Insight into the Laboratory Efficiencies Initiative (LEI) Informatics Self- Assessment Tool

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INTRODUCTION

The Association of Public Health Laboratories (APHL) and the Centers for Disease Control's (CDC) Laboratory Science Policy and Practice Program Office cosponsor the Laboratory Efficiencies Initiative (LEI) to assist public health laboratory professionals to identify and adopt high-efficiency, sustainable practices and capabilities. Informatics is critically important to PHLs but poses many challenges. The LEI Informatics Self-Assessment (SA) Tool can be used by laboratory professionals to :
- Gain a comprehensive understanding of their current informatics capabilities
- Identify any potential gaps in those capabilities
- Prioritize the informatics capabilities that need improvement
- Formulate a practical plan to acquire needed new capabilities, and
- Put that plan into action

METHODS

PHL leaders articulated the need for this SA tool in Dec. 2011. A working group of PHL directors, PHL informatics experts, APHL and CDC staff, and technical consultants developed the tool with extensive user input, including:
- Four reviews of draft by an SME group
- Technical review by PHLs in 1)Alabama, 2) Kentucky and 3) New York City PHLs, and
- Beta testing by PHLs in 1) Alabama, 2) Kentucky, 3) New York City and 4) West Virginia

KEY FEATURES OF THE TOOL

- There are 19 Capability Areas (CAs) or principal laboratory functions that a PHL's information management system should be able to support
  - 16 are based on a consensus LIMS requirements document (APHL 2003 report)
  - 3 reflect
    1) Data exchange and interoperability
    2) Policies and procedures related to informatics
    3) Core IT services
- Each CA section of the tool contains a title, broad description and guidance statement for progressive "maturity levels"
- Individual capability statements (CSs) with indicators are linked to different levels of maturity
- Each CS has multiple indicators on scales ranging from 1 to 3
- The 19 CAs contain 133 CSs
- Users can calculate an overall grade for each CA

Table 1: CAPABILITY AREAS

CA #1	Laboratory Test Request and Sample receiving	CA #11	Contract and Grant Management
CA #2	Test Preparation, LIMS Processing, Test Results Recording and Verification	CA #12	Training, Education and Resource Management
CA #3	Report Preparation and Distribution	CA #13	Laboratory Certifications/Licensing
CA #4	Laboratory Test Scheduling	CA #14	Customer Relationship Management
CA #5	Prescheduled Testing	CA #15	Quality Control (QC) and Quality Assurance (QA) Management
CA #6	Specimen and Sample Tracking/Chain of Custody	CA #16	Laboratory Safety and Accident Investigation
CA #7	Media, Reagents, Controls: Manufacturing and Inventory	CA #17	Laboratory Mutual Assistance/Disaster Recovery
CA #8	Interoperability and Data Exchange	CA #18	Core IT Services: Hardware, Software and Services
CA #9	Statistical Analysis and Surveillance	CA #19	Policies and Procedures, Including Budgeting and Funding
CA #10	Billing for Laboratory Services		

Table 2. CAPABILITY STATEMENT EXAMPLE

This capability statement example is drawn from Capability Area 1, which includes Laboratory Test Request and Sample Receiving. Users grade their laboratory maturity level based on the capabilities described in Capability Statement 1.1 and 1.2 using a three-point scale. Users chose whether the laboratory functions at Level 1, Level 2, or Level 3, as described in the indicator statements (i.e. description of each level). If this Capability Statement is not relevant to their laboratory, a user would select option N/A.

CAPABILITY STATEMENT	LEVEL	DESCRIPTION OF LEVELS	SELECT LEVEL
Capability Statement #1.1 The laboratory is able to receive an electronic test request message from a submitter for all tests.	Level 3	The laboratory is able to receive an electronic test request message from a submitter for all tests.	1 2 3 NA
	Level 2	The laboratory is able to receive an electronic test request message for some tests and paper-based requisitions for other tests.	
	Level 1	The laboratory is able to receive only paper-based requisitions for tests.	
	N/A	Not applicable to this laboratory.	
Capability Statement #1.2 The laboratory is able to receive an individual electronic test request or package request message from a submitter and process the workflow.	Level 3	The laboratory is able to receive an individual electronic test request or package request message from a submitter and process the workflow completely.	1 2 3 NA
	Level 2	The laboratory is able to receive an individual electronic test request or package request message from a submitter and process the workflow partially.	
	Level 1	The laboratory is able to receive a paper, e-mail, or fax, but not an electronic test order request message.	
	N/A	Not applicable to this laboratory.	

USER FEEDBACK

The intended users of the tool are:
- PHL Leaders
- PHL Scientists
- Informatics Staff
- QA/QC/QMS staff

End-user feedback (from beta testing sites) :

Alabama State Public Health Laboratory
This assessment will be a valuable tool for all State Public Health Lab directors as it is used and reused over the next several years. It is extremely detailed, yet very user friendly. It is the first tool that I have seen that allows an SPHL director to evaluate the maturity of their LIMS across all functional areas of their lab. This will give the lab director valuable insight into areas that still need improvement and will assist them in writing project justifications in their grants to improve deficiencies. I think it will also highlight areas where grant money has been well spent in the past.

Kentucky State Public Health Laboratory
Our laboratory found the LEI SA tool to be a comprehensive and informative informatics measuring tool as well as a great 'workshop' style document for lab leaders. This tool not only provides laboratories a scale to rank or measure their informatics maturity level but it can also be used alone or alongside existing laboratory self-awareness and growth tools.

New York City Public Health Laboratory
The 19 Capability Areas provide the most definitive assessment yet and place a level of standardization which will prove very useful to all PHLs and their supporting agencies. Gap related information can be inserted into strategic plans, annual objectives and used as substantive budget justification. We found the tool to be insightful, engaging and well worth the time.

West Virginia Public Health Laboratory
Although it did take some time to complete the assessment, we felt as if it was a advantageous use of our time. It helped us evaluate our weaknesses and discover our strengths. We were able to quickly determine what areas needed our focus. I would recommend all PHLs to use the tool.

SUMMARY

- The LEI SA tool can help PHLs accomplish the following objectives:
  - Assess their current informatics capabilities and establish a baseline
  - Measure maturity of their informatics capabilities against target levels
  - Adopt a step-wise approach to reaching benchmarks
- The value added by the LEI SA tool includes:
  - Identification of gaps in current informatics capabilities
  - Guidance on steps that can be taken to achieve desired standard

- Laboratories can repeat the LEI Self Assessment at any interval to identify advances in capability. The periodic reassessment can
  - Help evaluate ongoing informatics activities
  - Validate changes implemented by laboratory to information systems
  - Guide direction of future enhancements to informatics capabilities
- This initiative supports the long term goal/strategy of moving towards greater interoperability and harmonization

LABORATORY EFFICIENCIES INITIATIVE
Transforming to a Sustainable Public Health Laboratory System