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
OCTOBER 30-31, 2017
ATLANTA, GEORGIA

Contents

October 30, 2017 – Day 1; BSC Fall Meeting

Welcome, Call to Order, and Opening Remarks

Thomas Inglesby, MD; Chair, OPHPR BSC

The Fall BSC Meeting was called to order at 10:08 AM. Dr. Inglesby thanked CDC leadership and staff for organizing the meeting and expressed enthusiasm over the agenda items to be discussed.

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

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

Dr. Groseclose conducted roll call and quorum was present.

Members were asked to notify Dr. Groseclose before leaving portions of the meeting to ensure that quorum is maintained. Per FAC rules, discussions and deliberations are among BSC Members, Ex Officio Members, and Liaison Representatives. Voting is conducted only among the BSC and Ex Officio Members. The public is allowed to comment during the Public Comment portion of the agenda only. 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 form should have been completed and returned to Dr. Groseclose prior to the meeting; if there have been any changes, members were asked to provide updated forms now. Members were asked to identify any conflicts of interest. Dr. McKinney has been participating on a grant through the ASPPH (see APPENDIX C: ACRONYMS for definition of acronyms) with Harvard University. One of Dr. Inglesby's colleagues, Tara Kirk Sell has a grant from OPHPR and Dr. Inglesby is a collaborator on the COPEWELL project funded by OPHPR. Dr. Catherine Stemp is working on the COPEWELL project and worked on University of Washington's PERRCoLATE Initiative, both funded by OPHPR.

Dr. Groseclose also announced that OPHPR's BSC once again has Liaison members representing the Association of Schools and Programs of Public Health (ASPPH) and the Tribal Epidemiology Centers (TEC).The new ASPPH executive director, Dr. Laura Magaña Valladares will be the primary member and Ms. Rita Kelliher, will be ASPPH's alternate member. Dr. Jamie Ritchie, Director of the Tribal Epidemiology Center, Inter Tribal Council of Arizona, Inc., is our new TEC Liaison Member.

Dr. Inglesby gave a brief overview of the agenda before turning the floor over to Dr. Redd for an update.

OPHPR Update and Overview of OPHPR Response Roles and Responsibilities during Complex Emergencies

RADM Stephen C. Redd, MD; Director, OPHPR

Dr. Redd said the past six months have been very eventful. There's a new CDC director, Dr. Brenda Fitzgerald, former Georgia State Health Officer and practicing physician. Eric Hargan, J.D., was named Acting Secretary of HHS to replace Former Secretary Tom Price. Dr. Redd reported that CDC and HHS leadership and administration is coming together making it easier to determine future direction.

The CDC EOC-based Zika response ended on September 29, 2017. There were very few Zika cases in the U.S. in 2017, and cases in Puerto Rico dropped to 300 cases from the previous 30,000 cases seen in 2016. However, even with the decrease in cases, a lot of work still took place to address laboratory issues related to diagnoses. Serology is challenging. Work is occurring to modify the guidance for lab test interpretation and who should get tested. Significant work has also focused on monitoring babies born to infected mothers to understand the full spectrum of the Zika infection and to ensure that mothers can get the services they need. OPHPR is working with the National Center for Birth Defects and Developmental Disabilities (NCBDDD) and the National Center for Emerging and Zoonotic Infectious Disease (NCEZID) on this response.

Hurricane season has also been the focus of a lot of OPHPR's work in the last six months. Although each hurricane response, Harvey, Irma, and Maria, has been very different: there's a life-saving phase, restoring services and/or healthcare services phase, and then a public-health response phase. They are somewhat sequential. To restore medical services, the Strategic National Stockpile (SNS) has been shipping medical stations to areas designated by ASPR, who is serving as lead in this effort. CDC has provided staff through the Commissioned Corps to help with clinical services. CDC has also been informally communicating with state and territorial public health officials to help them navigate the National Response Framework.

OPHPR has also conducted surveillance through shelters and non-routine healthcare structures to identify any issues that require a public health response. It has worked on laboratory issues through the Select Agent Program to ensure that registered entities have secured their facilities. Other issues confronted, as a result of the hurricanes, were carbon monoxide poisonings in Florida due to loss of power and use of generators, an emergence of flesh-eating bacteria in Texas, as well as mold exposure, and in Puerto Rico increased work on immunization services.

The Gotham Shield Exercise, an effort to prepare for a nuclear detonation, was conducted in the last six months. CDC is not a lead in the response to a nuclear detonation but has a major role with regards to risk communication and training on how to shelter in place for the general public. There's a policy question of how hard the federal government should insist that

individuals shelter in place in the case of a nuclear detonation for at least 48 hours. There can be unintended consequences to this type of a notification.

OPHPR is continuing to work on delivery and dispensing countermeasure logistics and planning the establishment of community reception centers as points of decontamination. It is also defining the guidance for establishing registries of potentially exposed individuals. CDC is continuing to determine other areas where it can support the response to a nuclear detonation.

Dr. Inglesby asked about H7N9. In March 2013, China reported the first cases of human infection with H7N9 virus. As of January 2014, most cases were presumed to have contracted the infection directly from infected animals or their environment, particularly as a result of visiting live animal markets. Only a few small clusters with possible human-to-human transmission occurred among family members, but there was been no evidence of sustained human-to-human transmission to date. Cases occurred in a first wave (n=133) from February through May 2013. As of 28 January 2014, the case fatality rate of all confirmed cases was 22%, but many cases were still hospitalized at the time of that report.

This emerging virus led the US to develop a vaccine stockpile and conduct clinical trials to determine dosage and if an adjuvant is needed. A two-dose regimen with adjuvant was found to be necessary. Therefore, in 2014, a stockpile was began.

Beginning in October 2016 China began experiencing a 5th epidemic of H7N9, the largest since the first epidemic in 2013. For the 5th epidemic, the WHO reported 460 human infections as of early March 2017, which accounts for about one-third of cases ever reported since this strain of influenza virus first appeared in 2013. The cumulative total of laboratory-confirmed cases since the first epidemic is 1,223.There was a geographic spread westward to the provinces in the interior of China and some changes in the virus occurred resulting in a vaccine mismatch problem. A decision was made to create a vaccine to cover the new subclade. The concern is the possibility of having a bigger issue with the virus going forward. The virus does, however, appear to not have human to human transmission in the cases that have resulted from exposure to live bird markets.

The ability to work in a unified fashion is essential to a successful response. When working in partnership with other agencies, as well as other divisions in CDC, priorities are not always the same. It is paramount that CDC understands the overall objective or goal that is to be achieved in a response. OPHPR has the responsibility of the Emergency Operations Center (EOC), the state and local preparedness and response program, the Strategic National Stockpile and its logistics, but scientific leadership of each response comes from somewhere else within CDC – dependent upon the Center that has primary responsibility for the hazard that has caused the emergency. OPHPR tries to ensure that those who come to the EOC are well trained. Another goal is to support an organized process for formulating budgets to support complex emergency responses. Programs have to work well vertically as well as horizontally in order to be truly effective.

Interval Updates – OPHPR Division Directors

Greg Burel, BBA; Director, Division of Strategic National Stockpile (DSNS)

Mr. Burel provided the Board an interim update on DSNS's partnerships, activities, challenges and goals.
Partnership and collaboration with Health Industry Distributors Association (HIDA) has been a successful endeavor for DSNS. Recently, seventy-two HIDA attendees participated in 120 consultations with members of Congress to underscore the value of collaboration with the DSNS. Eighty-five top distributor and manufacturer executives continue to encourage stable funding for public health programs such as a public health emergency fund.

DSNS is also working with BARDA and others on Global Healthcare Exchange data, which will provide the market availability of product on a day-to-day basis. Having this data will also illustrate the impact of a crisis on the DSNS at any given time. The Division is also examining raw material and manufacturing risks. In addition, the data exposed that there was no more than a 5% surge capacity in most manufacturing of needles and syringes, which is concerning when considering where some of the materials to manufacture these items come from. Disruption caused by Hurricane Harvey impacted petroleum production, which directly impacts needle and syringe assembly. Lastly, the industry continues to transition further towards the just-in-time inventory models.

The Division is continuing to examine market supply challenges using the Material Product Workgroups. Items like syringes are needed for prevention, treatment, as well as every-day medical care. DSNS can now quantify the impact and risk of not having items such as these readily available. Below is an example of a quantification of risk, when looking at the availability of syringes. This underscores the importance of finding ways to meet demand outside of the market.

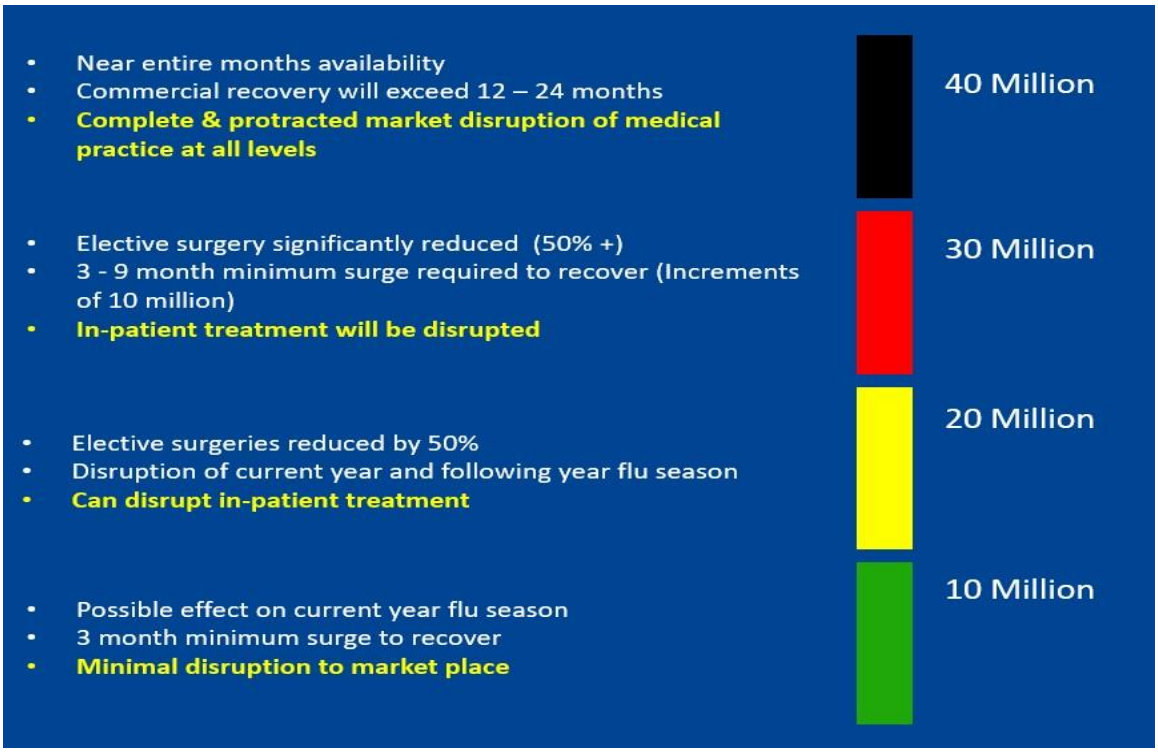


Figure 1. Impact of market demand on availability of syringes.

The Healthcare Supply Chain Association (HSCA) is another new partner to DSNS. This group represents 7,700 acute care providers, which is about 98% of all hospitals in the United States using a group purchasing organization. It also has 68,000 non-acute care partners and $200-billion purchasing power to support care and treatment. The association is currently working with the University of Utah to provide "up to the minute" drug shortage information. They also have participated in the FDA Hurricane Shortage Workgroup. HSCA has asked DSNS to present to its executive board in Irving Texas on November 9, 2017.

DSNS has provided training and outreach to state, local, tribal, territorial governments. Below is an overview of those activities that have occurred in the last six months.

SLTT Distribution and Dispensing Full Scale Exercises

• Rhode Island	May	TA and request for federal assets
• Colorado	June	TA and material (Doxy/Cipro bottles)
• Hawaii	June	Request for federal assistance call

UASI Distribution Tabletop Exercises

• Virginia	June	• Houston MSA	July
• Dallas MSA	July	• Philadelphia MSA	August
• Atlanta MSA	August	• Pittsburgh MSA	August
• Sacramento	September	• Bay Area	September

Receipt, Stage, and Storage (RSS) Course

- Minneapolis, MN June
- Anniston, AL June
- Anniston, AL August

On-line and Virtual Courses:

- Webinars
- SNS Online
- Mass Dispensing
- Closed POD
- Real Opt.
- Quick Learns

To date there have been 3,758 participants and 21 training sessions held. Below is a schedule of the upcoming tabletop exercises.

- National Capital Region November
- Chicago December
- Los Angeles January 2018
- Sand Diego January 2018
- Anaheim/Santa Ana January 2018
- Riverside January 2018
- Boston FY18
- Jersey City/Newark FY18

Mr. Burel then briefed the Board on DSNS' response activities to hurricanes Harvey, Irma, and Maria. Most of the work has been around federal medical stations (FMS), liaison officers, and FMS strike teams. For Hurricane Harvey, DSNS made 1,500 beds available. Resources were deployed as of September 2, 2017 (landfall August 25). For Hurricane Irma, 1,100 beds were staged for non-acute care for FMS. Those items were deployed on September 13, 2017 (landfall September 10). A number of beds in both hurricanes were not used and have been returned to stock. Hurricane Maria, however, has been DSNS' biggest endeavor this year. The following infographic was created to explain the work completed by the division.

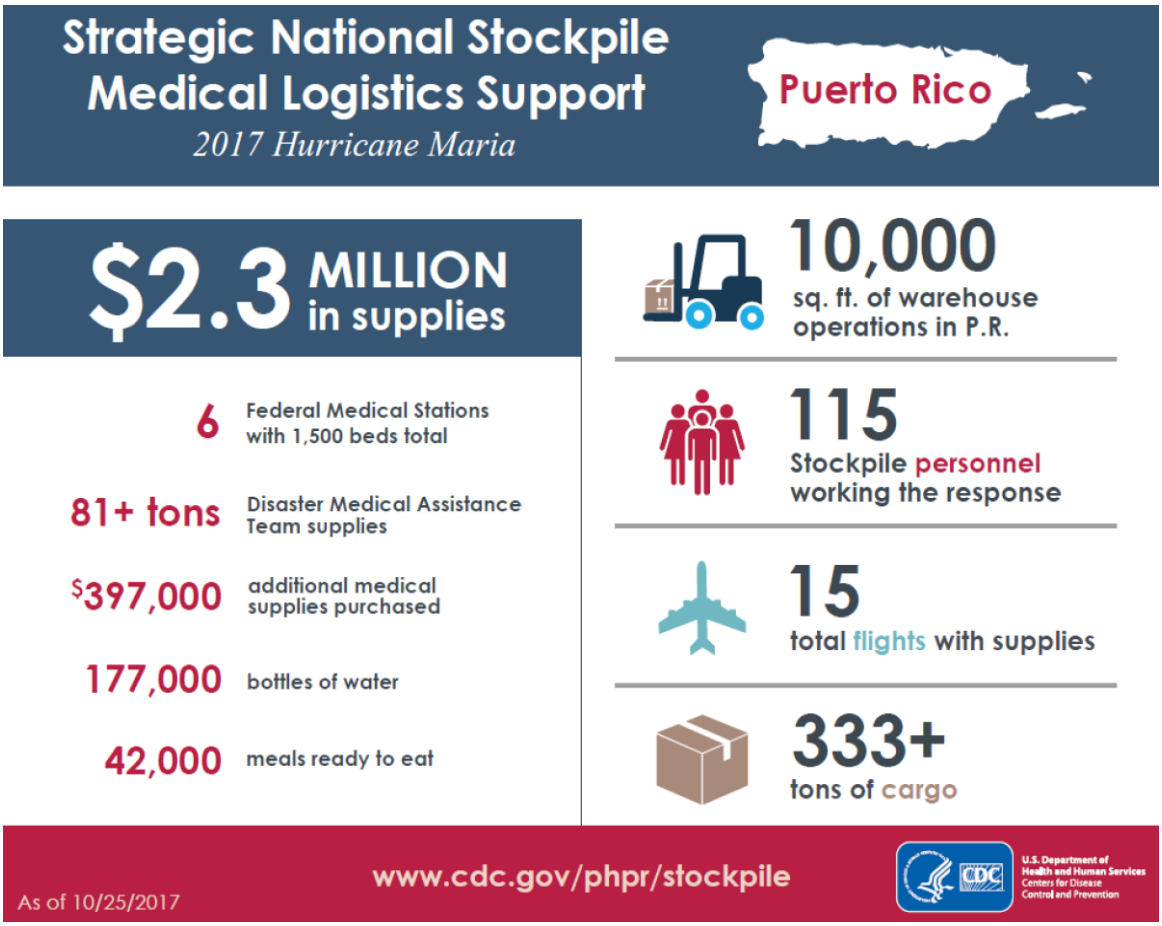


Figure 2. Snapshot of Hurricane Maria's impact on the response in Puerto Rico.

The 2017 hurricane response resulted in some collaborations, brought to the forefront policy issues, and uncovered some challenges. DSNS collaborated with the United Parcel Service (UPS) to provide airframe availability and ground services. The Critical Infrastructure Program (CIP) alliance garnered opportunities to transfer supplies and materials. Policy issues that need to be addressed were around reimbursement for CDC responders due to financial system's end of year procedures and examination of the HHS EMG Logistics contrasted to DSNS' contracting capabilities for services. One challenge that DSNS continues to encounter in large responses, like Hurricane Maria, are limited semi-trailers and available aircraft. There's a lot of competition among agencies for these services. Fortunately, DSNS to date has not had to ask FEMA to exercise Defense Production Act (DPA) authorities.

He ended with the following summary of the 2018 initiatives and goals, which are as follows:

- Continue to build Public-Private Partnerships to address:
    - Just-in-Time supply chain as related to public health emergency response
        - DSNS as a buffer
        - Manufacturing surge
        - Understand market capabilities (by product)
- Improve technical assistance and communication to State and Local Partners

    - Right training, information, and guidance is available before and during a response
- Align requirements to stable funding ensuring DSNS capabilities are maintained

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

The Division published its final rule in the HHS/USDA amendments to the select agent regulations on January 19, 2017. It became effective on March 21, 2017. The addendums included modifications to the toxin allowable limits, addition of specific requirements that must be followed for the inactivation of select agents, recent requirements added to the biosafety sections, and amplifications to the governing language regarding security, training, incident response, and records.

In response to the inadvertent shipment of live *Bacillus anthracis*, FSAP enhanced regulatory requirements regarding inactivation. Entities must confirm their inactivation or select agent removal processes internally through viability testing. Guidance on how to validate procedures and protocols, and confirm inactivation or select agent removal can be found at Select Agents Guidance. This will be a living document that is updated routinely.

With regards to inactivation requirements, if there is failure of an already validated inactivation procedure, there is a requirement to contact the FSAP. Another addition is the use of inactivation certificates and intra-entity transfers. A signature will be required by the principal investigator on the inactivation certificates. The investigator should hold the certificate until the material is fully utilized. In addition, surrogate strains can be used to validate the inactivation procedures.

On August 14, 2017, an updated policy statement was issued on *B. anthracis* inactivation. This is an update to the April 2017 version of the policy. The update addresses inactivation of *Bacillus anthracis*, including *Bacillus anthracis* Pasteur strain and *Bacillus cereus* Biovar anthracis. The modification explains the policy exclusion for certain inactivated material, eliminates the kill curve and neutralization curve requirements, and clarifies other language throughout (non-substantive changes). The update can be viewed at Select Agents Policy Statement-Bacillus

Program improvements for this year are similar to those in the past. The emphasis is being placed on accomplishing the following:

- Improving entity oversight, including facility inspections and inspection reporting
- Improving customer service
- Improving incident response
- Increasing transparency and engagement

Updates to the improvements can be found on the DSAT website at DSAT Review Initiatives.

DSAT's Report Card Pilot Project commenced in October 2016 and has now concluded. This trial was intended to be an enhancement to the full inspection report, in order to offer a synopsis of any regulatory departures and to illustrate how performance compares to similar entities. The Division issued approximately 50 report cards.

The Severity Spectrum and Enforcement Options is a device that provides examples of serious/moderate/low risk departures along with enforcement actions. It is not all-encompassing and is intended to do the following:

- Boost consistency across inspections
- Bring about improved characterization of the overall severity of inspection findings
- Increase awareness in the regulated community of how performance and violations are graded
- Guarantee enforcement actions are appropriate given the violation severity

Several examples were provided of the Severity Spectrum and Enforcement Option. A serious departure, for example, would be the discovery of biological select agents or toxins (BSAT) in unregistered space and/or possession of BSAT without approval. A moderate departure illustration is an insider threat awareness training not provided to staff by entity registered for Tier 1 agents. Lastly, a low departure would be something similar to shipping and receiving instructions not being described in the security plan. A draft of the Severity Spectrum and Enforcement Options were shared with the regulated community for assessment and feedback in June and October 2016. This document was also shared with external panels and will be finalized in September 2017.

The 2016 DSAT Inspection Report Processing Annual Summary was released May 2017. This is the second annual analysis of inspection report with regards to timeliness. Key findings from the assessment included the following:

- DSAT made considerable enhancements in its ability to provide timely feedback to entities.
- Improvements in report timeliness occurred across all inspection types where there was room for improvement.
- Inspection type is a dependable predictor of report timeliness, with intricate maximum containment inspections taking longest.

The Division will need a few more years of this type of assessment to really ascertain how well it's doing.

The second annual report of aggregate program data was published in October 2017. It provides continuous insight into the labor conducted with biological select agents and toxins at laboratories across the nation, as well as how the program provides regulation and oversight of these laboratories. It also mirrors FSAP's ongoing commitment to increasing transparency.

DSAT will take part in the 2017 Responsible Official Workshop. This workshop will have in attendance Responsible Officials (ROs) and Alternate Responsible Officials (AROs). The workshop will be held on November 28 through 30, 2017 in Riverdale, MD at the APHIS headquarters.

The Division has also revised the APHIS/CDC Form 3. This form is utilized by entities to report theft, loss, or release of a select agent or toxin. The updated form will further clarify what needs to be reported as a "release" and "loss". Furthermore, the form includes fields to aid with categorizing the type of release, such as spill within secondary containment, release due to failure of inactivation, occupational exposure, possible breach of facility containment, type of exposure, and the understanding of safety and security risk levels relative to human illness. The announcement was published in the Federal Register. The public comment period concluded on September 2, 2017. The form must be approved by the OMB before it's implemented.

The eFSAP information system is transitioning to a new secure information system that will cover select agent program information from all registered entities including DSAT and AgSAS. It is currently being rolled out to ROs and AROs at registered entities. The items related to Form 1 and Form 3 are now available to those users, with additional functionality soon to follow. Later this year, the system will become available to users at non-registered entities as well. The new secure system offers the following advantages:

- Secure, web-based user interface (portal)
- Decreased paperwork
- Improved ease of validating and submitting information
- Reduced processing time for requests
- Increased efficiency
- Searchable; will provide immediate, real-time information on who has what select agents, and where

In response to the recent hurricane events, all FSAP-registered entities are required to develop and implement an incident response plan based upon a site-specific risk assessment. During emergencies such as hurricanes, FSAP will conduct pre-and post- checks with entities in the path of the storm. Prior to the storm, the goal is to ensure there are no biosafety or security concerns that require assistance, such as transferring select agents to another facility. After the storm, the main concern is whether or not the entity's facility operation was interrupted by events such as power outages. For Hurricane Harvey, DSAT contacted 17 entities. For Hurricane Irma, it contacted 24 entities, and in the case of Hurricane Maria, one entity. All entities confirmed that no assistance was required from DSAT and their facility operation wasn't disrupted. None of the entities reported issues that jeopardized the safety or security of select agents and toxins stored at their facilities.

Below are the priorities for DSAT going forward:

- Continued focus on routine program functions (inspections, amendments, import permits, etc.) to ensure the safety and security of work with potentially dangerous biological agents and toxins
- Continued focus on implementation of amended select agent regulations, including inactivation provisions
- Continued focus on inspector training
- Continued development, implementation, and refinement of new electronic information systems (eFSAP and eIPP)
- RO/ARO training in November (eFSAP, agent inactivation)

Recommendations/Comments from BSC to DSAT:

- The second annual report of aggregate program data that was distributed to the Board was very well done and transparent.
- Board had a concern about the terminology "release" and if could be defined differently to avoid confusion.

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

The purpose of Ms. Kosmos' presentation was to review the update of the Public Health Preparedness Capabilities, examine the Operational Readiness Review (ORR), go over the PHEP Impact Project, and talk about how DSLR is commemorating the last 15 years of the PHEP and DSLR's role.

The Public Health Preparedness Capabilities were an attempt to define the state and local public health departments' responsibilities in an emergency and to define the core capabilities that each locality should possess at a minimum to effectively respond to an emergency. Since their development in 2011, there arose a need to refresh the capabilities in lieu of the most recent guidance documents and literature now available. The revisions to the capabilities include the following:

- Revise Executive Summary to describe purpose and operational use of the capabilities (logic model)
- Simplify and streamline language without loss of meaning
    - Replace passive tense with active tense
    - Change "written plans should" to more descriptive terms
    - Maintain concepts related to "have and have access to…"
- Update with current guidance, standards, and suggested resources
- Expand cross-cutting and intersecting program areas such as environmental health, vulnerable populations, tribal populations, and pandemic influenza
- Describe resource elements and tasks, as needed

Below is a timeline for the enhancement to the capabilities.

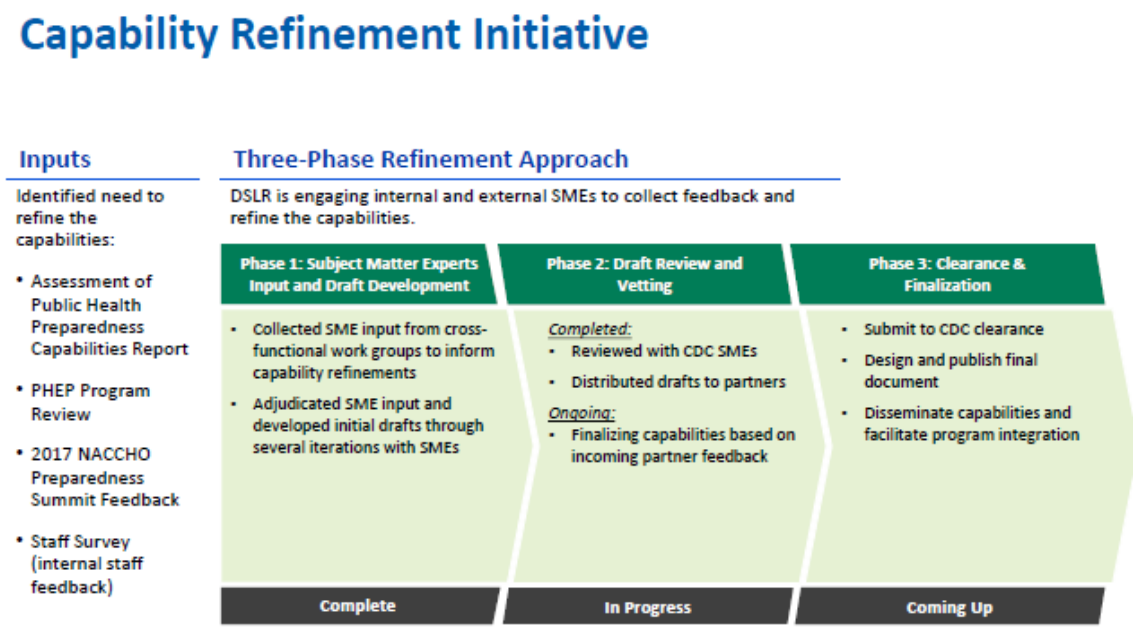


Figure 3. Capability Refinement Initiative.

The Operation Readiness Review is a process for assessing the readiness of state and local health departments for a large-scale medical countermeasure release. It is meant to be an agile process for continuous quality improvement. It will include constant feedback from internal/external MCM subject matter experts, such as ASTHO, NACCHO, and DPHP Executive Committee to promote improved processes and systems. Data Collation and Integration for Public Health Event Responses (DCIPHER) has been contracted to build a comprehensive informatics system that is capable of tracking and monitoring a continuous cycle of improvement. Also included was beta testing with MCM subject matter experts and recipients to provide useful feedback/modifications.

Below are a few examples of improvements made using the ORR.

Data Collection Improvements

MCM ORR Issues	2017 Improvements
SharePoint was problematic and not user-friendly	Online web-based tool (DCIPHER) • Secure access (SAMS credentials) • Real-time access — awardee can access 24/7 • Interactive comments (awardee/reviewer) documented
Challenges saving data (User and CDC)	• In-process ability to save • Timestamps • Maintains historical information • PDF upload (for sites with connectivity issues)
Printing challenges	• Includes printing functionality
Inconsistent ability to submit documentation	• Documents directly uploaded in the system • One-stop shop for all MCM data
Lack of clarity and real-time info on an awardee's status	• Awardee dashboard summary • Functionality includes ability to provide status level in real-time

Figure 4. Data Collection Improvements.

Content Improvements

MCM ORR Issues	2017 Improvements
Bundled questions	• Unbundled questions for discrete measurement
Inconsistent interpretation of questions	• Enhanced guidance incorporating tips for interpretation into the system
Questions not tailored to jurisdictional type	• Jurisdictional type-specific questions developed
Inconsistency of reviewers	• Consensus building with DSLR MCM staff • In-person training for 62 PHEP recipients in Atlanta, July 2017 • Webinars for additional reviewers and stakeholders

Figure 5. Content Improvements.

The next steps for the ORR will include:

- Integrating fundamentals related to pandemic influenza
- Extending the ORR to address all 15 public health preparedness capabilities
- Employing the ORR as an instrument for all PHEP program evaluation
- Acting collaboratively with other offices within CDC to include extended subject matter areas:

- Radiological/nuclear emergencies
- Other naturally occurring or intentional threats

Ms. Kosmos then updated the Board on the PHEP Impact Project. As a reminder, the PHEP Impact Project was created to assist with messaging, outreach, and education. The goal of the project is to:

- Create clear and compelling messages about the impact of the PHEP Program on state and local preparedness and response efforts;
- Plainly convey the role of public health in ensuring the health and safety of the community during a public health emergency; and
- Develop an outreach and education strategy to educate key decision-makers and to be able to speak in a unified voice.

Communication materials have been developed to support outreach to DSLR's targeted audiences. The project team has developed the PHEP Program one-pager template and worked with states with key congressional representatives to complete 7 of 11 proposed one-pagers. The team then compiled the one-pagers into a Hill Visit package to be presented to Congress. They are now devising ways to bring in more colleagues to do more education and advocacy work. Another product created was the PHEP Program, PAHPRA, and Emergency Fund talking points, which can be utilized when talking to different stakeholders and decision-makers. There have been some other successful interactions with DSLR's stakeholders and target audience. The Division convened the PHEP Impact Project huddle during the 2017 Preparedness Summit and facilitated a Hill visit with six key congressional representatives on October 10, 2017. They will be collaborating with ASTHO on future Hill visits and are planning a 2018 Preparedness Summit Town Hall session.

DSLR also wanted to reflect on its 15 years of work on the PHEP. A communication strategy was developed for DSLR with the aim of reaching a wider audience utilizing various methods and channels. The Division is also utilizing a myriad of promotional activities such as:

- Feature articles and blog posts
- Social media messages
- Web-ready graphics
- Posters and banners
- Success stories
- Videos
- Commemoration event
- Special supplement on the American Journal of Public Health

Ms. Kosmos closed out her presentation with a video, which was created to commemorate the 15 years of the PHEP Program.

Recommendations/Comments to DSLR from the BSC:

- It's nice to see the evolution and appreciate the leadership from DSLR and the division allowing the states and locals to have input. The PHEP Impact Project has been excellent and we have utilized it in our states and at the local level. It's been a great opportunity to utilize it. It's been well received in our annual reports because it's one page with key messages and found to be very effective and useful.
- Video is spectacular and can further promote the PHEP Program and educate decision-makers, leaders, and other necessary partners, who haven't been as engaged and why their participation is important.

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

Mr. Bryant opened by presenting data on the number of responders deployed for emergencies from 2011 to present day. DEO has closed out the EOC-based Zika response and is now focusing its efforts on the recent hurricane events: Harvey, Irma, and Maria. Thus far, 163 individuals have been deployed to assist with the hurricane response efforts.

Since the Zika response is ending, Mr. Bryant was able to provide a snapshot of the work completed to respond to the Zika virus outbreak. This was roughly a 20-months endeavor and lasted almost as long as Ebola. The two slides below provide insight on the amount of effort required to respond to the outbreak.

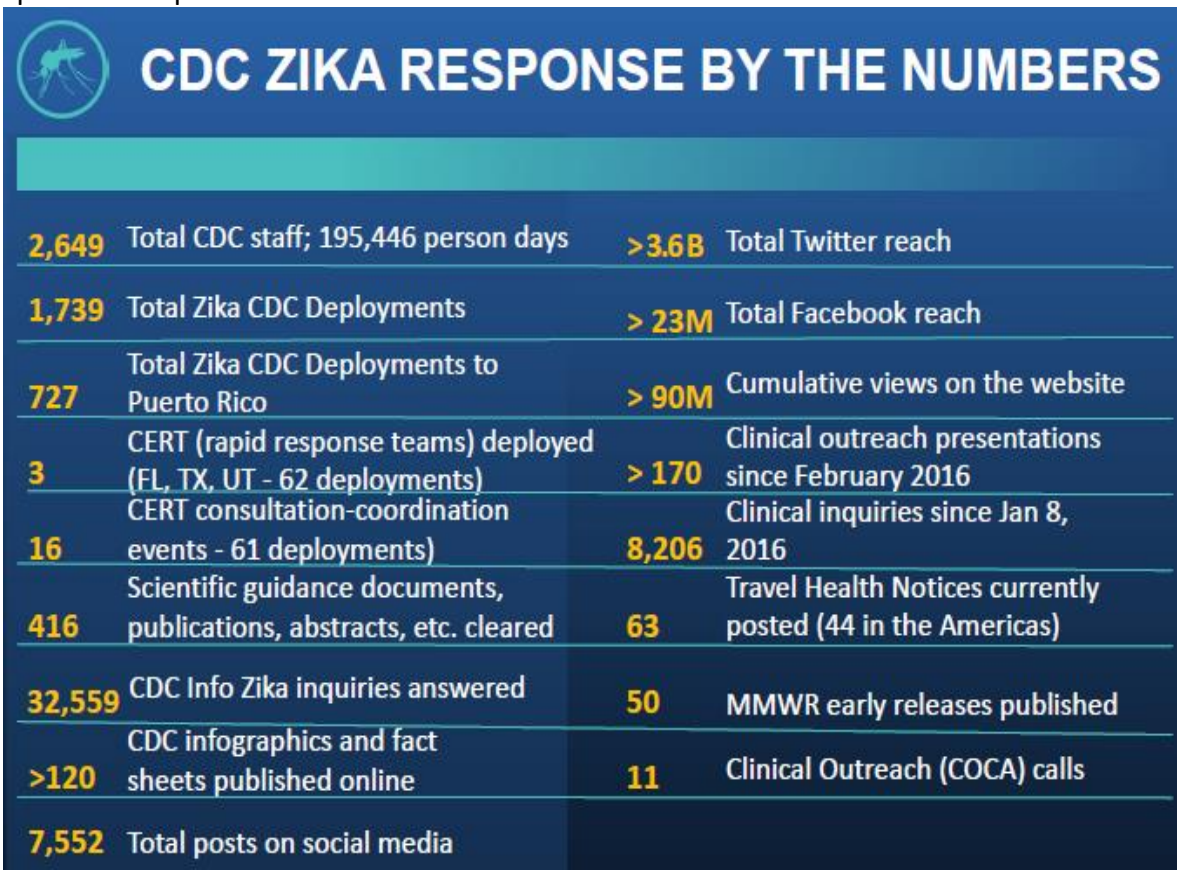


Figure 6. CDC Zika Response by the Numbers.

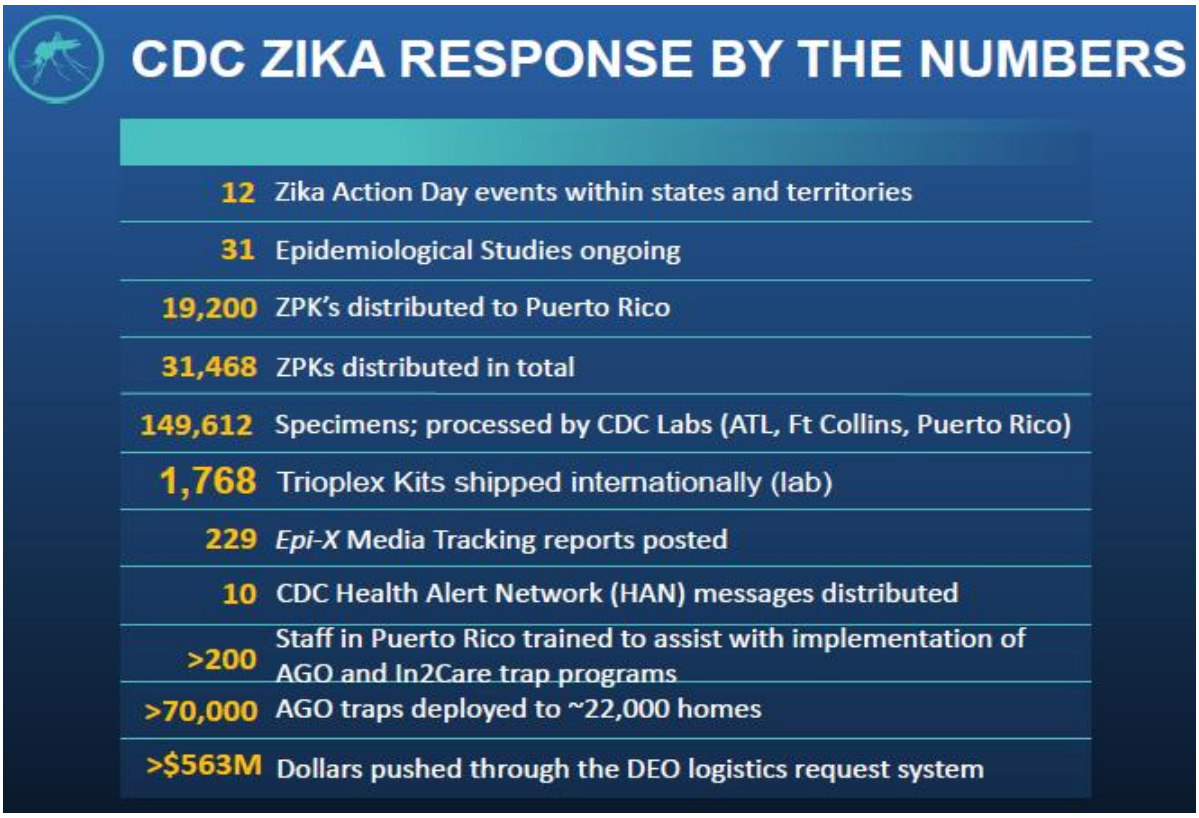


Figure 7. Continued - CDC Zika Response by the Numbers.

When it comes to the hurricanes, Hurricane Maria was the game-changer for DEO. Responses to natural disaster or emergency missions begin with the federal medical stations and strike teams. The strike teams help the local jurisdictions set up the federal medical stations. In addition, a cadre of Commissioned Corps officers are deployed. Once those two initial tasks are accomplished, the DEO moves into the deep public health response tasks associated with CDC's mission. DSNS has fulfilled the role of logistic manager for a lot of the HHS work. This work needs to be captured and institutionalized. DSLR is always the lead for state, local, tribal and territorial coordination and the same held true for the hurricane response as well. In Texas and Puerto Rico, much of the work now is related to environmental health and infectious diseases.

Below are some of the challenges incurred as a result of Hurricane Maria:

- Devastating damage
- Response/recovery tensions
- Reduced/loss medical capacity
- Geography
- Political considerations
- Small public health staff
- CDC facilities
- CDC staff living in impacted area
- Stafford Act operations
- New administration

- A decade since last bad year
- Patient movement (dialysis)

DEO currently is the only federal entity approved by the Emergency Management Accreditation Program. The next inspection or assessment will be in June 2018. Preparing for this assessment has to be done on top of the other response and risk management work that is already occurring in the DEO. This is a very taxing task.

Since the last BSC meeting, the DEO has been in consultation with business continuity management firms, like UPS, Goodyear, and even DHS. DHS' risk management work failed and understanding how it failed and why it failed has been as valuable or more valuable to DEO than understanding the best practices that are available. Outside of the financial sector, there is no one doing this well. Mr. Bryant reviewed an infographic that explained CDC's risk profile, which is provided below. The four areas in orange are the highest priority areas: budget environment, emergency response, lab safety and quality, and information security. DEO leads the emergency response area.

Figure 8. Ten CDC Risk Profile for 2017.

Over the last five months, input compiled from the ERAMMP, the Ebola after action work, and the Excellence in Response Operations (ERO) has advanced the DEO's understanding of the risks to CDC's ability to implement an emergency response.

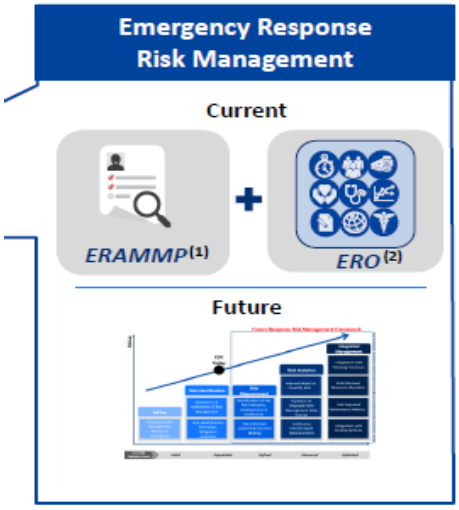
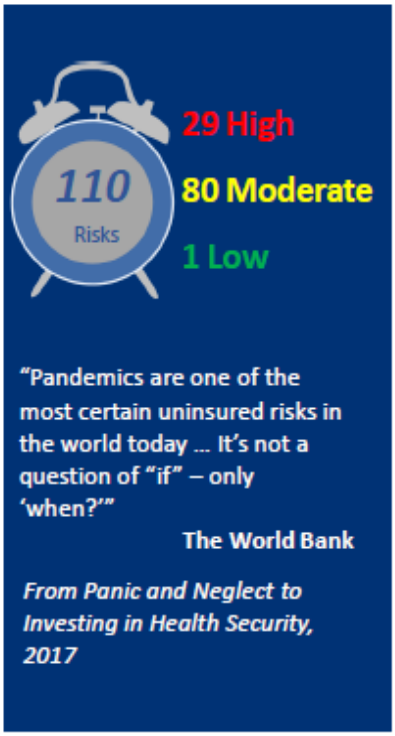


Figure 9. Emergency Response Risk Management Process.

Examining the assessment in this fashion resulted in the identification of 110 individual risks. These 110 risks were grouped into high, moderate, and low risk areas. Below is a categorization of those risks.

ERO Risk Statements at a Glance



Functional risk area	High
Resource management	11
Personnel	10
Centralized coordination	5
Planning	2
Infrastructure	1
Functional risk area	**Moderate**
Data management	20
Centralized coordination	16
Infrastructure	12
Personnel	10
Resource management	10
Planning	9
Capacity Building	3
Functional risk area	**Low**
Centralized coordination	1

Figure 10. ERO Risk Statement at a Glance.

CDC has become a public health agency with a response mission. With the emergencies it has had to respond to, the agency has set a level of expectation to the world on its ability to respond to an infectious disease outbreak or other types of events. Unlike other federal agencies such as DoD and DHS, which have a dedicated body of responders, surge staff, and funding, CDC has a volunteer staff for deployment, a volunteer surge staff, and no dedicated funding. That is a vulnerability for the agency and affects its ability to be successful. Mr. Bryant shared CDC's maturity model for risk management. It illustrates how far the agency has come in risk management and the next steps towards maturity.

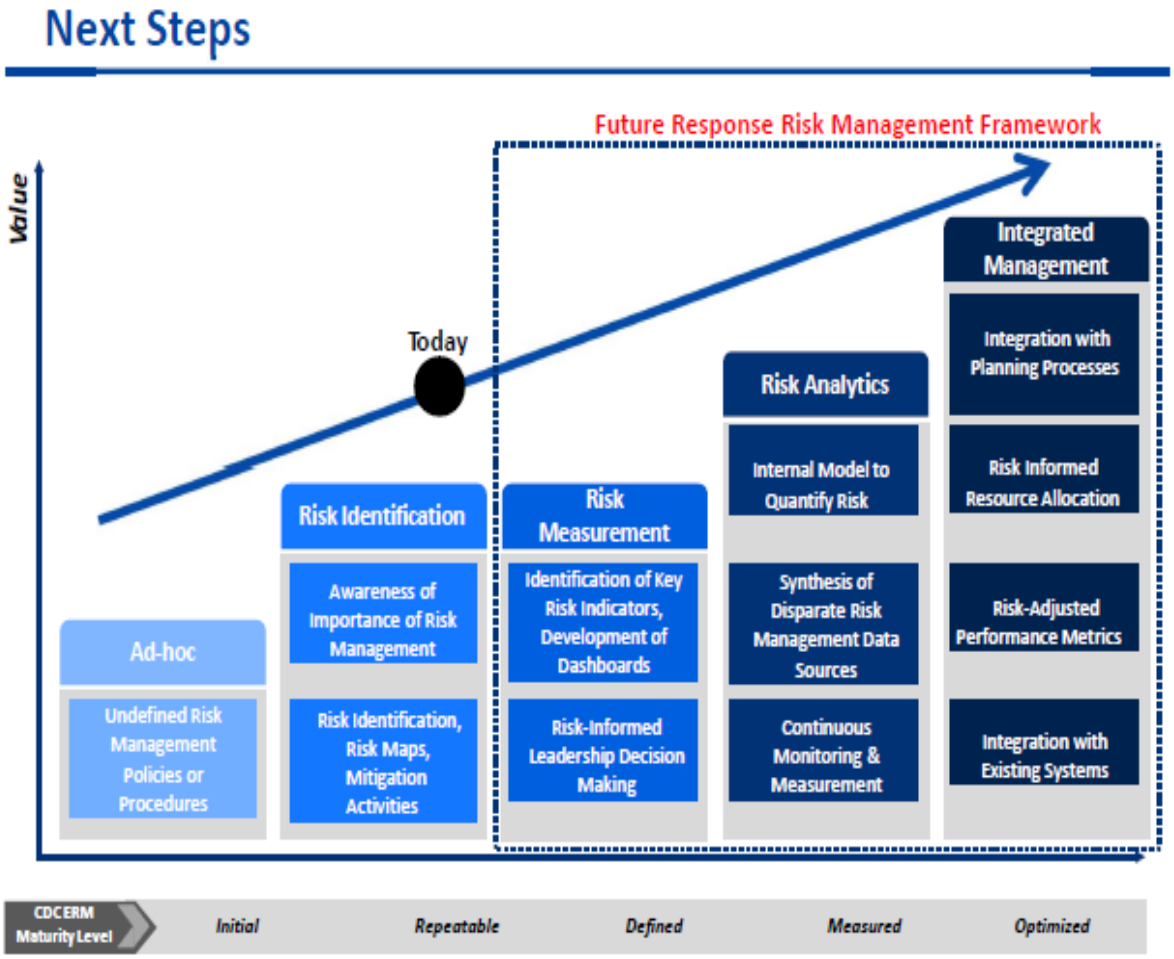


Figure 11. Risk Management Framework.

He concluded his presentation reviewing the work activities around the Global Health Security Agenda. So far, DEO has trained 70 officers around the world through the PHEM Fellowship Cohort. Another cohort will graduate this week. DEO is also still engaged in phase I GHS countries around the world. It conducted its largest regional exercise in June 2017 in Cameroon.

There have been eight international countries that activated since 2016, which resulted in 14 activations. In those countries, DEO has helped them advance their emergency management

programs. This type of work makes it easier to talk to the new administration and Congress about the value of the Global Health Security Program and the importance of continuing its work.

Biological Agent Containment Working Group (BACWG): Update

Dawn Wooley, PhD; BACWG Co-Chair, BSC member
Alison Mawle, PhD; Chief, Polio Containment Activity, OPHPR
Samuel S. Edwin, PhD; Director, Division of Select Agents and Toxins

Drs. Wooley, Mawle, and Edwin provided an update on the Biologic Agent Containment Working Group. This group was formed at the May 2017 BSC Meeting. Member recruitment occurred from July – August 2017. The group held its introductory teleconference on September 14, 2017 and a pre-meeting teleconference on October 20, 2017. The first in-person will occur on November 1, 2017.

The BACWG is made up of the following members:

Co–Chairs: Dawn Wooley, PhD (BSC member) and Alonzo Plough, PhD, MPH (BSC member)

External Membership:

- Nancy Connell, PhD
- Joseph Kanabrocki, PhD, NRCM(SM)
- Marc Lipsitch, PhD
- Jill Taylor, PhD
- Colonel Neal Woollen, DVM, MSS, PhD
- Laurie Zoloth, PhD

Additional BSC Membership:

- Tom Inglesby, MD
- Suzet McKinney, DrPH, MPH
- Catherine Slemp, MD, PhD

CDC Liaisons:

- Samuel Edwin, PhD
- Alison Mawle, PhD

The Biological Agent Containment Working Group (BACWG) will provide advice and guidance to the BSC/OPHPR regarding OPHPR efforts to improve and ensure biosafety and pathogen security associated with biological select agents (BSAT), importation of infectious materials, and containment of polioviruses in the following areas:

- Independent expert input to program operations in Division of Select Agents and Toxins and the Polio Containment Activity

- Review and vetting of select policies and reports to ensure that these products translate into meaningful requirements and guidance to promote effective containment and mitigation efforts
- Representing the community of legitimate users of these infectious materials to ensure awareness and balance between risks to public health and safety and the urgency of research and product development.
- Identify research priorities for biosafety and security operations
- Provide guidance for oversight of emerging risks (e.g., gain-of-function and genome editing)
- Provide a flexible resource for input during emergency situations that require effective containment of biological agents while ensuring sufficient availability to support emergency response

Topics for consideration are as follows:

- Entry Requirements for DSAT Inspectors Entering Facilities containing Select Agents and Toxins
- Polio Containment Activity (PCA) seeks guidance and recommendations on policies that will clarify expectations for complying with GAPIII elements where the element is intentionally broad and general

Below is a snapshot of the proposed agenda for the November 1, 2017 in-person meeting.

Figure 12. BACWG Agenda.

Office of Policy, Planning, and Evaluation Stories Project

Stacey Hoffman, MPH; Office of Policy, Planning, and Evaluation, OPHPR
Kathryn Gallagher, BS; Associate Director, Office of Policy, Planning and Evaluation, OPHPR

Ms. Hoffman and Ms. Gallagher co-presented on the Stories Project. Ms. Gallagher began with the budget and legislation update. The President budget has been released for fiscal year 2018. CDC across the agency had over $1 billion of proposed cuts and OPHPR was not spared in those reductions. The President recommended $139 million in cuts to OPHPR overall, which includes $109 million cut to the PHEP Program, $8 million cut to the Preparedness Research Program, and $21 million cut to the CDC Preparedness and Response capacity. Proposed level funding was given for the SNS. The House and Senate have marked up their own bills and they did not take up most of the President's recommendations. The Senate showed most lines leveled and held CDC level across the board. The House marked up a $20 million increase for the PHEP Program, $25 million increase for SNS, level funding for CDC Preparedness and Response Research. CDC is currently working under a continuing resolution through December 8.

For FY19, OPHPR is still in the President's budget formulation phase. The HHS proposal is with the Office of Management and Budget. Their brief should be received before the beginning of next calendar year. The President's budget should be released in February 2018.

In terms of legislation and the PAPHA reauthorization, the Office has been working internally on proposals and doing cross-department collaborations and debates about various programs going forward. This will continue.

Dr. Redd testified as a CDC witness before the House Energy and Commerce Oversight Subcommittee about the hurricanes last week. On November 2, 2017, Dr. Edwin will testify before the same subcommittee regarding the Select Agent Program.

Regarding partnerships, a lot of meetings have occurred on a staff-to-staff level with partners and Dr. Redd has conducted leader-to-leader meetings. For the first time, a cooperative agreement has been made with the National Governors Association to hold a series of policy academies. Five to seven states will bring team members, who represent individuals from their legislative and executive branch and others to work on identified policy issues around preparedness. The RFP will be released soon. The Office recently met with NGA to formulize the announcement and process for the states that are coming. The states will bring their own issues and CDC will suggest work for the states as seen from CDC's vantage point. Ms. Hoffman asked the board to chime in on any state-level policy issues they have identified that need to be addressed.

Ms. Stacey Hoffman updated the board on the progress of the Storytelling Initiative. This project was started as a result of feedback from the BSC. The target audiences, for the stories, are policymakers, particularly members of the House and Senate Appropriations Committees. These stories, along with data, help illustrate the impact that tax dollars are making on preparedness efforts. Stories also help CDC's key partners advocate for CDC's programs.

Storytelling is being utilized across the agency. For OPHPR, preparedness stories are included in its annual report called Snapshot, as well as on its partnership website. The Communications Offices produces the Public Health Matters Blog and posts of preparedness stories. DSLR has published stories on the website as well and shares links on the partnership website. Short accomplishment stories are included in budget narratives and are featured in the monthly e-newsletter. Stories are also used as part of the partner communications.

The Office has created a strategic plan for the Storytelling Initiative, which includes the roles and responsibilities of the office. The vision is to ensure members of Congress, their staff, and key policy partners are knowledgeable about the impact of CDC's public health preparedness work so that they are in a position to support its programs. The objectives are as follows:

- Develop and maintain a clearinghouse of story leads and stories.
- Draft vignettes for PHEP-funded grantees that show a clear link between OPHPR investments and public health impact.
- Create formatted one-page stories that show a clear link between OPHPR investments and public health impact.

The Office's goal is provide a clear illustration of impact. The stories should answer questions such as:

What exactly did CDC funding buy?
How is the success linked to CDC's role?
What would have happened if CDC did not fund this project?

It will steer clear of feel-good stories that could be viewed as a waste of money or stories where CDC's role isn't clearly defined. It will also not utilize stories that cover controversial subjects. The Office will act as a clearinghouse for success stories, which will minimize duplication and allow for categorization of stories. It will also formulate vignettes, which can be easily shared through links. The Stories Project will format one-pagers that showcase the successes of the Divisions and can be used as a talking-point tool when speaking to congressional leaders. The Office has been working closely with DSLR on a storytelling platform that shares stories from the field and the impact of the PHEP Project. It will soon begin work with other divisions like DEO, DSNS, and DSAT to do the same.

The Office left the BSC with some discussion questions:

- What feedback do you have for us about our storytelling initiative?
- What do you see as priorities for storytelling?
- Are there any objectives that we are missing?
- Can you suggest other ways we can share impact stories?

Recommendations/Comments from the BSC to OPPE:

- Learn from other entities like the public and private sectors. MasterCard said they're shifting from storytelling to story making. I think what that means is engaging the audience into being a part of the story. For example, a person uses their card to buy something for their grandchild, like a tutu. And they talk about how much the tutu cost and the tickets costs for the recital, but the value of the experience and being a part of their grandchild's recital, development, and growth is priceless. Figure out ways to pull the value piece in. Simon Sinek (Ted Talk; author, motivational speaker) suggests starting with the question of why. Instead of communicating on what we do and how we do it, instead focus on why we do it. What's the driving force and why it's important to us? This will get to the common human values that we all have.
- It's important to measure that we're making a difference and we're impactful, so we need to be able to measure that impact. Talk to marketers. You may be able to gather information from them to ensure that you're making a difference.
- Have a person, who is a pretty good storyteller, to deploy as well during the response. They can blog about what's going on in the field real-time. If this is already occurring, it needs to be more publicized so that people know what their tax dollars are doing.
- Get a sense of Congress' interests.
- The kinds of questions Congress expresses shows they do not have a good understanding of each of the functions of the agencies that collaborate during a response and how they function together. A better understanding of the functions of the agencies may help Congress comprehend better the impact of funding cuts and how they impact the overall goals of preparedness. There needs to be better methods for collaborating on messages as an interagency group to help define and clarify the roles and what it means all the way down to the SLTT level.
- I would suggest not calling this the "Stories Project". Maybe public health wins or success or accomplishes may work better. Story is the method, but the real emphasis is on the wins. CDC emphasized that the "stories" word is purely internal and is not used externally. Stories helps internally in understanding what's needed.

Preparedness Updates from Liaison Representatives

The update from Liaison Representatives changed slightly. Representatives, in addition to providing an update on their agency's activities since the last meeting, were asked to answer the following questions:

1. What public health preparedness and response recovery related issues do you want OPHPR to be aware of from the prospective of your organization?
2. What are your challenges and where might OPHPR assist?
3. What is on the top of your organization's after-action report and/or task list of priorities

that needs to be addressed to improve response? Think about this in the context of the recent response, and if so, point out a couple of priority issues that our board and OPHPR should be aware of and weigh in on.

4. What are one or two issues that went well or less well with regards to interactions between your organization members and local, state, or federal public health system partners, such as OPHPR, with respect to emergency preparedness, response, and recovery?

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

Dr. Egan furnished some brief comments on the priority items for APHL. Due to funding through CDC's Epidemiology and Laboratory Capacity (ELC) program, a number of new biosafety officers are in many of the public health laboratories, which is helpful for those labs that did not have a person assigned this responsibility. APHL has been working with the biosafety officers and providing training, coordination, and better mechanisms for them to communicate with one another.

APHL has also been involved with the Global Health Security Agenda by providing biosafety training to a number of different countries in Africa. It is also working on a twinning project, where individuals come from their home laboratories to spend some time in the States' public health laboratories. Once trained, participants return to their home country and additional individuals from their labs are sent to the States to be trained as well.

In response to the recent hurricanes, APHL has been aiding multiple jurisdictions. Request for assistance has come mainly from Puerto Rico for infectious disease testing and newborn screenings. APHL is helping to coordinate the requests.

In coordination with CDC, APHL deployed a team of three state laboratory directors as well as one APHL staff member two weeks ago to the public health lab in San Juan. This was to assess their current laboratory needs, provide guidance, and support their recovery efforts. The four individuals were providing a systems assessment of the laboratory in both environmental health, infectious disease, as well as operations.

In regard to the questions posed, APHL highlighted a few challenges. The first deals with test result recording, which has been an ongoing problem. APHL is working with CDC, as well as it partners in local and state public health laboratories. The deficiencies in the reporting systems are really magnified during events and crises.

The second challenge is the multiple laboratory reporting streams and information systems supported and used by CDC. There's ArboNet and LRN Results Messenger; even Excel spreadsheets that are sent to various programs within CDC. It would help to not have multiple reporting systems.

Another recent challenge, especially with Zika, is coordination of lab resources across CDC. APHL works with many groups in CDC. It can really be a challenge to coordinate between the different groups, just with respect to laboratory needs. So, coordination of laboratory issues between CDC programs and state public health laboratories would be very helpful.

After examining its after action reports, APHL will work on engaging its clinical partners and having agreements prior to events, which will help facilitate surge capacity testing and result recording. Another goal is to nationally coordinate with CDC subject matter experts on a coordinated approach to lab testing. If laboratory services and communications can be better integrated into the CDC/EOC that would result in a more coordinated response. APHL would also like to see that the public health laboratories become engaged to help evaluate methods and equipment for emerging agents. This can assist public health labs in being able to get their methods out and validated quickly, as well as streamline the system for result reporting and relieve the data entry burden.

Dr. Egan said the calls facilitated by CDC State Coordination Task Force were a success. The CDC staff was really flexible and addressed all of APHL's needs. The routine phone calls were held at least twice a week, and involved topnotch emergency response personnel. Also, the availability of DoD during the Ebola response and having an asset that could be deployed with CDC to the state public health and local public health laboratories worked well. There needs to be more engagement and coordination between federal agencies.

APHL indicated several areas that still needed improvement: a coordinated approach for laboratory response among the CDC SME's and advanced engagement of other federal agencies, such as DoD, FCA, and others. This is especially important for a better response to emerging agents. APHL highlighted the laboratory's role in ensuring safe drinking water and safe food; APHL could become more engaged with CDCD on these topics.

Comments from CDC:

- Things like common data fields and standardization across CDC might be a place where there could be some leverage. The other thing is activities being led by CSELS on data preparedness, which is kind of the surveillance or the emergency response version, is an area where there could be a more standardized approach to developing new systems.
- Your work in Puerto Rico and this hurricane response, has been very valuable. As a partner with us, the lab issues down there haven't been as contentious as other issues but the willingness of your staff to put a team together quickly, deploy to San Juan and provide the lab assessments, is greatly appreciated and may have been something we could not have done as well on our own, so thanks for that.

Marissa Levine, MD, MPH; Association of State & Territorial Health Officials (ASTHO)

Dr. Levine began with the questions posed by CDC. There are three issues related to preparedness response and recovery that ASTHO would like CDC to be aware of. The first is the risk-based funding approach. Given the direction of the current administration and its perspective, this is a concern. It should be emphasized that all-hazard preparedness is paramount. This was underscored by the civil unrest incident in Charlottesville. What was not televised was the amount of public health and medical infrastructure required to respond to that incident. If these types of uprisings were to occur in smaller and smaller jurisdictions, there may not be capabilities or capacity there to address it.

Another area is pandemic flu preparedness, which is critical. The 1918 Hundred Year Anniversary will be next year. It's a good time to raise awareness. Some state officials weren't around during H1N1, so a lot of work needs to occur to get current people up to speed on what capabilities are already available and the lessons learned from the previous events. Dr. Levine said perhaps this topic should be considered a standing agenda item in 2018 to bring emphasis to the issue.

Then the third area comes from the President's directive and the Secretary of Health issuing a public health emergency for the opioid crisis. That's an area that needs to be revisited.

In terms of after action report derived task lists, there are two items related to communication. One is has to do with situational awareness. There's a difference between communication and situational awareness. Perhaps there should be collaboration with NEMA and FEMA to increase the visibility of the various mission requests. ASTHO can play a role to connect federal agencies with the states. This is a great opportunity for federal partners to come together to work with the states.

The second issue, which is related, is reexamining the partner organization liaison function for both CDC EOC, and the HHS SOC during major catastrophic events. Given the magnitude of what has occurred thus far, it might be a good time to reexamine that role for the CDC and the SOC in terms of the liaison function and ensuring appropriate situational awareness and resources/technical assistance are coordinated.

Turning to the question of things that went well or less well, Dr. Levine felt that CDC should use the Zika response as a best practice. From the state health officer's perspective, the Zika response represented a time where the state and federal agencies were well-synced. There was a lot of outreach for feedback prior to preparing guidance documents. It would be good to revisit the lessons learned from that response.

She then reviewed some of the activities occurring at ASTHO. The Preparedness Committee met during the ASTHO meeting held in September 2017. In the meeting, the top priorities for the year where determined:

1. Increasing public health use and acceptance of incident command.

2. Planning for pandemic flu.
3. Examining special needs sheltering issues.

ASTHO is also providing ongoing support for those affected by the recent hurricanes. ASTHO representatives will attend an upcoming meeting hosted by the CDC Foundation. The aim of the forum is to better characterize and define the roles of nonprofits in a response, as well as identify mechanisms to develop greater coordination and synergy to maximize effectiveness of government and non-profit response activities.

ASTHO is also involved in the water emergency responses. There are three parts to the response: water preparedness in partnership with CDC; working on new water preparedness projects focused on addressing complex emergencies; and outbreaks associated with drinking water sanitation and hygiene. The main objective is to determine the status of the drinking water emergency preparedness and response infrastructure in states and then to develop a report that will be used to inform an expert panel who will look at this area in more detail.

ASTHO is working with the Environmental Councils of States in partnership with the EPA examining how state health and environmental agencies are communicating the risks of polyfluoroalkyl compounds and harmful algal blooms. Related to that, ASTHO's working with CDC on exposure assessment technical tools, which will be piloted in two states.

Last week, CDC Admiral Redd and his staffed worked with ASTHO's Directors of Public Health Preparedness at their meeting. Dr. Levine heard a lot of good feedback on the success of the meeting. She thanked him and his staff for their support.

Lastly, ASTHO is continuing work on PAHPRA reauthorization. There's a lot of effort to obtain input and pass it along to congressional committees and leaders. Also, regarding emergency drug shortages, there's a cooperative agreement with ASPR and ASTHO to begin refreshing the 2012 guidance document. The document is entitled Coping with and Mitigating the Effects of Shortages of Emergency Medication.

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

Dr. Quinlisk said the CSTE is dealing with issues similar to some of the other representatives' agencies, but the biggest issue for CSTE at present is funding. As an example, in Iowa, 100% of microcephaly is not caused by Zika, and yet there's funding to examine microcephaly associated with Zika infection and to follow those children, but no funding for CMV, which causes the majority of microcephaly cases.

Regarding the questions posed about the public health preparedness response recovery issues, the agency feels there's a strong foundation between CSTE and OPHR that can be built upon. OPHPR certainly does support the members' needs and provides a good liaison between CDC and the state territorial and local health departments. It also gives significant guidance for public health emergency response. Funding levels, again, are the barrier because they dictate

the level of response and what's available for preparedness and response activities. CSTE advocates for continued funding to sustain the basic needs for preparedness. CSTE would like to move away from the Zika-specific funding to all-hazards preparedness funding.

Another concern is data. Epidemiologists struggle with non-standardization and non-harmonization of data. It's very discouraging when CSTE encounters another new silo data system added to public health. It becomes very frustrating because time is shifted in figuring how to integrate the new data system into the everyday processes. CSTE also recommends that the EOC appoint a data steward, possibly someone from CSELS. This individual would be responsible for ensuring that the data management and any new kind of surveillance or data plan is integrated or interoperable with already existing systems.

Regarding the question of what is at the top of organization's after-action report priorities, CSTE is in the process of finalizing the continuity of operation plan for mobilizing from its national office resources during the public health emergencies. The national office has expanded over the last 20 years and has a significant amount of resources and experts that act as a bridge between each individual state and CDC. CSTE would like to ensure that there's better coordination with the office and that the partnership between the national office, CDC, and the states continues to improve.

CSTE would also like to explore strategies for improving the two-directional communication with OPHPR and the various centers. Using Zika as an example, there were several occasions during the response when various CDC EOC-based task forces made sudden changes to protocols with no forewarning to the states, which left CSTE with the responsibility of figuring out what happened and how to implement the new recommendations. CSTE suggested that changes such as these go through OPHPR first. There needs to be an appropriate system for reviewing and vetting any kind of new guidance to ensure all core partner agencies are notified before an official release is given. This gives the health departments direction on what to say when they're contacted by the media. An additional suggestion was to add into the standard operation procedures a requirement that the task force team reach out to partner agencies for vetting the guidance before it goes back through the OPHPR for implementation. This will provide the various partner organizations an opportunity to comment on the guidance before it receives a final stamp of approval.

As far as what went well or less well, what has gone quite well are the frequency of the CDC updates. Also, OPHPR did a good job in engaging some of the nontraditional programs. CSTE felt those were handled quite well. CSTE asked that those partnerships be sustained for future engagement. As far as things that could be improved, there still needs to be better coordination, especially when it comes down to the funding. The allocation amounts could be either better explained or better coordinated and, especially at the state level or the local level, where the activity is occurring. There also seems to be duplication of efforts.

Comments from CDC:

- You may be aware of the crisis notice of funding opportunity (NOFO) that OPHPR just published. While there's no funding associated with the crisis NOFO, the idea behind the NOFO is for eligible jurisdictions to have an approved but unfunded application. This will probably help with some of the issues CSTE is experiencing and may help address some of the issues with gaps and overlaps.

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

Ms. Askenazi began with NACCHO's preparedness priorities and activities. The agency is supporting local health departments and federal partners to respond to the Zika virus, hurricanes, and wildfires. NACCHO completed phase two of a local vector control competency assessment, which includes an analysis of mosquito control programs across the U.S. Ms. Askenazi made available copies of the report as well as a link to the study. NACCHO has been in regular communication to maintain situational awareness and share resources on the various ongoing response efforts.

NACCHO is working to improve efficacy and efficiency of medical countermeasure distribution at the local level. This endeavor was undertaken by ASTHO and NACCHO. The collaboration created a resource entitled Extended Medical Countermeasure Distribution and Dispensing Considerations for an Anthrax Incident. This tool was created to complement CDC's updated guidance on medical countermeasure distribution and dispensing response protocols following an anthrax release. This goes beyond the 50-day post exposure prophylaxis procedures and also provides instructions on what steps should be carried out post 10 days.

NACCHO is also finding new ways to support local health departments as well as build and enhance various public health preparedness and response capabilities. This will include examination of the Public Health Emergency Response Fund. The agency has published a policy statement related to supporting the needs for the fund. They also provided input and feedback regarding PHEP capabilities.

NACCHO has finalized and released an administrative preparedness toolkit that includes exercise guides, strategic planning frameworks, tools, and templates to assist health departments build their administrative preparedness planning and evaluation capabilities. Some local areas have been funded to develop some of the toolsets.

In response to water-related emergencies, a Water Preparedness Workgroup has been formed. It includes health officials who have recently responded to water and sanitation related emergencies in the last five years. They will focus on the experiences of those responders, discuss tools and resources that would be useful in such an event, and identify additional areas where tools and assistance can be used to support the response and recovery.

NACCHO has some other priorities on the horizon. It will synthesize feedback from local health departments related to the PAPHA Reauthorization. This will include some of the feedback from the Summit last spring. The agency will also establish a rural preparedness workgroup,

which will include a network of preparedness coordinators from rural and frontier jurisdiction, and provide information sharing opportunities.

Regarding the first question about public health preparedness response-related issues, it has been a little bit of a challenge to get the full national level picture of what the public health resource needs and requests have been. This includes understanding situation awareness across jurisdictions, not just locally but at the state level and across the federal level. It would be really helpful to understand what's going on, the current status, the needs, and the challenges so that NACCHO can respond effectively if requested. The picture is not clear beyond the states, so a broader situation update is needed.

The impact of recovery on local communities is significant and has a large, long-term public health, health, and medical impact. This should be continuously articulated and embedded in the response stories. Recovery needs to be uninterrupted, so look for sustained funding. When an incident is over, there's years and years of recovery. From the state and local levels, the funding model is not so bad that it needs a whole revamp, but more examination needs to occur in this area.

It would also be incredibly helpful to see all the federal partners utilizing the ICS and following the same terminology so that everyone is speaking the same language. Creating terms that are agency-specific creates barriers to communication.

NACCHO's after-action task list include cross-jurisdictional coordination efforts during public health and non-public health led incidents. The agency works well with its own jurisdiction and working with multidisciplinary partners across all the different support functions, but then going outside of its jurisdiction and moving across the states or across the country is a challenge. NACCHO is also looking at cross-disciplinary operational coordination during incidents with a strong public health and law enforcement component. The goal is to establish a unified command with law enforcement when it's not a public health led incident. The agency is also attempting to better define and operationalize the rule book of public health as ESF8 while assuming incident command during a public health led incident in spite of limited resources.

NACCHO would also like a more unified situation update from CDC so that it may gain a better understanding of what's happening and the full scope of response related efforts. It would also be helpful to absorb immediate lessons learned from responses in progress, not just the ones from the past.

Regarding the question of what has gone well and less well, NACCHO asks that local health departments continue to serve as a conduit for communication, whether it's with local hospitals, behavioral health partners, or whomever and that the state and federal partners continue to solicit information from the designated partners to reduce confusion and additional burden. The agency also received some recent feedback from its colleagues at the local levels

related to contingency contracts, challenges around staffing, and ongoing issue with managing donations.

Recommendations/Comments from the BSC and CDC:

- This idea of what's the composite MCM capability is an interesting question. And it's an area where it's been a problem identifying the right questions to ask. What are the wicked problems around this particular issues? How do you prioritize the work? There's still an issue identifying the MCM desired capacity and capability, under what conditions, and what can locals and states do to reach those targets. More effort should be given to articulating why the MCM capability is complex and what the complexities are so that everyone can think together as a system about how to address the issues.
- It's difficult to determine if a state or locality is ready to distribute medical countermeasures because every locality, every state is different, and the measures that are in place don't consider the very unique resource needs or resource availability in different states and in different localities. Perhaps a third-party vendor with that expertise should be utilized.

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

Dr. Ritchey gave a brief overview of the Tribal Epidemiology Center (TEC) network, which is current comprised of 12 tribal epidemiology centers. Dr. Ritchey works for Inter-Tribal Council of Arizona's Tribal Epicenter (ITCA). Her center represents tribes in Arizona, Utah and Nevada, consists of 44 tribes and bands. Addressing public health needs for these tribes can be challenging because her network consists of some very rural areas and works with tribes in several geographic locations, including the Grand Canyon, adjacent to the Mexican border, and borders California.

The Inter-Tribal Council of Arizona was established in 1975 by the 21 tribal governments in Arizona, first, to provide a collective voice for action. The public health section of the organization came later. It was formed to promote tribal collaboration, and tribal sovereignty. Its program's activities cover multiple areas such as policy, technical assistance, training, research identification, and community self-development.

The Indian Health Care Improvement Act provides the Tribal Epidemiology Centers their public health authority. Its core functions per the agreement are to provide the following:

- Collect data
- Evaluate data and programs
- Identify health priorities with tribes
- Make recommendations for health service needs
- Make recommendations for improving health care delivery systems
- Provide epidemiologic technical assistance to tribes and tribal organizations
- Provide disease surveillance to tribes

The Indian Health Care Improvement Act is permanently re-authorized as part of the Affordable Care Act.

The ITCA Epidemiology Center surveyed the tribal health directors, as part of quality improvement and program evaluation efforts, to determine areas that require technical assistance. The areas of highest ranking were substance abuse, behavioral health, diabetes prevention, and cancer prevention. The center also receives funding for a mass suicide prevention initiative and a domestic violence prevention initiative. The tribes receive grants to do that work on the ground with their behavioral health centers, public health offices, and clinics. They also provide technical assistance and training and have formed working groups. There's also funding from CDC to assist with diabetes, heart disease, and stroke prevention at the local levels as well as program evaluation.

As it relates to public health emergency preparedness and disease outbreak response, about 15 to 21 percent of the tribal health directors would like to make this a priority area. ITCA works with the Arizona Tribal Executive Committee, which is a group of coordinators in Arizona that receive funding through CDC to do Zika Virus preparedness work through National Indian Health Board. They will continue to provide vector-borne disease control support. They were also awarded the Public Health Infrastructure Enhancement Grant through CDC to examine chronic diseases.

ITCA provides a significant amount of training but, unfortunately, it's not often used, or individuals don't find it be useful. However, when doing evaluations of the training, the agency always gets high marks. Dr. Ritchey's not sure ITCA is providing what the communities need to bolster their support in all areas including preparedness. When queried about the types of support the tribal health directors and their staff would like about 45% need help analyzing data in Excel, 30% would like grant writing assistance, 40% want strategies for program planning and another 40% need assistance in visual presentation of data.

ITCA did a pilot with one group around cancer prevention. This group represented three of the tribes. A product from the pilot was a tool kit. They also worked with the Bluestone Strategy Group to provide a workshop. Feedback showed that more individuals would like support in that area.

Dr. Ritchey doesn't work on preparedness directly. All emergency responses would be local, so unless asked, ITCA doesn't support the response. Therefore, answers to the questions CDC provided should be viewed with that context. Below are the agency's answers to each of the proposed questions.

Question 1:

Question: What public health preparedness, response and recovery-related issues do you want OPHPR to be aware of from the perspective of your organization?

Answer: ITCA TEC provides training and technical assistance to Tribal communities to manage outbreaks of disease, but we are limited on our ability to respond to infectious disease outbreaks.

Question: What are your challenges?

Answer:

- From 2011–2016, ITCA TEC provided 55 public health trainings to over 700 participants in a variety of areas. Despite the numbers, many Tribes in the Area still lack adequate manpower and trained manpower to respond to disease outbreaks.
- Our survey results indicate that chronic diseases are a higher priority.
- ITCA TEC staffs epidemiologists for Tribal technical assistance. We are inadequately staffed to respond to outbreaks in 44 Tribes and only a modest part of our funding via Indian Health Service is marked for public health emergency preparedness.

Question: Where might we assist?

Answer:

- A few Tribes in Arizona requested a CASPER training. The CDC trainers do not have travel funds and cannot accept federal dollars to travel to Tribes. Can this be resolved?
- Tribes appreciate CDC response to disease outbreaks. Consider well trained assignees to directly assist Tribes not just during infectious disease outbreaks, but daily.
- Continue to support Tribes, counties, TECs and states to develop relationships and improve communication for PHEP response

Question 2:

Question: What is on the top of your organization's “After-Action Report-derived” task list of priorities that needs to be addressed to lead to improved response?

Answer: ITCA TEC received modest funding from CDC to assist Tribes in Arizona with Zika Virus preparedness. Arizona Department of Health Services (ADHS) provided about 5 of 22 AZ Tribes with preparedness funding. Political and legal issues delayed additional CDC funding to TECs and Tribes. In order to improve response, direct funding to Tribes (which is out now), and a CDC award for TECs specifically to work with Tribes for PHEP would help improve response times.

Question: Pick a recent response and let us know one or two priority issues that our Board and OPHPR should be aware of.

Answer: TECs need additional funding before an event to develop Memorandums of Agreement with Tribes for PHEP, access infectious disease data when Tribes want assistance from TECs (right now our ID data is about 2 years old from ADHS), and develop relationships with Tribal PHEP staff, state and county staff for PHEP/outbreak response.

Question 3:

Question: What one or two issues went well/less well with regards to interactions between your organizations' members and local, state, or federal public health system partners with respect to emergency preparedness/response/recovery?

Answer: At the moment, Tribal PHEP coordinators, ADHS, TEC, and counties are meeting to ensure improved communication and access to timely data for Tribes and TECs. We are working with USET TEC and National Indian Health Board as well to coordinate our vector borne disease efforts in 2018 rather than hold separate but similar events.

Public Comment Period / Day's Recap / Adjourn (Day 1)

No public comments.

Thomas Inglesby, MD; Chair, OPHPR BSC

Dr. Groseclose and Dr. Inglesby thanked the Liaison Representatives for their in-depth reports. Dr. Groseclose asked if they could send his office a copy. After Dr. Groseclose provided housekeeping notes to the attendees, Dr. Inglesby adjourned the meeting at 4:53 PM.

October 31, 2017 – Day 2; BSC Fall Meeting

Welcome & Call to Order/ Roll Call

Thomas Inglesby, MD; Chair, OPHPR BSC

Dr. Inglesby called Day 2 of the Fall BSC Meeting to order at 8:37 am.

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

Dr. Groseclose conducted the roll call. Quorum was present. All attendees were reminded to complete their evaluation forms.

Research in OPHPR – Two Approaches

Samuel Groseclose, DVM, MPH; Associate Director for Science, OPHPR

Dr. Groseclose gave the board a presentation that compared the two methods OPHPR used to identify research priorities and conduct research. These approaches have been used for the last ten years. The first approach is described as a research center-based effort and the second is described as a practice-based approach. His presentation covered the following:

- Source of research topics
- Research funding and mechanisms
- Participation of state, local, tribal practice communities
- Participation of OPHPR Divisions
- Research translation

The vision for research in OPHPR is for our programs to be driven by science. It is the Office's belief that the collaboration of science and programs results in effective, evidence-based public health. The roles of OPHPR-directed PHPR research, as spelled out by the Pandemic and All Hazards Preparedness Act (PAHPA, 2006), are to establish centers for public health preparedness at schools of public health; develop research agenda based on federal, state, local, and tribal preparedness priorities; and conduct public health systems research.

The source of research topics initially was informed by the Institute of Medicine's Letter Report of 2008. It prescribed four areas where research should be conducted. Those areas were enhancing usefulness of training; improving timely emergency communications; creating/maintaining sustainable preparedness and response systems; and generating effectiveness criteria and metrics. This activity was proposed to be funded for 5 to 6 years initially, but, after the second year of funding, academic center-based research funding was approved by Congress on a year-to-year basis (i.e., there was no guarantee of research funding from year-to-year).

The practiced-based approach was informed by the OPHPR Strategic Plan of 2011, which called for increased application of science to preparedness and response practice as one of its eight strategies. The Hurricane Sandy recovery research conducted in 2012, with the help of the practice communities of the northeast US, is an example of a practice-based approach. This was a collaboration effort with a number of federal agencies. In 2014, OPHPR funded the Practice-Driven Research Agenda Project. This was a survey of state and local health departments. Some of the topics identified addressed the needs of vulnerable populations, risk hazard mapping, risk communications, and community resilience. This project informed a research contract funding effort. Lastly, the Practice-Based Research Priorities document, which the Board just reviewed and commented on, is the latest practice-based approach to identify research topics.

Research funding started at approximately $1.5 million for each of the nine academic research center in 2012. Below is a summary of the decrease in funding over the years.

- Year four: ~27% decrease per center
- Year five: ~61% decrease per center (FY12)
- Year six: ~25% increase per center (FY13)

Since FY12, research funding for the schools of public health was not included in the President's budget, but later in the fiscal year it typically does appear in the Congressional budget. The uncertainty of funding was disruptive for the academic centers research.

Hurricane Sandy was the first-time recovery funds were used explicitly to fund research during response and recover. Other federal agencies also received some of that funding. Funding was confirmed four months post-landfall of Hurricane Sandy and awarded approximately 11 months post-landfall. CDC utilized a cooperative agreement with a two-year performance period. Schools of public health were eligible to receive funding as well.

CDC used the new broad agency announcement (BAA) approach in 2016. The research topics was informed by the survey results from state and local health departments. This BAA method has advantages. For one, it allows the use of one-year money for up to a five-year performance period. Eligibility could not be limited to schools of public health, but they were eligible to apply for funding.

When examining research participation by state, local, and tribal practice communities, research centers, by design, had project advisory committees. These were multidisciplinary groups representing different types of organizations. Many of the research partners were public health agencies. For the practice-based approaches, as the case with Hurricane Sandy, eligible awardees must be or have a co-project director or investigator from the state, tribal, or local public health agency. This requirement caused some administrative challenges. The broad agency announcement, in 2016, had language that encouraged partnerships with state and local health departments and allowed sub-contracting.

When looking at research participation by OPHPR Divisions, research centers used a grant mechanism that gave limited opportunities for OPHPR's Divisions to influence research. OPHPR's Office of Applied Research's grants management staff either had or applied limited subject matter expertise; which was also the case for Hurricane Sandy. In addition, NCEH and NIOSH–subject matter expertise influenced the projects to some degree but in none of those cases were CDC staff co-investigators with the researchers. For the broad agency announcement in FY16, the OPHPR staff served as co-investigators and for FY18, OPHPR Divisions will sponsor the research and serve as co-investigators as well.

As it pertains to research translation, in the final project year, the research centers were encouraged to extend their research to new populations or other jurisdictions. OPHPR cross-walked the research projects and products to PHP capabilities. OPHPR was used as a technical assistance resource. In FY15, the focus was on translation and evaluation of the research center and learning center products. This was completed in partnership with ASPPH. The funding for this endeavor had an 18-month performance period.

The practice-based approach for Hurricane Sandy has had limited translation so far, but there was a recent National Academy meeting to think about which projects would lend themselves best for translation to practice. In the FY16 and FY18 broad agency announcement, division sponsors may take the work to be translated to practice, if suitable. DSLR has a Capacity Building Branch, who will focus on technical assistance and use of available information for that announcement.

Dr. Groseclose ended his presentation with questions for the board, which were as follows:

- How best to identify research priorities going forward? Comment on our increased focus on application to public health practice.
- PAHPA recommends use of schools of public health. Based on funding realities and impact on performance period, comment on our recent involvement of research centers, other schools of public health, and other research organizations.
- How should state, local, and tribal health departments be involved in research process?
- How should OPHPR participate in conduct of research?
- How much should OPHPR "own" synthesis, dissemination, and translation of the research that it funds?

Recommendations/Comments from the BSC:

- Continue to build on the lessons learned with the things we're learning in the current hurricanes so that none of the knowledge is being lost over time or efforts are being duplicated.
- I appreciate your focus on translation. You want to be thoughtful of where it will be useful and how to make it actionable.
- Research centers are often run by academic researchers and sometimes their work is disconnected from practice and becomes esoteric. One of problems is when people are

responding to an emergency event they don't have time to answer these questions, but it is the perfect time to do research. Perhaps form a rapid response research group who can respond quickly and ask public health personnel what are the immediate questions that you have right now that if we could come up with even a partial answer it would be helpful to you. Theresa Smith said there may be room in the Capabilities Building Branch to start developing questions and protocols. Dr. Quinlisk will engage with Ms. Smith in this regard.

- There's a struggle to translate the research into actionable activities. When in the field, I don't see any of the learnings and research from the work provided from the PERLC and PERRC in the practices and policies out there. There's a barrier to the information getting to and actually changing the practice. We need to find ways to provide the technical assistance and expertise to the field to make the change happen and introduce the research.
- Research priorities have to be informed by practice and efforts must include the practice community. Engagement of practitioners working alongside researchers and academicians is critical because their work complements one another. The challenge is the level of time practitioners have available to them.
- There need to be opportunities for researchers to embed in response operations so that some of the learning can be applied in the midst of the response and unanswered questions can be captured.
- Be careful to ensure that there is a level of accountability on the part of the researchers to make certain that their findings have some applicability within the practice community and contribute to the building of capabilities.
- Find a way to embed, in the IMS planning section, individuals who have the technical expertise so that during a response, science that is known is being utilized. There's a rapid cycle improvement opportunity during emergency response that should be considered for areas where we're still searching for answers or perhaps want to apply current information to different scenarios.
- When identifying priorities, look at the problems in communities. The practice community at the local and state level already have activities going on in the communities. Find a way to align and ask for input from those activities to inform the research priorities. Push a community-led approach.
- Schools of public health absolutely have to be involved because they help align the effort, ensure education and training of our public health workforce are relevant to the needs, and provide an opportunity to better integrate in the education and training purposes.
- There's a wealth of items in the emergency event after-action reports and there are common issues happening at the state and local level. If we can synthesize those and find common thread they can inform what you want to look at from a research standpoint.
- Have researcher and practitioner networks established in advance of an emergency that come together in an event [practice-based, public health, and schools of public health] to tee up the questions so we can learn. Perhaps the collar (adjacent to jurisdiction in

which event is occurring) states or collar practitioners who know the people and region could serve as the practice-based research partnership.

- I like the broad agency announcement approach because it allows you to think more broadly about the subject matter expertise (e.g., engineering or logistics) required to conduct the research – sometimes beyond the knowledge of schools of public health.
- Putting a paper describing research findings out there is not going to change practice if you don't translate it. Having OPHPR and state and local participants work along with researchers is a great idea because it increases the odds that the questions will be the right questions to ask and that translation occurs.

OPHPR's Practice-based Research Agenda – Rationale & Approach

Samuel Groseclose, DVM, MPH; Associate Director for Science, OPHPR

This session was an open dialogue with the Board around the practice-based research priorities. The purpose of the research priorities are as follows:

- Influence public health preparedness, response, and recovery (PHPRR) outcomes
- Direct PHEP awardees using evidence-based practice guidelines
- Influence partners developing evidence base for PHPRR

The priorities should guide direction and funding of new projects; serve as roadmap for stakeholder to be aware of OPHPR's priorities; provide stakeholders opportunity to partner with OPHPR on future initiatives; and be revisited as new questions emerge.

The third iteration of a practice-based research priorities document was developed intermittently over two years, with inputs from a literature review, the OPHPR-funded Practice-Driven Research Agenda Project, the October 2017 version containing the 21 priorities across six domains, and lastly, the BSC ranked top 12 priorities that were submitted for comments. The BSC was provided a spreadsheet that provided the questions and their rankings for each. The questions were as follows for each of the PHPRR topical areas:

Biosafety & Biosecurity

3.1.1. What criteria (e.g., 10-6 sterility assurance level) should be required to ensure entities have inactivated biological select agents and regulated nucleic acids effectively? What types of evidence are necessary to determine the inactivation effectiveness?

3.1.2. What regulations / monitoring / constraints on synthetic biology are needed to assure the right balance between safety / security and scientific progress?

3.1.3. What is the difficulty to produce infectious select agent positive-stranded viruses from genomic material? Should positive-stranded RNA genomic material be regulated under the federal select agent program?

3.1.4. Is there a method (or options) to demonstrate inventory accountability of replicating BSAT (e.g., bacteria, viruses) that is superior to maintaining a vial-by-vial inventory? What are the biosafety and security risks of not requiring vial-by-vial inventories of replicating BSAT?

Biosurveillance

3.2.1. What are barriers to and facilitators for increasing the capture, validation, uptake, and use of electronic health records to improve emergency preparedness and response planning and implementation?

3.2.2. What are barriers to rapid, timely, accurate electronic death reporting, validation, sharing, interpretation, and use that hamper its use in emergency preparedness and response?

Community Resilience

3.3.1. What evidence-based, targeted interventions and health systems (i.e., public health and healthcare delivery) enhancements can be implemented at state or local levels to reduce the physical and mental health impacts of emergencies and disasters on vulnerable populations?

3.3.2. How can the National Health Security Preparedness Index (NSHPI) benefit PHEP recipients?

3.3.3. What statutory (legislation) and administrative (regulatory) laws support school preparedness?

3.3.4. What are the physical and mental health impacts of previous disasters and other adverse events on vulnerable populations?

3.3.5. What are the long-term health effects of emergencies on children's mental health?

3.3.6. How should the public health preparedness and response workforce be trained to increase and sustain community resilience?

Countermeasures & Mitigation

3.4.1. What individual and organizational level factors enhance, protect, or adversely impact the health or well-being of public health staff deployed as part of an emergency response?

3.4.2. How can the Division of Strategic National Stockpile (DSNS) overcome proprietary mismatch and best match intravenous (IV) administration tubing and IV infusion pumps used in every day health care settings to those stockpiled for widespread use during a public health emergency? IV ancillary products to be identified consist of IV tubing, IV syringe pumps, and volume infusion pumps.

Incident Management

3.5.1. What are the best or most promising measures of performance and effectiveness for an incident management system (IMS)?

3.5.2. Do differences in perceptions and attitudes towards the usefulness and effectiveness of an IMS between scientists and non-scientists (or between emergency managers and non-emergency managers) influence outcomes such as willingness to participate in a response, effective information sharing between groups, or better coordination between groups?

3.5.3. Which elements of an IMS should be prioritized for capacity building in low resource environments (e.g., low income countries, small health departments)?

Information Management

3.6.1. What elements of risk communication messages (e.g., actionability, clarity, tailoring, etc.) are most important in changing knowledge, attitudes and practices in specified target populations?

3.6.2. Are novel risk communication methods such as persuasive communication techniques, nudging (and other approaches drawing on behavioral insights), and narrative messages more effective in changing knowledge, attitudes, and practices than risk communication approaches based on traditional methods and theories?

3.6.3. Do inaccurate socio-cultural, behavioral, and economic assumptions about target populations in emergency risk communication messages negatively impact changes in knowledge, attitudes, and practices (such as compliance with recommendations or uptake of health protective behaviors)?

3.6.4. What are the information needs and best methods of dissemination for vulnerable populations of interest such as the elderly, the poor, and individuals with English as a second language in the context of public health emergencies or other disasters?

In the discussion, the board was asked to consider the following questions.

Questions for the Board

- What approach (working group, research, expert panel, etc.) do you recommend to answer the questions?
- What methods do you recommend to answer the question?
- Are the questions framed “correctly”?

- Since measuring the effectiveness of emergency response is notoriously difficult, do any immediate insights come to mind in terms of how to initially orient the project so we do not get stuck wrestling with this question in familiar ways?

- Do you think leveraging behavioral economics and related approaches to inform risk communication – and potentially emergency operations more generally – has as much promise as we do in moving the field forward and achieving better behavioral and other outcomes?
- How do you think the social and behavioral sciences can best contribute to public health emergency response – either in terms of actual response activities (such as field work in communities during an emergency), or in terms of research that will eventually inform actual response activities (as illustrated by a few of our research questions in this document)?
- Are there any recommendations for enhancing the success of evaluating a state's disaster mortality surveillance systems following a disaster to get somewhat real-time data to assess the quality of the systems as used under disaster circumstances, esp. when disasters are not predictable? Would having an approved (general) protocol for review by states be useful to get agreement in advance of an event?

Recommendations/Comments from the BSC:

- In terms of orienting projects, involve practitioners, who have or are experiencing certain challenges and/or those who have experienced identified challenges and figured out ways to overcome them.
- Engagement of behavioral sciences might have significant applicability when looking at community resilience and how members of the community respond to preparedness strategies, tactics, and actions. They can take them within their communities to augment emergency response efforts.
- Any response involves people, and you have to understand how people are going to behave. So, it's essential to understand behavioral science.
- Lots of people have done reviews of literature and science and found the gaps. Also, the PERLC and PERRCs put forth great summaries. Try to capture that aspect of work that gets funded and look at it collectively. Have a running list of gaps that emerge so that they can be addressed. These kind of assessments often get lost. They are not published and are normally a process piece/internal white paper.
- Looking at the question on the long-term health effect of emergencies on children's health made me reflect on the growing body of knowledge on adverse childhood experiences and the long-term impact on society from those. That's a critical priority and requires a holistic community view approach. What does the community need to do to buffer children from those long-term impacts?
- Regarding physical and mental impact on vulnerable population, this is an area that should be more broadly considered. I am concerned about limiting it because the impact is greater.
- Communication question before, during, and immediately after an event—there needs to be a better model to understand the dynamics of the communication that occurs. What are people tweeting out or putting out on Facebook? What's the role of government in being responsive? What needs to be done pre-event to minimize the potential impact of misinformation?

- Think of what kind of research will change practice. Some questions seem to be data collection questions, but there's no information on the attitudes of scientists versus practitioners in IMS. We need more information. We also need more information about deployed personnel. Then, some of questions are around expert judgment that will stick and is defendable. This requires a different approach probably some kind of working group that gathers available evidence. The more you can decide where you plan to use the research when done, the more tightly you can frame it and decide on the method.
- The first question requires scientific research and there's very little funding opportunities for biosafety research. A lot of biosafety research is done "quick and dirty". Accurate problem framing is essential. If you're not asking the right question, you won't get an answer that's useful.

The BSC then turned to the spreadsheet to go over the ranked questions and provide their recommendations and comments.

3.1.1.

- This remains an unanswered question. Researchers want to get things out of biocontainment as quickly as possible because it's easier to work with.
- It's not just the agent but also the equipment, like the positive pressure space suit. They take a chemical shower, but there's no data on testing the suit to ensure that the suit is sterile by this level of ten to the sixth. So, both the agents and equipment must be tested.

3.1.2.

- Regarding synthetic biology and nucleic acids, there's a lot of things below the radar. Most of the companies that make synthetic nucleic acids volunteer to do a security check on the sequences, but they're not mandated to do a security check. Regulation is going to be a challenge.
- Regarding nucleic acids on the positive stand RNA viruses, some of the viral genomes are directly infectious, so the nucleic acid issue needs to be looked at on some of these agents.
- Viruses can be cultured. For genomic material, use swabs and PCR analysis and establish limits of detection on those. Set limits and try to establish some standardized test. The toxins have to be treated like chemicals.
- Dr. Redd suggested the question be given to the BSC's Biological Agent Containment working group with the hope of some study designs to emerge.

3.1.4.

- Human factors are important. Think about the behavioral aspects. How are people trained? What do they understand? How do they behave? Consider the human issues related to the safety questions you're considering.

- With regard to inactivation, a concern is in-house testing because of the conflicts of interest. If a researcher wants to retrieve something from the containment lab so it can be worked with, they don't want to find the agent. It's hard to prove a negative. Results unless tested properly will show that nothing is there, and they'll consider it safe to work with. If there is a negative result, there must be exquisite controls and limits specification in order to do detection.
- Keep in mind the activities of some of the regulated parties. Determine what is the risk in comparison to some of the companies that are performing synthetic biology and are operating under no requirements. Work being done by private industry seems to be a bigger risk than what some of the public labs are doing.
- There's no funding to research these biosafety questions, but they are extremely important.
- We need to have more research on developing criteria and standards.

3.2.2.

- This area is complicated by comorbidities, which can contribute to the death. So, the question becomes, what did they actually die from? It takes some additional time to determine the final cause of death. Some of the complexities can be solved with time and funding but understanding some of the details of the association of mortality with an emergency event may require research.
- The challenge is creating a system, where systems may not even exist. Some states have coroner approaches, other medical examiner approaches, some have an integrated system, so are locally controlled and administered. The electronic death registry system has been a real plus but without thinking about this as system management and system development, a solution may not be found. This has to be rethought as a system issue.
- This seems to be more of a troubleshooting issue than an overriding research question that needs to be answered.
- Consider some just in time training in the situation of a response for individuals who would be in charge of doing implementation.
- It might be interesting to hear from individuals in the states about how the electronic health reporting evolution is going for public health and if public health is using the data. If not, why? Is it analytics? Is it storage? Is it the wrong data?
- For EHR, the issue is the quality of data in those system. The research question for that would be what are the individual practices and the system features that improve the quality of data in these systems. Unless we work on the quality piece, the data will not be beneficial.
- With all of the media around data breaches and personal information, we're running into individuals who are against giving out information in the first place. There needs to be a way to talk to legislators, who are very concerned about the privacy of information and how public health uses it.
- Another challenge with EHRs is the vendors are incentivized to create siloed systems. New interfaces are being developed so systems can communicate with one another.

- The most useful parts of an EHR are the components that support lab reporting and syndromic surveillance. There are some research questions in the use of syndromic surveillance data that would be helpful.
- There's a need for the creation of standards and approaches.
- There needs to be more thought as to how data reporting can help real-time. In VA, they've created a process to inform political leaders, when there's a gubernatorial emergency declaration. The most important aspect in this case is knowing who has the authority to report because it varies in every state.
- This really is a system management issue for much of the EHR work and some technical issues related to timeliness and data quality.
- It might be useful to examine the ways electronic health records are being used in public health agencies to find the leading lights or technical reasons why public health cannot move any further.
- Data warehouses, e.g. those maintained by corporations for their employees, will never just give you their data. You have to craft the kinds of questions that they would be willing to answer, then you can gather information across several data warehouses.

3.3.2

- Make it clear to state legislators and leaders about the Index's capabilities and why it's critical to maintain or improve it. The more complicated the Index becomes and expands beyond government and public health agencies, the more difficult the conversation becomes.
- There's a lot of opposition to the Index. PHEP officials need to understand how to use the index as a tool to find their strengths and weakness in preparedness and then network with colleagues to overcome the weaknesses. There's a concern that the Index measures many things outside of the realm of public health, but I think it aligns nicely.
- The Index continues to go through an identity crisis. We're not broadening the conversation and engaging other sectors (beyond public health) that influence the social determinants of health. Are there research questions to determine the state of affairs on the Index? What are the early lessons learned on its use in the field and how it can be capitalized and expanded in the years ahead? How do we get beyond the current impasse?
- On the research side, the challenge has been finding indicators that fully capture some of the components. We keep finding data gaps, so there's room for looking systematically at the gaps and how to address some of the issues more directly.
- Determine ways to penetrate into other areas of the public safety community, as a means of helping PHEP officials with socialization and participation from their public safety counterparts.
- Get in front of groups like NEMA and others who are developing measures for other areas of the public safety community? Also from a leadership perspective, consider getting the index in front of the National Governors Association and the Council of Mayors [?] to help them understand the value of the Index as a tool for improving community resilience and recovery.

- Consider gathering the lessons learned from the Index experience that can inform resilience and how to broach resilience in ways that engages partners more fully. What are the innovations that make a difference in resilience?
- This is an opportunity to train across sectors and complete the training in partnership with others so that it won't become a public-health-led issue.

3.4.2.

- This appears to be a technical problem and not a research question. To frame it, try saying how can we deal with proprietary mismatch of critical items in the SNS and what is the framework for thinking about the problem and protocol for solving those problems. What do we need to invent and develop to make the SNS better? What is missing? Identify priorities for what should be developed to make countermeasures better.

3.4.1.

- From a DoD perspective, this is looked as a disease nonvital injury. What's hurting or killing deployed staff that's not directly related to conflict? That type of data is collected.
- From a deployment standpoint, the Commission Corps goes through a screening before going in the field, and the same with the military. Then there's the post appointment and even further is the post-post appointment six months after. All that data collection gives a better picture of disease nonvital injury and what preventive measures should be taken. It gives indicators to what things will enhance readiness physically, mentally, and spiritually so individuals can be effective and return safely.

Synthesis and Translation of Public Health Preparedness and Response Research

Mary Leinhos, PhD; Office of Applied Research, OPHPR

Dr. Leinhos provided the Board with an overview of past research efforts and the future direction of research. The Public Health Preparedness and Emergency Response Research Centers (PERRCs) were created to support applied public health systems research. Also formed were the Public Health Preparedness and Emergency Response Learning Centers (PERLCs), which were designed to link the public health workforce training and educational needs. With research and training came dissemination and translation challenges. To try to overcome those challenges, OPHPR worked in partnership with ASPPH and the schools of public health to accomplish three goals:

1. Synthesize public health preparedness knowledge through systematic review of literature, including knowledge and tools produced by the OPHPR-funded PERRCs and PERLCs.
2. Identify remaining knowledge gaps.
3. Develop a dissemination strategy for current preparedness knowledge.

The Interactive Systems Framework, seen below, was use to address the challenges of dissemination and implementation. It can be used by stakeholders in the various systems (prevention delivery, prevention support, or prevention synthesis and translation), including funders, practitioners, and researchers. It helps to highlight the needs of the stakeholders to ensure that knowledge moves from research to practice. The system moves from the bottom up. The bottom system distills the information and translates it into user-friendly formats. The prevention support system provides training and technical assistance, and the prevention delivery system implements the innovations into the world of practice.

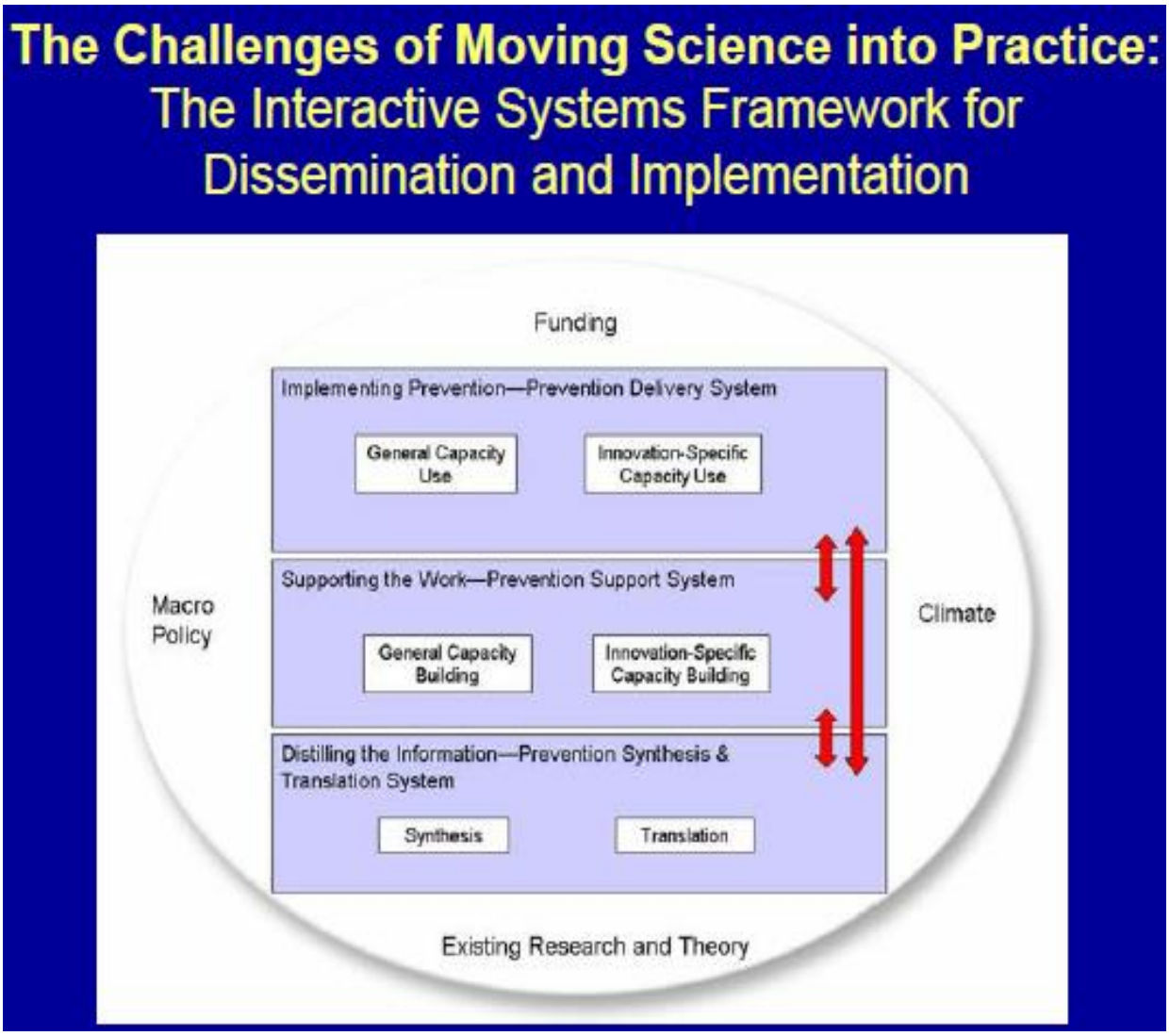


Figure 13. Challenges of Moving Science into Practice: The Interactive Systems Framework for Dissemination and Implementation.

There are numerous challenges for sharing and customizing information derived from research and moving it forward into practice. Training and technical assistance, are key for bridging the gap between research and practice. Technical assistance is a hands-on approach to capacity building and a strategy for enhancing the readiness of practitioners to implement evidence-

based interventions. Further barriers to implementation are the user-friendliness of the tools generated, resource intensiveness, and the fit of the evidence-based tool in a particular local context.

The focus of the ASPPH project was to translate, apply, and evaluate promising products and trainings from the PERRCs and PERLCs in order to improve PHPR practice, policy, program and the workforce capabilities. There was an emphasis on collaboration with practice partners and coordination with the ASPPH.

Dr. Leinhos reviewed two components of the ASPPH project which synthesized information from outcomes and products generated by PERRC and PERLC programs. The key products from the PERRC Program were the following:

- Comprehensive review of the PHPR research literature (2009-2015)
- Infographic summaries of 31 evidence-based tools for practice in 8 topical areas available online
- Identified remaining research gaps
- Lessons:
    - Assess confidence in research findings
    - Share knowledge synthesis with practitioners before gap identification
    - Use a marketing approach to share results

The key products for the PERLCs were the development of a searchable online catalog containing 413 training products; 105 online courses provided in 21 training "bundles" addressing PHP capabilities; and 6 additional skill areas. Furthermore, they identified gaps in training coverage in relation to topics and skill levels, variable instructional and design quality. It was discovered that practitioners desired clear information about the purpose of a tool. Also important is the usability of the tool.

The third component of the ASPPH project was conducted by seven awardees. Their roles were to:

- Translate PERRC & PERLC products into broader public health practice and policy;
- Identify and engage stakeholders who can mobilize resources and influence delivery systems;
- Ensure widespread use and increase capacity to implement and sustain evidence-based practices and products (EBPs);
- Evaluate research products and trainings; and,
- Collaborate with STLT PHPR practice partners in public health practice settings.

Dr. Leinhos then turned the presentation over to Drs. Janet Baseman and David Eisenman to talk about their projects, which are examples of a new type of research called implementation science.

Dr. Janet Baseman, PhD, MPH, School of Public Health, University of Washington

Dr. Baseman presented the PERRCoLate Program. Despite availability of research findings and evidence-based trainings, communication failures during public health emergencies continue. The project was designed to bring to the forefront methods that support adoption and use of research findings and evidence-based tools and trainings that aim to improve PHPR communications practices in public health organizations.

A systematic approach was used for this project that encompasses four phases before the final synthesis. Below are the activities of each phase.

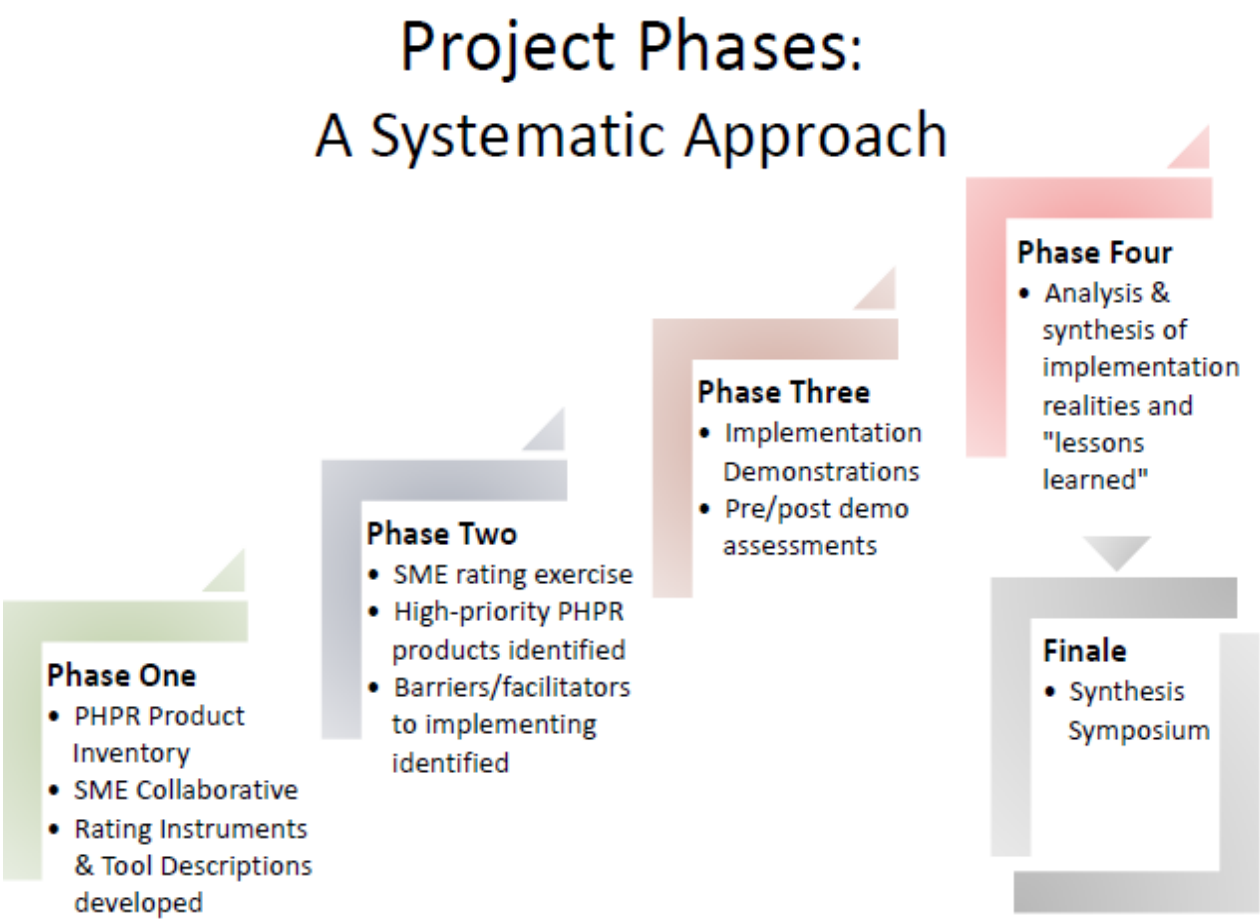


Figure 14. Project Phases: A Systematic Approach.

The project began with the assumption of certain barriers and facilitators to implementation. They are outlined in the table below.

Implementation Motivators/Facilitators

- Known & established process for integrating new tools & trainings
- Congruency of tool/training with funding & accreditation requirements
- Openness/readiness for change
- Desire for improvement
- Known capacity and knowledge gaps that may be filled with implementation
- Increasing empowerment, capacity and self-efficacy

Implementation Detractors/Barriers

- Staff turnover, changing workforce & loss of institutional knowledge
- Lack of needed resources to begin & sustain an implementation
- Previous experiences of poor follow-through & problems getting new ideas/training/etc. to "stick"
- Competing priorities
- Staff wear multiple "hats" outside of their preparedness role which influences motivation to implement
- Lack of leadership buy-in or support for the need for new tools/trainings

The project employed the following methodology:

- 6 sites (TA + $: supported) completed implementation
- 5 sites (no TA/$: controls) "stalled" at pre-implementation project charter phase
- No difference in reason for selecting tool to implement
- Control sites: more job vacancies; smaller average population served
- Protocol difference: Supported sites required to identify liaisons
- Culture/climate differences:
    - Most control sites did not have a process for integrating new trainings/tools into workflow
    - Leadership and agencies perceived as more responsive/receptive in supported sites

Using pre- and post-improvement data, the following graphs results were seen. Dr. Baseman also provided a slide of the synthesize results.

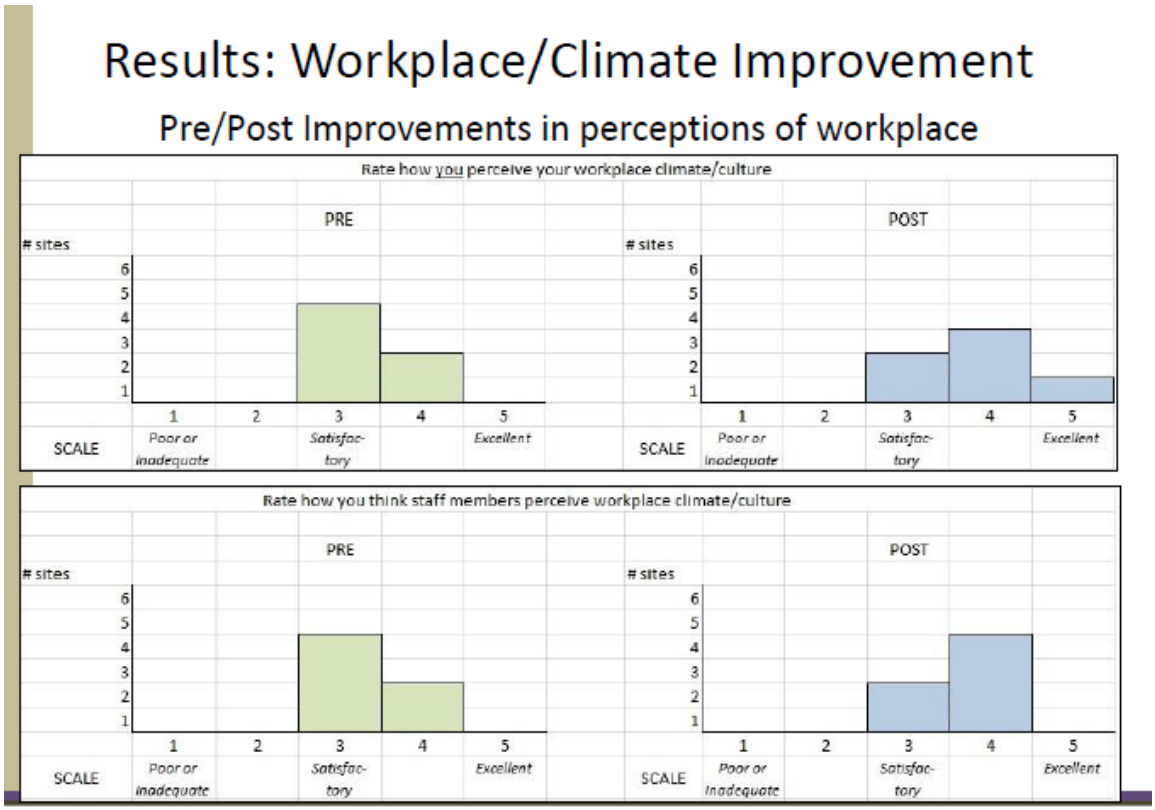
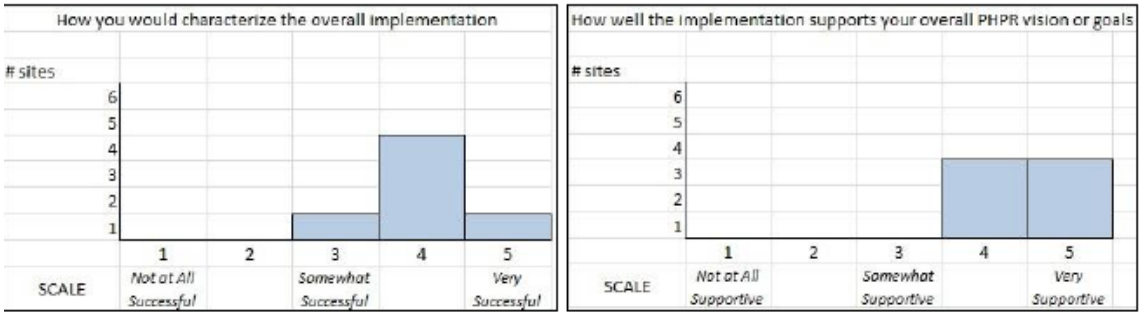


Figure 15. Results: Workplace/Climate Improvement.

Results: Importance of Tool-Context "Fit" to Success

At baseline, 5/6 sites indicated the primary reason the tool was selected is it matched identified agency needs.*

All sites indicated the implementation was successful and supportive of their PHPR needs.



* " fills a gap in our preparedness needs or skills derived from the tool most applicable to our needs "

Figure 16. Results: Importance of Tool-Content "Fit" to Success.

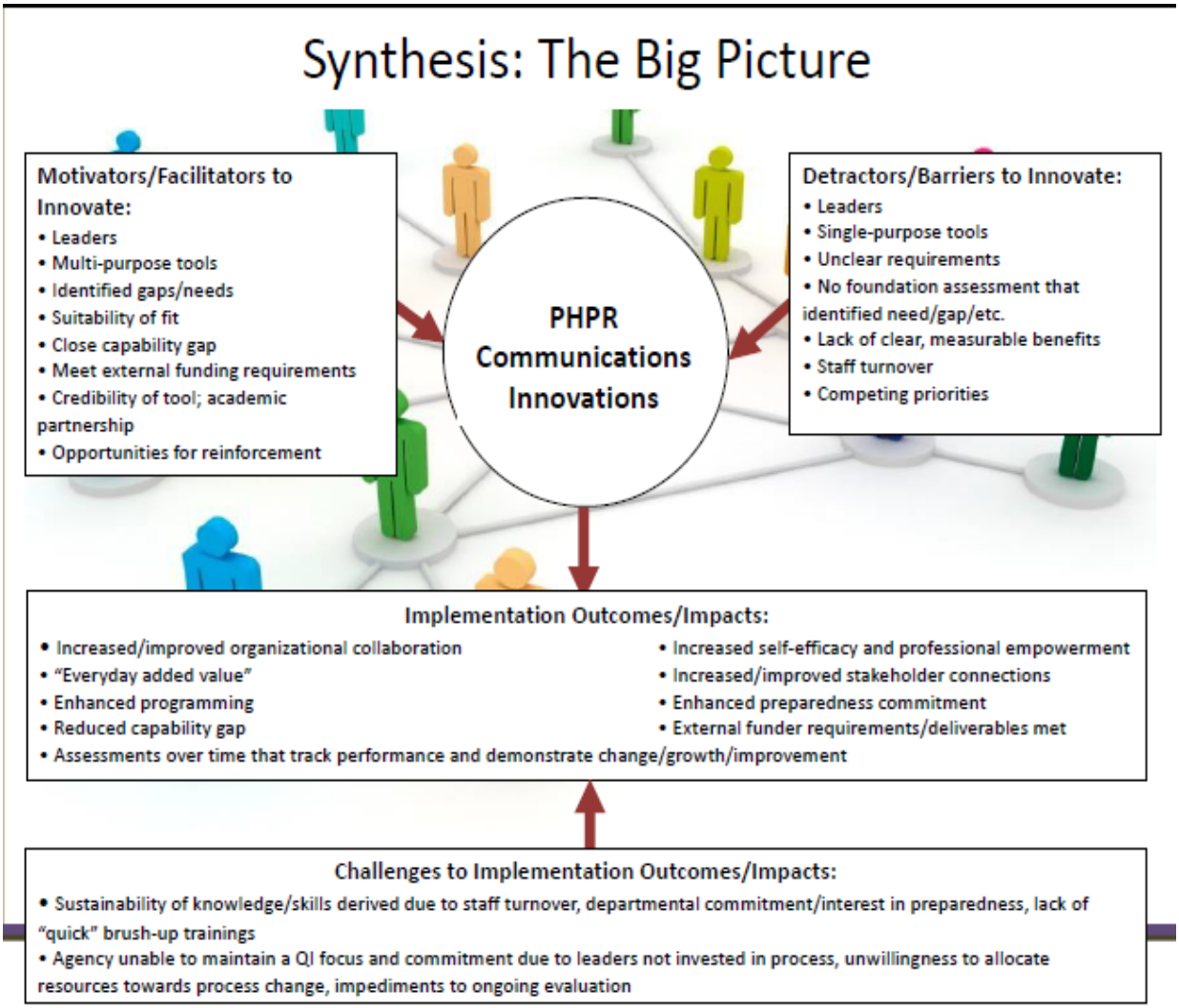


Figure 17. Synthesis: The Big Picture.

As a reminder, the project was created to answer the following question: what mechanisms support adoption and use of research findings and evidence-based tools and trainings that aim to improve PHPR communications practices in public health organizations? The project was able to provide an answer to that question related to several aspects.

- LEADERSHIP: Leaders are key drivers of innovation in their agencies
- PRACTICE/PRACTICAL: Build in opportunities to practice during and after implementation
- TOOL-CONTEXT FIT: Congruency of tools with PHPR mission/vision/goals
- FILL A KNOWN GAP: An implementation needs to fill an identified gap in an agency
- EVERYONE CAN BENEFIT: All personnel can benefit from an implementation, not just the PHPR division, so cross-divisional implementation is valuable
- CUSTOMIZABLE: Tools that can be tailored to context and modularized
- SHARED AGREEMENT: A project charter is a reference point to keep everyone motivated

- INCORPORATE KNOWN BARRIERS: Anticipate competing priorities and time constraints in the implementation timeline
- BE SYSTEMATIC: Evidence-based, high-quality innovations need to be systematically identified, supported and delivered; academic partnership can provide methodologies and objectivity to ensure trustworthiness/credibility in selected tools

Dr. Baseman said this project is a starting point in learning how to successfully implement innovations into public health. The PHEP Division benefits from collaborating with other internal public health department Divisions and their external stakeholders when engaging in translation, dissemination and implementation of innovation activities. Public health may be able to leverage implementation lessons from other sectors, like healthcare and business, to improve the translation, dissemination and implementation of new skills, ideas, technologies and other innovations in practice. Future research should consider how leadership both bridges and creates the pathways for implementation and diffusion of innovations in public health.

In order to create a fertile ground for innovation success she suggested building flexibility and/or tailoring into the innovation and providing training in change management. Be sure to engage with leaders and innovation champions, as well as, recognize that empowerment, self-efficacy and increased comfort and confidence in work roles are solid definitions of success.

In order to build on the project, Dr. Baseman asked the BSC to help with answering to the following questions:

1. What are the greatest barriers to implementation of innovations in practice and how can they be addressed most effectively?
2. Are there structural or organizational characteristics that ensure successful implementation of innovations in PHAs?
3. What external and internal supports improve the translation and implementation of innovations?
4. How do PH Authorities define success when implementing a new tool or disseminating new information or ideas?
5. How can implementation successes be sustained in the face of staff turnover, changing PH priorities?
6. How can we create PHA learning organizations that support innovations and improvements coming from within the agency itself?
7. What lessons can be learned from other sectors about implementation facilitators for evidence-based practice and adoption of new ideas, technologies and innovations?

Recommendations from the BSC and CDC:

- Is there a way of looking at the characteristics of the innovation itself and if it was more readily implemented?
- With this project there was discussion around why some lessons learned were stronger than others and had more impact. Those that rose to the top may be characteristics of the project themselves and why those projects are chosen.

- Sometimes research leads to other research and the natural outgrowth of such research is how we can think about innovating in public health.

David Eisenman, MD, MSHS; Center for Public Health and Disasters, UCLA Fielding School of Public Health

UCLA has been working with three local health departments to translate evidence-based practices and for those departments to then implement those practices. His presentation focused on the challenges incurred while adapting a single program to fit three different health departments that later led to a solution. He believes the solution has implications for public health emergency preparedness.

The core components of a program are the elements responsible for its effectiveness and are central to its theory and program logic. They should remain unmodified in any adaptation or implementation. The project's plan was to improve capacity in the health departments to do program planning and implementation around community preparedness. The health departments desired to address community preparedness (PHP Capability 1). The primary focus was to implement evidence-based programs in household level preparedness. The following model was used to guide the process.

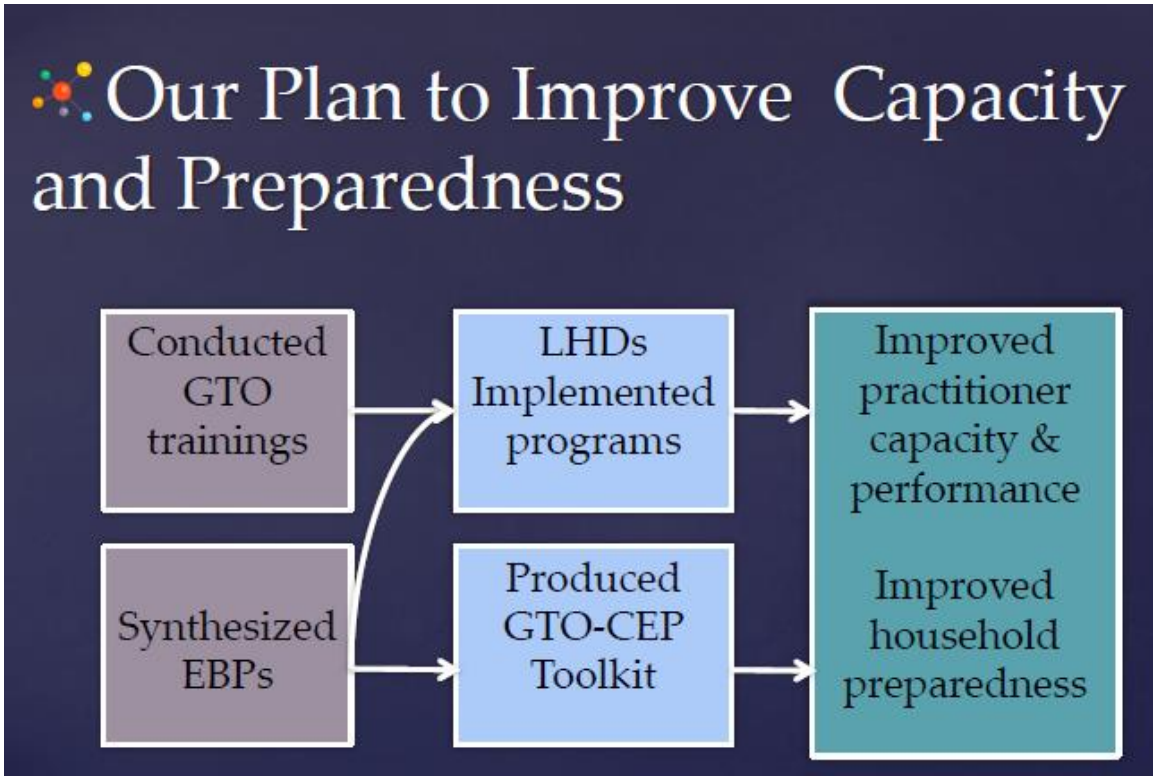


Figure 18. Our Plan to Improve Capacity and Preparedness.

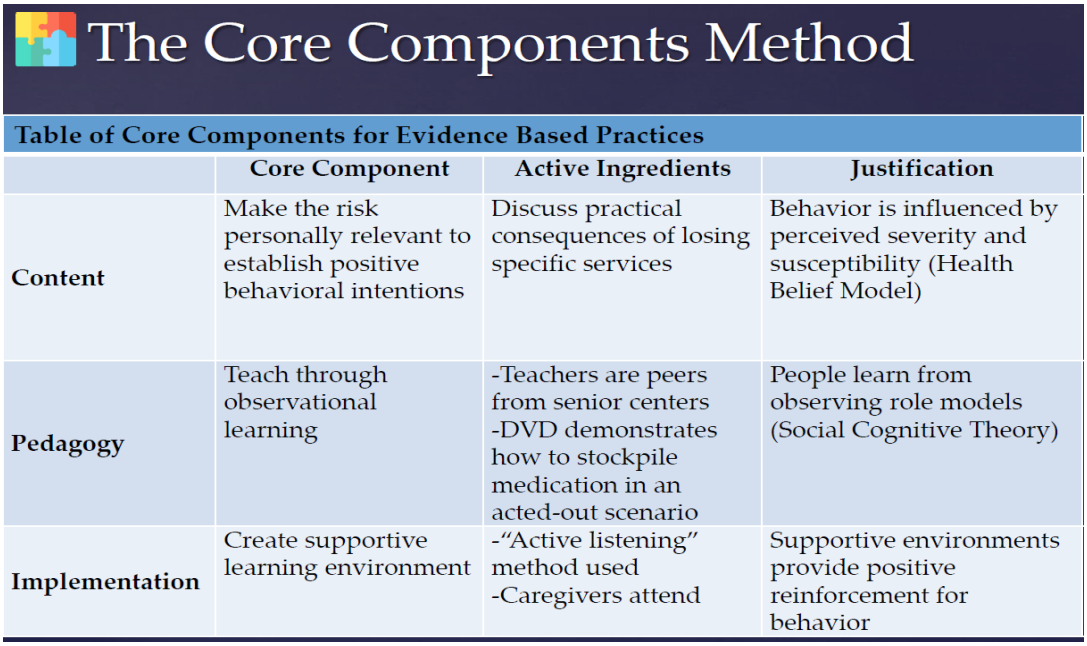
The Getting to Outcomes Method (GTO) has 10 steps:

1. Choose problem
2. Identify goals, population, outcomes
3. Find programs worth copying
4. Modify program to fit needs
5. Assess capacity to implement program
6. Make a plan for start
7. Evaluate implementation
8. Evaluate outcomes
9. Plan for CQI
10. Consider how to sustain

Between steps 3 and 4, the challenge is fitting the innovation to fit the need.

The GTO Method says, when assessing fit, use a red light, yellow light, and green light process. Red light means not advised. Yellow means to proceed with caution, get and engage expert to help. Lastly, green light means it's safe to adapt. He gave an example of train-the-trainer, evidence-based program in which senior citizens in the community were trained to deliver community-based trainings on improving household preparedness. The health departments wanted to assess the impact of making the following adaptations to the program: skip the nuts and bolts of how an earthquake affects services; use health educators instead of community seniors in a train-the-trainer model; and use slides instead of a portable flipchart.

The table below was used as a guide. The first column contains components of the program. The second column, active ingredients, are the specific interventions based on the core components. The third column provides the justification.



The Core Components Method

Table of Core Components for Evidence Based Practices			
	Core Component	**Active Ingredients**	**Justification**
Content	Make the risk personally relevant to establish positive behavioral intentions	Discuss practical consequences of losing specific services	Behavior is influenced by perceived severity and susceptibility (Health Belief Model)
Pedagogy	Teach through observational learning	-Teachers are peers from senior centers -DVD demonstrates how to stockpile medication in an acted-out scenario	People learn from observing role models (Social Cognitive Theory)
Implementation	Create supportive learning environment	-"Active listening" method used -Caregivers attend	Supportive environments provide positive reinforcement for behavior

Figure 19. The Core Components Method.

As a result of their assessment, the GTO Method exhibited that they should not skip the nuts and bolts (red light); they should proceed with caution when using health educators (yellow light), and that it was okay to use slides instead of flipcharts (green light). More information on the GTO Method can be found at GTO Method and UCLA Center for Public Health and Disasters.

The GTO Method can also be used to help practitioners with fit. The focus should be on fit to advance the field. Dr. Eisenman suggested that public health broaden its perspective from looking for the islands of excellence to research on core components. This is research that operationalizes and tests core components to learn what matters. Think of core components as the new deliverable. They can be catalogued and are searchable to make them more available to health practitioners. Use LHD-academic partnerships to leverage this resource and assist with the next steps in translation.

He ended his presentation with some questions to consider.

- How do we capture core components in a standardized way?
- How do we incentivize core components as a deliverable?
- What type of TA will academics and practitioners need?

Recommendations/Comments from the BSC and CDC:

- Fit is relative and specific to particular communities. Consider participation by community members as a component who can advocate for the community's need and can advocate to the community.
- We do a lot of "to and for" other audiences as opposed to "with and about". We need to build that concept into the GTO Method. A group that consists of academics, practice, and the target audience should come together to determine the components, theory behind them, and the benefits and unintended consequences. Possible to use flipcharts because they work best for these discussions because you can see real-time feedback and the pros and cons.
- The value of the PERRC and PERLC portfolio summaries is phenomenal because it's overwhelming to have 413 suggestions. If there is any opportunity that CDC can contract with ASPPH or others to take the volume of products and synthesize it into a manageable format – ideally one that can gives the strengths and things to consider when implementing -- that would be helpful. Doing this can also identify research gaps.
- NACCHO has some valuable lessons also related to your work under the Advanced Practice Center tools.
- There needs to be some thought on how to keep the tools up to date as new learning occurs. Also consider how you're looking at Project Public Health Ready in light of the work you're doing as well.
- ASTHO has done considerable work on strategic planning and has identified high level goals, deliverables, and strategies moving forward. Those should be incorporated into this work and the field's activities. The goal is to make these processes part of the day-to-day work. There's value to think of a way to align the work in the strategic efforts

that are happening in agencies so that leaders will incorporate them in their processes moving forward.

- Oftentimes culture is a barrier to innovation to occur. Or in environments in which there is no incentive to innovate.
- Think of what can be done through the PHEP grant program as a possible lever and a nudge in the direction of innovation and implementation. There may be a need to do surveillance on the materials created to monitor how, or if, they are being used.
- Determine if training has been looked at from the angle of facilitators and barriers, identification of core components of interventions—these should be built into evaluation criteria.

Dr. Groseclose resided as chair for the remainder of the meeting due Dr. Inglesby's early departure.

Incident Management Training Development Program (IMTDP) Update

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

Over the last two years, DEO has built the capacity to train the agency's senior leaders to be more successful in a senior leadership role in CDC's incident management structure during a response operation. The mission of IMTDP is to build a comprehensive training program that increases the public health response leader's capacity and to integrate response training efforts at CDC. In the initial year of the pilot cohort, roughly 17 individuals were trained. The hope was to deliver three modules the first year, but only two were completed. Last year, again, the goal was to deliver three modules. Surprisingly, six where actually created. This year, ten modules will be created. Enrollees, commit to one training day per month for ten months in order to complete the training.

This program has grown quickly. Senior leaders that serve as faculty go all the way up to the most senior levels of CDC. The buy-in and engagement from around the agency underscores the importance of the program.

There's also evidence that the agency understands the need. Of the 35 senior leaders that have gone through the pilot year or the inaugural cohort, nine of them have served in either the Zika response or the current hurricane response in senior IMS leadership positions. There's been a request for individuals from the inaugural cohort to serve as deputy incident managers. This is one just piece of putting the agency in a position to be successful in the next public health emergency response.

Silvia Trigoso, MPH, Division of Emergency Operations
Catherine Piper, MPH, CHES; Division of Emergency Operations

Ms. Trigoso and Ms. Piper dedicated the remainder of the presentation to providing more information on the training program components. The IMTDP is the first of its kind at CDC. The

quality improvement measures utilized ensure that the curriculum maintains relevancy and meets the learning needs of current and future incident managers. Another important component to the program is the evidence-informed training strategy that led to the selection of participants for the cohorts. Below is an illustration of the annual cohort selection process.

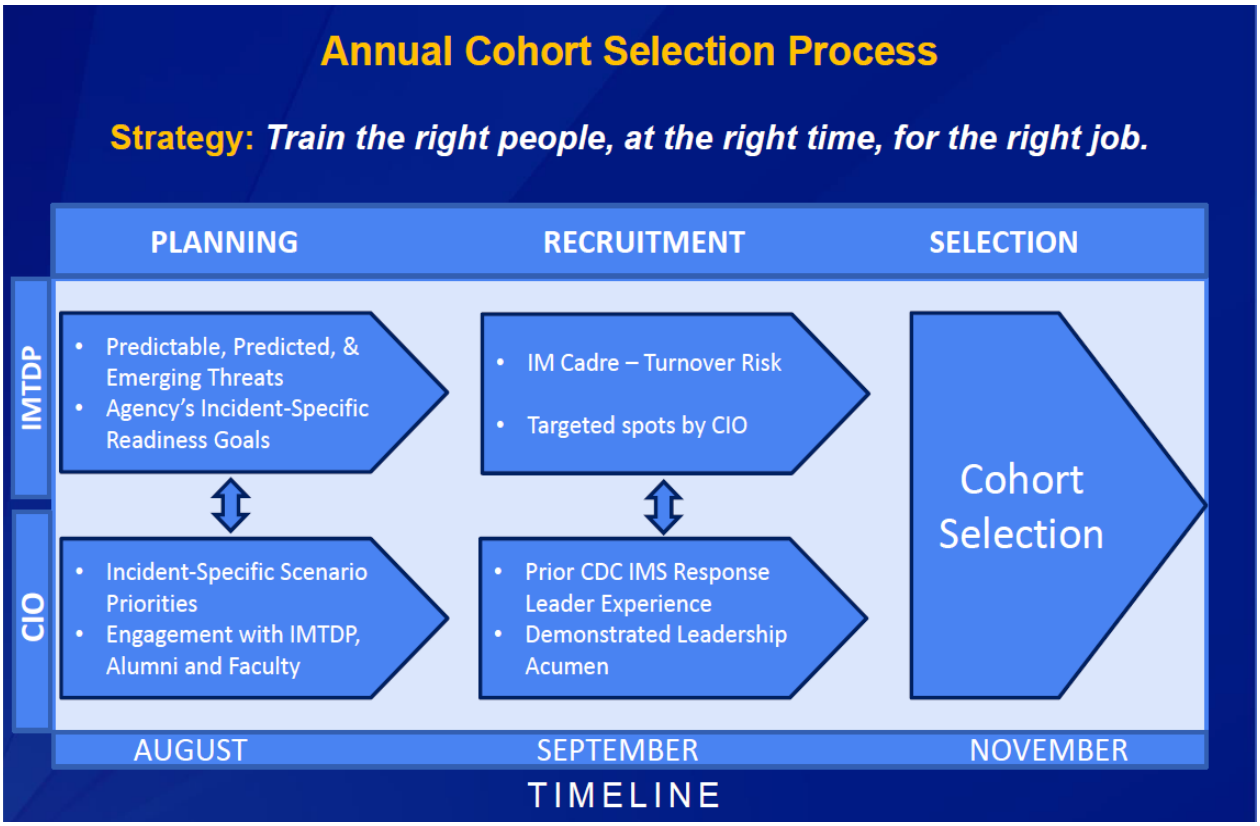


Figure 20. Annual Cohort Selection Process.

This process has been applied for two continuous cycles and there's been a 93% response rate for participation. The training is informed by real-time capacity needs of CDC response leaders. Results from an analysis conducted last year was used as the baseline for CDC response leaders. The data showed there were 526 CDC response leaders identified as serving in an IMS leader role. Of those, 363 were existing response leaders who previously worked a response leader role at CDC, like incident manager, deputy incident manager, taskforce lead, or team lead. This analysis allows for understanding the bench strength by response leader roles so that CDC can prioritize, and plan forward the number of individuals needed for training in each cohort.

Another way to look at capacity is through acquired response experience and institutional response memory. Analysis demonstrated that less than 10% of the existing response leader worked in three or more activations. This 10% of individuals was purposely engaged to serve either as faculty, vet training curricula, and inform training to assure relevancy.

The IMTDP Inaugural Cohort of 2017 had 17 nominees trained from seven CIOs. Four of these individuals supported the Zika Virus Response and/or 2017 Hurricane Response. These

individuals were found to have 10 or more years of public health preparedness and response experience and served in leadership roles dating as far back as SARS. Fifty-three percent of the cohort are alumni of the Epidemic Intelligence Service. In about two weeks, this cohort will be graduating.

IMTDP will also monitor its impact on turnover risk of the incident management cadre of the CDC. When retirement eligibility is considered as an indicator for turnover risk, the IMTDP will get a better picture of which response leaders, from the incident specific program areas, should be made top priority in training efforts. Recent data was collected to assess risk and the results are shown below. The results confirm the IMTDP has made an impact on incident manager turnover.

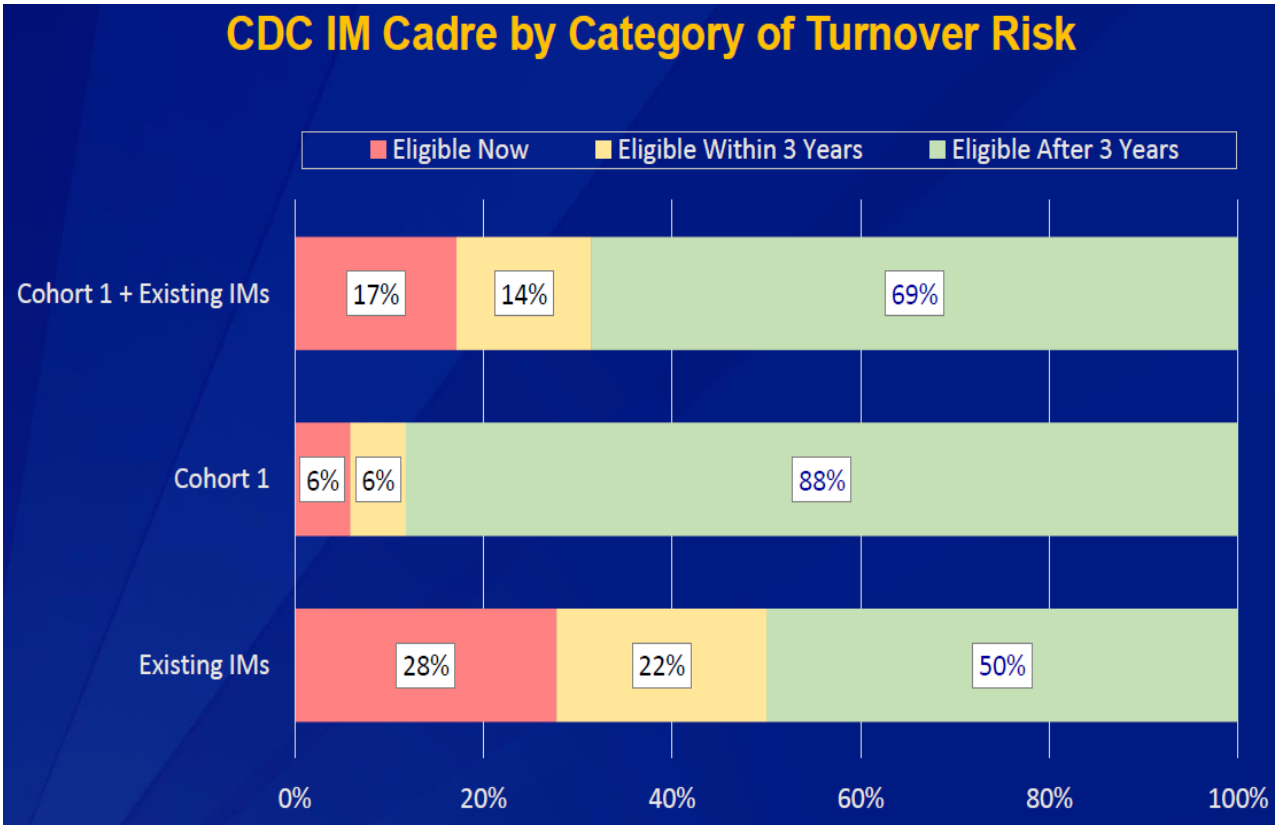


Figure 21. CDC IM Cadre by Category of Turnover Risk.

Participants were also queried regarding their training satisfaction, suggestions for program improvement, and the impact IMTDP training has made on their roles. Below are some preliminary results.

Areas of success:
IMTDP helped participants:

- Clarify the CDC Incident Manager role (90%)
- Gain interest for a CDC response leader role (60%)
- Understand expectations of a CDC Incident Manager (80%)

- Recognize the value of preparing leaders and encourage them to recommend that their CIO nominate participants to IMTDP (80%)
- Gain confidence in their ability to serve as an IM

Areas for improvement:

- Applied learning opportunities (63%)
- Agency rotation opportunities through IMS
- Formalized shadowing and mentoring

When formalizing the curriculum, an environmental scan was conducted, internally as well as externally. State and local partners were engaged to gain an idea of their activities so that the process was not created in a vacuum. The environmental scan continues to inform the curriculum. Some of the content learned has turned into key messages after being thoroughly vetted. The other desire is to add themes to the key messages and began to disseminate them. The aim is to standardize the processes and terminology so that everyone is speaking in the same manner.

The IMTDP will continue to evolve to accommodate the changing cohort and the response needs. Also, the recruitment and selection processes are becoming more formalized. The curriculum will also guide the way CDC works with faculty and how faculty will inform the training content.

Continuous engagement occurs with CIO partners. An annual advisory committee meeting has been established that will be held in the first week of February every year. On the agenda will be a state of the program report. Previous cohorts will also be invited to assist in future module development. The graduation event will expand to not only the annual graduation but also provide an opportunity for previous cohorts to come together and help with current issues and pilot material.

A systematic process was employed when creating the curriculum so that the decisions were informed by evidence, research, best practices, instructional design, and operation. Focusing on these areas will help maintain the integrity of the program and assist with sustainability and integration into the agency.

Several activities were used to inform the curriculum development process. There were pre- and post-assessments to identify the cohort. Debriefs would occur with faculty, and official evaluators were employed to gather information.

The desire is to make the program agile and to focus on succession planning. The CDC workforce is changing. The level of experience within this first cohort was more varied than the cohort coming in but many of them had experience in being involved or leading a response but not in the command staff.

A component that needs to be added is participation of nontraditional, emergency response CDC centers. Another important component is faculty. The desire is to keep internal faculty, who can share the history of their experience and lessons learned. Keeping internal faculty allows for individuals to share safely, honestly, and candidly their lessons learned. Moreover, this builds a community of practice and will only expand CDC's knowledge as an agency.

One of the obstacles identified was the availability of senior-level faculty. Multiple methods have been added for participation in training (in-person or remote) to overcome this barrier. A video project was also performed, where a series of questions based on key messages were asked. From the videos, 41 clips were captured and used in the modules. These clips give faculty, who come from different disciplines, an opportunity to react to what the incident manager is saying. So, if they cannot be there in person, there's representation of senior leaders providing examples.

The time for interaction was also expanded in an organic way through guided straight talk. Also, this coming year incident managers will come in for about an hour to facilitate personal discussions with trainees. The aim of the discussions is to build relationships and foster trust among the participants.

The following table was shared as an example of the curriculum evolution.

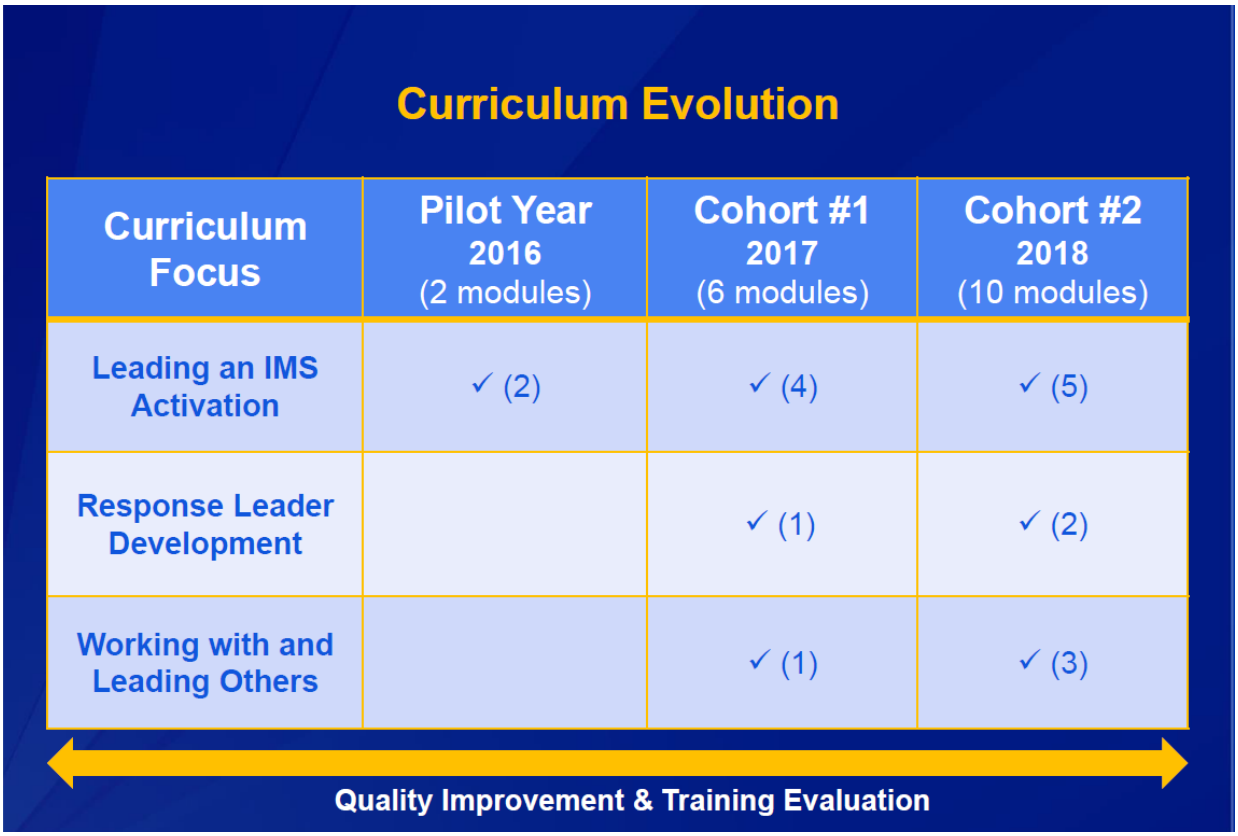


Figure 22. Curriculum Evolution.

The panel ended their presentations with two questions for the board.

1. How do we teach political savvy to response leaders?
2. How can we incorporate experiential learning opportunities?

Recommendations from the BSC and CDC:

- New incident managers can't learn what they can't see. There need to be opportunities where they can shadow and be in environments where political leaders are making decisions on a response. This will help them have political savvy, understand how political decisions impact responses, and how to communicate with political leaders. They also need to learn how to do negotiation, conflict resolution, and influence those they don't normally have authority over. There may be an opportunity to do a specialized training at CDC.
- Can you teach someone to be a leader or is it an innate trait? It may be worthwhile to develop a set of metrics to identify the naturals.
- Look outside of the agency for great instructors with different perspectives and experiences, as well. It's important to bring in external participants. It gives a larger view of the world.
- One of the biggest challenges for new leaders is feeling as though they have to have all the answers, make all the decisions and not rely on others. They also need to be able to hear themselves in the middle of a crisis. Make sure leaders don't work past the point of exhaustion. Look at past emergencies to determine common skills and challenges. Teach them to make decisions with limited information.
- There are differences between day-to-day leadership and leadership during a response and you need to define the skillset of both and ensure participants have the right skillset to be successful.
- Learn how to interact with other responders. Incorporate nontraditional partners into the trainings and ensure trainees get experiences with external partners on training and exercises. As a part of exercise have policy group type meetings. Make sure those who participate in the exercise have a binder to place all the documents and tools, so they have them on hand.
- The more opportunities to experience the political bubble the better. Often there are things going on at the jurisdictional level and trainees could participate in those events. Remember most of the learning comes from hard knocks on the job. Much of that learning is awareness, skill and communication. Also, the political situation is always changing so you may not be fully competent, and you have to accept that. The political decisions made during the Ebola response would be a wonderful teaching tool.
- Have your students think about who their key response partners are and remember to consider the ones you might not work with every day or traditionally and build in specifics of how to build trust with those nontraditional partners.

Public Comment Period

NACCHO has been conducting assessments of public health workers for several years. The assessment looks at demographics of participants and capabilities of the health departments that might contribute to its funders' initiatives. One of the questions pertaining to demographics is number of years in the field. About 50% have been in the field five years or more and 50% five years or less. PAHPA has called for an individual competency-based model for public health workers, yet, some of the trainings have been mapping to organizational capabilities. Be certain that you're looking at these methods differently because each method measures differently. We do not want to lose individual skillsets by only focusing on organizational capacities.

Meeting Recap & Evaluations, Action Items & Future Agenda

RADM Stephen C. Redd, MD; Director, OPHPR

Dr. Redd thanked everyone for participating and making the meeting successful. The agenda for this meeting was formulated for more discussion time. He hopes that this was a good approach and invited the Board to let CDC leadership know their thoughts regarding the meeting format via their evaluations. He also asked the board to help CDC identify domains that should be given more attention and topics from the Board's perspective that should have more priority.

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

Dr. Groseclose reminded the Board members to complete their evaluation and conflict of interest forms and return them. He also asked Board members to check their availability for two public webinars and two in-person meetings. There's quorum for those meetings, so CDC will send out a save the date. He hopes the webinar can be used to present at least one topic in addition to CDC or OPHPR Division comments/responses to any recommendations made at this meeting.

Lastly, he thanked CDC leadership, staff, and contractors for orchestrating a productive meeting. After wishing all attendees safe travels, Dr. Groseclose adjourned the meeting at 2:43 PM.

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.

Date 1/2/18

Thomas V. Inglesby, MD
Chair, Board of Scientific Counselors, OPHPR

APPENDIX A: OPHPR BSC MEMBERSIP ROSTER

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APPENDIX B: BSC Meeting Attendance Roster, Atlanta, GA – October 30-31, 2017

NAME	AFFILIATION	DAY 1 (May 30, 2017)	DAY 2 (May 31, 2017)
Inglesby, Thomas	Chair and SGE	In person	In person
Brandeau, Margaret	SGE	In person	In person
Galea, Sandro	SGE	Absent	Absent
James, Erika	SGE	Absent	Absent
McKinney, Suzet	SGE	In person	In person
Mitroff, Ian	SGE	Absent	Absent
Pawlecki, Brent	SGE	In Person	In Person
Plough, Alonzo	SGE	Absent	Absent
Slemp, Catherine	SGE	In Person	In Person
Viswanath, Kasisomayajula (Vish)	SGE	Absent	Absent
Wooley, Dawn	SGE	In person	In person
Dickerson, Bradley (DHS)	Ex Officio	In Person	In Person
Herrmann, Jack (ASPR/HHS)	Ex Officio	In Person	In Person
Deussing, Eric (alternate) (DoD)	Ex Officio	In person	In person
Levine, Marissa (ASTHO)	Liaison	In person	In Person
Askenazi, Michele (NACCHO)	Liaison	In person	In person
Quinlisk, Patricia (CSTE)	Liaison	In person	In person
Egan, Christina (APHL)	Liaison	Phone	Phone
Ritchey, Jamie (TEC)	Liaison	Phone	Phone
Kelliher, Rita (alternate) (ASPPH)	Liaison	Phone	Phone

APPENDIX C: ACRONYMS

[Recommend using Appendix C from May 2017 BSC meeting minutes.]

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
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)
DSLR 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)
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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