk management strategies had been piloted.

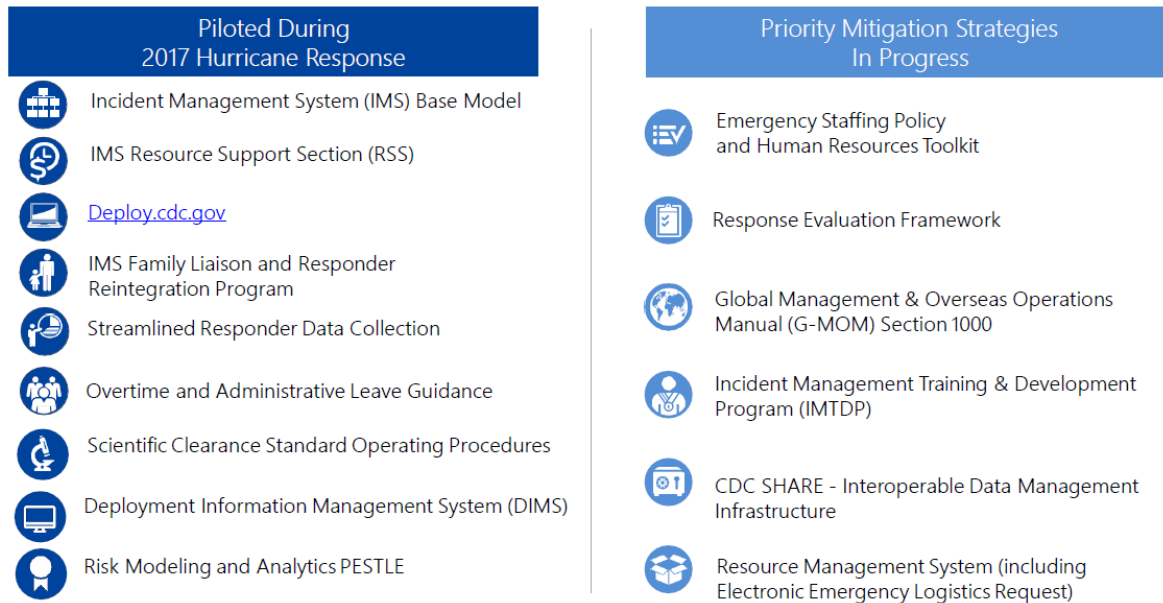
The process highlighted the value of cross-CIO collaboration and moved the agency from managing risk in an ad hoc manner to a more structured, inclusive approach.

There are a couple of caveats. While this has significant potential, there are challenges and very few enterprise risk management success stories to benchmark. There are concerns about sustainability, accountability, and funding. It is also impossible to eliminate all uncertainties, but it is possible to identify strategies that will mitigate risk.

Figure 6: Sample Risk Mitigation Strategies

Figure 6 provides examples of some of the risk mitigation strategies.

Sample Risk Mitigation Strategies



ERO 2.0 evolved from DEO's experience with ERO 1.0; the structure was refined to achieve better alignment to priority tasks to improve response compared to ERO 1.0. Workgroup co-leads and workgroup membership were examined to identify individuals who had a willingness to think outside the box and would encourage others to do the same. In addition, the strategies are more agency-wide in their approach. The workgroup structure moved from nine to eight. Below is a description of the governance structure for the workgroups.

- ERM Governance Board provides oversight on agency risk priorities and cross-cutting risks. It is comprised of a mix of agency CIOs and leaders that oversee the development and implementation of strategies to analyze, prioritize, and address risks across the agency.
- Senior Leaders Response Group (SLRG) is responsible to review, guide and oversee the evolution of CDC emergency preparedness and response activities.
- Risk Management and Operational Integrity (RMOI) is responsible for providing strategy and direction for the ERO initiative, communicating with the ERM Governance Board and SLRG, and other oversight functions.
- Workgroup Co-Leads are responsible for setting direction for an individual workgroup, holding monthly (or more frequent) meetings, and assigning and holding workgroup members accountable for activities.
- Workgroup Members are responsible for participating in workgroup meetings, providing SME, and are accountable for progress on assigned activities.

As the process evolved to ERO 2.0, risks were written at a high system or enterprise level and are now being translated into risk events, which are more manageable. This will tie causes to consequences, which will result in more targeted actions that can decrease the likelihood of a risk event occurring and/or mitigate consequences.

Moving from one response to the next, the goal is to learn and evolve as an agency. One of the workgroups is focused specifically on the evaluation process and examining methods and tools to assist in moving CDC to a strategic systems-based organizational learning model.

Recommendations/Comments from the BSC:

- Success of any response is going to be around the resilience of personnel. Think about the ways that you prepare personnel to ensure that they are physically, emotionally, and financially stable. Does preparedness of staff vary by skill set or other characteristics? The military does a great job of that. How do you assess if you have prepared staff sufficiently? How do you allow them time to disengage, decompress, and debrief post-deployment? Hopefully, this can lead to retention of the workforce.
- In the last couple of years, people in this community have talked about the value of more robust clinical deployment in the event of infection disease emergencies. These would either be run alongside or by CDC, ASPR, USAID, or some entity. If that is the case, they should be incorporated into your thinking on employee health and risks of deployment.
- Who can make an observation? Can observations be made in a confidential manner?

Biological Agent Containment Working Group (BACWG): Update

Dawn Wooley, PhD; BACWG Co-Chair, BSC Member

Catherine Slemp, PhD; BACWG Co-Chair, BSC Member

Drs. Wooley and Slemp co-presented to the BSC providing updates on the Biologic Agent Containment Working Group's (BACWG) U.S. National Authorities for Containment (NAC) policies. The BACWG is asking the Board to approve the drafted policies.

To help frame the discussion and validate the need for the new policies, several risk factors were reviewed. The wild type Poliovirus 2 (PV2) was last seen around 1999 and was confirmed eradicated in 2015. Efforts are currently ongoing to eradicate PV Types 1 and 3. Given those facts, there is currently no intent to eliminate the vaccination programs for IPV and OPV, but there have been changes made to the vaccination process. In April 2016, over 120 countries moved from the trivalent OPV to bivalent OPV, in an effort to eradicate Vaccine-Derived (VD) PV2 disease.

In addition, there still exist some gaps in PV2 immunity. There are OPV/IPV low vaccination coverage areas. These are areas with environmental conditions that are conducive to spreading poliovirus, if introduced. Additionally, there have been past releases of PV by labs, although rare. Lastly, polio vaccination guards individuals from the disease but not from infection, re-infection, or enteric transmission.

From a global perspective, the World Health Organization (WHO) Global Action Plan (GAP) III was developed to reduce the risk of facility-associated virus release. The National Authorities for Containment (NAC) were tasked with implementing policies to reduce risk of lab-associated poliovirus disease in each country. The policies have implications for U.S. entities with known poliovirus infectious material (IM), like Wild PV; VDPV; and OPV, which are few in number. It also has implications for US entities with potentially infectious materials or PIM, of which there are many. The NAC will supervise interim certification and certification as Polio Essential Facilities (PEF). Currently, NAC has no valid supervisory authority for policy implementation based on labs following good benchmarks of practice founded by NAC or GAPIII, but these policies will likely evolve with changing PV and lab status.

GAP III has 139 sub-elements. The NAC is commissioned to evaluate guidance. About 15% of the sub-elements are prescriptive requirements by WHO. The NAC ranked policy development for elements that the NAC will not adopt GAPIII guidance for at this time and elements that have no equivalent U.S. standards or regulations; and for which facilities requested additional guidance. The Containment Certification (CC) audits will assess compliance to GAPIII per the NAC policy.

The NAC Policy development process has five steps:

1. NAC develops policy
2. BACWG policy review/recommendations
3. NAC updates policy and release for comments
4. PEF submit comments on draft policy
5. NAC address comments and publish policy

With all policies, there are disclaimers. There may be updates over time based on external input, WHO updates, and so forth. The policies being developed now are subject to change at the time of final eradication. This is not a substitute for a site-specific risk assessment. The labs are given some standard criteria, but facilities may adopt additional controls based on their risk assessment.

The workgroup has been drafting policies via monthly teleconferences. The BACWG drafted policies related to four topics: storage outside of containment; physical security; record of access; and inventory. The policy for storage outside of containment establishes risk mitigation strategies to ensure the safe and secure storage of PV2 materials outside of containment. It is stratified by risk of infectious materials versus potentially infectious materials. PEFs must also conduct a site-specific risk assessment for these storage locations. PEFs may adopt additional hazard control measures. The physical security policy ascertains security requirements to mitigate the risk of theft, loss, or release of PV2. Security controls are required for GAPIII containment laboratory and/or storage locations outside of containment. The record of access policy determines requirements for a system to document information about individuals that enter PV2 area(s) in the facility to mitigate risk of theft or loss of poliovirus and to aid any investigation. Lastly, the inventory policy establishes requirements for a qualitative inventory management system to maintain an accurate accounting of PV2 material for each material type.

The NAC will work with an advisory group and may seek additional clarification from facilities prior to publication of policies. There are future policies under development related to personnel reliability, PV inactivation methods, and occupational health program.

A detailed packet of the policies (Appendix “A”) were presented to the BSC. They provide an in-depth description of the mitigation strategies along with some appendices, as needed. The BACWG has deliberated and approved the policies and asked the BSC to review the policies, ask any clarifying questions, and provide recommendations. After answering a few clarifying questions, the Board was then asked to vote on the draft policies for acceptance. **The BSC unanimous approved the policies with no changes.**

Dr. Redd thanked the workgroup for the quality of their work and the group members’ devotion.

2017 Hurricanes Response and Recovery – Public Health System Perspectives

**Japhet Rivera, MBA; Assistant Secretary for Planning, Development, and Federal Affairs; Puerto Rico
Department of Health CDR**

Mr. Rivera provided insights on the Puerto Rico’ experience following Hurricanes Irma and Maria regarding the overall response with special attention to the impact on the public health system. He also shared some of the lessons learned and observations regarding Puerto Rico’s interactions with other agencies, in particular the federal government.

Hurricanes Irma and Maria devastated Puerto Rico bringing sustained winds well over 150 miles per hour, heavy rains, and catastrophic flooding. The storms caused nearly complete devastation, including the catastrophic failure of the island's power grid, water and waste-water infrastructure, and communications network. The economy of the island came to a standstill due to the physical damage, loss of supporting infrastructure, and the

absence of power and water. Roads and bridges failed or were blocked by debris across the island, leaving communities stranded and unable to obtain lifesaving aid, food, water, and medicine for a period of weeks. More than 472,000 housing units were destroyed or experienced major damage, forcing hundreds of thousands of Puerto Ricans to seek refuge in shelters and the homes of family and friends.

Today, electricity is not fully restored and there are places where potable water is either unavailable or has yet to be certified as safe to drink. Thousands of businesses are closed or have limited operations. Power outages and the decimation of telephone cell tower capability have prevented regular communication or access to wireless internet services. Hospitals are operating at a reduced capacity. Hundreds of thousands of Puerto Ricans are displaced, many in the continental U.S. All levels of government, as well as the health, police, and fire departments, were hampered by the destruction of their buildings and infrastructure. The hurricanes also robbed thousands of Puerto Ricans of their livelihoods.

As a result of the hurricanes, all dialysis centers were shut down and all of the hospitals and clinics were on generators for an extended period. Vaccines were lost due to lack of refrigeration, and the state reference laboratory was severely damaged and unable to support lab testing needs of the citizens. As of today, two out of the 68 hospitals and four out of the 101 primary health care centers remain powered by generators. All but three of the 48 dialysis centers are fully operational. Last week was the first week FEMA did not receive requests to deliver water and food to affected areas.

Even before the hurricanes, the health statistics for Puerto Rico were concerning. The prevalence of diabetes is 50% higher than in the United States. As of 2014, Puerto Rico had the second highest HIV death rate compared to other U.S. states, territories, or districts in the nation. Diabetes and HIV death rates on the island are three and four times respectively higher than in the U.S. In addition, Puerto Rico also experienced over the last few years outbreaks of mosquito-borne diseases like Dengue, Chikungunya, and Zika.

Even though there's been a lot accomplished in the last few months, there's still much to do. Mr. Rivera reported that the majority of the improvement needed is in preparedness and response training. Serious fiscal restraints, Medicaid shortfall that threatened to shut down the state sponsored health insurance, lack of training and preparation, and misunderstanding of roles and responsibilities, particularly in the health department, were all contributing factors to Puerto Rico's inability to effectively respond to the storms. The communication and guidance was not clear or nonexistent. The government had its plans, and the private sector, both for-profit and not-for-profit, had their plans but there was no alliance to bring together perspectives and ensure continuity.

Today, staff training is occurring in preparation for the upcoming hurricane season. Island-wide and regional emergency response plans are being created that will include the government, private sector, and volunteers. Citizens are being educated and empowered to manage their chronic diseases.

Mr. Rivera said early involvement of the federal government, in particular the Federal Emergency Management Agency (FEMA), ASPR, and the CDC saved lives. All three of the agencies were leaning forward by the time the storms hit. CDC staff immediately appeared in Puerto Rico's EOC performing in areas like the Emergency Support Function-8 (ESF-8) to aid communications and serve as liaisons on public health and healthcare issues. They also were critical to the staff in the Department of Health. In a matter of days, lab samples were being shipped to the CDC for processing to ensure availability of lab testing.

Currently, personnel from the CDC are speaking to the staff in Puerto Rico and coordinating opportunities funded by the supplemental funding approved by Congress. This funding and guidance from the CDC will help develop and improve capacity and capabilities in areas like public health support infrastructure, epidemiology,

vaccines, environmental health, response preparedness, demographic registry, infectious disease, public health communications, and suicide prevention.

Mr. Rivera ended his presentations with some recommendations to agencies that participate in response efforts.

- Jurisdictions receiving services in the future will benefit from a trained workforce that works in a more cohesive fashion.
- Confusion and disorganization ultimately delays services and support. There should be a sense of urgency among responding agencies. Delaying support to a jurisdiction because the organizations can't come to an agreement or find the perfect answer is unacceptable. At least start supporting the jurisdiction with what the organization is comfortable with at the time until an agreed-upon solution is obtained. Do not base a jurisdiction's needs or requirements on historical information.
- Jurisdictions will benefit from organizations that adapt to the emergency and assume an emergency posture and emergency procedures that align with the jurisdiction's needs and response approach.
- Professional pride of responding agencies that distracts from the response has no place in emergency response environment. Maintain the focus on the jurisdiction's needs.
- Jurisdictions are usually in charge during an emergency response. If a jurisdiction turns down specific assistance, do not try to find a back door or push to provide something that is not welcomed by the jurisdiction.
- Jurisdictions will benefit from federal organizations that respect and consider the expertise in the local jurisdiction. A world-wide expert does not know more than the local people in that jurisdiction for many aspects of the emergency response. Every time there is an emergency experience, the whole system learns from it.

He closed by expressing his gratitude to CDC and the other federal agencies. Puerto Rico has a ways to go to in its recovery efforts and is looking forward to working with its federal partners as it improves.

Anita Patel, PharmD, MS; National Center for Immunization and Respiratory Diseases
Satish Pillai, MD, MPH; National Center for Emerging and Zoonotic Infectious Diseases

Drs. Patel and Pillai gave a joint presentation on the Infectious Disease Medical Countermeasure Taskforce working in CDC's EOC. The taskforce was established on September 8, 2017 as a component of the overall Hurricanes response Incident Management System (IMS). The frequent questions coming from jurisdictions and the public regarding vaccination during an emergency responses, for example, made it necessary to create the taskforce. The Infectious Disease Medical Countermeasures Taskforce is not a task force that is routinely established as part of CDC's IMS. It was originally part of the overall EOC and functioned as a liaison, but it became clear that it really needed to have a larger role during this emergency response. Drs. Patel and Pillai co-lead the taskforce.

Epi-surveillance is one of the traditional roles for CDC. It is very useful for situational awareness. When Hurricane Harvey struck, Houston, TX had just transitioned their syndromic surveillance platform and were implementing a new system. Partners like the Center for Surveillance, Epidemiology, and Laboratory Services (CSELS) were in close communications continuously with Houston. They recognized a potential gap in the new system and coordinated with Tarrant County, TX which runs a healthcare system-based syndromic surveillance program. As a result, TX responders were able to get the data feed re-routed and analyzed, which provided Houston's health department with immediate data on what was happening in the Harris County hospitals. It also allowed them to conduct syndromic surveillance in real time. In addition, the Disaster Medical Assistance Teams (DMAT) were being stood up by ASPR. These teams were also providing syndromic surveillance data that

was being fed back to Houston's health department. This is an example of how CDC is able to work with its federal partners to provide results without necessarily having to deploy epi staff.

In Puerto Rico, the health department was completely destroyed, and the surveillance system was offline. CDC was again able to partner with other federal agencies, like the Veterans Administration (VA), to set up a surrogate syndromic surveillance system monitoring data from the largest VA hospital in San Juan and two satellite facilities. This provided, essentially, coverage of the entire island. For eight weeks, CDC continued syndromic surveillance for respiratory illness, GI illness, as well as skin and soft tissue infections. CDC staff were deployed to do chart extractions, manually collect data from paper records, and abstract data via electronic medical record. During the eight weeks, CDC extracted data from over 13,000 charts, providing the Puerto Rico Department of Health, ASPR, and CDC the information needed to obtain situational awareness of what was happening on the ground.

The syndromic surveillance efforts are only part of the picture. There is a 12-laboratory response network in Texas and they function as an integrated system. Prior to landfall, they started coordinating amongst one another. After landfall, one lab lost their generator and reagents. CDC Atlanta was able to backfill those reagents and no laboratory staff had to deploy. In Puerto Rico, there were eight labs spread across San Juan and several satellite facilities. While the labs were offline due to the hurricane, CDC was able to continue to support them. Over 20 Spanish-speaking laboratory scientists were deployed. Partnerships were set up to bring specimens back to Atlanta for high priority testing. The Association of Public Health Laboratories (APHL) helped CDC to respond faster due to its partnerships with private companies and nonprofits. Since the end of October, over 2,800 laboratory diagnostic tests have occurred through CDC or APHL's state labs. As a result of CDC working with its state and private partners, provided by APHL, nearly 95% of Puerto Rico's laboratory capacity is back online.

There were lots of questions regarding the role of tetanus vaccine during the hurricane emergencies. CDC was able to codify and disseminate information to clinicians using Clinician Outreach and Communication Activity (COCA) calls. COCA blast messages were distributed to state and local jurisdictions to inform clinicians regarding who should get tetanus vaccines, when they should be administered, and the appropriate schedules. Similarly, in the post-landfall of Maria, there was concern regarding risk of acquiring leptospirosis, hepatitis A, typhoid, and other potentially waterborne communicable infectious diseases in individuals in U.S. Virgin Islands and Puerto Rico. CDC utilized the Health Alert Network, which reaches over a million subscribers, to provide information about these potential communicable infectious diseases and ways to contact the health departments.

One of the strengths of CDC field-deployed staff is that they have established a presence in jurisdictions before a disastrous event occurs. The presence of state assignees provided by the Office for State, Tribal, Local and Territorial Support (OSTLTS) and the Career Epidemiology Field Officers (CEFO) in health departments help to form relationships that can be used during an event to increase the response rate.

The presenters talked about some of the mitigating strategies CDC utilizes in the responses. For rapid lab testing and case identification, the Lab Transport System was created. The system is very effective for disease surveillance.

CDC also provided technical assistance for vector control. In collaboration with FEMA, CDC ensured that all federal laws governing mosquito spraying and environmental protections were followed. Technical experts then developed a process to identify areas that required aerial spraying.

CDC also examined the risk of vaccine preventable diseases. The goal was to create strategies to address those types of diseases. The agency took on the two efforts. The first was the Vaccines for Children Program. This federal program provides vaccines at no cost for children, who may not otherwise be able to receive them.

The federal Advisory Committee on Immunization Practices (ACIP) recommended vaccinations that cover over 16 diseases. The second area is the mass vaccination clinic effort within Puerto Rico. Over 200,000 doses of various vaccines were provided through that effort. CDC expertise was pivotal in determining what products and vaccines were needed. There were over 250 clinics that provided over 40,000 vaccines. In addition, vaccines were also provided to U.S. Virgin Islands. The clinics were successfully able to access the vaccine supply and administer vaccines to the population as needed. CDC also coordinated access to donated vaccines and provided the donated vaccines directly to the Department of Health. In Texas, over 69,000 doses of vaccines were able to be managed and stored. CDC also assisted with restoration of the Vaccine for Children services in Texas as well.

CDR Joseph Laco, MSEH, RS/REHS; National Center for Environmental Health

CDR Laco talked about the role of the National Center for Environmental Health (NCEH) in the 2017 Hurricanes response. NCEH supported a large part of CDC's response. In addition to partnering with FEMA and ASPR, NCEH was very busy on its own response activities. NCEH, first, provided subject matter experts (SMEs) to Texas in response to Hurricane Harvey. Soon after, Hurricane Irma hit and created quite a bit of devastation in St Thomas, St John, and the U.S. Virgin Islands before moving on to Florida. By this time, NCEH's resources were starting to spread thin. Then, Hurricane Maria arrived. While sending staff to the field in response to the sudden wave of hurricanes, NCEH still had a number of SMEs providing expertise and support to the EOC in Atlanta, which operated around the clock for many months.

The most valuable NCEH asset is its people. They bring skill, expertise, and experience to the response. The Center deployed 97 people to Texas and Florida, 63 to the U.S. Virgin Islands, and over 200 staff to Puerto Rico. Simultaneously, over 300 personnel rotated through the EOC in various roles. Initially, one of the biggest contributions NCEH provided were environmental health assessments. Many NCEH staff served as sanitarians and public health inspectors. They inspected schools, shelters, hospitals, and healthcare settings. In addition, NCEH examined government buildings, nursing homes, orphanages, day care centers, hotels, and lodging facilities. These establishments were assessed for food safety, safe drinking water, waste-water management, vector control, illnesses, solid and hazardous waste management, vegetative waste and debris, and mold. The health hazard associated with mold was a priority concern everywhere due to water intrusion occurring in damaged infrastructures.

NCEH's health communications staff were able to provide hundreds of thousands of flyers, radio spots, and posters to educate the people on mold, carbon monoxide, injury prevention, mosquitoes, and mental health. All the information gathered was also shared with local partners, like the Department of Health, as well as federal partners like ASPR and FEMA. Most efforts took place in Puerto Rico and U.S. Virgin Islands because Texas and Florida were much more prepared and had well-established systems in place.

Most of what was observed was destruction to infrastructure, power grid damage and lack of electricity, and issues with water access and quality and waste water management. The debris that covered the roads initially had to be quickly removed and placed on the side of the roads to allow for emergency and response services. Unfortunately, the debris created harborage for vectors and became a problem down the road. Food safety also became a priority in shelters, grocery stores, food wholesalers, food and water distribution sites, as well as restaurants.

Healthcare settings, from clinics to hospitals, in both Puerto Rico and U.S. Virgin Islands, received detailed environmental health assessments. The conditions found in the shelters varied based on the state of the building or structure, population size, and their different needs. One of the primary ways the local people wanted to get back to normalcy was to have schools reopened as soon as possible so that families could try to

resume their daily routines. Therefore, NCEH inspected several schools to ascertain the level of damage and the resources needed in order for them to reopen.

NCEH has conducted an assessment of its Hurricanes response strengths and weaknesses. Its greatest strength is the leadership and staff it is able to provide to a response, not only in the field but also to the EOC and the incident command structure leadership roles. Leadership from NCEH served in a rotating role in the Environmental Health Taskforce in the EOC and regularly engaged with CDC leadership, as well as those in the field. NCEH also has strong partnerships both on the local and federal level.

NCEH has ready-to-use communication plans and materials that are available for safety responders and the public. In addition to its shelter assessment forms, NCEH developed and modified other assessment forms, including those for healthcare facilities and building assessments for re-occupancy and re-entry. NCEH also developed a healthcare facility assessment app and database in Puerto Rico that allows NCEH to quickly share its findings of the evaluations of the healthcare facilities across the territory.

CDR Laco also reviewed some of the challenges that NCEH faced. One was in the area of communications, particularly between the federal agencies, as well as with the local agencies. There was limited mobile communication. In addition, there were three storms, affecting four different locations and multiple agencies responding. These factors contributed to a lack of coordination.

He noted that there need to be better procedures that facilitate sharing of data that is collected. Improved systems can expedite response to changing conditions, as well as clear funding streams.

Some of the mission assignments weren't always clear, particularly beforehand, due to the chaotic nature of the initial response. With the multi-agency response, the chain of command wasn't always clear.

OCONUS (outside the continental United States) logistics were very challenging for the hundreds of deployers. Where were they going to sleep? How was food and water going to be provided to them when most of the community and most of the regular structures like hotels had been destroyed? There was also a need for more equipment that can be utilized for evaluations and assessments, which are vital elements for environmental health monitoring.

One of the successes and high priorities was the safety of CDC's personnel and deployers in the field. NCEH provided ESF8 support during the response and continued to do so in Puerto Rico and U.S. Virgin Islands.

One of the areas NCEH is improving is capacity building in preparedness. One of the ways to accomplish this is through increased training so that people are more prepared. The extreme challenges that were faced due to destruction of so many vital services, like lack of power, mobile services, cell towers, and generators highlight gaps in preparedness plans that need to be addressed.

Harald Pietz, BA, Deputy Director, Division of State and Local Readiness, OPHPR

Mr. Pietz provided a snapshot on the activities of DSLR's State Coordination Taskforce (SCTF). The taskforce was winding down its activities around Zika when Hurricane Harvey hit. The small SCTF has now been activated since 2014. The members rotate to respond to hurricanes, emergency infectious disease responses, and whatever other priority they are assigned. The taskforce brings in the state and local perspective and makes connections when necessary. They provide the state and local levels a more holistic understanding of the response.

Roughly 15,000 hours of SCTF staff time was contributed to the 2017 hurricane response. The time investment required meant that taskforce members either didn't do their day job or they did two or three jobs in order to accomplish their work. There were over 100 calls with hurricane-affected areas to discuss the restoration of public health services and to provide technical assistance. There were 32 staff deployed to Hurricanes Harvey, Irma, and Maria, mostly through the ASPR and the Commission Corps but there were also individuals deployed through DSLR.

Mr. Pietz noted that some states like to balance their budget by not having a fully-staffed state structure. They will have roughly 30%, 40%, or 50% state staffing vacancy for a lot of their federally-funded positions. By not having adequately-filled positions, when an event occurs, more Emergency Management Assistance Compact (EMAC) and federal resources are required to provide adequate response staff support.

The SCTF hosted 21 calls with non-governmental organization (NGO) colleagues (e.g., APHL, ASTHO, CSTE, and NEHA) to discuss developments in the response. There were weekly or sometimes bi-weekly calls to provide information on what was occurring throughout the response to all three hurricanes. The taskforce worked to link agencies to the appropriate SME or CDC EOC taskforce for guidance.

The SCTF is now moving from a response mode into recovery from the hurricanes. DSLR's SCTF has an exceptional working relationship with colleagues at OSTLTS. They have created an Office of Insular Affairs, which has been a very valuable asset. The taskforce will continue its efforts in hurricane preparedness, since hurricane season starts in June.

Mr. Pietz also addressed the crisis cooperative agreement (CoAg) formally known as the public health crisis notice of funding opportunity (NOFO). This mechanism, created by CDC, can expedite and distribute funding, when funding is made available. The crisis CoAg is being activated for the first time. CDC anticipates there to be roughly \$135 million that will go out through this mechanism to impacted jurisdictions. In preparation for the crisis CoAg, seven individual jurisdiction calls have been conducted with each of Alabama, Florida, Georgia, Houston, Louisiana, South Carolina, and Texas. The goal of the calls was to gain the states' insight on their needs. This will ultimately help CDC provide better guidance.

A part of the crisis CoAg is an approved but unfunded list (ABU). This feature eliminates the need for competition. These jurisdictions have already competed, so when an event occurs CDC can have very direct dialogue, gain a better understanding of the needs, and then work with the SMEs to develop more of the guidance that's tailored to the states' needs based off their feedback. There were 13 meetings with the U.S. Virgin Island team coordinated through OSTLTS and 13 meetings with the different CIO's between March 5th and 9th to discuss needs, coordination, and PHEP communication.

The new cooperative agreement required staff to get up to speed on REDCAP, which is an open source software tool that CDC plans to use to support program management, performance management, and grants management. In addition to learning REDCAP, CDC staff set up a brand-new information system, distributed it to states, and trained the states and other internal people on how to use the system. So far, there have been four CDC internal REDCAP trainings. DSLR has also hosted two introductory software training sessions and two in-depth tutorials with the states and locals. They're also developing some online training.

On March 14, 2017, the SCTF held a national call to discuss the hurricane crisis cooperative agreement funding process. The appropriation language called for some reimbursement for those who activated their EOC and incurred cost because they believed they were going to be impacted by the hurricane. There were over 190 participants on the national call. Since the crisis CoAg will be the mechanism used in future responses, states that were not impacted by the hurricanes wanted to learn about the new cooperative agreement.

Thus far, seven CDC CIOs have submitted hurricane funding project plans. The SCTF reviewed 76 projects to determine if proposal objectives overlapped. Any areas that seem to be duplications were given a second review by SMEs for verification.

There have been 35 CDC internal and jurisdictional requests for information. A FAQ has been created on how to use the REDCAP software application. The taskforce has also coordinated an objective review panel comprised of 59 reviewers, six chair persons, and 12 recorders. There were 64 applications reviewed, approved, and placed on the ABU list. Notification letters were sent out to the principal investigators through the Offices of Grant Services.

The SCTF held one CIO informational meeting with IMS staff regarding the hurricane crisis cooperative agreement, and is coordinating follow-up meetings with individual CIOs probably on a weekly basis. The CDC internal calls will discuss the DSLR and OSTLTS hurricane recovery cooperative agreements.

In addition, OSTLTS has created a companion crisis cooperative agreement that is focused on non-governmental entities, which includes NGOs, for-profit, or academic institutions.

Dale Rose, PhD, MS; Associate Director for Science, DEO

Dr. Rose has served as the agency's incident manager for the hurricane response since mid-December of 2017. He shared some of his reflections and perspectives on the hurricane response.

First, the hurricanes highlighted just how critical CDC's mission is in responding to disasters. Although it's generally not the lead agency in these kinds of disasters, its mission and responsibilities are extensive and clearly essential. The roles run the gamut across environmental health and infectious disease, as well as a range of other functions and domains. It is important for CDC to bring the full weight and scope of its expertise to bear early and forcefully to catastrophic events. This requires intensive coordination across the task forces that are in the EOC and the IMS structure, as well as across a range of different stakeholders within and outside the agency.

Secondly, there's no prepared playbook for CDC's role in long-term recovery. Although the agency is engaging in recovery work with other partners, it has had to design aspects of its recovery role in an ad hoc manner. Programs at the agency have not taken on a lot of recovery work of this scale before, but this is a task it is now engaging upon.

Thirdly, there are a number of operational gray areas related to response and recovery. More engagement with federal partners will be needed to bring more clarity. For example, what is the optimal operational and reporting relationship between HHS and CDC when operating under emergency or recovery support functions? The RSF is a new concept and has been operationalized for the first time, robustly, in this response. There is not a clear one-pager that gives instructions.

Fourth, the response was built on and was successful largely due to partnerships. CDC worked closely with local partners in the affected areas, as well as other key federal partners. The CDC Foundation was a vital partner. Without the Foundation, a lot of successes achieved would not have been done in such a timely manner. The EMAC Groups utilized by the states and locals were incredible. The EMAC group brought in teams from other jurisdictions and provided technical assistance and support to the territories. Partnerships were an avenue and an enabler of innovation and adaptation.

Fifth, this response highlighted an evolution of CDC activity, specifically oriented towards jurisdictional engagement and coordination in emergency response. Although many of the centers at CDC engage with jurisdictions to one degree or another, the agency's OSTLTS, OPHPR, and DSLR, have been critical actors. They acted as a “glue” and coordinated many activities. The partnership between these centers and their engagement with the EOC has been nothing short of stellar.

Finally, CDC has some of the brightest, finest, most talented and motivated employees committed to public service. This response was no surprise in that regard. It's just another reminder of just how committed the people are to the mission.

Recommendations/Comments from the BSC:

- Discussion about how to use the BSC to “get out” stories of the positive work that CDC is doing and accomplishments during a response.
- Request from BSC to have “info briefings” on response activities during responses for awareness and communication within their professional domains. Need to explore any constraints (i.e. legal, administrative, etc.) to providing briefings to BSC.
- Recommendation that the BSC members think about how they collectively or individually can shed light on the valuable/positive work performed during a response.

Preparedness Updates from Liaison Representatives

Christina Egan, PhD, CBSP; Association of Public Health Laboratories (APHL)

Based on our activities since the last time the Board met, APHL has the following comments for consideration:

1. Division of Select Agents and Toxins (DSAT): Select Agents
 - APHL member labs have been encouraged by the new Electronic System however there seems to be an inconsistent message given by inspectors as to if the Federal Select Agent Program (FSAP) will require printing of all forms/documents? This message has varied from lab to lab.
 - Inactivation of Select Agents: APHL feels that there is still a need for clear guidance on inactivation of select agents. We understand that the FSAP also realizes this need. We hope to engage with FSAP to assist with this effort.
 - Training for Inspectors: We would recommend that APHL and CDC Laboratory Response Network for Biological Threats Preparedness (LRN-B) provide a training for FSAP on the LRN-B and the typical work seen in these laboratories, specifically public health laboratories (PHLs) as there have still been reports of inconsistent inspections of PHLs that are performing the same public health assays.
2. Division of State and Local Readiness (DSLRL): Public Health Emergency Preparedness (PHEP) Cooperative Agreement
 - APHL has heard some concerns from some members regarding PHEP funding and how to ensure laboratories are maintaining readiness to respond; e.g. maintenance contracts for all LRN-B and C equipment; procurement of new instruments. Has DSLR received any reports/feedback on funding concerns?
 - We believe that there is also a misperception that labs receive the most funds but many do not recognize that this funding has been directed at purchasing equipment and maintenance contracts and not in investing in actual staff to run these instruments. This may lead to significant negative consequences on the ability of labs to respond to the next threat.
 - Letter from Awardees: Some public health laboratories have commented that their states are submitting letters stating that they have collaborated on PHEP budget development. However,

these labs are not always engaged but are asked to sign off on the letter. How is DSLR verifying that the collaboration actually occurred?

3. Biosafety

With the ending of Ebola funds, public health labs will likely lose their biosafety officers (BSO) and biosafety outreach officer (if in place). APHL would encourage CDC to promote the need for at least one BSO in each laboratory. APHL through its Biosafety and Biosecurity Committee has created and held many different training sessions and documents to assist new biosafety officers in their tasks both within the public health laboratory as well as clinical laboratories.

4. Incident Management

APHL recommends incident management training for laboratorians across CDC. This standardized training can help to better integrate laboratorians into the response and increase awareness of external organizations such as APHL which could assist during responses.

APHL Feedback on Hurricane Response and Recovery Efforts

CDC QUESTION: What issues were of particular concern during the hurricane responses?

At the beginning of the response, there was no dedicated Laboratory Taskforce within the CDC IMS. Once the lab team was assembled, it appeared that they were not fully integrated into the response. Within the IMS, there needs to be recognition and articulation of the role of laboratories in natural disasters (e.g. drinking water testing; ground water testing; foodborne diseases; other emerging infectious diseases testing) as well as how CDC lab response will be coordinated.

CDC QUESTION: What were your expectations of CDC during the hurricane response?

We would expect CDC to oversee coordination of the public health response (e.g. surveillance, epidemiology, lab) as well as serve as the connection with other federal agencies such as EPA and FEMA.

CDC QUESTION: What went well? What went less well? (especially with reference to CDC)

1. Well: engagement with partners and information sharing by the state coordination taskforce (SCTF) as well as follow-up by the SCTF. Engaging APHL for assessments of four labs in PR
2. Not so well: There was a lack of recognition of the role of lab and in coordinating across the lab system (environmental, food [milk products], human clinical, biosafety, safety, and infrastructure). Due to the infrastructure of CDC, there is a lack of broad lab system expertise – across Divisions and programs there tends to be focus on a specific subject area (e.g. chemistry, infectious diseases). We would suggest that APHL is engaged early in a response. Also, there should be a more consistent utilization of the CDC Division of Lab Systems within CSELS. There was also limited information received on Virgin Islands and lab-specific needs during the hurricanes.

CDC QUESTION: What does the public health system need to do to better support response and recovery from catastrophic natural disasters?

The public health system should understand the core functions of public health laboratory systems and differentiate the essential or critical functions. There should be testing/exercising of continuity of operations plans at least every two years and update these plans.

There should be work done to promote stronger linkages between laboratories and other response areas. In most natural disasters, labs will play a key role in restoring infrastructure (e.g. safe drinking water).

CDC QUESTION: How does our response and recovery effort need to be modified based on variability of resources in the impacted jurisdictions?

The system as a whole should be analyzed and identification of essential resources should be detailed in each jurisdiction. Jurisdiction should be encouraged to have agreements in place for maintenance of essential services (e.g. ConOps plan; MOUs with critical partners).

Laura Magana, PhD; Association of Schools and Programs of Public Health (ASPPH)

ASPPH and the schools funded under the ASPPH/CDC cooperative agreement continue to disseminate information about the results of the research dissemination and translation projects through webinars. Many of the PIs have been working on papers to be published and presentations for professional conferences. They have also continued to provide training and technical assistance to their partners and specifically with community health departments as a result of the partnerships built through funded initiatives.

ASPPH is also working with CDC on the publication of a supplement focused on the results of the project. The supplement will be published in the *American Journal of Public Health*, under the title "**Translation, Dissemination, and Implementation of Public Health Preparedness and Response Research and Training.**" The supplement is scheduled to be published in September 2018. ASPPH expects 12-15 articles to be published; four manuscripts from ASPPH member schools have been accepted, and an additional seven invited to re-submit. In addition, two articles from CDC, one from ASPPH, and one from guest editorial committee will be included. The guest editorial committee is comprised of:

- Dr. Jay Maddock, Dean, Texas A&M Health Science Center School of Public Health. Lead Guest Editor and will be drafting the guest editorial article
- Dr. Swannie Jett, Health Officer/NACCHO Representative, Director of Health and Human Services for Brookline, Massachusetts
- Mr. Bruce Clements Director, Deputy Director, Texas Recovery Office, Federal Emergency Management Agency
- Dr. Maxine Kellman, Biotechnology Analyst HHS/Office of the Secretary/ Office of the Assistant Secretary for Preparedness and Response
- Mr. Skip Payne, Deputy Director, National Medical Reserve Corps, Partner Readiness and Emergency Programs Division, Office of Emergency Management, Assistant Secretary for Preparedness and Response
- Dr. Karen Smith, Director of the California Department of Public Health and State Public Health Officer, California Department of Health

Last year, schools and programs of public health were actively engaged, as was CDC, in responding to the usually high number and impact of natural disasters. ASPPH-member schools and programs of public health in Puerto Rico, Florida, California, and Mexico were affected by the hurricanes, fires, and earthquakes of 2017. ASPPH coordinated efforts with our member institutions to provide aid and support to our colleagues throughout response and into recovery. We featured a session at our annual meeting focusing on the impacts of these disasters and the impressive response from our schools/programs, faculty, and students. It also became clear throughout these incidents that our current and future public health workforce are in need of high-quality training on a regular basis to ensure our country's capability to respond to natural disasters.

With the probability that natural disasters like we have experienced in the last year will only increase over time, ASPPH continues to be committed to moving forward on collaborative initiatives to develop and improve pedagogical tools to build capacity for disaster response and recovery.

Gerrit Bakker, Association of State & Territorial Health Officials (ASTHO)

Mr. Bakker began with a report on the hurricane response. ASTHO encountered a number of difficulties with EMAC, like situational awareness and an inability to determine, on a national level, what was being requested and whether EMAC requests had been filled or not filled. It is working very closely with NEMA, as well as NACCHO, who experienced many of the same issues, to try and address these problems.

ASTHO has been very active. It facilitated comments for the PAHPA reauthorization draft legislation, which resulted in publication of the draft bill last week. Next week, ASTHO will hold the annual National Alliance for Radiation Readiness meeting, and it is in the process of organizing a National Academy of Sciences Preparedness Forum on Radiation. Next month, ASTHO hosts the Zika Summit in Texas, which will focus specifically on Zika-associated birth outcomes. Lastly, its Environmental Health Team is hosting a national conference on vector-borne diseases.

Mr. Bakker also thanked the CDC Foundation, who awarded ASTHO funding for three activities: 1) short-term direct assistance to the USVI Department of Health, which will include an executive consultant. The executive consultant will develop a plan for a matrix management with ASTHO and the Virgin Islands Health Department. 2) ASTHO will also conduct an in-progress review of the Hurricane Maria response in Puerto Rico. This is currently scheduled for June 11th and 12th. A report will follow the review. 3) A similar review will also be conducted for the Virgin Islands, both on St. Croix and on St. Thomas in July. Reports will follow.

Patricia Quinlisk, MD, MPH; Council of State & Territorial Epidemiologists (CSTE)

Dr. Quinlisk began her report with an update on activities related to emergency preparedness. The CSTE Concept of Operations (ConOps) plan is near finalization. Dr. Jeff Engels has been part of putting together both the pandemic master scenario event, as well as the pre-exercise planning which will occur this fall. This exercise will include agencies such as NACCHO, ASTHO, and APHL. As it relates to the hurricane response, CSTE, as an organization, had a limited role. However, at its annual conference, there will be a session on resilience and response both in Puerto Rico and the Virgin Islands. This meeting will occur the second week of June.

CSTE will be releasing a Zika Preparedness Resources Toolkit in June 2018.

CSTE will be conducting a Vectorborne Disease Surveillance and Epidemiological Capacity Assessment in summer 2018, as a follow-up to the 2012-2013 CSTE assessment.

CSTE also now has representation in the National Academy of Sciences, Health, and Medical Division Forum on Medical and Public Health Preparedness for Disasters and Emergencies. The organization is trying to streamline communications between its jurisdictions during public health emergencies. The forum helped it garner ideas on how to do this effectively. As a result, CSTE launched the Jurisdictional Preparedness Contact Board in January of 2018, which will allow states and territorial staff to add, edit, and search on preparedness issues across the nation.

The agency is also hosting an annual meeting of the core non-profits like ASTHO, NACCHO, CSTE, APHL, and CDC/OPHPR to discuss emerging and critical health preparedness issues. The goal is to tackle some of the issues that were discussed during today's BSC meeting, such as communication, coordination, and developing more

effective and integrated response solutions. Data preparedness will likely be a 'hot topic' for this year's annual meeting. OPHP&R and CSELS are working closely on CDC's data preparedness initiatives and we hope to have an update on those activities.

Michele Askenazi, MPH, CHES; National Association of County & City Health Officials (NACCHO)

In April, NACCHO hosted the 2018 Preparedness Summit. There were over 1,700 attendees, and 100 learning demonstration and workshop sessions were offered.

NACCHO recognized 24 local and regional health agencies for achieving Project Public Health Ready (PPHR) status. PPHR is a standard-based training and recognition program similar to an accreditation. It is based on continuous quality improvement models that recognize local public health agencies for their demonstration of readiness to respond to all hazardous events. Health departments recognized this year were located in Florida, Kentucky, Michigan, Utah, Virginia, Texas, North Carolina, Colorado, Louisiana, and Pennsylvania.

NACCHO was incredibly active during the flu season, like many other health agencies. Many local health departments were actively engaged in surveillance and utilized systems like syndromic surveillance, in addition to providing outreach response. NACCHO shared information, tools, and resources with local health departments and organized calls between CDC and local health department members. Some of the primary issues that arose were around saline shortages and spot geographic shortages of antivirals.

NACCHO's Government Affairs staff organized a Hill Day, which was also extremely successful. Several board members and state organizations met with Congressional representatives. Along with their other priorities, PHEP and PAHPA Reauthorization was discussed. NACCHO is awaiting comments from this engagement.

NACCHO also established a Water Preparedness Workgroup with local health departments to advise on water-related emergencies and outbreaks, such as Legionella, lead, and post-hurricane water issues. This workgroup was created in response to feedback from local members requesting an increased focus on the environmental aspects of emergencies, as well as the need for improved collaboration between preparedness and environmental health staff at all levels. NACCHO was pleased to see a greater emphasis on environmental health in the new PHEP capabilities, which should enhance the workgroup's activities and assist agencies that don't have public health and environmental health under one organization.

Lastly, local public health agencies are continuing to support various response and recovery efforts due to the many disasters that have occurred over the last year, as well as ongoing public health incidents related to infectious disease outbreaks and incidents that have a health and medical impact requiring ESF #8 support.

NACCHO Feedback on Hurricane Response and Recovery Efforts

CDC QUESTION: What issues were of particular concern during the hurricane responses?

Environmental health (EH) – mold, water issues, vector control. Need more surge staff in EH and epi personnel to respond on multiple fronts (food inspections, water testing, etc.).

Challenges with employee response capacity and volunteer management. Many staff and volunteers who were activated for the response were unable to get to work because of transportation issues or did not report to work because of personal/family/property issues they had to take care of before they could respond. Health department staff normally working in programs outside of preparedness who were activated for the emergency

response did not have clear understanding of expectations and, due to challenges of emergency response, there was burn out among activated staff.

Medical evacuations of nursing homes and possible Level 1 Trauma hospital.

Public/Environmental Health concerns in all shelters across the county.

In addition an issue then and still now, is community and responder mental health, including long term recovery impacts.

CDC QUESTION: What were your expectations of CDC during the hurricane response?

Guidance and information. CDC templates and information on environmental and human health following a storm were very useful to reference.

NACCHO didn't have much interaction with CDC

CDC QUESTION: What went well? What went less well?

Communications were both a plus and a minus during this season. The amount of communication was appreciated however it was often duplicated by calls with ASPR. There's always an opportunity to better align response efforts.

Successful response efforts:

- Pre-established partnerships were instrumental in accomplishing tasks in a short time frame
- Emergency Management saw Public Health as a vital partner
- Providing the public with important and valuable information consistently allowed the health department to serve as a trusted outlet for information
- Providing public health services in the communities affected were instrumental when transportation concerns were present

Challenges included:

- Contingency contracts were hit or miss. Seemed to work well in TX but in FL the oxygen contractor evacuated and broke the contract.
- More robust planning for where to discharge people from medical shelters or healthcare system when they have no house to go back to.
- Vector control enhancements (such as spraying) is part of the critical path for getting folks back to their houses and work, so it must be done sooner.

There is still room for improvement in the following areas, many of which the health department has already started addressing:

- Providing mental health or crisis counseling to internal staff/responders
- ConOps plan revisions should be updated to reflect true mission essential functions and essential supporting activities during an emergency
- Need for additional trained staff to perform position functions within ICS during response/recovery
- Pre-established locations with agreements in place for providing public health services in communities would be ideal
- Refining and better defining roles and responsibilities and exercising using ICS

- Adhere to preparedness planning mentality and strive to think 1-2 operational periods ahead; be less reactive and look at leaning forward
- Improved situational awareness and communication across all public health and medical partners as part of the ESF #8 system

CDC QUESTION: What does the public health system need to do to better support response and recovery from catastrophic natural disasters?

Integrate into existing response and recovery structures for tactical coordination and resource mobilization

Local public health agencies should operate within a clearly defined scope of work agreed-upon with partner agencies (including local public health and ESF #8 roles)

Resource Requests/Mutual Aid - LHDs need a more agile system for sharing resources between and amongst themselves; need for all disciplines (including public health) to follow their statewide/local resource mobilization plans as part of the broader emergency management system. Work to ensure that specific public health and medical needs are better defined and articulated with emergency management partners. Also need to understand how this fits in the EMAC structure. Is there a role for national partners in helping to evaluate and facilitate?

Administrative preparedness – working resource requests through the process and getting assets deployed more quickly

Increase the knowledge of all partners of the duration of the response for public health. Many of the other responders' work is done when public health is still responding to community health needs. The recovery is long and the resources and assistance seems to go away right after recovery efforts begin.

There are still opportunities to better integrate all aspects of public health into response and recovery efforts at all levels, specifically mental health, environmental health, vector control, food safety, volunteer management.

Need for reliable funding source for impacted communities and engage the local jurisdictions to see what actual needs are within a community to which funding can be applied.

CDC QUESTION: How does our response and recovery effort need to be modified based on variability of resources in the impacted jurisdictions?

Public Health expertise and consultation would be greatly appreciated to ensure the locals are not missing anything or forget about addressing or preventing a key issue that could arise.

Jamie Ritchey, MPH, PhD; Inter Tribal Council of Arizona, Inc. Tribal Epidemiology Center (ITCA TEC)

Dr. Ritchey quickly reviewed the roles and responsibilities of the Tribal Epidemiology Centers. She represents the Intertribal Council of Arizona's Tribal Epidemiology Center, which is one of 12 Tribal Epidemiology Centers across the country. The Arizona TEC is working with the 44 tribes in Arizona, Utah, and Nevada. All of their outbreaks are local; therefore, the TEC does not employ strike teams. However, they do provide training, coordination, technical assistance, and data support to the sovereign nations located in the three states. There's also the CDC Tribal Advisory Committee. Lieutenant Governor Chester Antone, from Tohono O'odham Nation, and Delia Carlyle, from the Phoenix area are a part of the committee. Chairwoman Carlyle is from the Ak-Chin Indian Community. As part of recent contract with the National Indian Health Board, the Intertribal Council of Arizona

received funding via NIHB through the Centers for Disease Control and Prevention to work on the eco-virus response.

ITCA in partnership with Arizona Department of Health Services (ADHS), United South and Eastern Tribes (USET) TEC, National Indian Health Board (NIHB) and the Centers for Disease Control and Prevention (CDC) provided a 2 day vector borne disease workshop and 1 day CASPER training for Tribes in the Phoenix and Tucson, Navajo, and Indian Health Service Areas (IHS) from Feb 13 – 15, 2018. The agenda and presentations from federal, state, and local presenters can be found on-line at: [Inter Tribal Council of Arizona](#) .The Arizona TEC has also employed the Arizona Tribal Executive Committee and two tribes, who are strong in developing tribal curriculum, to assist in creating a curriculum for emergency response and preparedness. Once completed it will be pilot tested in local communities. It is possible the Navajo TEC will take part in this effort.

Dr. Ritchey expressed concerns in meeting the needs of both remote and urban tribes in light of the President's Budget for FY19, which requested that the community health representative line item go to zero. The community health representatives in the local communities are a stronger workforce and are much more effective than those seen in the city. Oftentimes, the community health representatives will do work that a public health nurse would not do. For example, they'll drive elders to their doctors' appointments and ensure they get a healthy meal through the Agency on Aging. They'll even read medication labels to the elders. Reductions in the local workforce would present a challenge for the agency. This workforce is a part of the tribal health infrastructure and helps to promote good health and wellness in Indian countries.

ITCA TEC and Tribes completed the Zika virus preparedness scope of work to provide 4 Tribes with funding and technical assistance to conduct local education, outreach, prevention, and control for Zika virus. The final report and materials was submitted to NIHB in April 2018.

The Arizona Tribal Executive Committee (AZTEC), a group of Tribal Public health Emergency Preparedness (PHEP) coordinators, requested 12 local CASPER-like exercises from ITCA TEC. ITCA TEC will partner with Tribes, ADHS, counties, local universities, and other relevant partners to pilot and sustain these events over the course of four years from development to completion.

The ITCA TEC continues to work with ADHS and AZ counties to provide needed, timely, infectious disease data to Tribal communities regarding the surrounding area, and surveillance reporting information on special topics. ITCA TEC continues to work with UDOH and the Utah American Indian Health Board to provide Tribes with surveillance reporting information on special topics.

ITCA TEC continues to work with the NVDOH, and the Inter Tribal Council of Nevada to provide Tribes with surveillance reporting information on special topics.

No recommendations/comments from the BSC or CDC.

Public Comment Period / Day's Recap / Adjourn

No public comments.

Meeting Recap/Meeting Adjourn

RADM Stephen C. Redd, MD; Director, OPHPR

Dr. Redd thanked the members of the Board for their patience while overcoming quorum issues. The hope is to renew members and fill any vacancies as soon as possible. He also expressed appreciation for the comments and rich feedback. Dr. Redd would like to examine the meeting structure so that there is time for sufficient engagement with the Board and that we value the time contributions of all participants. Is a one-day BSC meeting sufficient? Some polls will be conducted to gain the board's recommendations.

Samuel Groseclose, DVM, MPH; Designated Federal Official, OPHPR BSC

Dr. Groseclose, also, thanked everyone for organizing their schedules to come to the meeting. He expressed his appreciation to the staff for making the meeting a success. He also reminded the board members to please share their comments on the evaluations.

Thomas Inglesby, MD; Chair, OPHPR BSC

On behalf of the board, Dr. Inglesby thanked CDC leadership and staff for all the work to provide a seamless day. He asked his fellow members to continue to think of ways that they could highlight CDC's successes. He looks forward to the August 2018 phone conference and the 2018 in-person October meeting.

With no further comments, the meeting was adjourned at 3:25 p.m.

CERTIFICATION

I hereby certify that to the best of my knowledge, the foregoing minutes of the October 30-31, 2017 meeting of the OPHPR BSC are accurate and complete.

_____ /s/ _____
Date Thomas V. Inglesby, MD
Chair, Board of Scientific Counselors, OPHPR

APPENDIX A: U.S. National Authority for Containment (NAC) of Poliovirus (DRAFT)

U.S. National Authority for Containment (NAC) of Poliovirus Policy

Physical Security

Acronyms

GAPIII	WHO Global Action Plan, Third edition
NAC	National Authority for Containment of Poliovirus
OPV	Oral poliovirus vaccine
PIM	Potentially infectious materials
PV	Poliovirus
UL	Underwriters Laboratories
WHO	World Health Organization

Policy Statement:

It is the policy of the U.S. National Authority for Containment (NAC) of Poliovirus located at the Centers for Disease Control and Prevention that facilities must provide physical security of poliovirus type 2 (PV2) materials to mitigate risk of a theft, loss or release of poliovirus in accordance with the World Health Organization Global Action Plan III (WHO GAPIII). U.S. facilities must implement physical security controls to safeguard PV2 materials (e.g., cultures, specimens, samples, potentially contaminated materials, waste) in the facility including, but not limited to, the conditions stated below. Facilities may adopt additional security control measures based on a site specific risk assessment.

Note, OPV/Sabin potentially infectious materials (PIM) are subject to Guidance for non-poliovirus facilities to minimize risk of sample collections potentially infectious for polioviruses and its less stringent recommendations instead of WHO GAPIII.

Security Controls [GAPIII subelement 16.1.1]

- Facilities designate areas where PV2 material is authorized for use and storage. These locations are reported to the NAC and listed on the facility's containment certificate.
- Facilities limit access to the PV2 area(s) to only persons and visitors they authorize. Authorized individuals comply with facility vaccination, training, occupational health and personnel reliability policies for access to PV2 area(s).
- PV2 area(s) must be enclosed by a permanent barrier from floor to ceiling, with entry doors that can be securely locked. Material used in the construction of the permanent barrier must be of sufficient strength and thickness that it cannot be readily or easily removed, penetrated, or bent. Walls must be permanent construction, floor to ceiling.
- Entry door(s) to PV2 area(s) must use an UL approved lock and lock cylinder which are rated as burglary resistant. Lock(s) shall fail secure and allow egress only.
- External hardware is removed (or lock cores sealed) on all fire exits and other perimeter doors associated with the PV2 area(s) that are not authorized for employee entrance.

This policy is subject to change for final containment of all PV. This policy statement is effective May 30, 2018.

U.S. National Authority for Containment (NAC) of Poliovirus Policy

Record of Access

Acronyms

GAPIII	WHO Global Action Plan, Third edition
NAC	National Authority for Containment of Poliovirus
OPV	Oral poliovirus vaccine
PIM	Potentially infectious materials
PV	Poliovirus
WHO	World Health Organization

Policy Statement:

It is the policy of the U.S. National Authority for Containment (NAC) of Poliovirus located at the Centers for Disease Control and Prevention that facilities that use or store poliovirus type 2 (PV2) materials must generate and maintain a record of access to mitigate risk of theft or loss of poliovirus and to aid any investigation in accordance with the World Health Organization Global Action Plan III (WHO GAPIII).

U.S. facilities must implement a system to document information about individuals that enter PV2 area(s) in the facility that includes, but is not limited to, the conditions stated below. Facilities may adopt additional control measures based on a site specific risk assessment.

Note, OPV/Sabin potentially infectious materials (PIM) are subject to Guidance for non-poliovirus facilities to minimize risk of sample collections potentially infectious for polioviruses and its less stringent recommendations instead of WHO GAPIII.

Records [GAPIII subelement 1.4]

- Each entry to the PV2 area(s) must be recorded.
 - PV2 area includes equipment located outside of containment laboratories that store PV2 materials.
- The record of entry must include: name of the individual, date and time of entry, and escort name (if applicable).
- Records are:
 - established, controlled and maintained to provide evidence of conformity to the requirements of the GAPIII biorisk management standard,
 - handled in such a way that they remain legible, readily identifiable and retrievable,
 - maintained in paper or electronic form for a minimum of 10 years from the day of withdrawal as a poliovirus essential facility, and
 - available for review during containment certification audits.

This policy is subject to change for final containment of all PV. This policy statement is effective May 30, 2018.

U.S. National Authority for Containment (NAC) of Poliovirus Policy

Storage Outside of WHO GAPIII Containment

Acronyms

IM	Infectious materials
OPV/Sabin	Oral poliovirus vaccine
PEF	Poliovirus essential facility
PIM	Potentially infectious materials
PRP	Personnel reliability policy
VDPV	Vaccine-derived poliovirus
WPV	Wild poliovirus

Policy Statement:

It is the policy of the U.S. National Authority for Containment (NAC) of Poliovirus located at the Centers for Disease Control and Prevention that facilities may store poliovirus type 2 (PV2) infectious or potentially infectious materials outside of the laboratory containment perimeter stipulated by WHO GAPIII. Because PV2 materials pose a risk to personnel, the environment, and the global eradication of poliovirus, the NAC requires facilities to implement risk mitigation strategies as stated in this policy to ensure the safe and secure storage of PV2 materials outside of laboratories meeting GAPIII containment. Poliovirus essential facilities must also conduct a site specific risk assessment for these storage locations and may adopt additional hazard control measures.

Note, OPV/Sabin potentially infectious materials (PIM) are subject to Guidance for non-poliovirus facilities to minimize risk of sample collections potentially infectious for polioviruses and its less stringent recommendations instead of WHO GAPIII. A site specific risk assessment is also recommended for facilities retaining OPV/Sabin PIM.

Risk Mitigation Strategies

NAC specifies risk mitigation strategies by material type for PV2 materials stored outside of WHO GAPIII containment (refer to Table 1). This policy and recommendations are subject to change for final containment of all polioviruses.

This policy statement is effective May 30, 2018.

Table 1. Risk Mitigation Strategies for Poliovirus Type 2 (PV2) Material Storage Outside of WHO GAPIII Containment

RISK MITIGATION STRATEGY1	TYPE OF PV2 MATERIAL2		
	WPV, VDPV, or OPV IM	WPV or VDPV PIM	OPV/Sabin PIM
LIMIT ACCESS TO STORAGE AREA	✓	✓	
LOCKED STORAGE UNIT	✓	✓	✓
STORAGE UNIT DEDICATED FOR POLIOVIRUS MATERIALS	✓		
SEGREGATE POLIOVIRUS MATERIALS IN SHARED STORAGE UNIT		✓	
AUTHORIZED TRAINED PERSONNEL	✓	✓	✓
PRP FOR AUTHORIZED PERSONNEL	✓		
RECORD OF ACCESS TO STORAGE UNIT	✓	✓	
INVENTORY	✓	✓	✓
TRANSFER PROTOCOLS	✓	✓	✓
IMPACT RESISTANT CONTAINERS	✓		
LEAK PROOF CONTAINERS	✓		
SURFACE DECONTAMINATION OF CONTAINERS	✓		
OPENING PRIMARY CONTAINER OCCURS IN GAPIII CONTAINMENT LABORATORY	✓	✓	
PERSONNEL ENROLLED IN OCCUPATIONAL HEALTH PROGRAM	✓	✓	
POLIO IMMUNIZATION OF PERSONNEL REQUIRED	✓	✓	
PROOF OF IMMUNITY FOR PERSONNEL REQUIRED	✓		
TRANSPORT PROCEDURES INCLUDING CHAIN OF CUSTODY	✓	✓	
EMERGENCY RESPONSE PROCEDURES	✓	✓	

1 Facility must implement the risk mitigation strategy, see Appendix 1 for additional information.

2 Poliovirus vaccine manufacturing facilities may be subject to additional standards that are not superseded by this policy.

Appendix A.1: Risk Mitigation Strategies For Storage Areas

WHO GAPIII establishes international standards for primary safeguards of facility containment to reduce the risk of facility-associated poliovirus release. In 2017, GAPIII was amended to allow storage of PV2 materials outside of GAPIII containment [GAPIII guidance 3.1.1] and NAC to establish requirements for facilities storing PV2 materials outside of laboratories meeting GAPIII containment. NAC requires that facilities adopt risk mitigation strategies to minimize risk of an unintentional release or loss of these materials. Poliovirus essential facilities must also conduct a site specific risk assessment for these storage locations and may adopt additional control measures.

Poliovirus Essential Facilities (PEFs)

Infectious Materials (WPV2, VDPV2, OPV2) and Potentially Infectious Materials (WPV2, VDPV2 PIM)

Risk mitigation strategies are required for storage of PV2 materials outside of the WHO GAPIII containment laboratory perimeter. PEFs must implement security and biosafety strategies to safeguard PV2 materials which include, but are not limited to, the following conditions.

Note, where GAPIII elements are indicated, these strategies are also required for poliovirus material storage in the GAPIII containment laboratory. Further, records created to comply with GAPIII are maintained in paper or electronic form for a minimum of 10 years from the day of withdrawal as a poliovirus essential facility. [GAPIII subelement 1.4]

Security Strategies

Limit access to storage area

Access must be limited to authorized personnel in accordance with institutional policies and meeting the requirements outlined in this policy statement (Refer to Physical Security Policy).

Locked storage unit

Storage units containing PV2 materials must be locked to prevent unauthorized access. Appropriate locks include a padlock, combination lock or other unique means to restrict access rather than use of a standard manufacturer installed lock. [GAPIII subelement 16.1.1]

Note, storage units located within a secured, dedicated WHO GAPIII containment laboratory may or may not be locked, as determined by site specific risk assessment.

Storage unit dedicated for poliovirus materials

Infectious PV2 materials are stored in dedicated units (e.g., ensuring samples of wild and OPV/Sabin poliovirus materials are segregated from each other and other virus isolates, cell lines, cultures or other materials that could be subject to cross-contamination or misidentification). [GAPIII guidance 3.1.1]

It is recommended that PV2 materials are clearly labeled and segregated (e.g., separate freezer rack) from PV1 or PV3 poliovirus materials.

Segregate poliovirus materials in shared storage unit

Potentially infectious materials (PIM) are labeled and segregated from other materials (e.g., separate box, rack or shelf) within a shared storage unit.

Authorized trained personnel

Access to storage units containing PV2 materials is limited to trained and authorized personnel. [GAPIII element 5]

Personnel Reliability Policy (PRP) for authorized personnel

Personnel authorized to access storage units containing infectious PV2 materials comply with the facility's personnel reliability policy. [GAPIII subelements 16.3.1, 16.3.2] (Refer to PRP Policy, pending)

Record of access to storage unit

A record of access must be kept for each time the storage unit containing PV2 materials is opened, in accordance with recordkeeping requirements implemented for the GAPIII containment perimeter (Refer to Record of Access Policy). [GAPIII guidance 16.1.1]

Inventory

Facilities must maintain a current, qualitative inventory of PV2 materials in their possession (Refer to Inventory Policy). [GAPIII subelements 3.1.1, 3.2.1]

Transfer Protocols

Facility must establish protocols for transfers of PV2 materials between laboratories at the facility or to and from the facility. NAC must be notified of material transfers to other facilities to ensure the U.S. inventory of poliovirus materials is current. [GAPIII subelement 3.3.1] (Refer to Transfer Policy, pending)

Biosafety Strategies

Note, facilities have flexibility on risk mitigation strategies that are used to ensure the continued safe storage and handling of PV2 material containers.

Impact resistant containers

Storage of infectious PV2 materials that are to remain in a viable or intact state must be held in at least one impact resistant container (e.g., plastic screw top cryovial). If the primary container is not impact resistant, the material may be enclosed in a secondary container that is impact resistant rather than transferring the material into a new primary container (e.g., glass vial located within plastic conical tube, specimen tubes located in gasketed transport container).

Note, packaging of material must occur in WHO GAPIII containment laboratory and a primary containment device (e.g., biosafety cabinet) if the primary container is changed or primary container integrity is unknown or breakable (e.g., glass ampules). [GAPIII subelement 12.3.1.e]

Leak Proof containers

Storage of infectious PV2 materials that are to remain in a viable or intact state must be held in at least one leak proof container. If the primary container is not leak proof, the material may be enclosed in a secondary container that is leak proof rather than transferring the material into a new primary container (e.g., sealed plastic bag, protective wrapping, gasketed transport container).

Opening primary container occurs in GAPIII containment laboratory

Opening the primary container of PV2 material that is in a viable or intact state is permitted only in a WHO GAPIII containment laboratory. Appropriate controls must be in place to ensure that primary containers of PV2 materials are not manipulated outside of the GAPIII containment laboratory and primary containment devices. [GAPIII subelement 12.3.1.e]

Surface decontamination of containers

PV2 materials must be transferred through a disinfectant dunk tank, fumigation chamber or other validated method to ensure the disinfection of the exterior surfaces of any packaging materials when removed from the WHO GAPIII containment perimeter. [GAPIII subelements 12.3.1.j, 14.2.1]

Once removed, packaged viable PV2 material must not be opened outside of the GAPIII laboratory containment perimeter unless inactivated by a validated method.

Note, appropriate entry and exit requirements for the storage area are implemented in accordance with facility's risk assessment. Further, for handling historic collections of PV2 material containers that have not been surface decontaminated using a method validated to inactivate poliovirus, entry and exit procedures include use of gloves and handwashing.

Personnel enrolled in occupational health program

Individuals with access to the storage unit must be enrolled in an occupational health program that addresses potential exposure to poliovirus materials. Further, a system is established to effectively manage medical and/or environmental emergencies, including but not limited to identifying potentially infected workers and providing immediate medical care to exposed, ill or injured workers. [GAPIII element 9]

Polio immunization of personnel required

Individuals with access to the storage unit must provide proof of poliovirus immunization according to the national schedule. If an individual cannot produce proof of polio immunization, the individual should be immunized according to national recommendations for persons with potential occupational exposure to poliovirus. [GAPIII subelement 9.2.3]

Proof of Immunity for personnel required

Individuals with access to the storage unit containing infectious PV2 materials must provide evidence of immunity to PV1, PV2, and PV3 (i.e., serum neutralizing antibody titers greater or equal to 1:8). [GAPIII guidance 9.2.3]

Note, CDC will provide proof of immunity testing for personnel in U.S. PEFs. Contact NAC for information on how to request testing.

Transport procedures including chain of custody

Transport procedures, including chain-of-custody records, must be developed and implemented. The biosafety plan or transport procedure must describe the method for safe transport of PV2 materials to and from the storage site, including the location of the storage area in relation to the WHO GAPIII containment laboratory. Transport procedures must take into account any safety requirements to protect personnel and the environment during transport. [GAPIII subelement 15.1.1]

Emergency response procedures

Emergency response procedures for a release of stored PV2 material outside of the WHO GAPIII containment perimeter must be established. These must take into account measures to protect personnel and the environment in the event of a primary container breach, including a provision to follow the facility's exposure plan. Personnel must also report incidents, including "near misses" that may trigger an investigation or emergency response, for stored PV2 materials in accordance with institutional policies. [GAPIII elements 10, 11] (Refer to policy for reporting, pending)

Facilities Retaining OPV/Sabin 2 Potentially Infectious Materials

Potentially Infectious Materials (OPV/Sabin 2 and Related Strains)

Risk mitigation strategies are required for storage of poliovirus potentially infectious materials (PIM), as outlined in Guidance for non-poliovirus facilities to minimize risk of sample collections potentially infectious for polioviruses. A site specific risk assessment is also recommended for facilities retaining OPV/Sabin 2 PIM.

Security Strategies

Locked storage unit

Storage units containing OPV/Sabin 2 PIM must be locked to prevent unauthorized access. Further, poliovirus type 2 PIM are clearly labeled and segregated (e.g., separate freezer rack) from other stored material.

Authorized trained personnel

Access to storage units containing OPV/Sabin 2 PIM is limited to specifically trained and authorized staff.

Inventory

Facilities must maintain current inventories of OPV/Sabin 2 PIM in their possession.

Transfer protocols

Facilities must establish protocols for the transfer of OPV/Sabin 2 PIM to other laboratories internal or external to the facility in accordance with institutional policies. NAC must be notified of material transfers to other laboratories to ensure the U.S. inventory of facilities with poliovirus type 2 materials is current.

Biosafety Strategies

For continued use of OPV/Sabin 2 PIM, WHO recommendations are categorized by risk level of the material type (e.g., fecal/sewage, respiratory) and activity (e.g., inoculated in poliovirus permissive cells, inoculated in non-poliovirus permissive cells). Additional information on biosafety containment conditions is available in the Guidance for non-poliovirus facilities to minimize risk of sample collections potentially infectious for polioviruses available at: [Polio Global Eradication Initiative](#).

U.S. National Authority for Containment (NAC) of Poliovirus Policy

Inventory Requirements

Acronyms

GAPIII	WHO Global Action Plan, Third edition
CDC	Centers for Disease Control and Prevention
IM	Infectious materials
NAC	National Authority for Containment of Poliovirus
OPV	Oral poliovirus vaccine
PIM	Potentially infectious materials
PV	Poliovirus
VDPV	Vaccine-derived poliovirus
WHO	World Health Organization
WPV	Wild poliovirus

Policy Statement

It is the policy of the U.S. National Authority for Containment (NAC) of Poliovirus located at the Centers for Disease Control and Prevention (CDC) that U.S. facilities 1) establish a qualitative inventory system, 2) maintain records that document information about all PV2 materials held by the facility, and 3) implement inventory monitoring and controls to safeguard these materials in the facility including, but not limited to, the conditions stated below. Facilities may adopt additional inventory control measures based on a site specific risk assessment.

Note: poliovirus type 2 (PV2) material is defined as WPV2, VDPV2, and OPV2/Sabin infectious materials (IM) as well as WPV2 and VDPV2 potentially infectious materials (PIM). OPV2/Sabin PIM should be inventoried as outlined in the Guidance for non-poliovirus facilities to minimize risk of sample collections potentially infectious for polioviruses.

This policy is subject to change for final containment of all PV.

This policy statement is effective May 30, 2018.

Inventory Conditions

In accordance with WHO GAPIII, facilities must 1) maintain an accurate and up-to-date inventory of wild poliovirus type 2 (WPV2), vaccine derived poliovirus type 2 (VDPV2), and oral polio vaccine/Sabin 2 (OPV2) infectious materials and WPV2 and VDPV2 potentially infectious materials, and 2) ensure facility records related to this material are current, complete, and stored securely with adequate backup provisions. (GAPIII subelements 3.1.1, 3.2.1)

Inventory System

Facilities must establish and maintain a material accountability system for all PV2 materials to ensure proper possession, use, tracking, monitoring, transfer, and destruction. Facilities must develop a material identification system with records that are reliable, legible, and stored securely (e.g., computer files are password protected, manual records are stored in a location known only to authorized staff) with adequate backup provisions (e.g., copies of inventory records stored in a second location). The processes established should be based on a site specific risk assessment. [GAPIII guidance 3.1.1, 3.2.1]

Inventory Control

All PV2 materials must be controlled with use and storage only permitted in locations authorized by the institution, reported to NAC, and listed on the facility's approved certificate. Access to PV2 materials must be restricted to authorized, trained personnel with a legitimate need, who are enrolled in the facility personnel reliability program. Facilities must ensure samples of wild (WPV and VDPV) and OPV/Sabin type 2 materials are segregated from each other and other virus isolates, cell lines, cultures, or other materials that could be subject to cross-contamination or misidentification. [GAPIII guidance 3.1.1]

Records

Inventory records for PV2 materials must be current and complete (GAPIII subelement 3.2). These records may be created and maintained manually or electronically, at the discretion of the facility. Records must be maintained in accordance with GAPIII subelement 1.4 and document the following information.

- Material type (IM or PIM; WPV, VDPV, or OPV) [GAPIII guidance 3.2.1.c]
- Location (building, room, and storage unit, where applicable) [GAPIII guidance 3.2.1.d]
- Name of person responsible for material (e.g., principal investigator, laboratory manager) [GAPIII guidance 3.2.1.a]
- Sample type (e.g., seed stocks/cell culture isolates, human (fecal, respiratory, tissue), animal, or environmental samples, extracted nucleic acids, other) [GAPIII guidance 3.1.1.i]
- Estimated range of vials/containers (ranges: 1-99, 100-999, 1,000-4,999, 5,000-9,999, 10,000-49,999, >50,000) for each material type [GAPIII guidance 3.2.1.d]
- Material transfers to include receiving facility, date of transfer, material type, sample type, and estimated range of vials/containers [GAPIII subelement 3.3.1] ([Refer to Transfers Policy, pending](#))
- Material destroyed or inactivated (i.e., estimated number of vials/containers by material type and date material destroyed/inactivated) [GAPIII subelement 14.2.1 and guidance 3.2.1.f]

- A list of individuals with access to material to include first and last names and dates when access is granted and terminated [GAPIII guidance 3.2.1.a]

Inventory Monitoring

Facilities must self-audit their inventory, at least annually, to ensure that the inventory records are consistent with the material held by the facility (GAPIII subelement 3.4.1). A self-audit must be completed and reported to the NAC each calendar year. Facility audits should also identify materials that are no longer essential and can be destroyed (GAPIII subelement 3.4.2). The extent of each audit should be determined by a site specific risk assessment (GAPIII guidance 3.4.1).

The facility self-audit may include:

- Performing checks of non-PV freezers to ensure storage units not designated for PV material storage remain free of these materials.
- Determining the room and storage unit where the material is physically located agrees with the record.
- Ensuring the correct material types are listed for the storage unit.
- A rough count/estimate of vials/containers.

Facility inventory self-audits must be performed following a change in the person responsible for PV2 material, relocation of the material, and laboratory identified theft or loss of material (e.g., laboratory worker discovers missing specimen boxes when accessing material for an experiment). Facilities should continuously implement measures to reduce PV2 materials to the smallest amount possible.

Facilities must submit a completed Inventory Update Record (Appendix 1) to the NAC following the completion of the annual self-audit. Using the form, facilities must 1) categorize PV2 by material type (IM or PIM; WPV, VDPV, or OPV), 2) include an estimate of vials/containers using the ranges provided for each material type, 3) provide a justification for retaining these materials, and 4) report destruction of materials. This information will be used to maintain the U.S. inventory of PV materials.

Facilities must also send the NAC an Inventory Update Record when a material type is no longer in a facility's inventory (e.g., WPV2/VDPV2 IM).

APPENDIX B: OPHPR BSC MEMBERSHIP ROSTER

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APPENDIX C: BSC MEETING ATTENDANCE ROSTER, Atlanta, GA – May 9, 2018

NAME	AFFILIATION	(May 9, 2018)
Thomas Inglesby	Chair and SGE	In person
Sandro Galea	SGE	In person
Vish Viswanath	SGE	In person
Erika James	SGE	In person
Brent Pawlecki	SGE	In Person
Catherine Slemp	SGE	In Person
Jody Wireman (DoD)	Ex Officio	Phone
Jack Herrman (HHS)	Ex Officio	In Person
Gerrit Bakker (ASTHO)	Liaison	In person
Michele Askenazi (NACCHO)	Liaison	In person
Patricia Quinlisk (CSTE)	Liaison	In person
Christina Egan (APHL)	Liaison	Phone
Jamie Ritchey (TEC)	Liaison	In Person

APPENDIX C: ACRONYMS

AAR After Action Report
AMT Anthrax Management Team
APHL Association of Public Health Laboratories
ARRA/HITECH American Recovery and Reinvestment Act/Health Information Technology for Economic and Clinical Health Act
ASPPH Association of Schools and Programs of Public Health
ASPR Assistant Secretary for Preparedness and Response (HHS)
ASTHO Association of State and Territorial Health Officers
BACWG Biological Agent Containment Workgroup
BSAT Biological Select Agents and Toxins
BSC Board of Scientific Counselors
CDC Centers for Disease Control and Prevention
CEFO Career Epidemiology Field Officer
CSTE Council of State and Territorial Epidemiologists
DEO Division of Emergency Operations (CDC)
DHS US Department of Homeland Security
DoD Department of Defense
DOT Department of Transportation
DPHP Directors of Public Health Preparedness
DRMU Deployment Risk Mitigation Unit
DSAT Division of Select Agents and Toxins (CDC)
DSLRL Division of State and Local Readiness (CDC)
DSNS Division of Strategic National Stockpile (CDC)
EHR Electronic Health Record
ERPO Extramural Research Program Office (CDC)
ExO Ex Officio
FACA Federal Advisory Committee Act
FDCH Federal Document Clearing House
FOA Funding Opportunity Announcement
GAO Government Accountability Office
FRO Financial Resources Office (CDC)
HCW Healthcare Worker
HPA Healthcare Preparedness Activity (CDC)
HPP Hospital Preparedness Program
HHS US Department of Health and Human Services
IHR International Health Regulations
IOM Institute of Medicine
IT Information Technology
LO Learning Office (CDC)
LRN Laboratory Response Network
LRN-B Laboratory Response Network Biological
LRN-C Laboratory Response Network Chemical
MASO Management Analysis and Services Office (CDC)
MCM Medical Countermeasure

NACCHO National Association of County and City Health Officials
NCEH National Center for Environmental Health
NCEZID National Center for Emerging and Zoonotic Infectious Disease
NCIRD National Center for Immunization and Respiratory Diseases
NIHB National Indian Health Board
NIH National Institutes for Health
OD Office of the Director
OID Office of Infectious Diseases (CDC)
OIG Office of the Inspector General
OPHPR Office of Public Health Preparedness and Response (CDC)
OPPE Office of Policy, Planning, and Evaluation (CDC)
ORR Operational Readiness Review
OSPHP Office of Science and Public Health Practice (CDC)
PAHO Pan American Health Organization
PAHPA Pandemic and All-Hazards Preparedness Act (PL 109-417)
PERRC Preparedness and Emergency Response Research Center
PHEP Public Health Emergency Preparedness
PHPR Public Health Preparedness and Response
SGE Special Government Employee
SLTT State, Local, Tribal, and Territorial
TEC Tribal Epidemiological Center
TFAH Trust for America's Health

APPENDIX D: MEETING AGENDA

Office of Public Health Preparedness and Response (OPHPR)
Board of Scientific Counselors (BSC) Spring Meeting
Wednesday, May 9, 2018
Roybal Campus, GCC, Building 19, Auditorium B3
Atlanta, Georgia

8:00 am – 5:00 pm

OPHPR-authored NACCHO 2018 Preparedness Summit Posters (n=13) are available for viewing during breaks, lunch, and after the BSC meeting in the Second Floor Atrium of CDC's Global Communications Center, Building 19. *Please take a moment to view the posters.*

8:30 – 8:40

Roll Call, Introductions, and Review of Federal Advisory Committee Rules, Duties, and Conflict of Interest

Samuel Groseclose, DVM, MPH; Associate Director for Science, OPHPR and Designated Federal Official, OPHPR BSC

8:40 – 8:45

Call to Order, Welcome, and Opening Remarks

Thomas Inglesby, MD; Chair, OPHPR BSC

8:45 – 10:30

Interval Updates – OPHPR Director and Division Directors

RADM Stephen C. Redd, MD; Director, OPHPr

Jeff Bryant, MS, MSS; Director, Division of Emergency Operations

Steven Adams, MPH; Deputy Director, Division of Strategic National Stockpile

Harald Pietz, BA; Deputy Director, Division of State and Local Readiness

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

10:30 – 10:40

BREAK

10:40 – 11:40

Excellence in Response Operations (ERO) Initiative

Jeff Bryant, MS, MSS; Director, Division of Emergency Operations (DEO)

David Kennedy, MBA; Chief, Plans, Training, Exercise, and Evaluation Branch, DEO

Sachiko Kuwabara, PhD, MA; Director, Office of Risk Management and Operational Integrity, DEO

11:40 – 12:30

LUNCH

12:30 – 1:15

Biological Agent Containment Working Group (BACWG): Update

Dawn Wooley, PhD; BACWG Co-Chair

Catherine Slempp, PhD; BACWG Co-Chair, BSC member

1:15 – 1:25

BREAK

1:25 – 2:55

2017 Hurricanes Response and Recovery – Public Health System Perspectives

Japhet Rivera, MBA; Assistant Secretary for Planning, Development, and Federal Affairs; Puerto Rico Department of Health CDR

Anita Patel, PharmD, MS; National Center for Immunizations and Respiratory Diseases

Joseph Laco, MSEH, RS/REHS; National Center for Environmental Health

Satish Pillai, MD, MPH; National Center for Emerging and Zoonotic Infectious Diseases

Dale Rose, PhD, MS; Associate Director for Science, DEO

Harald Pietz, BA, Deputy Director, Division of State and Local Readiness, OPHPR

2:55 – 3:30

Preparedness Updates and Discussion: Liaison Representatives

Christina Egan, PhD, CBSP; Association of Public Health Laboratories (APHL)

Laura Magana, PhD; Association of Schools and Programs of Public Health (ASPPH)

Michele Askenazi, MPH, CHES; National Association of County & City Health Officials (NACCHO)

Jamie Ritchey, MPH, PhD; Tribal Epidemiology Centers (TEC)

Patricia Quinlisk, MD, MPH; Council of State & Territorial Epidemiologists (CSTE)

Gerrit Bakker; Association of State & Territorial Health Officials (ASTHO)

3:30 – 3:40

Public Comment Period

3:40 – 3:45

Meeting Recap / Meeting Adjourn

RADM Stephen C. Redd, MD; Director, OPHPR

Samuel Groseclose, DVM, MPH; Designated Federal Official, OPHPR BSC

Thomas Inglesby, MD; Chair, OPHPR BSC