Maine held its first public health laboratory system performance standards assessment (assessment) on March 27, 2007. The assessment was a field test of the national instrument that was designed to:

- Create collaboration among public health laboratory partners throughout the state;
- Identify the public health laboratory “system” in Maine; and
- Determine its strength.

Staff of the SPHL were charged with the implementation of the assessment. This report lays the foundation for a laboratory system improvement plan to be developed and implemented based on the strengths and weaknesses identified through this assessment.

This instrument is based on the work of the Center for Disease Control and Prevention’s (CDC’s) National Public Health Performance Standards Program (NPHPSP), in partnership with the Association of Public Health Laboratories (APHL) and CDC’s Division of Laboratory Systems within the National Center for Prevention, Detection and Control of Infectious Diseases. The NPHPSP was established in 2002 to identify and measure the components, activities, competencies and capacities of state and local public health systems and local public health governance. APHL works to safeguard the public's health by strengthening public health laboratories in the United States and across the world. Its membership includes state and local public health laboratories, environmental laboratories and others that conduct testing of public health significance. APHL provided three professional facilitators for the Maine assessment.

The instrument incorporates the 10 Essential Public Health Services and the “Core Functions and Capabilities of State Public Health Laboratories”. The State Public Health Laboratory System (SPH Laboratory System) assessment was established to help users answer questions such as, “What are the components, activities, competencies, and capacities of our state public health laboratory system?” and “How well are the Essential Services (ES) and the Core Public Health Laboratory Functions being provided?” The dialogue that occurs in answering these questions will identify strengths and weaknesses; this information can be used to improve and better coordinate public health laboratory activities at the state and local levels. Additionally, the results gathered will provide an understanding of how well each state public health laboratory and the system within which it is functioning is performing. This information will help policymakers make better and more effective policy and resource decisions that will help improve the nation’s public health as a whole.

This assessment was conducted in a public meeting over a one day period. It included participants identified by the organizers at Maine's Center for Disease Control (the parent organization for the State's Public Health Laboratory) and consisted of public health
laboratory experts and their partners from across the state. Maine Centers for Disease Control targeted public health emergency preparedness partners, as these partners represent organizations that play a key role in the provision and evaluation of public health laboratory services. These organizations largely included groups associated with biological and chemical terrorism preparedness and pandemic flu planning efforts. These partners also included sentinel laboratories and private laboratories that provide surveillance data to the state. Approximately 150 partners were exclusively contacted by e-mail. Approximately 75 partners participated in the assessment event.

The SPH Laboratory System Performance Assessment Program is intended to improve the quality of public health laboratory practice and the performance of public health laboratory systems by:

• Providing performance standards for public health laboratory systems and encouraging their widespread use;
• Engaging and leveraging state laboratory system partnerships to build a stronger foundation for public health preparedness;
• Promoting continuous quality improvement of public health laboratory systems; and
• Strengthening the science base for public health practice improvement.

Maine joined the project in its field-testing phase of the SPH Laboratory System Performance Assessment Program instrument. The results from the assessment will help Maine to improve its public health laboratory systems as well as provide valuable input on this instrument.

The SPH Laboratory System Performance Assessment Program instrument is designed to:

• Improve communication and collaboration, by bringing partners to the same table.
• Educate participants about the system that performs public health laboratory testing, and the interconnectedness of activities, which can lead to a higher appreciation and awareness of the many activities related to improving the public’s health.
• Strengthen the diverse network of partners within state and local public health systems, which can lead to more cohesion among partners, better coordination of activities and resources, and less duplication of services.
• Identify strengths and weaknesses that can be addressed in quality improvement efforts.
• Better articulate of resources needed to improve the SPH Laboratory System.
• Identify resources to operationalize state public health laboratory system improvements.
• Provide a benchmark for public health laboratory system practice improvements, by setting a “gold standard” to which public health systems can aspire.

There are four concepts that have helped frame the Public Health Laboratory System Performance Standards into their current format:

1. The standards are designed around the 10 Essential Public Health Services. The use of the Essential Services assures that the standards cover the gamut of public health action needed at state and community levels. They also incorporate all of the 11 Core Functions and Capabilities of State Public Health Laboratories.

2. The standards focus on the overall state public health laboratory system, rather than a single organization. A state public health laboratory system includes all public, private, and voluntary entities that contribute to public health laboratory activities within a given state. This ensures that the contributions of all entities are recognized in assessing the provision of essential public health services.

3. The standards describe an optimal level of performance rather than provide minimum expectations. This ensures that the standards can be used for continuous quality improvement.

4. The standards are intended to support a process of quality improvement. System partners should use the assessment process and the performance standards results as a guide for learning about public health laboratory activities throughout the system and determining how to make improvements.

Each of these concepts is more fully described below.

The 10 Essential Public Health Services

The Essential Public Health Services provide the fundamental framework for the NPHPSP instruments by describing the public health activities that should be undertaken in all states and communities. The Essential Public Health Services were first set forth in a statement called Public Health in America and were developed by the Core Public Health Functions Steering Committee in 1994 (convened by Department of Health and Human Services). The statement identifies the essential functions of public health. They are as follows:

1. Monitor health status to identify 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 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 a competent public health 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.

The 11 Core Functions and Capabilities of State Public Health Laboratories

A Task Force assembled by APHL, in collaboration with and with support from CDC's Public Health Practice Program Office, Division of Laboratory Systems (PHPPO/DLS), developed a set of core functions of state public health laboratories. The term core function is defined as “a role assumed by the laboratory that underlies the laboratory's ability to support public health.” They describe the broader functions and elements that are necessary to ensure the laboratory capability to execute the core functions. APHL adopted the core functions at its 2000 Annual Meeting as the consensus position of the association.

According to the report, all State Public Health Laboratories should be capable of performing:

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

The tool also uses key indicators and model standards. Each key indicator is illustrated by a model standard that describes aspects of an optimal performing public health laboratory system. The model standards articulated in these instruments represent expert public health opinion and best practice concepts. Each model standard is addressed by assessment questions that serve as measures of performance.

A Focus on the Public Health Laboratory System

1 Core Functions and Capabilities of State Public Health Laboratories: A Report of the Association of Public Health Laboratories (CDC 20sep02)
The SPH Laboratory System consists of all the participants in public health testing, including those who initiate testing and those who ultimately use the test results. The SPH Laboratory System should assure that:

1. Public health threats are detected and that response is timely;
2. All stakeholders are appropriately informed of potential threats;
3. Reportable conditions are monitored in a comprehensive state-wide system;
4. Specimens and isolates for public health testing are sufficient to provide comprehensive public health surveillance and response; and
5. When referred to reference laboratories, testing is timely, accurate and provides the scientific basis for treatment. The concepts of a SPH Laboratory System are embodied in the 11 Core Functions.

The SPH Laboratory has a leadership role in:

- Developing and maintaining active collaboration and communication among stakeholders to assure comprehensive, accurate, timely testing services. Stakeholders include, but are not limited to, epidemiology professionals, first responders, environmental health professionals in water, food and air surveillance activities;
- Routinely monitoring clinical laboratories performing public health testing on reportable infectious diseases to assure submission of accurate, timely results using national testing guidelines and processes; and
- Maintaining an integrated informational system that includes all stakeholders.

Optimal Level of Performance

Frequently, performance standards are based on a minimum set of expectations. However, these types of standards may not stimulate organizations to strive for higher levels of achievement.

It is for this reason that the SPH Laboratory System Performance Assessment Program instrument describes an optimal level of performance and capacity to which all state public health laboratory systems should aspire. Optimal standards provide every public health laboratory system – whether more or less sophisticated – with benchmarks by which the system can be judged. In comparing the current status to optimal benchmarks, systems are able to identify strengths and areas for improvement. Additionally, optimal standards provide a level of expectation that can be used to advocate for new resources or needed improvements in order to better serve the population within a public health system.

A nationally developed set of optimal performance standards, framed in the essential public health services, will provide the following:

- A means for strengthening relationships with public health, commercial, and other laboratories and partners that comprise the broader laboratory system;
- A framework for continual improvement of public health laboratory systems;
- A concrete way to educate system partners and elected officials about the laboratory system;
• A practical tool to help identify areas in need of advocacy and increased resources;
• A means to help formalize the National Laboratory System around the country, with potential inclusion of veterinary, agricultural, and environmental laboratories; and
• Support for the planned process for accreditation of state public health laboratories.

Quality Improvement
The SPH Laboratory System Performance Assessment Program is intended to promote and stimulate quality improvement. As a result of the assessment process, the responding laboratory system should identify strengths and weaknesses within the state public health laboratory system. This information can pinpoint areas that need improvement. If the results of the assessment process are merely filed away or sit idle on a shelf, much of the hard work that is devoted to completing the instrument will be wasted. System improvement plans must be developed and implemented.

Assessment Process
This assessment was conducted in a public meeting over a one day time period. It included participants identified by leaders within Maine’s Health and Environmental Testing Laboratory and consisted of public health laboratory experts and partners from across the state. Following a plenary session designed to introduce the assessment process to stakeholders; the participants conducted their first assessment as a whole group and were then divided into three groups for the remainder of the Essential Services (ES). The breakouts are as follows:

• **Whole group** - ES# 7 Linking people;
• **Group #1** - ES# 9 Evaluation, ES# 1 Monitor, and ES# 10 Research;
• **Group #2** - ES# 2 Diagnose, ES# 5 Plan/policy development, and ES# 6 Enforce; and
• **Group #3** - ES# 3 Inform/educate, ES# 8 Workforce, and ES# 4 Mobilize.

Three categories of organizations were identified to participate in the conference:

• Core governmental organizations;
• Other governmental organizations; and
• Non-governmental organizations.

The Scoring Process
Once all of the questions for a Key Idea have been discussed, the facilitator moved the discussion to closure. The facilitator asked the group how they would rate performance by the SPH Laboratory System relative to the Key Idea and the Points for Discussion. “Voting” took place by raising colored paper and the group worked towards a consensus. The performance options used were:
Summary, Results and Analysis

**Performance**
Collectively, the essential functions of the Maine SPH Laboratory System were assessed as:
- “Yes Partially” for six of the 10 essential functions;
- “No Partially” for three of the 10 essential functions;
- “No” for one of the 10 essential functions;

Performance was rated **highest** (70% or over) for:

- The SPH Laboratory System monitors health problems to identify health problems (ES #1, key indicator 1.2)
- The SPH Laboratory System- The SPH Laboratory System assures provision of services at the highest level of quality to assist in the diagnosis and investigation of all health problems and hazards (ES #2, key indicator 2.1)
- The SPH Laboratory System- Position requirements for all laboratory position categories within state and local public health laboratories are identified; and the SPH Laboratory System has tools to assess competencies of the workforce (ES #8, key indicator 8.1)

Performance was rated **lowest** (33% or under) for:
• The SPH Laboratory System- The SPH Laboratory System has the ability to respond rapidly to medical and public health emergencies (ES #2, key indicator 2.3)
• The SPH Laboratory System- Partners in the SPH Laboratory System develop and maintain positive relationships with each other and with other key organizations (ES #4, key indicator 4.1)
• The SPH Laboratory System- The SPH Laboratory System communication plan is fully integrated with partners’ and collaborators’ communication plans; and the SPH Laboratory System communicates effectively in a regular, timely, and accurate way to support collaboration (ES #4, key indicator 4.2)
• The SPH Laboratory System- The SPH Laboratory System works together to share existing resources and/or to identify new resources (e.g. funding, personnel, tools) to assist in identifying and solving health issues (ES #4, key indicator 4.3)
• The SPH Laboratory System- The SPH Laboratory System has the appropriate resources to fulfill its enforcement function for laws and regulations; and the SPH Laboratory and other appropriate government agencies collaborate to fulfill their enforcement function (ES #6, key indicator 6.3)
• The SPH Laboratory System- The SPH Laboratory System identifies laboratory service needs and collaborates to fill gaps (ES #7, key indicator 7.1)
• The SPH Laboratory System- The SPH Laboratory System mission, purpose, and range of services are evaluated on a regular basis; and the range of technologies in use by the SPH Laboratory System is periodically surveyed and evaluated, with objective reports shared across the SPH Laboratory System (ES #9, key indicator 9.1)
• The SPH Laboratory System- The effectiveness of personal and population-based laboratory services provided throughout the state is regularly determined; and the quality of personal and population-based laboratory services provided throughout the state is regularly determined (ES #9, key indicator 9.2)
• The SPH Laboratory System- The SPH Laboratory System has adequate capacity to plan research and improvement activities; the SPH Laboratory System collaborates to finance research activities; and research and improvement initiatives are clearly defined and support broad public health goals (ES #10, key indicator 10.1)
• The SPH Laboratory System- The SPH Laboratory System research efforts draw on diverse perspectives and expertise to stimulate innovative thinking; the SPH Laboratory System research is evaluated to foster improvement and innovation; and; the SPH Laboratory System disseminates research outcomes, best practices, and recognition of research activities (ES #10, key indicator 10.2)

Discussion and Evaluation

Most participants felt that the assessment provided an opportunity for exchanging information, sharing expert opinion, and networking among important system partner organizations.
The system’s collective performance was judged to be less than optimal on most of the model standards contained in the assessment instrument. Furthermore, judgments about system performance ultimately reflect the qualitative and quantitative perceptions of those who participated in the assessment process. Verification of these perceptions are beyond the scope of this undertaking. When assessment participants identified gaps in model standard performance it was unclear whether this should be attributed to the status of the system or to the participants’ level of awareness about the system. Despite this ambiguity, performance gaps identified during the assessment conference provide a starting point for future efforts to improve system functioning.

In addition, the conference itself served as an important tool to improve the public health system by inviting a broad group of stakeholders together and have them reflect about their roles as system partners.

The following comments were discussed as part of the evaluation component:

- Great process, worked very well
- People communicated very openly
- People were very positive
- Excellent participation
- Several people stayed that said they were leaving early
- Thought the diversity would be a challenge, but didn’t happen at all
- Great mix of people
- Users Guide good
- Glad it was facilitated; made it much easier for us
- The consensus process worked, and probably wouldn’t have done that if not facilitated.
- The sessions were fascinating
- Research section very difficult to get arms around
- Definition was very different from process definition (improvement, etc.)
- Some way to separate the state lab from the system is needed.
- Collaboration opportunities seemed to grow throughout the day.
- Private labs MAY want to participate in sharing data.
- Most said there are things that only the public lab can do…even from the private sector
- Private sector could help sponsor some of this work (offered by private lab person)
- The state lab does have advocates out there
- People don’t understand the complexity, think the lab can be privatized
- Dangers in the EH, given lack of reporting. Private wells
- Systems aren’t connected electronically – clinical, environmental, private, public… even the feds don’t have it.
- Competition came up
- Whether the stakeholders will take on ownership; how well did we reach the political frame to act on the recommendations that we made.
- Need to work on getting reporting from private labs.
Private sector interested in public forcing the reporting to get past the “ethical issues”

Next Steps

The assessment served as an important tool to improve networking within the public health system by inviting a broad group of stakeholders together to reflect about their roles as system partners. Participants identified the following steps to be taken to improve the laboratory system:

**Essential Service #2: Diagnose & Investigate Health Problems/Hazards**
1. Improve/expand the electronic exchange of data to speed response time (feds need to lead, but have dropped the ball)
2. Need a new laboratory
3. Finalize the state plan

**Essential Service #5: Develop Policies and Plans**
1. Get more external involvement in the review of policies and plans
2. Do a better job of identifying stakeholders and getting them connected
3. Develop a comprehensive communication system to notify stakeholders of plans and policy development to include them

**Essential Service #6: Enforce Laws & Regulations**
1. Develop clearer penalties for non-compliance, and place in the law
2. Need to draw in private labs, share enforcement information with them
3. Get more resources to help fulfill compliance issues better

It is recommended that Maine also focus on the areas in which performance was rated the lowest. Several field test sites have decided to work on these areas by forming steering committees, made up of participants from the assessment day. APHL will also be implementing a Quality Improvement Program in the next year to assist states.

**Detailed Parking Lot Comments and Next Steps**

**Essential Service 1: Monitor health status to identify community health problems.**

Next Step: Provide a unified list of laboratory services including cost, turn around time, hours of operation, reportable diseases for all the laboratories in the state.

1.1 Surveillance Information System

1.1.1 Parking Lot Issues:
  A lot of work needs to be done in this area
  At the same time, a lot of work is on-going

1.1.2 Parking Lot Issues:
Timelines are an issue in some cases for State of Maine surveillance
Negative results are not reported

1.1.3 Parking Lot Issues:
Electronic data transmission is lacking

1.2 Monitoring of Community Health Status

1.2.1 Parking Lot Issues:
Radiation surveillance needs higher priority.
Collaboration needs improvement
Rarer conditions/diseases are very difficult to identify and analyze
Air testing is not as good as other areas

1.2.2 Parking Lot Issues:
Communication, timeliness and completion are all issues

1.2.3 Parking Lot Issues:
Coordinator position with the Family Health Unit is vacant (State of Maine)

1.2.4 Parking Lot Issues:
None

1.2.5 Parking Lot Issues:
Private lab communications to the state system
Access to IT staff

Essential Service 2: Diagnose and investigate health problems and health hazards in the community

Parking Lot Issues: Private Wells and Beach testing: contacts for referral of testing requests are unknown by private labs. Private labs should be considered full partners during outbreak investigations.
Field Test Evaluation Comments: The separation of State PH lab and State PHL System would clarify the intent of the evaluation to assess the entire System and not the State PHL.

Next Step: Increase the interoperability of the IT systems for electronic data exchange. The state of Maine needs a new Public Health Laboratory. The state of Maine needs a central plan that is turned into action at the local level.

Essential Service 3: Inform, educate, and empower people about health issues.

3.1 Identification of outreach & communication system:
3.1.1 Parking lot issues: Explore barriers between private labs and the State for
coordination and technologies. Critical for the idea of handling de-identified data or aggregate data from private: State.

Risk communication plan training needed to target communication on issues that locally impact communities and facilities to allow locals to respond to the public after a news release.

Organize the HAN to help target specific subjects, localities etc. ( sortable index?) Strategize response to the public prior to issues arising

3.2 Data and social marketing
3.2.1 Parking lot issues: Creation and delivery of targeted lab information to health partners:
What should be communicated to the State from private labs? An example was how to handle investigations of hotspots of Arsenic: what lab tests follow-up samples? How do state and private labs work as a network?

3.2.2 Parking lot issues: Creation and delivery of targeted lab information to non-health partners:
Lack of comprehension of lab reports
Traditional communication media does not hit all groups need to include IM, podcasts, etc.

3.3 Mobilization of partners through education
Parking lot issues: Desire resolution of Hotspot issue needed.
Need to outreach by utilizing existing organizations such as Scouting, churches, sororities and frats, clubs, VFW, Elks, schools etc.

**Essential Service 4: Mobilize community partnerships to identify and solve health problems**

4.0 Constituency Development

4.1. Development and maintenance of positive relationships

4.1.1 Parking lot issues: Connecting labs to research and location of funding
What is the State’s Research Agenda?
Purpose and process of private labs is very different from state lab.
Lack of courier system
Questions about holiday coverage at HETL by hospitals (example flu over thanksgiving = dead specimen and false negative)
Clarification of roles especially in communication between HETL:Hospitals:Epis, Dr.s
Need to define and describe the current structure. Identify gaps, who provides services and make this structure available to the partners.
Build relationships
4.2 Communications

4.2.1 Are communication plans integrated?
- Parking lot issues: Coordination between silos
- Coordination between specialties
- Sample transportation issues
- The HAN needs subject matter to be searched by subject
- Different sample processing, results reporting by different partners
- Close the communication loop

4.2.2 Communication effectiveness
- Parking lot issues: Difficulty exists communicating between specialties
- Historic communication is OK (personality based a success)
- Difficulty comes with new partners
- Confidentiality issues exist
- Potential over-reaction to communication
- Mini networks exist, what is available to one may not be to another

4.3 Resources

4.3.1 Work together to share and identify new resources
- Parking lot issues: Resources are limited
- Strategic thinking required on how to do this
- Desire to have a flow sheet of responses (communication) for every day and emergencies
- Confidence expressed that in emergency communication but concern with day: day issues
- No analysis of use of the system and it’s capacity

**Essential Service 5: Develop policies and plans that support individual and community health efforts**

Parking Lot Issues: Federal agencies were missing from this exercise and all agencies need to be included in emergency planning. Race and ethnicity data need to be reported for alterations in policies. No central plan is shared with all localities: Plan centrally and act locally.

Next Step: Partners will be included in planning once they are identified as stake holders.

**Essential Service 6: Enforce laws and regulations that protect health and ensure safety**

Parking Lot Issues: Collaboration of state and private labs to provide control of testing. Rules for blood lead. There is a need for increased communication and collaboration between HETL and private labs. Packaging rules are not understood by couriers
Next Step: Increased collaboration between private laboratories and state epidemiologists.

**Essential Service 7: Link people to needed personal health services and assure the provision of health care when otherwise unavailable**

Nothing identified

**Essential Service 8: Assure a competent public health and personal health care workforce**

8.1 Workforce Competencies

8.1.1 Parking Lot Issues:
- IT competencies and availability
- Small labs – accreditation issues

Field Test Evaluation Comments:
- Do position descriptions include IT requirements?
- Some labs do not have Job Descriptions

8.1.2 Parking Lot Issues:
- Adequate personnel issues – there is a shortage in the marketplace
- Small Lab issues
- Training issues for information given to the public regarding lab results

8.2 Staff Development

8.2.1 Parking Lot Issues:
- Number of staff available for education limited
- Workload problems
- Small labs especially have greater problem

8.2.2 Parking Lot Issues:
- Finances
- Availability of staff (workload problem)
- Travel restrictions
- Mentoring
- Competencies for lab sectors

8.3 Assuring Laboratory Workforce

8.3.1 Parking Lot Issues:
- State compensation and career moves are limited (private labs are not as limited)
- Limitations are by state law and decree
8.3.2 Parking Lot Issues:
Succession planning is a problem for State of Maine personnel – not so for private labs
Mentoring needs improvement

Essential Service # 8 Next Steps:
Succession planning needs improvement and implementation

**Essential Service 9: Evaluate effectiveness, accessibility, and quality of personal and population-based health services**

9.1.1 Parking lot issues: Do not try to push “public health functions” on to private labs.
Private health function is different than public health
Surveillance is a Public Health function.
Establishment of a “Laboratory Advisory Committee”
Simplify reporting
Define common threads between public and private labs to improve communication

9.1.2 Evaluation of technologies

9.1.2 Parking lot issues: Push the EPA for method flexibility

Have outside groups advise HETL on new methods/technologies (Lab Advisory Committee?)
Biomonitoring technologies restricted by regulations so relax them

9.2 System Effectiveness

9.2.1 Parking lot issues: Want more uniformity in lab testing of private wells i.e. Use the same groups of tests and same reports
Food safety lab capacity too small
Educate user that DR.s and nurses make diagnosis & DDR. Selects the lab. Lab does not make decisions to sub-contract work out of state
Determine the roles of public vs. private

9.2.2 Quality of service
Parking lot issues: Cannot determine because of HIPPA.
This impacts the ability to determine and correct Negative impact on biomonitoring use

9.3.1 Collaboration is measured

Parking lot issues: Mandatory reporting of more environmental testing than just radon (include Uranium and Arsenic etc.)
Create a policy agenda
Determine restrictions and remove them
Establishment of Lab Advisory Committee could advance this.

**Essential Service 10: Research for new insights and innovative solutions to health problems**

10.1 Planning and Financing Research Activities

10.1.1 Parking Lot Issues:
   Need for more collaboration
   Need for more resources, especially financial

10.1.2 Parking Lot Issues:
   None

10.1.3 Parking Lot Issues:
   None

10.2 Implementation, Evaluation, and Dissemination

10.2.1 Parking Lot Issues:
   No research committee(s)

10.2.2 Parking Lot Issues:
   None

10.2.3 Parking Lot Issues:
   None

Essential Service # 10 Next Steps:

   Collaboration with research organizations and/or encourage research organizations