

Laboratory System Improvement Program: Arizona Assessment Report

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Bureau of State Laboratory Services
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Laboratory System Improvement Program: Arizona Assessment

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SUMMARY

The Arizona State Public Health Laboratory ([AZSPHL](#)) conducted the L-SIP ([Laboratory System Improvement Program](#)) assessment on December 14, 2010, with 52 partners throughout the state. A diverse group of individuals came together to evaluate the Arizona public health laboratory system against the national performance standards and to provide ideas on how we can improve Arizona’s laboratory system. Arizona used the tool “Laboratory System Improvement Program Performance Measurement Tool” developed by the Association of Public Health Laboratories ([APHL](#)) in participation with the Centers for Disease Control and Prevention (CDC) National Public Health Performance Standards Program ([NPHPSP](#)).

Arizona was the twenty-fourth state to complete the L-SIP assessment using the tools provided. The aggregated results achieved through the assessment were similar to other states that have completed the L-SIP assessment.

The current laboratory system was scored against the Ten Essential Services, with the following aggregated results:

ASSESSMENT SCORES	0	1	2	3	4
	No Activity	Minimal Activity	Moderate Activity	Significant Activity	Optimal Activity
Essential Service #1: Monitor health status to identify and solve community health problems					X
Essential Service #2: Diagnose and investigate community health problems and health hazards in the community				X	
Essential Service #3: Inform, educate, and empower people about health issues			X		
Essential Service #4: Mobilize community partnerships and action to identify and solve health problems		X			
Essential Service #5: Develop policies and plans that support individual and community health efforts			X		
Essential Service #6: Enforce laws and regulations that protect health and ensure safety				X	
Essential Service #7: Link people to needed personal health services and assure the provision of health care when otherwise unavailable		X			
Essential Service #8: Assure competent public and personal health care workforce				X	
Essential Service #9: Evaluate effectiveness, accessibility, and quality of personal and population-based health services		X			
Essential Service #10: Research for new insights and innovative solutions to health problems			X		

ASSESSMENT PROCESS

The Arizona State Health Laboratory ([AZSPHL](#)) conducted the [L-SIP](#) (Laboratory System Improvement Program) assessment in one day on December 14, 2010, with 52 partners throughout the state. Arizona's assessment was funded in part by a grant applied and received from the APHL to assist with associated costs. APHL also provided technical support throughout the process and provided the majority of the handouts Arizona distributed to participants.

The State Public Health Laboratory System (SPHLS) consists of all participants involved in protecting the public's health, from those who initiate testing to those who ultimately use the test results provided. The SPHLS includes those involved in clinical, environmental, newborn screening, and emergency response among others. As part of the SPHLS, the Arizona State Health Laboratory plays a leadership role in developing and promoting the system, collaborating and communicating with our partners and stakeholders, and routinely monitoring clinical and environmental laboratories performing testing to assure submission of accurate, timely results using national and state guidelines.

Participants of the one day assessment included local health and environmental departments, Civil Support Team members, clinical laboratories, environmental laboratories, vendors, Newborn Screening partners, a local college, and risk management personnel among others. This diverse group of individuals came together to evaluate the Arizona laboratory system against the national performance standards and to provide ideas on how together we can improve Arizona's laboratory system.



Facilitators of the L-SIP assessment included the interim Laboratory Director from Kansas State Health & Environmental Laboratory, the Laboratory Director from Colorado State Health Laboratory, and a Communication Specialist from Arizona Department of Health Services. These three facilitators were able to provide both technical and communication backgrounds to assist the assessment in moving forward. The facilitators lead the entire group of participants in a plenary session initially and then each of the facilitators led a smaller group for the remainder of the day. Each facilitator had a least one theme taker available throughout the day to assist in capturing scores and key ideas discussed during the sessions.

The overall assessment was based on a tool created by APHL. The "Laboratory System Improvement Program Performance Measurement Tool" was developed for the purpose of understanding what the Public Health Laboratory System is and the role stakeholders play in the system. The tool is based on the Ten Essential Services of Public Health ([Appendix 1](#)) and the Core Functions and Capabilities of State Public Health Laboratories ([Appendix 2](#)). The Ten Essential Services of Public Health was created to provide a working definition of public health and a guiding framework for the responsibilities of local public health systems. The L-SIP tool was also designed to help facilitate the following:

- Improve communication and collaboration among the system partners
- Educate participants about the public health laboratory system, the testing and the interconnectedness
- Identify strengths and weaknesses
- Identify resources
- Provide a benchmark, a “gold standard”, for public health laboratory system improvements

The standards provided in the L-SIP tool are not the minimum standards for a laboratory system, but are the standards for a perfect or near perfect laboratory system. These standards help the SPHLS to strive for improvement in all areas of the system including but not limited to quality, communication, and collaboration. Thus the assessment tool describes an optimal level of performance and capacity that all state systems are able to identify as strengths and areas for needed improvement. The optimal level also provides a foundation in which to move forward and advocate for additional resources or new and innovative ways to better serve the population within Arizona.

As part of the L-SIP, there was an established scoring tool provided that helped participants determine what the various activity levels meant from optimal to no activity. Optimal activity was when the laboratory system met the essential service at a high level or greater than 75% of the time. No activity was the other end of the spectrum in which the laboratory system had not participated or provided the service at all. There were three additional levels between these two and provided participants the opportunity to show areas where the laboratory system needed to improve. Each level of activity was color coded and the participants were provided a colored card to hold up during each call for a vote on an indicator. Every essential service indicator was scored and then compiled with the other indicator scores to provide an aggregate (or net) score for the essential service. The indicator and net scores are provided at the beginning of each essential service discussed in the report.

The facilitator started each session by reading the essential service, reading an indicator and opening the session up to discussion. Some essential services had multiple indicators and each one was read and then opened for discussion. Once the discussion was complete, the facilitator would ask the participants to score the key idea as to how well the State Public Health Laboratory System currently rated. The rating categories are provided below.

No Activity	0	0% or absolutely no activity
Minimal Activity	1 to 25	Greater than zero, but no more than 25% of the activity described within the question is met within the state public health laboratory system
Moderate Activity	26 to 50	Greater than 25%, but no more than 50% of the activity described within the question is met within the state public health laboratory system
Significant Activity	51 to 75	Greater than 50%, but no more than 75% of the activity described within the question is met within the state public health laboratory system
Optimal Activity	76 to 100	Greater than 75% of the activity described within the question is met within the state public health laboratory system

The following pages provide an overview of the scores for each essential service, a highlight of the discussions and the next steps and priorities identified during the meeting.

RESULTS

Essential Service 1: Monitor Health Status to Identify Community Health Problems

Overview of scores:

Indicator	Score	Activity Level
1.1 Surveillance Information Systems	100.0	Optimal
1.2 Monitoring of Community Health Status	54.4	Significant
Overall Net Score	77.2	Optimal

Discussion Summary:

- The State Public Health Laboratory System (SPHLS) works well for reporting surveillance results.
- The Arizona State Health Laboratory (AZSPHL) is a reference laboratory and participates in the Laboratory Response Network (LRN) with the exception of biomonitoring and environmental health tracking system. The AZSPHL participates in FoodNet, FERN, Arbonet, PulseNet, NARMS, WHO Collaborative, and Emerging Infectious Disease Reporting.
- The Newborn Screening program submits data to a national database.
- There is a good working relationship and routine communication with CDC and EPA and other national agencies among the system partners.
- The AZSPHL also has worked with non-profit organizations to perform surveillance.
- Electronic reporting was discussed for the various programs:
 - When a lab is added for electronic reporting, there is a validation study and then evaluation of the data received
 - There is no electronic reporting on water data directly from the AZSPHL
 - AZ Game & Fish lab performs its own monitoring for water and discharge from fisheries
 - A reporting system for safe drinking water and healthy food would be nice. There is no linking or monitored data on clean air and none on presence of toxins.
 - Synchronizing environmental data is complicated depending on what information is required and the Arizona Department of Environmental Quality (DEQ) does not have an electronic reporting system in place.
- Security was determined to be in good shape. There is chain of custody procedures in place and the AZSPHL had a recent site evaluation and security assessment which assisted in pointing out areas that needed improvement, but also highlighting areas that were functioning well.
- A challenge in maintaining equipment/instrumentation or keeping up with technology is limited funding sources and the inability to slowly build up a fund to purchase these

items. The AZSPHL relies heavily on federal grants to assist with maintaining ability to provide support to the system.

- Submission to the reference laboratory can sometimes be confusing – it was pointed out that information is available on the AZSPHL web pages.
- The timeliness of sample and data submissions has been an issue
 - Part of the issue identified was a lack of education on reporting to the state
 - More outreach and training from the AZSPHL, especially to clinical labs, would help instead of the labs having to call and find the right individual to determine what needs to be done
- The data is used by the epidemiologists to perform aberration data models and report detected outbreaks and clusters.
- The Newborn Screening (NBS) program is working well and even though hearing is not mandated, it still has a 98% compliance rate and is conducted by the system partners.
- The NBS program works with its partners to provide resources for abnormal results and genetic counseling.
- A Memo of Understanding (MOU) is in place with the four corner states for contingency planning back up testing.
- Behavioral Risk Factor Surveillance (BRFS) surveys are performed, but no real data on testing. The information used is gathered from hospital discharge databases. This relates primarily to chronic diseases and the discussion was where this would fall in the system – at the community health level or the public health level.
- The AZSPHL has a secure and integrated laboratory data information system which is shared with the state epidemiologists and is working to provide a system for submitters to pull their results electronically. Implementation may be an issue with limited information technology support staff in all areas of the system.

Next Steps/Priorities:

These next steps are not in any particular order of importance but listed as ideas the laboratory system would like to pursue.

- 1) Information Technology compatibility and standardization for all, but especially environmental data collection, management and reporting.
- 2) Utilize community based chronic disease data better. An incentive might be health reimbursement for a healthy community and by utilizing the information we could become healthier.
- 3) Conduct a “needs assessment” to ask partners and submitters what kinds of tests are needed, and what kind of trainings would be useful to them.
- 4) Determining how to handle the challenge of getting people to change their lifestyle to become healthier realizing that the cause may not be obvious.

Essential Service 2: Diagnose and Investigate Health Problems and Health Hazards in the Community

Overview of scores:

Indicator	Score	Activity Level
2.1 Appropriate and State of the Art Testing	33.0	Moderate
2.2 Collaboration and Networks	67.0	Significant
2.3 Continuity of Operations Plan and Surge Capacity	67.0	Significant
Overall Net Score	55.7	Significant

Discussion Summary:

- Challenges to maintaining a competent and complete workforce
 - This was an issue that many individuals felt was a growing concern
 - There are generational gaps with a very small/limited middle group that could assist with transitioning the knowledge and skills of the seasoned “experts” to the newer staff.
 - Public service jobs are seen as less appealing (what does it offer me?)
 - Public service are no longer seen as “safe” jobs or as a career
 - Each generation has differences on what benefits they want from a company
 - There is minimal loyalty to an organization or company and this means that a lot of effort and time is spent in training as people come in, receive training, and then leave for another job.
 - Continual challenge to keep and train qualified staff.
 - Resources, including staff, cause delays in results or cause changes in services offered by laboratories
- Collaboration and networks
 - The AZSPHL can respond quickly to issues, especially for urgent issues
 - Ability to handle serious situations and communicate well with the community and public
 - The lab is not as involved in tabletop exercises/drills. The lab would like to be more involved in the planning and would like to test the system to determine realistic scenarios for testing samples.
 - Communication between the epidemiologists and the laboratories is not always good and there is sometimes disconnect between these groups. Perhaps a lab representative should be on every outbreak response team.
 - Communication between areas that are not in the metro Phoenix area is limited and not as good.
 - The general lab community is not included in preparedness activities.
 - Would like to see scenarios that are specific to areas/regions around the state when exercises or drills are performed.

- The laboratory community felt that they had some continuity of operations plans in place and that they can handle some surge capacity. There was some discussion about stocking supplies and delivery based systems for maintaining supplies needed for testing.

Next Steps/Priorities:

These next steps are not in any particular order of importance but listed as ideas the laboratory system would like to pursue.

- 1) Determine how we can encourage interest from our youth to consider the sciences, specifically in the public health sector.
- 2) Determine how the laboratory system can be more involved with tabletop exercises/drills and how we can provide input in planning scenarios. Regional areas of Arizona would like to see more scenarios that are specific to an area, like a dam breaking.
- 3) Determine how to maximize limited resources.

Essential Service 3: Inform, Educate, and Empower People about Health Issues

Overview of scores:

Indicator	Score	Activity Level
3.1 Outreach and Communication with Partners	33.0	Moderate
3.2 Public Information	83.5	Optimal
3.3 Education	33.0	Moderate
Overall Net Score	49.8	Moderate

Discussion Summary:

- Feedback within the laboratory system is not as strong as it could be and the AZSPHL could improve its feedback mechanisms and outreach to include more partners in the communication system.
- There are some areas where a system is in place to communicate with specific partners like the advisory groups for Environmental Laboratory Licensure and Newborn Screening.
- It is not known what the AZSPHL environmental testing capability is for water testing. The information is not readily available.
- The laboratory system works with the epidemiologists to provide public information and reaches out to local Environmental Health Services and Epidemiological Services. The state epidemiology section channels information from the laboratory to county health departments (or posts on the web) and these local agencies decide how to disseminate the information.
- The AZSPHL has a web site with policies, guide to laboratory services, and the microbiology submission form.
- AZSPHL has a newsletter for outreach and uses this as a mechanism to announce changes to the web site (the newsletter is primarily for sentinel labs).
- The state and local Public Information Officers seem highly effective.
- AZSPHL general training system (state funded) is gone due to budget issues. There are some federally funded training positions within AZSPHL but these are specific and limited to the scope of the grants.
 - Training through the grants includes select agent handling and proficiency testing
 - Newborn Screening and Environmental Laboratory licensure in cooperation with other organizations and in part due to being fee based programs are still able to provide some training.

Next Steps/Priorities:

These next steps are not in any particular order of importance but listed as ideas the laboratory system would like to pursue.

- 1) Generate feedback mechanisms for the AZSPHL and laboratory system that can be accessed by many partners and that capture information from multiple areas.
- 2) Provide information about the AZSPHL testing capability that can be easily accessed.
- 3) Determine a mechanism, like the newsletter, that can keep all partners of the AZSPHL system informed of current information.
- 4) Determine creative ways to provide training throughout the laboratory system. Examples include webinars, teleconferences, or working with other organizations to support training of laboratory personnel.

Essential Service 4: Mobilize Community Partnerships to Identify and Solve Health Problems

Overview of scores:

Indicator	Score	Activity Level
4.1 Constituency Development	5.0	Minimal
4.2 Communication	33.0	Moderate
4.3 Resources	33.0	Moderate
Overall Net Score	23.7	Minimal

Discussion Summary:

- There was a discussion of having more partnership with the laboratory system in testing other than bioemergency response. The constraints of budgets were mentioned along with this discussion.
 - Collaboration levels differ with the programs, as the Environmental Laboratory licensure and Newborn Screening have regular stakeholder meetings even though other areas do not.
 - The cost of working on partnerships and having regular meetings is not in funding, but in personnel time as many organizations are short on people and time.
 - It was discussed that technology could be used to make collaboration more efficient.
 - It would be nice to have an individual that oversees the overarching function and mission of the AZSPHL and system and could identify partners and seek out new partners.
 - Partners are not sure how to express their needs or how to ask for services. How should they present the information to decision-makers and let AZSPHL know their concerns and needs?
 - Coordination across the programs could be better and help with efficiency.
- A discussion of communication systems occurred.
 - The Health Alert Network (HAN) exists, but the H1N1 outbreak showed gaps in the communication plans. Also, it was unknown to what degree laboratories were included in the HAN.
 - Remote/rural areas were identified as areas with large gaps and during the outbreak had needed to rely on community partners, especially during off hours.
 - There are many plans out there, but it was unclear if everyone has the plans and how the various plans all work together.
 - No central contact list is available electronically and there is no easy way to identify partners or the correct individuals to communicate with.
 - AZSPHL does have a 24/7 on call number for after hours. There is a list-serv also but it is not clear how a partner would get on the list.
 - Communication varies by section with the environmental labs feeling that things are great and the clinical services feeling that it is inadequate.

- No central coordination of communication and not sure how individuals getting information now get that information. Many partners are not sure of who to contact to get on the appropriate list.
- AZSPHL has been good at collaborating with partners to obtain grants and working together as a group to seek funding and support of other grant applications.
- The laboratory system/community has been less successful at advocating to legislatures or elected officials to maintain the current system. Currently there is a moratorium on rule making and so no statutes or rule changes have been able to occur.

Next Steps/Priorities:

These next steps are not in any particular order of importance but listed as ideas the laboratory system would like to pursue.

- 1) Develop a strategic planning committee as a forum to present ideas, concerns, or identified needs.
- 2) Determine ways to collaborate with partners more on testing issues and other issues that affect the laboratory system. Also determine ways to keep partners informed of legislative actions.
- 3) Coordination and centralization of communication system – especially in remote/rural areas.

Essential Service 5: Develop Policies and Plans that Support Individual and Community Health Efforts

Overview of scores:

Indicator	Score	Activity Level
5.1 Role in Laboratory Related Policy Making	33.0	Moderate
5.2 Partnerships in Public Health Planning	67.0	Significant
5.3 Dissemination and Evaluation	33.0	Moderate
Overall Net Score	44.3	Moderate

Discussion Summary:

- Advocacy groups were found mainly with Newborn Screening and not really identified for any other programs. It was felt there was disconnect in several areas between system partners and policy makers.
- The laboratory system felt that a continued effort to influence policy with data and finding was acceptable but that the information was not seriously considered.
 - It was felt that policy makers decide based on budget considerations and not on science.
 - There is a disconnect in aligning scientific data with political and fiscal agendas. In today's climate fiscal management overrides scientific management.
 - There is also a disconnect in interpreting/analyzing the data produced and in determining if the right people are getting the information.
 - By not working together, the laboratory system loses ground in communicating the importance of the laboratory system to political entities.
- A limited discussion on partnerships in public health planning occurred due to non-state laboratory staff being unsure of the process and how it worked.
 - AZSPHL identified CDC as a key partner for the clinical services.
 - AZSPHL has made an effort to assess their system and listen to partners.
 - The question arose about who could champion or advocate for the lab system causes, this takes time in staff and getting together to discuss the issues.
 - It was mentioned that a completely diverse selection of partners and constituents was not represented at the L-SIP and that there could be areas not identified at this time.
- The laboratory system felt that they were represented by the AZSPHL but were not aware of how much the laboratory system was actually represented at state or federal levels.
 - The bioemergency response system that was in place did offer good communication, people knew who to contact, and were provided contact information to use in case of an emergency.
 - Sufficient tools were available for emergency situations but there is a lack of a similar structure for non-emergency situations (more day to day issues).
- Dissemination or communication of information was not always making it to appropriate individuals. It was discussed that there is difficulty in maintaining the contact points in organizations.

- The laboratory system partners felt that feedback was not always being solicited from everyone involved.
 - It was discussed that if the partners provided too much information it may relate in additional regulations or scrutiny of their facility.
 - Newborn Screening was considered one of the main programs with identifiable partners/champions. Newborn Screening is very collaborative and workgroup orientated.
 - Most of the current feedback occurring are complaints and if there are no complaints then it is assumed that there are no issues.
 - Reviews and surveys are not necessarily anonymous – although efforts are made to ensure this is occurring.

Next Steps/Priorities:

These next steps are not in any particular order of importance but listed as ideas the laboratory system would like to pursue.

- 1) Communication is not occurring in a two – way format and there is a disconnect of dissemination of information from point-of-contact to the lab staff. A way to for partners to keep each other informed of important changes or updates.
- 2) A better feedback format is needed to obtain information – in some cases this needs to provide a level of anonymity.
- 3) Determine a way to provide education to politicians and a way to provide a “translator” between scientists and politicians. A need for better communication with politicians and the public.
- 4) Need to identify key partners and develop more collaboration among the lab community and other potential partners

Essential Service 6: Enforce Laws and Regulations that Protect Health and Ensure Safety

Overview of scores:

Indicator	Score	Activity Level
6.1 Revision of Laws and Regulations	33.0	Moderate
6.2 Encourage Compliance	67.0	Significant
6.3 Enforcement of Laws and Regulations	67.0	Significant
Overall Net Score	55.7	Significant

Discussion Summary:

- When revisions to laws and regulations occur, there are some programs where the community relies on committees to perform this review.
 - Newborn Screening has committees that bring up issues that get worked on and the Environmental Laboratory licensure has a regular Environmental Laboratory Advisory Committee (ELAC) where regulations are reviewed and discussed.
 - Comment: “As outsiders we are regularly trying to work within the system in regards to staying current with recommendations, standards of testing, and being self sustaining when funds run out.”
 - The group did feel that many regulatory review issues were conducted largely internally (in the AZSPHL) and partners were unaware of how often items were reviewed. Many indicated that they had not been involved in the process.
 - One item discussed was to have the reportable conditions updated regularly (January was the preferred month) as this would allow time to get notifications out to providers. Clinical side indicated that the reportable did not change often.
- Training on compliance issues and regulations was discussed in detail.
 - AZSPHL indicated that the general funded training section was no longer available, which this section used to provide general training to multiple areas.
 - Training on regulations/rules and statutes was lacking according to many participants.
 - Partners indicated that they would like to see training available for new staff on the proper process of reporting to the state.
 - AZSPHL currently provides a newsletter (primarily for sentinel labs) and lab specific scorecards which assists the labs in viewing trending for their location.
 - There is a lack of clinical training, specifically mentioned were emergency room settings. Although these issues are typically syndromes and can be more subjective.
 - There is an issue with training because many seasoned staff know who to contact for information and direction but they are nearing retirement age or leaving for other opportunities.
 - The new staff do not have this information on contacts and this can lead to issues in getting the right information/samples reported or sent.

- Institutional knowledge is not being passed on due to staff turnover, hiring freezes, low employee morale, and low retention rates among others.
- AZSPHL ensures compliance of regulations well on the environmental side and the larger clinical labs make it their business to know the regulations. The smaller labs have a harder time keeping up on the regulations and require training in order to ensure compliance.
- Enforcement of regulations depends on the program and origination of funds can be a large factor in what manner enforcement is taken. Enforcement may be a federal issue in many cases and the state provides the information to the federal agency and the federal agency determines if they want to pursue.
- There was discussion about the relationship between the state and the federal agencies. The question arose that if there was a potential enforcement/compliance issue that was sent from the state to the federal agency, are the issues actually addressed?
- AZSPHL works with facilities to ensure compliance, but there is not always a good mechanism in place to demonstrate the facility is complying.
- The group felt there was an environment of “if there are no complaints there must not be anything wrong”. The concern was that issues are being underreported.

Next Steps/Priorities:

These next steps are not in any particular order of importance but listed as ideas the laboratory system would like to pursue.

- 1) Determine a way to make communication on reportable conditions better and have a regular (annual) update of the listing.
- 2) Provide information on the process of reporting and make it readily available. This is especially important and beneficial with new staff.
- 3) Determine creative ways to provide training and technical support throughout the laboratory system. Examples include webinars, teleconferences, or working with other organizations to support training of laboratory personnel. The lack of training withholds valuable information and budget affects the opportunities for training.
- 4) Work together to determine ways to retain institutional knowledge and building the workforce. Determine how technological resources can be used in order to combat the lack of staff.
- 5) Work on outreach and identify gaps, clinical laboratories specifically, in order to provide assistance with compliance.
- 6) Encourage collaboration between partners in the laboratory system to share resources (e.g. training, recruiting practices, etc) and assist each other.

Essential Service 7: Link People to Needed Personal Health Services and Assure the Provision of Healthcare when Otherwise Unavailable

Overview of scores:

Indicator	Score	Activity Level
7.1 Availability of Laboratory Services	33.0	Moderate
Overall Net Score	33.0	Moderate

Discussion Summary:

- AZSPHL, or the laboratory system, does not provide transportation services for all programs (Newborn Screening has a system in place and law enforcement agencies have their own system).
 - The lack of transportation services makes it difficult for many agencies especially in small counties.
 - Transportation for Newborn Screening is crucial in order to get results out quickly and follow up with abnormal results.
 - Smaller counties do not have funding for transportation systems. They would like to have built in flexibility so issues can be accommodating.
 - It was noted that the lab has been very responsive in accommodating non business hour requests in the past.
 - Collaboration ideas for transportation services were discussed.
- The AZSPHL lab hours of coverage was identified as a critical component. The delay due to weekend closure can cause difficulty, especially during outbreaks.
- Communication and awareness of services the lab provides is essential.
- There needs to be more outreach to partners to ensure utilization of services. Several individuals were unfamiliar with some of the services provided by AZSPHL. Also, increase outreach to the general public – specifically mentioned was the Newborn Screening program as many parents do not know the AZSPHL does the testing.
- It was discussed that there is a need for a concerted effort to communicate needs and resources so the laboratory community can combine efforts (and limit duplication of services) to save unnecessary costs.
 - “The days of being able to manage our own “projects” are over and we need to talk more and combine our efforts. We are serving the same communities in many instances.”
 - One example mentioned was moving towards electronic medical records and that by moving in this direction, resources can be saved and/or used in other areas than processes paper records.
 - Communication of non-critical issues and standard available services was considered a key component. The emergency response portion of the AZSPHL was great, but they would like to see more communication and response for non emergency issues.

- It was also mentioned that partners need to be able to know what the AZSPHL offers in order to advocate and/or collaborate to fill gaps.
- The AZSPHL has technical capabilities but limited funding. Outreach will assist with increasing the advocacy of work performed. The use of technology will assist with reaching more individuals/partners.

Next Steps/Priorities:

These next steps are not in any particular order of importance but listed as ideas the laboratory system would like to pursue.

- 1) Work with partners to determine creative ways to assist with transportation issues. Example, it was mentioned the LabCorp and Quest have couriers in each county and perhaps other agencies/labs could work with them to arrange transportation services or to have temporary agency staff available for when quick services are needed.
- 2) Increase outreach and education to the community, including communication of services.
- 3) Determine creative ways to provide training throughout the laboratory system. Examples include webinars, teleconferences, or working with other organizations to support training of laboratory personnel.

Essential Service 8: Assure a Competent Public Health and Personal Health Care Workforce

Overview of scores:

Indicator	Score	Activity Level
8.1 Workforce Competencies	100.0	Optimal
8.2 Staff Development	83.5	Optimal
8.3 Assuring Laboratory Workforce	19.0	Minimal
Overall Net Score	67.5	Significant

Discussion Summary:

- The AZSPHL is inspected by CLIA and conforms to minimum standards for position requirements which are reflective on knowledge, skills, and abilities.
 - AZSPHL typically hires based on education and experience and not based on special certifications like ASCP. Often applicants with greater experience desire higher salaries than offered/available.
- The AZ Game and Fish are licensed through the AZSPHL Environmental Licensure program for water quality testing and have good workforce retention.
- AZSPHL Chemistry section was identified as a good reference for other labs.
- Community partners discussed being able to “walk through” the AZSPHL watching testing and wondered if this was something that could be implemented again.
- Discussions related to the laboratory system’s ability to assess competency of the workforce brought up multiple tools.
 - CLIA/CMS regulate hospital, private, doctor’s offices, and other laboratories performing clinical work. This covers all aspects of clinical testing including competency of workforce.
 - Samples confirmed at the AZSPHL help identify false positives and assist as a form of continuing education of the hospital labs.
 - AZSPHL conducts internal audits, competencies, and proficiencies on laboratory staff in all sections in accordance with regulatory requirements.
 - External audits also ensure staff competency.
 - Private labs mentioned that it is very difficult to find qualified and experienced clinical laboratorians, resulting in staff shortages. The limitations with salary are an issue in many cases.
 - Phoenix College is starting a Medical Technology program which should help train new staff.
- Communication to submitters and partners on laboratory testing availability.
 - When testing services are changed or dropped, provide reasons why or training if new procedures.
 - What should the laboratory system do when an offered test is cancelled or there is a delay in results?
 - New clinical procedures require staff training, proficiencies, quality assurance, and other items.

- AZSPHL works with CDC to assure essential core functions, but funding is not always provided for functions that are considered to be the part of clinical/hospital community functions. The CDC also provides some reagents/supplies for core functions – an example is Salmonella serotyping antigens.
- Training opportunities for staff development and for internships are limited at this time.
 - The limited resources and funding have cut back training offered by AZSPHL.
 - Interns are good idea to assist with training new individuals that will be in the job market shortly, but they still require resources to train and due to regulatory requirements their ability to assist with testing is limited.
 - It was discussed that hopefully future med tech students could visit the AZSPHL as part of an educational rotation.
 - There are two grant funded training coordinators at the AZSPHL – limited to grant priorities when training. There is no longer a general funded training section.
 - AZSPHL does not have a mandate for continuing education, but does encourage staff to attend educational opportunities or additional courses.
- The laboratory system’s retention ability various depending on the organization, but many have similar issues.
 - Salaries are not always competitive; this is true at the AZSPHL along with furlough days and hiring freeze causing difficulties in retaining/promoting.
 - Pride in self/career is an incentive to continuing education and looking for opportunities in performing public health work. Promotional opportunities, while not always available, are another incentive for workforce.
 - There is a gap in the workforce with many younger/new to the field staff just starting and many seasoned staff retiring. The middle section of the workforce is missing and this can lead to lack of retention, loss of experienced staff, and historical knowledge.
 - Promoting the laboratory as a career is difficult as other careers, with similar educational requirements, usually offer higher salaries and more perks (example mentioned were nurses). Often lab staff are treated poorly (hospital environment mentioned) and not seen as individuals with true careers (lower end of the occupational ladder) which leads to stress.

Next Steps/Priorities:

These next steps are not in any particular order of importance but listed as ideas the laboratory system would like to pursue.

- 1) Collaborate to encourage training, recruitment, retention, and interest in the laboratory field, specifically in public health. Determine ways to deal with the salary issue and the qualified pool of applicants.
- 2) Evaluate the cost of recruiting and training versus incentives to retain an employee. The actual cost of constantly retraining new staff versus providing salary increases to encourage retention.

- 3) Partner with training programs, schools, to promote public health as a career option.
- 4) Reach out to seasoned employees that may be retiring or have retired recently and provide an incentive to encourage them to continue working and assist with training new workers by allowing flexible schedules, etc. This could help with institutional knowledge gaps.

Essential Service 9: Evaluate Effectiveness, Accessibility, and Quality of Personal and Population-Based Services

Overview of scores:

Indicator	Score	Activity Level
9.1 System Mission and Purpose	5.0	Minimal
9.2 System Effectiveness, Quality, and Consumer Satisfaction	19.0	Minimal
9.3 SPH Laboratory System Collaboration	33.0	Moderate
Overall Net Score	19.0	Minimal

Discussion Summary:

- Evaluation of the laboratory system is mixed. Many of the federal standards and grants have an evaluation mechanism and the Newborn Screening and Environmental Licensure programs have advisory committees with regular meetings to discuss issues.
- Partners felt the clinical programs were not a resource in testing and data management.
 - Partners believed that AZSPHL technology was not up to date, not available as a reference laboratory because methodology and testing available is no more advanced than other laboratories.
 - It was pointed out that there are constraints due to mandated instrumentation and methods, especially when under federal funding. Often AZSPHL is not able to select the method being performed, but following the federal requirement.
- Partners felt that the environmental programs had techniques and methodology that were up to date even if not using for regulatory testing.
- Community capacity is not assessed regularly and gaps are not identified. Participants felt that stakeholder needs were not evaluated.
- Partners felt that determinations of testing to be performed or continued or dropped at AZSPHL did not include stakeholder input.
 - Decisions are not explained to the partners in many cases, some indicated that they received explanations of the changes.
 - There is a newsletter (sentinel laboratories) where this information is included but many individuals in attendance were not aware this existed and have not seen it.
 - Community feedback is not solicited before policy and testing changes are made. It was mentioned that AZSPHL does not always have a say in the policy and testing changes made as these decisions can be dictated by the department director or legislative changes.
- Information systems are seen as the biggest weakness.
- Collaboration should be used to evaluate the services provided and to work with partners in determining gaps.
 - Customer satisfaction surveys are offered by the Environmental Licensure program with a return of 50% or less.
 - There was discussion about whether the clinical programs had a survey or not. AZSPHL indicated that there is a survey, but many participants had not seen one.

- There is no set process in soliciting feedback from labs about quality of service. It was mentioned that the microbiology quality assurance individual works with the laboratories regularly but not for the whole system.
- The advisory committees for Newborn Screening and Environmental Laboratory licensure have collaboration with local and private labs. These committees assist with evaluating services and in the case of Newborn Screening selecting the disorders to prioritize.

Next Steps/Priorities:

These next steps are not in any particular order of importance but listed as ideas the laboratory system would like to pursue.

- 1) Encourage and increase communication with partners about policy and testing changes.
- 2) Solicit feedback from the laboratory system to ensure the needs of the community are being met and that gaps are identified.

Essential Service 10: Research for Insights and Innovative Solutions to Health Problems

Overview of scores:

Indicator	Score	Activity Level
10.1 Planning and Financing Research Activities	50.0	Moderate
10.2 Implementation, Evaluation, and Dissemination	35.0	Moderate
Overall Net Score	42.5	Moderate

Discussion Summary:

- The AZSPHL has access to an internal review board (IRB) and committee to work on clinical research.
- Some partnering with other organizations has occurred with AZSPHL to perform some research.
 - The state epidemiology program works with the data provided by the laboratory system to perform research.
 - AZSPHL received a grant from the Arizona Biomedical Research Consortium (ABRC) to look at and track variance and mutation in H1N1 samples.
 - AZSPHL had a visiting scientist sponsored through CDC to look at Valley Fever.
 - A combination of limited time and energy at the county level reduces the ability to perform epidemiological research studies. Although they have had some through student thesis projects.
- The AZSPHL does try to write grants to work on projects and perform research.
 - AZSPHL received a grant to hire a grant writer.
 - The county indicated that they are not as proficient at grant writing.
- The laboratory system research structure is not very robust due to multiple factors including staff time and funding. There are some areas that are doing research but overall not many. The laboratory system does not really foster improvement or innovation at this time.
- There were suggestions to work with educational institutions to help with research through ideas, suggestions, partners and volunteers. There was a comment made that the time invested in using students may end up being unreliable as the end product may not be what public health needs.
- Research that is conducted is recognized through journal articles published (the system publishes some every year), best practice information sent out by AZSPHL and public health, and there is an award recognizing publications in public health.
- The laboratory system should try and focus on educating physicians on ordering and using the proper tests for particular organisms/diseases.

Next Steps/Priorities:

These next steps are not in any particular order of importance but listed as ideas the laboratory system would like to pursue.

- 1) Collaboration and have a relationship with the AZSPHL to build on clinical laboratory activities. Determine if an advisory committee would be appropriate and if so, reactivate.
- 2) Institute internal policies that mentor students to work on data.
- 3) Create a better communication system on research projects that are epidemiological or laboratory related. A suggestion was to have a periodic summary of the pertinent news and links to additional information, including any papers that are published.

CONCLUSIONS AND NEXT STEPS

The first Arizona L-SIP (Laboratory System Improvement Program) event was successful in bringing together various partners to engage in a discussion on the essential services and to determine what we can do as a laboratory system to improve. The participation, discussions, and results were insightful and successful in identifying areas of improvement and attendees were enthusiastic about the opportunity to participate. Many attendees expressed their excitement at being able to meet and discuss issues face to face, to network with many of their colleagues, and to discover other areas of the laboratory system that they did interact with normally. Several participants shared a lot of the same experiences and were able to talk through the issues with their state wide counterparts.

A review of the priorities and next steps identified during the discussions show four main themes emerging:

- 1) Collaboration
- 2) Communication
- 3) Training
- 4) Workforce Development

These four main themes relate to the minimally and moderately scored essential services that discussed informing, educating, mobilization of the community, development of policies/plans, evaluation of health services, research, and linking people to needed health services. By working together and communicating the needs of the laboratory system and the needs of the community, the system will be able to determine ways to collaborate and train.

The L-SIP event was the beginning of a long-term process that will help the Arizona State Public Health Laboratory system foster an atmosphere of improvement. Already steps are being taken to determine how best to move forward to address the main themes that have emerged from this event. AZSPHL staff members are exploring technology options to assist with collaboration, communication, and training needs.

As we move forward into the future, we hope to improve the laboratory system as a whole and work together to protect the health of Arizona citizens.

APPENDIX 1

Ten Essential Public Health Services

The **Essential Public Health Services** provide the fundamental framework for the [NPHSP](#) instruments, by describing the public health activities that should be undertaken in all communities.

The Core Public Health Functions Steering Committee developed the framework for the Essential Services in 1994. This steering committee included representatives from US Public Health Service agencies and other major public health organizations.

The Essential Services provide a working definition of public health and a guiding framework for the responsibilities of local public health systems.

1. Monitor health status to identify and solve community health problems
2. Diagnose and investigate health problems and health hazards in the community.
3. Inform, educate, and empower people about health issues.
4. Mobilize community partnerships and action to identify and solve health problems.
5. Develop policies and plans that support individual and community health efforts.
6. Enforce laws and regulations that protect health and ensure safety.
7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable.
8. Assure competent public and personal health care workforce.
9. Evaluate effectiveness, accessibility, and quality of personal and population-based health services.
10. Research for new insights and innovative solutions to health problems.

APPENDIX 2

Eleven Core Functions of State Public Health Laboratories

This section lists eleven core functions common to the state public health laboratory system. The term *core function* is a role assumed by the laboratory, such as a direct public health responsibility or service provided by the lab staff, underlying the laboratory's ability to properly function. *Capability* refers to a specific activity that will ensure the laboratory's success in implementing an associated function. Finally, each organization has a *capacity*, or, in the case of public health laboratories, output of testing or services accomplished over a defined time period.

State public health laboratories should thus accomplish the following core functions as part of their organizational capacity:

- 1) Disease Prevention, Control and Surveillance
- 2) Integrated Data Management
- 3) Reference and Specialized Testing
- 4) Environmental Health and Protection
- 5) Food Safety
- 6) Laboratory Improvement and Regulation
- 7) Policy Development
- 8) Emergency Response
- 9) Public Health Related Research
- 10) Training and Education
- 11) Partnerships and Communication

Information obtained from the white paper: *Core Functions and Capabilities of State Public Health Laboratories* by APHL, 2000.