INNOVATION GRANTS

A Catalyst for Change within Regional Public Health Laboratory Consortia

FEBRUARY 2020

APHL ASSOCIATION OF PUBLIC HEALTH LABORATORIES®

Regional Public Health Laboratory Consortia

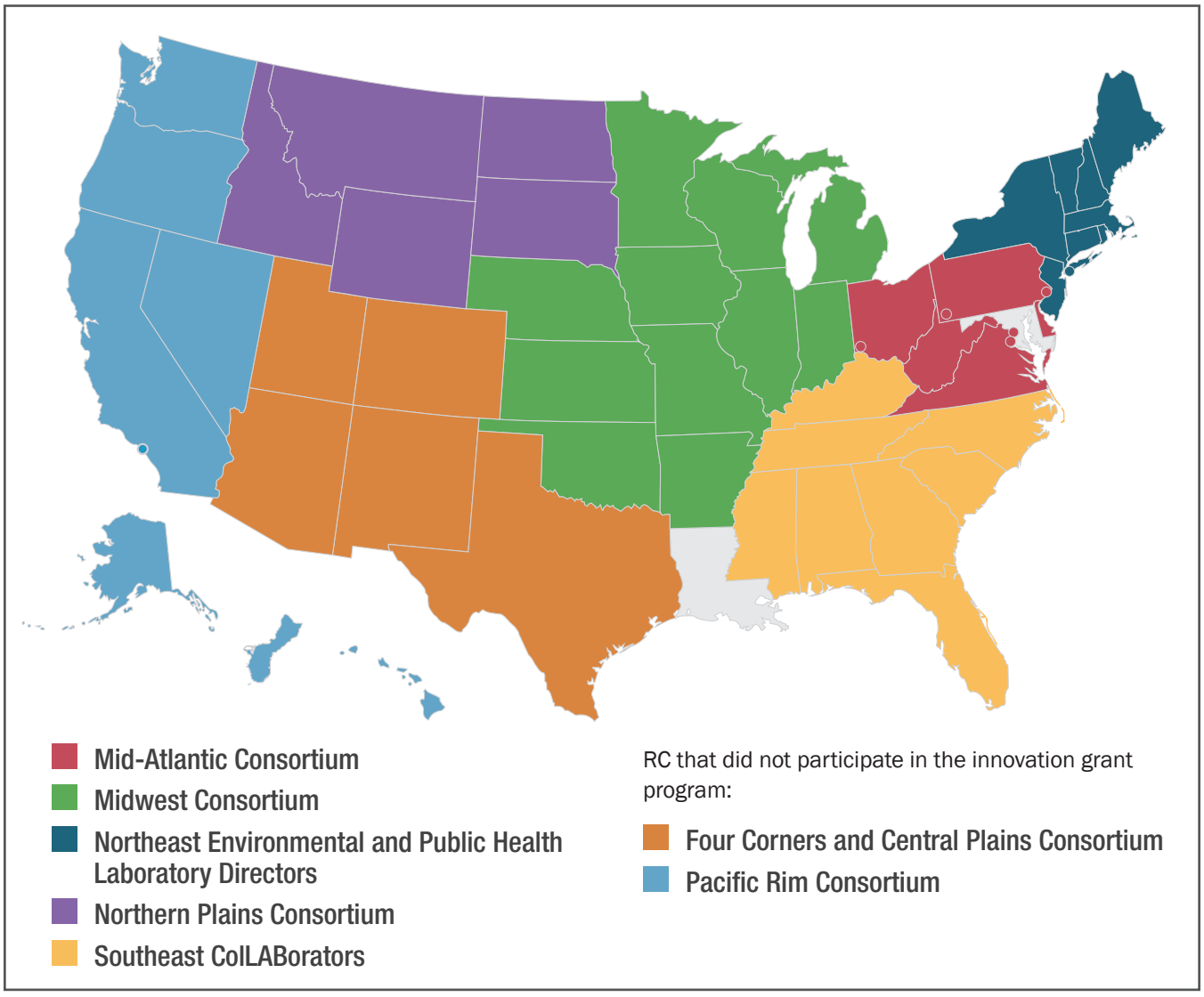
Public health laboratory (PHL) regional consortia (RC) provide a multi-state approach for laboratories to strengthen the public health laboratory system. Through the formation of their own governance structure, identified strategies, and establishing their priorities, each RC is able to develop and implement changes using a comprehensive view of all core functions and essential services specific to their needs. These consortia, including some regions, US territorial or large local public health laboratories, share expertise and resources, provide mutual support when needed, collaborate on special projects and, work to advance a shared mission to enhance laboratory-based public health services.

Learn more about Regional Consortia at aphl.org/RC

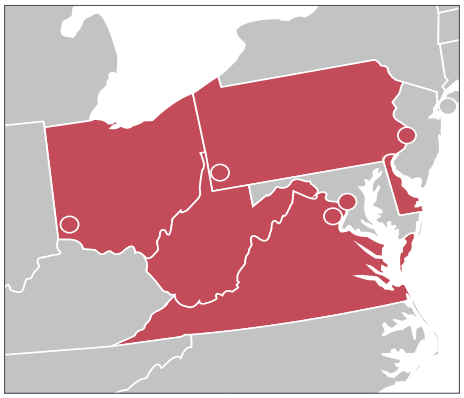
Innovation Grants

With support from the US Centers of Disease Control and Prevention (CDC), the Association of Public Health Laboratories (APHL) provides systems coordination of RC though guidance, facilitation, meeting support, document management and knowledge sharing, as well as offering annual innovation grant awards of up to $10,000 each. Between 2017 and 2019, APHL distributed a total of eight awards for innovation grant projects to five RC: the Mid-Atlantic Consortium, Midwest Consortium, Northeast Environmental and Public Health Laboratory Directors, Northern Plains Consortium, and Southeast CoILABorators.

As detailed in this report, these mini-grants were leveraged for maximal impact of the network and were targeted based on their specific priorities and needs.



MID-ATLANTIC CONSORTIUM



Formed in 2017, the Mid-Atlantic Consortium (MAC) encompasses a broad geographic area, comprising state PHLs in Delaware, Ohio, Pennsylvania, Virginia, West Virginia and Washington, DC, plus the Pennsylvania Department of Environmental Protection laboratory and local PHLs serving Allegheny County, PA; Fairfax County, VA; Philadelphia, PA; and Ohio's Dayton and Montgomery Counties.

Given the highly competitive laboratory environment in the Mid-Atlantic region (which is home to a number of high-powered federal, academic and medical laboratories), MAC members focused their two innovation grant awards on 1) a compensation study and 2) a training needs assessment, both focusing on current public health laboratory scientists.

Documenting Mid-Atlantic Compensation Levels

Scope: With the recognition that the salary scale is a significant barrier to recruiting and retaining a high-performing workforce, MAC undertook a compensation study. Conducted with consultation support by Quatt Associates, the study was based on data collected from 14 laboratories, which varied greatly in staff size and operational capabilities and capacity.

Results:

- Participants reported an average full time staff size of 62, with a median of 44, 25th percentile 13 and 75th percentile 65.
- The average 2018 laboratory operating budget was $9.0 million, with a median of $5.9 million, 25th percentile $1.7 million and 75th percentile $12.8 million.
- Base salary levels for key scientific staff, as of March 1, 2018, are summarized in **Table 1**. Standardization of scientific positions within the study laboratories was critical to ensure accurate data.
- Results indicated that levels vary from a median of $102,500 for scientist directors to $32,800 for an entry-level technician.
- In addition to salaries, some laboratories boost overall compensation with bonuses and awards, and virtually all offer other benefits, such as paid overtime, retirement contributions and free parking or subsidized commuter benefits.
- The Virginia Division of Consolidated Laboratory Services (DCLS) used this data as the basis for a request for general fund appropriation to support a compensation adjustment for staff. DCLS had solid data to demonstrate that several job roles were under paid as compared to local (Virginia Department of Forensic Sciences), regional and national benchmark data with the range of the discrepancy being at least 10% in all scientific position levels with some position salaries being 30% or below. The decision package was approved to move forward by the Virginia Agency and Secretariat and DCLS is waiting to see if it received favorable consideration by the Governor.
- The Fairfax County Public Health Laboratory intends to use the median and average base salary during their latest recruitment to advocate for a higher base salary for an applicant who has significant experience and educational background.

Impact: Compensation has remained one of the primary barriers for PHLs to recruit and retain a high performing workforce. Outcomes from the compensation study will equip PHLs with information on compensation disparity to educate funders and decision-makers.

Future Directions:

- A follow-up of this study with an external market analysis, so PHL compensation can be compared with that in the overall Mid-Atlantic labor market for laboratorians.
- Develop regional compensation policies.
- Present study findings to the broader APHL membership.
- Apply the MAC compensation model to other RC.

Table 1. Base salaries for select public health laboratory staff, as of March 1, 2018.

Position	Responding Laboratories	Incumbents	Base Salary *			
			25th Percentile	Median	75th Percentile	Average
Scientist Director	11	19	$88.8	$102.5	$110.4	$99.0
Scientist Manager	12	43	$61.2	$74.9	$79.3	$71.4
Scientist Supervisor	10	92	$52.9	$63.1	$71.6	$62.2
Quality Assurance Officer	9	9	$68.7	$72.8	$89.1	$76.5
Scientist, Level 4 (Lead level)	6	43	$45.5	$70.2	$86.2	$67.7
Scientist, Level 3	10	78	$48.5	$61.3	$65.6	$59.8
Scientist, Level 2	11	134	$47.1	$55.0	$59.5	$54.4
Scientist, Level 1 (Entry level)	13	170	$36.3	$46.4	$51.9	$45.6
Technician, Level 4 (Lead level)	2	6	ID†	ID	ID	ID
Technician, Level 3	3	31	ID	ID	ID	$35.7
Technician, Level 2	5	41	$25.9	$33.8	$41.7	$33.8
Technician, Level 1 (Entry level)	4	31	ID	$32.8	ID	$33.1

* All dollar figures reported in thousands
† Insufficient data

Assessing and Addressing Training Needs

Scope: PHLs cannot operate without a workforce proficient in the technical skills required to deliver core services, as enumerated in the CDC/APHL *Competency Guidelines for Public Health Laboratory Professionals* (MMWR Supplement/Vol. 64/No. 1; May 15, 2015). With the recognition that it is rare to find a scientist with all of these competencies at the time of hiring, MAC recognized the considerable investment of resources needed by laboratories to support continuing education and training.

With 519 sub-competencies detailed in the guidelines, the consortium identified a subset of core "general" competencies, including general technical and laboratory practice knowledge (GEN 1.00), equipment use (GEN 3.00), pre-examination steps (GEN 4.00), testing (i.e., "examination") skills (GEN 5.00), post-examination steps (GEN 6.00) and regulatory compliance (GEN 7.00). Led by the Virginia Division of Consolidated Laboratory Services, with instrumental support from the Fairfax County Health Department Laboratory, a MAC workforce training needs assessment was conducted in 2018.

> "The Virginia DCLS has already implemented the hands-on Lab Skills 101 training modules to give our personnel a standardized learning experience with consistent measures, assessments and outcomes, aligned to public health laboratory competencies. The foundational laboratory knowledge and capabilities covered by this course are critical for all our scientific staff, whether new to the field or highly experienced."
>
> – Crystal Barrett, Laboratory Systems Improvement and Training, Virginia Division of Consolidated Laboratory Services

Results:

- Findings identified five high-priority training areas (see **Table 2**). The study also revealed that MAC members prefer hands-on, instructor-led training in a classroom or laboratory setting, with asynchronous/online delivery a secondary option.
- One high-quality module—Lab Skills 101, addressing GEN 1.00 sub-competencies was developed. The training module can be used "as is" or customized to address specific proficiency deficits. Moreover, it can be delivered via instructor-led or online learning systems.
- Preliminary data from the beta users measured the most significant change in Chemistry and Laboratory Quality Control knowledge with 52.5% and 113.6% improvement, respectively, based on pre- and post-assessment scores (see **Table 3**).

Impact: Providing standardized training modules, and offering optional delivery methods, provides PHLs with real-time training resources to ensure laboratory workforce has the core competencies to meet quality PHL services.

Future Directions:

- Review of materials utilization in late 2019 and, based on this review, the consortium will decide whether to develop additional training modules, using Lab Skills 101 as a template.
- Make available all training materials to other RC, as well to the overall APHL membership.

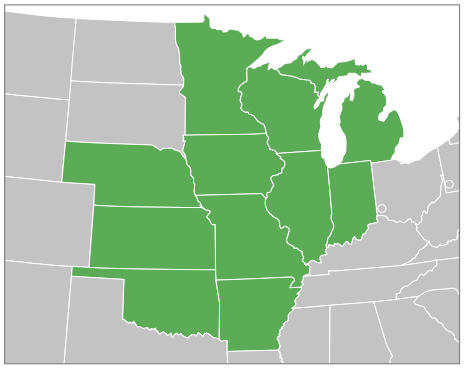
Table 2. Training Priorities, Based on MAC Needs Assessment

Training Priorities
General scientific laboratory concepts and theories, such as data integrity and universal precautions (GEN 1.01)
Technical skills related to safety, equipment calibration, calculations and measurements (GEN 1.04)
Troubleshooting (GEN 1.05)
Scientific ethics (GEN 1.09)
Regulatory compliance (GEN 7.01)

Table 3. Pre- and Post-test Scores of Beta Users for Lab Skills 101 Training

Training Module	Number of Beta Users	Pre-test Scores	Post-test Scores	Improvement
Measurement and Calculations	15	75.3%	80.3%	8.8%
Chemistry	12	56.2%	78.4%	52.4%
Laboratory Quality Control	13	41.8%	83.5%	113.6%
Other Common Lab Methods	13	92.4%	96.6%	4.4%

MIDWEST CONSORTIUM



Formed in 2018, the Midwest Consortium (MWC) was originally comprised of state PHLs in Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska and Wisconsin. In 2019, the MRC expanded to include Oklahoma and Arkansas.

The MRC devoted their APHL innovation funding to a review and revision of member COOP plans to assure consistency, completeness and the adequate availability of testing services to support any of the nine consortium states in the event of a service disruption.

Assuring Continuity of Operations (COOP) in Emergency Situations

Scope: COOP plans assure that critical public health services, such as newborn screening or outbreak response, continue unabated despite the impact from highly infection agents, chemical or radiological threats, natural disasters, other emergencies. This initiative positions the Midwest PHLs to respond quickly when needed.

Results:

- Revised existing COOP plans to assess member capabilities and capacities compared with the defined critical testing needs of each consortium member.
- Updated all member COOP plans with language considerate of Midwest Regional Consortium support in emergency situations.
- Completed emergency contact lists for each consortium member, including a 24/7 duty officer and a checklist to use when reaching out.

> "We look to our Midwest Consortium colleagues as our primary resource when we need to go outside of our state for emergencies, to enhance our COOP."
>
> – Midwest Regional Laboratory Consortium position statement

- Discussed the legal mechanisms necessary to authorize backup testing from another state.
- Developed a regional position statement supporting interstate collaboration on COOP planning and the adoption of legal agreements necessary to enable mutual testing support.
- Planned and conducted three tabletop exercises in March 2019 with twenty-four representatives from all nine states. Three hypothetical disasters were presented: a flood within the Illinois PHL, a Missouri flood at the time of testing needs for a high threat pathogen, and an Iowa tornado that damaged the state PHL to the level of inoperability. For each scenario, consortium members assessed regional, federal and commercially-available laboratory assets; legal agreements/emergency contracts needed to access those assets; potential data-exchange mechanisms for test ordering and results reporting; available sample shipping options and other critical issues
- Developed an emergency outreach checklist for pre-analytic, analytic and post-analytic activities that must considered when testing is referred to another facility (see **Table 4**).

Impact: With a common mission to protect population health and provide essential services among all PHLs, reaching out to consortium members as a primary resource is easily complimented during emergency events. Evaluating and challenging COOP plans through real-life scenarios allows RC to pro-actively identify specific support needs, gaps, and develop comprehensive tools that collectively assure a timely and systematic approach to respond to emergencies.

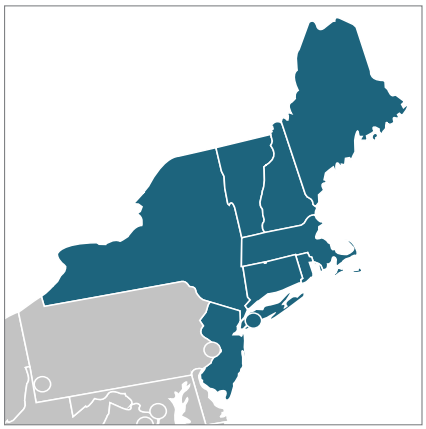
Future Directions:

- Members are now in the process of updating their COOP plans with language considerate of regional public health laboratory support in emergency situations.
- The consortium is investigating potential inter-state legal agreements to facilitate mutual support.
- Share COOP resource materials to apply the systematic approach across other RC.

Table 4. Midwest Regional Consortium Emergency Outreach Checklist

Midwest Checklist for Emergency Outreach
☐ Determine that testing services will need to be performed by another laboratory.
☐ Identify the preferred test methodology, approximate volume, and the projected time frame for the referred tests.
☐ Determine if assets are available within your state to address the issue.
☐ Reach out to another laboratory: ☐ Use the Midwest Consortium 24/7 Duty Officer contact information. ☐ Use the APHL Laboratory Directors Community. ☐ Contact CDC. ☐ Use a commercial reference laboratory.
Pre-analytic
☐ Identify the laboratory that will perform the testing: ☐ Verify that the laboratory is accredited by the appropriate organization to perform testing for your state. ☐ Verify that the laboratory has the supplies, personnel, other resources to accomplish the testing.
☐ Determine the expected turnaround time and when results will be available.
☐ Determine if legal agreements are necessary in order to refer samples/specimens: ☐ Emergency Contract? ☐ MOU/MOA?
☐ Determine if payment for testing will be required: ☐ Can test kits/reagents be purchased and drop shipped to the testing laboratory?
☐ Determine how the samples/specimens will be delivered to the testing laboratory.
☐ Determine the method for data exchange (web portal, manifest, complete individual requisition forms).
☐ Notify staff of the operation plans.
☐ Identify points of contact for questions, feedback, status calls.
Analytic
☐ Determine if the testing methodology is identical to/compatible with your current method.
☐ Determine if a test panel will be performed that provides additional information not normally produced.
☐ Evaluate the reporting needs of the program/project against the referral laboratory reporting options (reference ranges, minimum detection levels, and/or reporting limits).
☐ Determine how reflex testing would be handled.
Post-analytic
☐ Determine the methods of results reporting: ☐ Determine how the results will be received (fax, telephone report, web portal, etc.). ☐ Determine who will report the results to the submitters: ☐ Will all results be reported to your laboratory for resulting in your LIMS? ☐ Will the testing laboratory have any contact with your submitters? ☐ Determine who will notify Epidemiology, when applicable: ☐ Will all contact with Epidemiology be conducted by your laboratory? ☐ Will the testing laboratory have any contact with your Epidemiologists? ☐ Determine the storage of residual specimens.

NORTHEAST ENVIRONMENTAL AND PUBLIC HEALTH LABORATORY DIRECTORS



Formed in the 1970s, the Northeast Environmental and Public Health Laboratory Directors (NEEPHLD) consortium is the longest established consortium comprised of state PHLs in Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont, plus the New York Department of Agriculture and Markets, Food Laboratory, and the New York City PHL.

NEEPHLD represents a region with a number of high-value terrorism targets and a heavy influx of people, goods and potential pathogens from across the globe. New York, for example, suffered anthrax attacks in 2001, had an imported case of Ebola virus in 2014 and currently has areas beleaguered by antibiotic-resistant *Candida auris.* Typically, the first laboratorians to encounter such dangerous patient specimens or disease isolates are professionals working in clinical laboratories, such as those based in hospitals, medical centers and other healthcare sites. These frontline workers have varied levels of instruction related to occupational safety. In 2017—based on reports from state PHL biosafety officers conducting outreach to clinical laboratories—NEEPHLD identified a need for enhanced biosafety and biosecurity training for clinical laboratorians within the region. With the potential for terrorism targets, in 2018 NEEPHLD focused efforts on preparing for Ebola and other high-risk special pathogens.

Improving Laboratory Biosafety and Biosecurity

Scope: Supported by an APHL innovation grant, the consortium partnered with two local chapters of the Clinical Laboratory Management Association (CLMA) to host the Northeast Laboratory Safety Symposium at a Massachusetts Medical Society facility in June 2018. This day-long event was designed to promote networking and problem-solving among subject matter experts and laboratory personnel working in clinical and reference laboratories.

> "Safety isn't talked about enough in clinical laboratories with a positive tone, because it can often be seen as a hassle or barrier to efficiency."
>
> – NEEPHLD Symposium Attendee

Results:

- Expert presenters covered topics such as potential laboratory exposures, laboratory-acquired infections, the role of biosafety officers, risk assessments and biosecurity protocols.
- Safety workstations featured hands-on exercises addressing biological spill cleanup, chemical spill cleanup, use of respiratory protection and proper use of personal protective equipment.
- Altogether, 107 people attended the symposium, with attendees from all NEEPHLD jurisdictions, four guest speakers and seven vendors promoting laboratory safety products. The symposium offered Professional Acknowledgment for Continuing Education (PACE®) credits through the New York City Public Health Laboratory.
- A comparison of pre- and post-meeting participant test results showed a definite increase in knowledge regarding the five laboratory risk assessment steps (i.e., identify hazards, evaluate risk, mitigate risk, implement controls, review risk assessment), the role of sentinel laboratories within the national Laboratory Response Network, the role of biosafety officers, types of physical laboratory vulnerabilities, key hazard control methods (e.g., eliminating the hazard), the definition of biosecurity (i.e., "protection of microbial agents and toxins from theft or diversion by those who intend to pursue intentional misuse") and other important safety issues. **Table 5** (right) lists the aggregate of scores from the pre and post-tests.

Table 5. Aggregate Pre- and Post-test Scores from Northeast Laboratory Safety Symposium Attendees

	% of Attendees That Took the Test	Average Score
Pre-test	77%	65%
Post-test	96%	87%

Impact: As the front-line to work with high risk pathogens and patient diagnostics, it is essential to assure the safety and security of clinical laboratorians. Hosting a regional conference in partnership with multiple organizations and expertise provides a wide-ranging and efficient approach to reach a larger audience and address biosafety and biosecurity training needs across the region.

Future Direction: Share the NEEPHLD regional biosafety and biosecurity conference model with other RC.

Preparing for Ebola and Other "Special Pathogens"

> "Day 5" blood from an Ebola patient can have 10^9 viral load, or enough virus to infect the planet.
>
> – Factoid from Peter Iwen, PhD, Conference Presenter

Scope: A second NEEPHLD grant activity—an Ebola Regional Coordination and Response Plan Conference—was designed to strengthen regional laboratory network capability to detect and respond to Ebola virus infections and similar high-threat pathogens.

Results:

- The day-long event—held April 23, 2019, in Waltham, Massachusetts—provided an opportunity for public health leaders to review "special pathogen" threat response plans for US Health and Human Services (HHS) Regions 1 and 2, with a focus on the public health laboratory's role and its relationship with other partners.
- The NEEPHLD conference followed a fall 2018 National Ebola Training and Education Center (NETEC) exercise of the US HHS Region 1 Ebola and Other Special Pathogens Regional Coordination and Response Plan (officially adopted in March 2017), making it especially timely.
- Dr. Peter Iwen, Professor, University of Nebraska Medical Center and Director of the Nebraska Public Health Laboratory and a NETEC member, discussed laboratory considerations for Ebola virus and other special pathogens.
- Other experts addressed safe collection, packaging and transport of clinical specimens from patients under investigation; current Ebola assessment and treatment capabilities at regional hospitals; and the experience of New York City's Bellevue Hospital Center around Ebola virus.
- Thirty-three people attended the conference (representing every NEEPHLD state, except Maine) and included public health laboratory directors, division/program directors and biosafety officers; state medical directors, state epidemiologists, state emergency preparedness administrators and others. Most had not seen the US HHS special pathogens response plan before the conference.
- In addition to boosting awareness of the response plan, the NEEPHLD conference led to a number of follow-up activities (see **Table 6**).
- All of the seven participants who completed a post-meeting conference evaluation reported that the conference raised their "familiarity and understanding" of the Region 1 response plan "very much" or "extremely." And all but one reported that it improved their understanding of "current responsibilities and capabilities among assessment, treatment and regional treatment hospitals" "very much" or "extremely."

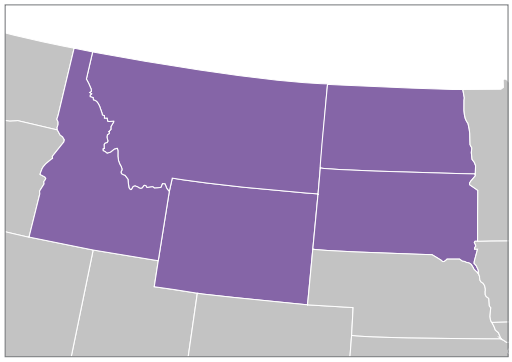
Table 6. NEEPHLD Ebola and NETEC Post-Conference Accomplishments

NEEPHLD Ebola and NETEC Post-Conference Accomplishments	
• Review and update of the state public health laboratory Ebola testing template. • Distribution of a bio-emergency planning textbook to NEEPHLD members.	• Development of a NETEC laboratory course on Ebola. • Addition of a laboratory/epidemiology component to the regional June 2019 exercise focusing on Vermont patient transport to Massachusetts General Hospital.

Impact: Hosting a regional conference with participation from PHL system partners provides a comprehensive approach to review "special pathogen" threat response plans, identify any gaps, and implement improvements such as training and new resources.

Future Direction: Share the NEEPHLD conference model for "special pathogen" threat response plans with other RC.

NORTHERN PLAINS CONSORTIUM



Formed in 2006, the rural Northern Plains Consortium (NPC) is comprised of state PHLs in Idaho, Montana, North Dakota, South Dakota and Wyoming, and is the second longest established network in the US.

Professional development is a perennial public health laboratory need, as new threats emerge (requiring precisely targeted analytical responses) and technologies evolve. NPC has a long history of pooling resources and expertise to enable scientists' continuing education and leadership training beyond what any one consortium member could achieve individually.

Training Emerging Laboratory Leaders

Scope: Tight budgets and increased workloads have sometimes limited professional development opportunities among NPC member laboratories. To address this challenge, in spring 2015 the consortium launched its Regional Emerging Leaders Program (RELP), modeled on APHL's own national Emerging Leaders Program. Throughout the nine-month RELP, participants enjoy the benefits of networking and teambuilding opportunities, monthly webinars addressing the management skills needed to advance within the laboratory, and periodic in-person meetings. Following the success of this first RELP student cohort, the consortium used its APHL innovation grant to support a second cohort, whose program began in April 2017.

Results:

- Six individuals participated in Cohort 2. Leadership skills curriculum was based on data from an initial assessment of the cohort's competency in various technical and leadership skills.
- Grant funding was used to cover three in-person cohort meetings, peer-to-peer trainings, travel reimbursement and fees for speakers who addressed topics such as communication styles and the role of laboratorians vis-à-vis legislators.
- Despite challenges associated with heavy workloads, short staffing and coordinating among five states with different organizational structures, the group completed a joint project:
    - Updated and improved each of the five state public health laboratory websites, with a link to a common Northern Plains Consortium webpage.
    - Four of the six presented a poster abstract at the 2018 APHL Annual Meeting.
- A pre- and post-program knowledge assessment showed that knowledge was gained in 17 subject matter areas, including personnel management, ability to motivate others, strategic planning, fiscal management, grant writing and public health regulations (see **Tables 7** and **8**). As said by the supervisor of one RELP Cohort 2 member, "Our emerging leader was an excellent employee before the program…and even better after completion."

> "Not only has the [Regional Northern Plains Consortium] Emerging Leaders Program helped me develop my skills as a leader in the laboratory, it has afforded me the opportunity to develop life-long professional relationships with other public health colleagues in surrounding states… giving all of us a professional database from which we can draw knowledge, experience and answers."
>
> – RELP Cohort 2 Member

Impact: Utilizing a regional perspective for leadership development provides a platform to grow emerging leaders within the region, establish a long-standing peer-to-peer network, share resources, and successfully complete a joint project.

Future Directions:

- Transition RELP to develop peer-to-peer skill growth in the laboratory technical science areas.
- Share NPC RELP resources and model to other RC and the broader APHL membership.

Table 7. Initial and Final Self-Assessments Scores for RELP Cohort 2 (Six Participants), 1=low, 5=high

Topic	Initial Assessment					Final Assessment				
	1	2	3	4	5	1	2	3	4	5
Knowledge of Laboratory Management	XX		XXXX					XX	XXX	
Knowledge of Personnel Management	X	XX	X	XX				XX	XXX	
Confidence of Leadership Skills at Work		X	XXXX	X				XX	XX	X
Ability to Motivate Others			XXXX	XX			X		XXXX	
Ability to Lead/Motivate Others			XXX	XXX				X	XXXX	
Comfort Level With Resolving Conflict		XXX	X	XX			XX	XX	X	
Ability to Listen and Work as a Team			X	XXX	XX			X	XX	XX
Knowledge/Ability to Manage Projects		X	XX	XX	X	X			XXX	X
Ability to Think Critically About Problems			XXX	X	XX			X	XXX	X
Verbal Communication Skills		X	XXX	XX				XX	XXX	
Written Communication Skills			XXXX	XX				XXX	XX	
Knowledge of the Purpose/Goals of Public Health		XX	XXX	X				XXX	XX	
Knowledge of Legislative Processes and Regulations Pertaining to Public Health Issues/Funding	XXX	XXX				X	X	XX	X	
Knowledge of Laboratory Funding Sources	X	XXXX	X				X	XX	XX	
Knowledge of Strategic Planning	XX	X	XXX				X		XXXX	
Knowledge of Fiscal Management	XX	XXX	X				X	XX	XX	
Knowledge of Grant Writing	XX	X	XXX					XX	XXX	
Knowledge of Quality Management Systems	XX	X	XX	X				XXX	X	X

Table 8. Highlights on Improvement Scores for RELP Cohort 2

Topic	Improvement
Knowledge of Laboratory Management	50%
Knowledge of Personnel Management	40%
Knowledge of Legislative Processes and Regulations Pertaining to Public Health Issues/Funding	60%
Knowledge of Laboratory Funding Sources	50%
Knowledge of Grant Writing	80%
Knowledge of Strategic Planning	80%

Developing Skills in MLST-based Molecular Epidemiology

Project Background: Since the late 1990s, the PulseNet food safety network has provided the critical laboratory data needed to detect and contain bacterial foodborne disease outbreaks in the United States. PulseNet members compare the DNA fingerprints of pathogens from patients so epidemiologists can determine which cases constitute a related outbreak "cluster" and can then identify the common source of infection. Currently, PulseNet is implementing two new testing technologies—core genome and whole genome multilocus sequence typing (cgMLST and wgMLST)—a move that will change the landscape for lab-epi communication and increase the need for descriptive epidemiological data.

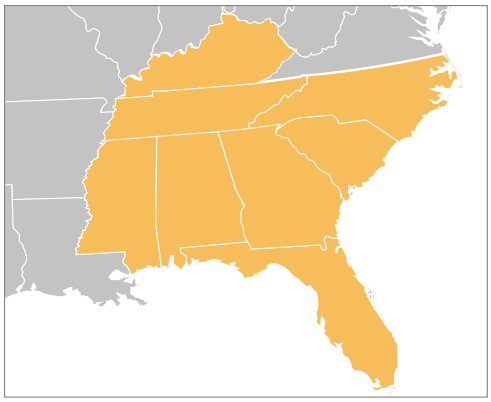
Results:

- To demystify the application of MLST and develop a common, regional understanding of lab and epi needs, the Northern Plains Consortium developed the 1.5 day "MLST-based Molecular Epidemiology Workshop," held in March 2019 at the Idaho Bureau of Laboratories in Boise.
- Although inclement weather and canceled flights meant that some consortium members had to attend the workshop "virtually," both laboratory scientists and epidemiologists from each consortium state participated.
- Among the topics addressed by the workshop faculty (all experts from within the consortium) were case definitions, microbial population ecology, categorical versus genetic data analysis, hierarchical cluster analysis, changing laboratory and epidemiology roles, models for constructing dendograms, and local cluster detection approaches.
- Pre-workshop and post-workshop evaluations were administered to gauge knowledge gained from the event. The average pre-test score was 55.6%, compared with an average 91.4% post-test score.

Impact: Implementing a regional workshop with laboratory scientist and epidemiologists provides an effective platform to collectively understand application of MLST through a common understanding of definitions, roles, and data analysis and models.

Future Direction: Share the NPC workshop model for the application of MLST with other RC.

SOUTHEAST COLLABORATORS



Formed in 2015, the Southeast ColLABorators (SEC) is comprised of state PHLs in Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina and Tennessee.

One important role of RC is mutual support: network members needing specialized testing that cannot be performed on-site, or assistance during emergency situations, rely on one another for backup. SEC used its innovation grant funding to extend the concept of mutual support by institutionalizing the use of a web portal for submitting specimens to the Florida Bureau of Public Health Laboratories (FBPHL). The FBPHL has a sophisticated mycobacteriology laboratory and performs a range of tests to aid the diagnosis, management and containment of tuberculosis (TB).

Using a Web Portal to Facilitate Mutual Support

Results:

- The pilot project proposed that the SEC demonstrate proof-of-concept for use of the FBPHL's web portal for electronic TB test ordering and results reporting in three situations: 1) for molecular testing of positive TB specimens to ascertain drug resistance to rifampin and isoniazid by line probe assay and phenotypic drug susceptibility testing, 2) for nucleic acid amplification testing of non-respiratory clinical samples (e.g., gastric aspirate or cerebral spinal fluid) from TB-suspect patients and 3) for molecular testing to assess rifampin- and isoniazid-resistance of TB-positive specimens that are part of an investigation of public health importance and therefore require rapid turnaround.
- The FBPHL web portal is custom built, easily accessible and has been shown to improve data integrity compared with non-electronic test ordering and reporting. Users only need internet access and the ability to scan pre-printed barcode labels that can be provided by FBPHL. Importantly, the portal does not require HL7 messaging capability.
- At least one scientist in each Southeast ColLABorators member laboratory received web portal training and access.
- During the brief project period—from February to early May 2019—one TB specimen was submitted to FBPHL through the laboratory's web portal. However, during this same period, FBPHL was called upon to perform ova and parasite testing to assure continuity of operations for the temporarily short-staffed Georgia state PHL. As of May 10, 2019, the Georgia laboratory successfully submitted 131 parasitology specimens to FBPHL using the web portal.

Impact: Electronic test ordering and results reporting with an easy web-based system creates a readily available mechanism for regional members who need specialized testing, assistance during emergencies, or surge support.

Future Directions:

- Continue outreach in the region to encourage greater use of the FBPHL web portal and assess any challenges to portal usage.
- Share the SEC web-portal model with other RC.

Association of Public Health Laboratories

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This publication was 100% funded with federal funds. This publication was supported by Grant or Cooperative Agreement number #5 NU60OE000103, funded by the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the Department of Health and Human Services.

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