March 23, 2022

Dear ELC Grantee Public Health Laboratory Directors:
APHL is pleased to provide a guidance tool to assist you in responding to the “Epidemiology and Laboratory Capacity for Infectious Diseases (ELC)” notice of funding opportunity (NOFO), which was released on February 18, 2022. The NOFO solicits applications for fiscal year 2023 funding for current ELC grantees under NOFO number CDC-RFA-CK19-190404CONT22. The application must be submitted by April 22, 2022.

Your responses should include requests for continuation from projects that are cross-cutting (non-categorical) ELC projects (Section 1), emerging infectious disease programs (Section 2) and infectious disease activities (Section 3).

APHL encourages our members to be highly involved in the ELC grant writing process. Laboratory Directors and appropriate technical staff should contribute to the relevant sections of the grant proposal. Laboratory Directors are asked to share this guidance with appropriate technical staff. Once the application process is complete, summary comments and the budget markups will be sent to the ELC Governance Team members in each state/jurisdiction. If you are not the laboratory representative on the ELC Governance Team, please ensure that your laboratory representative shares this information with you.

If you need assistance, please feel free to contact the APHL staff below.

Sincerely,

Scott Becker, MS
Executive Director

APHL Staff Contacts

<table>
<thead>
<tr>
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<th>Staff Contact</th>
<th>Email</th>
<th>Telephone</th>
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<tbody>
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</tr>
</tbody>
</table>
General Highlights

- A number of instruments commonly used in public health laboratories will be sun setting in coming years. Consider your need to update extraction platforms and consult the table for information on which platforms are sun-setting and which CDC assays have been cleared or evaluated on various models.
- Thermo Fisher Scientific recently announced that they will stop selling the ABI 7500fastDx at the end of 2022. They will continue to support the instrument through 2027. CDC is currently working with public health laboratories to develop a transition plan. APHL will share additional information as it becomes available. APHL suggests delaying purchase of new thermal cyclers, until more information is available, if possible.
- APHL maintains a list of manufacturer discounts for public health on our website: Public Health Pricing List.

Section 1: Cross-cutting Emerging Infectious Disease Capacity, Systems and Leadership
(Guidance includes only sections relevant to the laboratory)

Attachment A: Cross-Cutting Epidemiology and Laboratory Capacity (p. 10-26)

Advanced Molecular Detection

AMD Platform Development

OAMD is funding five communities of practice, which will be a critical part of the development of the national bioinformatics infrastructure (AKA platform development). The five communities of practice are described in Table 1. All laboratories are encouraged to apply for funding and participate in these communities of practice. Laboratories can apply for funding under three different activities: Core, expanded, and Domain leader. Below in Tables 2 and 3 are potential funding breakdown for each of the three activities. A laboratory may request up to $350K if requesting funding for all three. If applying for expanded or domain leader activities, laboratories MUST apply for core funding as well. Table 4 below describes the expectations of each of the three activities.

Any laboratory can apply for any of the activities (core, expanded, or domain lead). While Bioinformatics Regional Resources are encouraged to apply for domain leader activities, ANY laboratory can apply for the core, expanded activities, and/or domain leader role. Bioinformatics Regional Resources are not required to apply for domain lead. If a laboratory is applying for a domain lead, please list preferences of which domain you would like to lead and provide a workplan for each domain. For example, list First choice: Applied Genomic Epidemiology with included workplan, Second choice: Quality and Standards with included specific workplan, Third choice, AMD Data Modernization with included work plan.

Funding requests can be for:
- Staff time.
- Hosting costs related to AMD Platform testing/validation.
- Analytics costs related to AMD Platform testing/validation.
Funding requests can be used for academic collaboration, but NOT a contracted industry partner.

Table 1: Description of Communities of Practice

<table>
<thead>
<tr>
<th>Current Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Genomic Epidemiology</td>
<td>Identify and/or design methods and strategies to translate genomic data and knowledge into understanding using data analysis and visualization to help guide epidemiologists in their public health decision making and intervention strategies.</td>
</tr>
<tr>
<td>AMD Data Modernization</td>
<td>Identify and/or design methods and strategies to ensure data ownership; establish data sharing and collaborative environments; and reference data curation and management.</td>
</tr>
<tr>
<td>Agile Architecture, Pipeline Development and Automation</td>
<td>Identify opportunities for future pipeline development, current pipeline enhancement, and analytical optimization; development, enhancement, and optimization activities could also be pursued within this community of practice.</td>
</tr>
<tr>
<td>Quality and Standards</td>
<td>Identify and/or design standard operating procedures for laboratory and bioinformatics processes; workflows that create and control technical records; standards and ensemble-based analytical frameworks for results validation; and proficiency testing frameworks and management tools.</td>
</tr>
<tr>
<td>IT Security and Privacy</td>
<td>Establish data access standards/roles, security standards, best practices, business service agreements, processes to ensure the protection of confidential information, processes to ensure data integrity, and other AMD Platform data governance topics.</td>
</tr>
</tbody>
</table>

Table 2: Potential Funding Breakdown

<table>
<thead>
<tr>
<th>Funding Opportunity</th>
<th>Total Number of Awards</th>
<th>Funding Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Activities</td>
<td>64</td>
<td>$25,000</td>
</tr>
<tr>
<td>Expanded Activities</td>
<td>20</td>
<td>Up to $175,000</td>
</tr>
<tr>
<td>Community of Practice Domain Leader</td>
<td>10</td>
<td>Up to $150,000</td>
</tr>
</tbody>
</table>

1. Applicant may request up to $350,000 for all AMD Platform activities; the applicant is required to include workplan narratives for each activity.
2. If applying for Expanded Activities, Core Activities must also be selected.
3. Bioinformatics Regional Resources are strongly encouraged to submit for Community of Practice Domain Leader funding.

Table 3: Potential Funding Examples

<table>
<thead>
<tr>
<th>Funding Opportunity</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Expanded</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CoP Domain Leader</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Funding Amount</td>
<td>$25k</td>
<td>Up to $200k</td>
<td>Up to $350k</td>
<td>Up to $175k</td>
</tr>
</tbody>
</table>
1. Example A: Applicant is awarded $25,000 funding for Core Activities.
2. Example B: Applicant is awarded up to $200,000 funding for Core Activities and Expanded Activities.
3. Example C: Applicant is awarded up to $350,000 funding for Core Activities, Expanded Activities, and CoP Domain Leader.
4. Example D: Applicant is awarded up to $175,000 for Core Activities and CoP Domain Leader.

Table 4: Responsibilities and expectations of each role

<table>
<thead>
<tr>
<th>Funding Opportunity</th>
<th>Activities</th>
</tr>
</thead>
</table>
| **Core Activities**  | Collaborate with OAMD to assess the landscape of genomic epidemiology in public health and provide subject matter expertise for AMD Platform planning (20–25 hours per month).  
   i. Respond to CDC OAMD and APHL requests for next generation sequencing (NGS) and bioinformatics capacity and capability.  
   ii. Participate in AMD Platform communities of practice, providing subject matter expertise and guidance to meet the objective/s of the community of practice.  
   iii. Evaluate current NGS laboratory capacity, bioinformatics capability, and the application of genomic epidemiology within the local public health setting. |
| **Expanded Activities** | Collaborate with OAMD to build infrastructure to expand and enhance genomic epidemiology in public health (80–100 hours per month).  
   i. All Core Activities  
   ii. Participate in requirements gathering activities to provide input on functionality, discuss current plans; and identify any further development opportunities and prioritization for AMD Platform activities.  
   iii. Participate in beta and user acceptance testing activities to evaluate the effectiveness and user experience of the AMD Platform to improve timeliness, completeness, and quality of public health laboratory bioinformatics efforts.  
   iv. Provide NGS instrumentation and LIMS data and specifications to enhance and expand the electronic data exchange and interoperability of the AMD Platform.  
   v. Participate in validation of analytical processes and workflows for NGS platform review and implementation. |
| **Community of Practice Domain Leader** | Participate as a Domain Leader for at least one of the AMD Platform Communities of Practice. A domain leader is a subject matter expert in a given area who has demonstrated experience or advanced knowledge in that area. In the context of communities of practice (CoPs), some example responsibilities for the domain leader include setting goals to be accomplished by the CoP; setting success criteria and prioritizing activities for engagement with members; creating content to document activities and creating artifacts that people can learn from; facilitating meetings and guiding points of discussion for the topic area. |
LRN COVID-19 Funding (p 14-15)

Laboratories should prioritize budgeting for:

- Upgrading electronic laboratory reporting messages for LRN testing
- Service agreements for instruments used for public health response testing
- Upgrading laboratory instrumentation; consult this table for a list of qualified instrumentation
- Note that funding is only guaranteed for budget period 4

Attachment C: Health Information Systems Capacity (p. 31-42)

APHL Suggested Activities

- Consider requesting funds for informatics staff to attend the following conferences or meetings:
  - Request additional funds (above those required under Attachment B) for Informatics leads to attend the 2023 ELC Annual meeting in Atlanta.
  - 2022 APHL Annual Meeting
  - NACCHO 360/Public Health Informatics, Information Technology, and Surveillance (PHIITS) Conference, July 19 - 21 2022, Atlanta, GA. [https://www.nacchoannual.org/home](https://www.nacchoannual.org/home)
  
  - American Health Information Management Association (AHIMA) Health Data and Information Conference, October 9 – 12 (in person) and November 10 – 11 (virtual), 2022 [https://conference.ahima.org/](https://conference.ahima.org/)

- Maintain current CDC program data feeds and participate in efforts to enhance the quality and completeness of these data including:
  - PHLIP: Electronic Laboratory Surveillance Feed from laboratories to CDC in support of respiratory routine and outbreak test results
    - Migrate PHLIP reporting to the current HL7 2.5.1 message standard
    - Add ILINet provider information and other epidemiologically important information to PHLIP message
    - Ensure all respiratory virus test results are captured in PHLIP to report non-influenza respiratory virus surveillance data to the National Respiratory and Enteric Virus Surveillance System, replacing manual reporting methods.
• **AR Lab Network**: Laboratory surveillance for AR threats via the Data for Action on Antibiotic Resistance Threats (DAART) platform
  o Implement and maintain HL7 2.5.1 messaging for AR Pathogens
• **APHL Technical Assistance** is available to assist with message implementation, upgrades, enhancements, and data transport efforts. For more information about technical assistance or for access to the PHLIP or ARLN encoding guidelines, please email the Informatics Help Desk at informatics.support@aphl.org.

Attachment C2: Data Modernization (p. 43-50)

**AREA A: Accelerating Data Modernization**

APHL is working with CDC to align guidance. We will provide supplemental guidance as more information becomes available.

Attachment E: Cross-Cutting Emerging Issues: Enhanced Surveillance, Outbreak Investigation Response and Reporting, Surge Efforts and Interventions (p. 55 – 57)

• plan for $3,000,000; will only be funded in emerging situation

• **Funds will only be available in the event of a local or national infectious disease outbreak. All proposals should plan for a request $3,000,000 (small jurisdictions may request less while very large jurisdictions may request more). This request will likely be marked “approved but unfunded” in your initial budget markup, but it will expedite the release of funds should outbreak conditions warrant.**

**Section II: Emerging Infectious Disease Capacity, Systems, and Leadership**

Attachment F: Foodborne, Waterborne, Enteric and Environmentally Transmitted Diseases: Surveillance, Detection, Response, Reporting and Prevention (p. 58-91)

• **Jurisdictions should request funding for what you need to support all activities under Section F. Very little has changed since the last budget period, so our guidance here will be minimal.**
• **Opportunities may arise later in the grant year to obtain funding for activities (i.e. supplies, equipment, CIDT isolate recovery) that may not initially receive funding at the beginning of the grant year. So include all anticipated costs now.**
• **Travel for all laboratory staff (i.e. laboratory scientists, bioinformaticians) to support PulseNet, CaliciNet, CryptoNet and CycloNet activities should be requested under Section F. This includes InFORM regional meeting, CaliciNet Users Meeting, and Training for all of the above listed networks.**

**Tier 1: Area A: Surveillance, Detection, and Response**

2a. Enhance Laboratory Workforce Capacity
• Request funds so that staff are trained in the protocols used by all projects under Attachment F, and when necessary, support trainings at a PulseNet area lab, at another peer PHL, or at CDC.

• Ensure your laboratory signs and returns PulseNet, CryptoNet and CaliciNet MOU, CryptoNet and PulseNet ToR, and CryptoNet DUA documents

5. Strengthen laboratory testing for response

• Consider packaging and shipping costs for sending outbreak-related and NARMS-requested isolates to CDC for antimicrobial susceptibility testing. Outbreak isolates should be submitted as soon as possible and should not be batched with NARMS routine surveillance isolates.

6. Enhance laboratory testing for surveillance and reporting

• Request funding for equipment, supplies and personnel to support isolate recovery of CIDT positive specimens.

• Request funding to enhance/maintain courier services for specimen transport from clinical laboratories to public health laboratories.

• Consider packaging and shipping costs for sending routine surveillance isolates to CDC for antimicrobial susceptibility testing, per the required NARMS performance metrics and the Enteric Disease Isolate Submission Table (located here: https://www.cdc.gov/ncezid/dfwed/edlb/index.html). NOTE: Deadlines and requested timing/frequency of routine surveillance isolate shipments may be affected by the COVID-19 response. Specific guidance will be provided by the CDC NARMS program as needed.

• Consider all costs for conducting laboratory-based surveillance, diagnostics and subtyping for PulseNet, CryptoNet, NARMS, CaliciNet and general surveillance and outbreak investigation functions, including waterborne diseases:

  • For CaliciNet, include funding for-
    o Personnel
    o Reagents and consumables for norovirus detection and sanger sequencing (or outsourcing, if applicable), freezer space for storing positive norovirus specimens and norovirus negative specimens with viral epidemiology for three years.
      o NGS Pilot Labs: Whole Genome Sequencing reagents for Next Generation Sequencing
      o Sporadic norovirus testing support for non-outbreak samples.
    o Specimen collection costs including providing kits, shipping and/or courier systems

  • For CryptoNet
    • Include costs for collecting, screening and/or shipping Cryptosporidium positive clinical specimens to the CryptoNet Reference Laboratory at CDC for subtyping.
8. Improve laboratory coordination and outreach to improve efficiency

- Consider including personnel for Lab/Epi coordinator position to assist with data analysis, interpretation and reporting of clusters for outbreaks and routine surveillance

**Tier 2: Cryptonet**

15. Enhance laboratory testing for response

- For CryptoNet certified sites-
  - Include costs for personnel, equipment and maintenance, software upgrades and laboratory supplies in order to 1) conduct near real-time subtyping for Cryptosporidium using CryptoNet protocols; 2) actively participate in evaluating and/or validating new methods, software modules and scripts.
  - Consider certification costs

- For CryptoNet Regional Laboratories:
  - Include costs for personnel to provide troubleshooting, training and analysis assistance for participants in your respective region.
  - Include personnel, equipment and maintenance, software upgrades and lab supply costs in order to provide surge capacity for participants in your respective region.

**Tier 2: Cyclospora Genotyping**

17. Strengthen laboratory testing for response

- Consider the costs of reagents, supplies, and equipment to implement or continue amplicon-based multilocus sequence typing methods to provide genotyping information for Cyclospora cayetanensis. CDC protocols are available upon request.

**Tier 2: Environmental Microbiology (optional)**

Anticipated total Funding: ~$5 million

*Legionella* response activities are covered in Section P of the Notice of Funding Opportunity

18. Enhance workforce capacity

- The aim of this funding is to develop capability and capacity for testing environmental samples for fecal contamination, etiological agents and physiochemical water quality parameters, in the public health and environmental laboratories. Jurisdictions may also contract with laboratories for this testing to provide response capacity.

- Consider travel costs for environmental microbiology training at partner laboratories (CDC, EPA, public health, environmental or academic laboratories) and registration and travel to technical conferences to enhance skills and share knowledge.
• Consider joining the EPA Water Laboratory Alliance and participating in relevant exercises to assess response capabilities and identify areas for improvement.

19. Enhance laboratory testing for response

• Consider the staffing requirements for sampling and testing, cost of reagents, supplies and equipment for environmental microbiology test kits and culture. Consider the cost of equipment necessary to measure physiochemical water quality parameters (temperature, pH, electrical conductivity and dissolved oxygen).
• APHL recommends working with subject matter experts at CDC and local and state partners to develop metrics for environmental assessments associated with waterborne disease investigations.
• Consider resource needs for reorting and sharing of laboratory results.

Tier 2: FoodCore

22. Enhance investigation and outbreak response

• Note the requirement on pg 64 to participate in calls, meetings and site visits. FoodCORE will look for proposals that demonstrate a coordinated and comprehensive approach to the required work.

Tier 2: FoodNet

• Consider all personnel, equipment and lab supplies needed in order to 1) meet all of the activities outlined under enhanced laboratory testing for surveillance and reporting and 2) enhance coordination between laboratory and epidemiology.
• Consider storage costs for storing/preserving FoodNet isolates for future characterization
• Considers costs for traveling to the annual FoodNet Vision Meeting in order to lend a voice to laboratory related topics including the use and interpretation of CIDTs and WGS.
• With regard to advanced electronic information exchange implementation, please review APHL ELC guidance language included under Attachment C1: Health Information Systems Capacity and Attachment C2: Data Modernization for general Informatics guidance.

Tier 2: National Respiratory and Enteric Virus Surveillance System (NREVSS) Enhanced

32. Improve surveillance and reporting

• Consider funding to electronically transmit norovirus data via the PHLIP data feed, which can replace manual reporting to NREVSS. The APHL Informatics Technical Assistance Team is available to assist with updating PHLIP messages to support NREVSS reporting. For more information, email informatics.support@aphl.org. See Attachment C: Health Information System for additional Informatics related guidance
• Ensure adequate personnel in order to sequence and report all laboratory-confirmed norovirus outbreaks to CaliciNet within 7 business days.

**Tier 2 National Wastewater Surveillance System (NWSS) (p 73-75)**

- Estimated total availability of NWSS funds: ~$60 million
- Estimated number of NWSS awards: 43-64
- Estimated average award: ~$900,000

- This initiative looks to expand wastewater surveillance in the National Wastewater Surveillance System (NWSS), with the aim of understanding trends in community infections. ([https://www.cdc.gov/healthywater/surveillance/wastewater-surveillance/wastewater-surveillance.html](https://www.cdc.gov/healthywater/surveillance/wastewater-surveillance/wastewater-surveillance.html))
- Applicants should note NWSS requires a separate budget template. Workplan progress reporting is required quarterly, consistent with other projects in Section F. Financial reporting of expenditures and unliquidated obligations is required monthly. **This year of NWSS expansion is focused on detection of SARS CoV-2 in wastewater, however, CDC anticipates sustaining support for NWSS and expanding detection capabilities to include other pathogens with antimicrobial resistance being a likely future targets.**

**Requirements:**

- **Identify one or more points of contact as NWSS coordinators**
- **Identify one or more laboratory points of contact for wastewater testing**
  APHL recommends that public health laboratories strongly consider wastewater surveillance testing in their laboratories, and that they designate one or more points of contact to partner with their health department colleagues, APHL, NWSS members, wastewater treatment facilities and CDC. Applicants may refer to the APHL SARS CoV-2 Wastewater Surveillance Guide for sampling and testing options ([https://www.aphl.org/aboutAPHL/publications/Documents/EH-2022-SARSCoV2-Wastewater-Surveillance-Testing-Guide.pdf](https://www.aphl.org/aboutAPHL/publications/Documents/EH-2022-SARSCoV2-Wastewater-Surveillance-Testing-Guide.pdf))

  Please refer to the APHL SARS CoV-2 Wastewater Surveillance Guide for sampling and testing recommendations.
  Alternatively, health departments may contract with environmental agencies, commercial or academic partners for laboratory services.

- **Participate in NWSS calls, annual meeting and program site visits**
  APHL recommends that public health and environmental laboratories conducting wastewater surveillance testing, participate in calls and program site visits, as appropriate, and that they budget for travel for two laboratory scientists to attend the NWSS annual meeting.

43. Coordinate and partner to optimize national wastewater surveillance.

a. Develop or enhance partnerships that will support data collection and reporting to NWSS

  • **APHL recommends that public health and environmental laboratories engaged in wastewater surveillance develop and maintain relationships with public health, wastewater...**
treatment facilities, academic and commercial partners to optimize the collection and generation of quality laboratory data to inform public health decisions.

b. Participate in the NWSS Public Health Community of Practice

- **CDC hosts a health department Community of Practice (CoP).** APHL encourages laboratories to participate in this meeting to the extent practical. APHL convenes a Wastewater Surveillance Laboratory CoP, in which all public health and environmental laboratories in NWSS should participate.

c. Participate in consultations with other health departments/jurisdictions

- **APHL strongly supports the systems approach to NWSS and encourages laboratory participation related to technology, testing and peer-to-peer exchange of ideas.**

44. Surveillance data management

a. Coordinate data management, recordkeeping and reporting for wastewater testing to produce reliable, actionable, and high-quality data for public health action. Implement wastewater sampling strategies and protocols for submission of data to the health department and CDC.

- **APHL recommends coordination and collaboration with other NWSS laboratories and programs to benefit from successful approaches.** APHL is developing guidance for laboratories that will aid in determining appropriate workflows, ensuring quality measurements and aims to harmonize measurements across NWSS laboratories.

- **APHL recommends a standardized process for sample accessioning using available technology (i.e., bar codes, QR codes, remote order entry etc.) to improve efficiency and minimize transcription errors.** A secure data management system should be developed in collaboration with health department and informatics partners. Defined protocols for data review and reporting should be established and verified prior to use.

b. Submit wastewater from one or more wastewater system to the NWSS DCIPHER portal at least weekly

- **APHL recommends development of detailed protocols and timelines in collaboration with partners, to ensure meeting or exceeding project requirements.** APHL also recommends the development of a continuity of operations plan (COOP) to provide for critical testing during emergencies and a redundant reporting system to ensure critical data are sent to CDC.

c. Facilitate data sharing among partners to support completeness and timeliness of surveillance data collected and submitted

- **APHL recommends working collaboratively with partners to ensure the quality of the laboratory data used for public health decision-making and sharing information, as appropriate.**
45. Surveillance data analysis

a. Review and interpret wastewater surveillance data to inform epidemiological and programmatic decisions related to SARS CoV-2 infection.

- **APHL recommends working collaboratively with partners to ensure the quality of the laboratory data used for public health decision-making and sharing information, as appropriate.**

b. Disseminate data to key stakeholders

*Same as a. above*

46. Enhance laboratory capacity for wastewater testing

a. Participate in the NWSS Laboratory Community of Practice

*APHL convenes the NWSS Laboratory CoP monthly. Email eh@aphl.org to be added to the distribution and to access the electronic messaging platform, CoLABborate.*

b. Support laboratory capacity to safely receive, process and test wastewater samples.


- **APHL also strongly recommends that laboratories include travel costs for scientists to attend the annual NWSS meeting, technical trainings and wastewater surveillance conferences to stay current on methodological advances.**

- **Sampling & transport wastewater treatment facilities (WWTF) are important partners for identifying appropriate sampling sites and in the collection of wastewater and/or sludge for testing. NWSS programs should consider supporting these important partners to ensure the safe collection and transport of samples to the testing laboratory.**

- **APHL encourages public health and environmental laboratories to work with WWTFs and health departments to develop sampling and transport protocols.**

- **Consider materials required for proper transport and storage of samples, such as coolers, consumable materials, cold packs, thermometers and laboratory refrigerators (4C).**

- **Consider reliable and safe methods of transport in all seasons and weather conditions.**

- **Sample processing & testing: Multiple testing methods and workflows are used to quantify SARS CoV-2 in wastewater, across the United States. All must be performed in a biological safety level 2 (BSL-2) environment with unidirectional airflow and BSL-3 precautions including respiratory protection and a designated area to don and doff personal protective equipment.**

• Consider the required general laboratory safety, biosafety and waste disposal requirements for your laboratory, including but not limited to: engineering controls and space modifications (biological safety cabinets, physical barriers, mobile benches) personal protective equipment (gloves, glasses, shields, respiratory protection, disposable lab coats/coverings) waste disposal (sharps containers, biohazard containment materials, autoclave supplies).

• Consider equipment and supplies for processing wastewater samples (will vary by method/workflow):
  o Storage - laboratory refrigeration at 4 degrees C
  o Sample homogenization (i.e., sonicators, mixers, bead bashers) Sample clarification (i.e., filtration systems, centrifuges)
  o Sample concentration (i.e., ultrafiltration, electronegative filtration, ultracentrifugation and wet chemical techniques - polyethylene (PEG) precipitation and skim milk flocculation)
  o RNA Extraction - extraction kits specific to your workflow. Laboratory controls (matrix control, human fecal normalization, quantitative measurement controls, inhibition assessment and negative controls).

• Consider instrumentation and reagents needed to detect and measure SARS CoV-2. The SARS-CoV-2 virus may be measured in wastewater by either: RT-qPCR (reverse transcriptase, quantitative polymerase chain reaction), or RT-dPCR (RT- digital PCR), primers and probes (N1 and N2 gene targets, published by CDC and E genes (Corman et al, 2020, EuroSurveillance)) accessory or ancillary equipment.

• Subject matter experts in NCEZID/DFWED are able to provide technical support for the following platforms:
  Bio-Rad QX200 Droplet Digital PCR System
  Bio-Rad QX ONE Droplet Digital PCR System
  Qiagen QIAcuity FOUR digital PCR 5 channel multi-plex system
  Qiagen QIAcuity EIGHT digital PCR 5 channel multi-plex system

• APHL recommends instrument preventative maintenance and service contracts for all critical instrumentation.

• APHL recommends collaboration with health department and informatics partners to assess instrument interface to the facility LIMS and from the LIMs to the DCIPHER portal.

Other Emerging Issues Strategy

Develop and implement a plan for prioritizing wastewater samples for prospective sequencing SARS-CoV-2 and other pathogen targets (optional)

Develop and maintain the ability to link wastewater laboratory sequencing data with-sewershed level clinical sequence surveillance, and other data sources as needed. (optional)

• If applying for this optional activity, APHL recommends including the testing and informatics personnel, equipment and supplies necessary to be successful.

• Consider collaborations and public health partnerships required to link the various sources of sequencing data.

Tier 3 National Wastewater Surveillance System Centers of Excellence (NWSS CoEs) NEW
This Tier 3 activity is optional, but if a jurisdiction is applying for this Tier 3 project, then all activities included in the project are required,

- Estimated total availability of funds: ~$2 million
- Estimated number of NWSS CoE awards: 2
- Estimated average award: $1 million

- Applicants should note that those applying for this Tier 3 activity are anticipated to also be applying for Tier 2 NWSS funding.
- Jurisdictions are required to collaborate with and support academic and utility partners.
- Funding may not be used to support research activities.
- Consider personnel, contractual, equipment and infrastructure needs to address the following required activities: knowledge transfer, wastewater data collection and sharing, evaluate laboratory workflows, public health communication and geographic scaling of wastewater testing.

Attachment G2: Antibiotic Resistance Laboratory Network (AR Lab Network) (p. 103-118)

**Tier 1:**

- All activities under Tier 1 are required for all applicants. Given the recent ‘Strengthening HAI/AR Program Capacity’ (SHARP) supplement that was awarded in October 2021, recipients can repurpose Budget Period 3 (BP3) workplans and budgets for this application. For the Budget Period 4 (BP4) workplans, recipients only need to re-align milestones to correspond with BP4 dates, while BP4 budgets should remain consistent with the submitted BP3 budgets.

**Tier 2:**

- All PHLs should consider applying for Tier II activities, all of which are optional; laboratories applying for Tier 2 activities must apply for Tier 1 activities.
- Laboratories interested in applying for the new Mycobacterium tuberculosis (Mtb) activity must submit an implementation plan for a CLIA-compliant WGS assay or, if a CLIA-compliant WGS assay is already in use, provide information on the continuation of the testing. Include milestones in the workplan that indicate that at minimum a validation package is submitted for approval by the end of the project period.
  - Since this is a new activity, budget items must be added to the budget workbook under the ‘G2’ tab. Include requests for personnel, reagents, supplies and equipment to test 100-500 isolates. It is recommended to separate supply lines by test type when building budgets.
  - This activity is intended to support the applicant sequencing their own jurisdictional specimens, not to serve as a reference laboratory for other PHLs. That being said, if the applicant plans to partner with another PHL to meet the minimum specimen volume information about that collaboration should be included.
  - CDC will be available for technical consultation for the awardees including assistance in validation of pipelines but will not be able to share isolates for the validation.
  - There is no requirement or preference for a specific sequencing platform. However, most tools/resources developed by CDC and other entities are based on Illumina sequencing platforms/technology.
Tier 3:

- As more non-regional laboratories expand AR testing, regional laboratories should plan to support non-regional laboratories through training, technical assistance and mentoring. Regional laboratories should consider including activities and budgets for this purpose if it was not included in their SHARP workplan.
- Due to the length of time it could take for non-regional laboratories to implement new testing, regional labs should be prepared to continue a similar volume of Tier 3 testing, including HAI/AR sequencing and CPO and Candida auris screening.

Attachment H: Vector-borne Diseases (p. 119-128)

- A National Public Health Framework for the Prevention and Control of Vector-Borne Diseases in Humans has been published here.

Tier 1

- Laboratories should request funding staff typically supported under this activity to maintain basic testing capacity for endemic vector-borne diseases significant to their jurisdiction. At least 0.5 FTE is recommended.
- Laboratories should request funds for reagents to provide molecular and serologic testing for at least one vector-borne disease but are encouraged to maintain testing for more vector-borne diseases. Request funding for equipment (including service/maintenance), consumables and reagents not provided by CDC.
- Laboratories should participate in annual proficiency testing for vector-borne disease diagnostic testing.

Tier 2

- Laboratories applying for tier 2 activities should plan to maintain broader capacity to detect and respond to vector-borne diseases including multiple pathogens both endemic and exotic. Request staff

Tier 3

- Laboratories applying to serve as tier 3 laboratories should plan to provide basic (e.g. PCR and IgM serology) and advanced (e.g. MIAs, PRNT, vector) testing for vector-borne disease both viral and bacterial of significance to their jurisdiction either because they are endemic or there is a threat of local transmission. Developing services and capacity to serve as a regional reference center may be considered.

Section III: Disease-Specific Projects

Attachment Q– Influenza Surveillance and Diagnostic Testing (p. 185-191)
For required activities, APHL strongly suggests that you place a high priority on personnel. At a minimum, be sure to include staff that was funded on ELC last year. As most reagents and many consumables used for influenza testing are provided by the Influenza Reagent Resource (IRR), those budget items are not likely to be funded.

Review APHL ELC guidance language included under Attachment C: Health Information Systems Capacity for general Informatics guidance and additional information that are applicable to these activities.

Plan to make the following upgrades and enhancements to your PHLIP reporting feed:

- Migrate PHLIP reporting to the current HL7 2.5.1 message standard
- Add ILINet provider information and other epidemiologically important information such as level of care to your PHLIP message
- Ensure all respiratory virus test results are captured in your PHLIP message

APHL Technical Assistance is available to assist with PHLIP message support. Please email the Informatics Help Desk at informatics.support@aphl.org to learn more.

Attachment R – Non-Influenza Respiratory Diseases: Diagnostics, Reporting and Surveillance (p. 175-178)

Consider requesting funds for the maintenance, implementation or expansion of non-influenza respiratory virus tests including reagents and personnel. Proposals focused on strengthening surveillance capacity for non-influenza respiratory viruses through PCR and multiplex panels are likely to be given priority as well as assays to type RSV, adeno- and/or enteroviruses strains of public health importance linked to severe outbreaks or severe outcomes. CDC protocols are available upon request.

- See the APHL Respiratory Pathogens page under ID Member Resources for select protocols and lists of commercially available respiratory virus panels. Note that access to the webpage is restricted to APHL members.

Consider budgeting for reporting of non-influenza respiratory pathogen laboratory results to CDC programs including NREVSS and NATRS. If your laboratory performs typing of adeno and/or enteroviruses, APHL strongly encourages you propose reporting subtype/genotype results to NATRS. Reporting non-influenza respiratory virus surveillance data automatically through PHLIP can replace manual reporting to the National Respiratory and Enteric Virus Surveillance System (NREVSS). As noted, the APHL Informatics Technical Assistance Team may be available to assist staff with updating your PHLIP message. For more information, email informatics.support@aphl.org. See Attachment C: Health Information System for additional Informatics related guidance.

Attachment S: Strengthening the United States Response to Resistant Gonorrhea (p. 196-213)

All public health laboratories are eligible to apply. Competitive applications will be those that can demonstrate a strong track-record and existing capacity to address the activities listed in the NOFO. Only applicants selected for Component 1 will be awarded a component 2 pilot project.

Public health laboratories should collaborate with your jurisdictional STD prevention and surveillance programs to determine if you plan to apply. Public health laboratories should contribute to applications by describing current capability and capacity to perform gonorrhea culture and susceptibility testing, ability or willingness to validate additional specimen types.
(particularly self-collected specimens in a non-clinical testing), methods, or approaches as well as any current collaborations with clinical laboratories and providers, current data collection, reporting and storage mechanisms and strategies for expanding capacity if necessary.

Attachment T: Gonococcal Isolate Surveillance Project (GISP) (p.214-228)

- Public health laboratories should collaborate with your jurisdictional STD prevention and surveillance programs to determine if you plan to apply.
- Applicants who are currently funded to perform similar activities in selected STD clinic(s) in their jurisdiction through ELC Project S (above) are eligible to apply but must identify at least one different STD clinic(s) in different geographic location(s) in their jurisdiction for activities funded through this project.
- You must apply for the Core GISP surveillance if you wish to apply for eGISP Part A or Part B.
- Applicants are requested to provide detailed budgets. For example rather than grouping items into laboratory supplies it is recommended to list out the laboratory supplies that would be required such as number of plates, swabs and ancillary materials. If applicants are applying for GISP and eGISP consider providing separate budgets for each project (can be placed on the same budget template). Funding can only be used for required GISP and eGISP activities.