

APHL Policy Statement

Laboratory Information Management Systems (LIMS) for every Public Health Laboratory

A. Statement of Position

Implementation of a comprehensive and integrated electronic information management system within local, state, and national public health laboratories by 2010 is one of the highest priorities for public health preparedness in the United States. Federal funding to assist states in the acquisition, implementation, and ongoing maintenance of these integrated information management systems is critical.

B. Background/Data Supporting Position

The development of successful strategies for defending the public from all hazards (including biological, chemical, and radiological) requires the sharing and analysis of accurate and timely information. The majority of vital public health and emergency preparedness data flowing between local, state and federal agencies is either paper-based or through secondary electronic systems that are not integrated with a LIMS and do not conform to recognized standards. These secondary stop-gap systems involve the manual data entry of information, subjecting the data to the potential of serious errors as well as longer turn-around times.

The Centers for Disease Control and Prevention (CDC) has documented the need for robust, interoperable information management systems that are capable of “Ensuring secure electronic exchange of clinical, laboratory, environmental, and other public health information in standard formats between the computer systems of public health partners.”¹ Public health laboratories are essential providers of data for planning and implementation of intervention strategies to reduce the impact of disease and exposure events. Such capability is critical to the detection of emerging infectious disease, tracking of new trends in antibiotic resistance, food and chemical contamination events and evaluating the effectiveness of outbreak investigations. Modern laboratory information systems must be capable of collecting data from many sources and transmitting information to multiple governmental agencies and appropriate health authorities to carry out the responsibilities of public health officials. The monitoring of quality medical care and the reduction of medical errors and their ultimate cost to society requires the use of common standards for data exchange of laboratory test results.

In the May 2003 United States General Accounting Office report to Congressional Requestors entitled “Information Technology Strategy could Strengthen Federal Agencies’ Abilities to Respond to Public Health Emergencies”, GAO reported that public health officials examined their readiness to respond to acts of bioterrorism and have found weaknesses due to vulnerable and outdated Health Information systems and technology.² These technology deficiencies at local, state, and federal levels may hinder the effective detection and identification of potentially harmful biological or chemical agents.

In order to operate as a first line of defense to protect the public against diseases and other health hazards, every public health laboratory must be supported by a laboratory information management system (LIMS) fully capable of meeting standards for electronic communication.

Sophisticated public health LIMS technology could assure functionality that would allow bi-directional communication of test orders and results between our local state and federal laboratories to meet the demand of mutual assistance and surge capacity during times of crisis. This capability would enable PHLs to continue daily operations supporting state programs and customers, while always being ready to join as part of the larger national protection network. Finally, LIMS assures the flow of information necessary to inform both governmental policy makers and business leaders about impending health threats.

Being prepared to respond to health threats today means that PHLs must maintain infrastructure that meets national standards, enabling fluid technical integration with other PHLs, numerous federal agencies (e.g., Centers for Disease Control and Prevention (CDC), Environmental Protection Agency (EPA), United States Department of Agriculture (USDA), Food and Drug Administration (FDA), Department of Homeland Security (DHS), Federal Bureau of Investigation (FBI), etc.), other health partners across the nation, as well as with international health agencies. Seamlessly weaving PHLs into the fabric of the health safety net is an urgent national priority today and will remain so into the future.

Laboratory information management systems specialized to meet the full breadth of PHL responsibilities are recognized by PHLs and the Association of Public Health Laboratories (APHL) as mission critical, but to date, the only federal funding offered to state health departments for clinical LIMS implementation is from the CDC through its Bioterrorism grants. Without substantial federal funding directly to state and local public health laboratories for LIMS implementation it will be impossible for these laboratories to acquire, support and maintain these systems.

A nation-wide survey conducted by APHL in November 2004, determined that almost 90% reported the need to improve their LIMS by upgrading a portion of the system or purchasing a new LIMS in order to meet the operational needs of the laboratory and participate in electronic commerce. Survey analysis also found that less than half of the PHLs operate an enterprise LIMS system that provides all necessary technical functions of the PHL. One-quarter of respondents indicated that they could not report electronically to clients, and almost half indicated that their LIMS system did not incorporate any of the national data standards (HL7, LOINC, or SNOMED).

APHL has included LIMS in its strategic plan³ for 2006-2009; it states "Provide the information, tools and training to assist members in implementing a comprehensive, state-of-the-art, PHIN-compliant LIMS; and ensure input in the next generation of LIMS". The APHL Informatics Committee seeks to move public health laboratories forward in the technology of capturing, processing, and communicating laboratory information vital to public health.

The APHL is dedicated to working with its many partners to achieve the goal of a fully functional LIMS in every city, county and state public health laboratory before 2010.

C. References

1. CDC Bioterrorism Continuation Guidance Budget Year Five – Focus Area E "Health Alert Network/Communications and Information Technology". http://www.bt.cdc.gov/planning/continuationguidance/pdf/healthalertnetwork_attache.pdf
2. United States General Accounting Office report to Congressional Requesters, May 2003. "Bioterrorism: Information Technology Strategy could Strengthen Federal Agencies' Abilities to Respond to Public Health Emergencies". <http://www.gao.gov/new.items/d03139.pdf>
3. The APHL strategic plan: https://aphl.org/about_aphl/2006_2009_aphl_strategic_plan_final.pdf

Other sources used as reference material, but not quoted:

Public Health Informatics Institute and Association of Public Health Laboratories. (2004). Research Brief: Batteries Not Included – Understanding the total cost of ownership for a commercial off-the-shelf public health laboratory information management system. Decatur, GA:

Public Health Informatics Institute.
APHL "Requirements for Public Health Laboratory Information Management Systems."
<https://www.aphl.org/docs/RPHLIMS.file.pdf>
APHL PH-LIMS Design
Documents<http://www.aphl.org/programs/informatics/LIMS/registration.cfm>

D. Implementation

APHL will promote a significant multi-year strategic IT initiative to accelerate adoption of adequate public health LIMS infrastructure. APHL will work with members and federal partners to seek funding to support the strategic IT initiative. APHL is advocating for 27 million dollars in first year federal funding directly to state and local public health laboratories to ensure acquisition of an integrated information system. APHL is then advocating for an additional 15 million dollars per year for state and local public health laboratories to support and maintain the systems in an ongoing basis.

APHL must lead the development of collaborative working groups for each of the following implementation options:

PHL implementation of a COTS LIMS. (Implement commercial off-the-shelf (COTS) product and pay for enhancements needed to comply with evolving standards and work needs.)

Collaborative COTS LIMS enhancement (Work with a consortium of PHLs, COTS product implemented through collaborative approach to make decisions about how a product is further developed by the vendor.

State collaborative development of LIMS.

In house developed LIMS products.

Integration of multiple LIMS in one PHL. (Mix of COTS and/or homegrown)

LITS Plus development (Continue to support states to evolve LITS Plus, the first LIMS developed through support from the CDC).

LIMS development is essential for moving the nation forward in data exchange for public health preparedness, biosecurity and improving the health of all Americans. The United States has the capability and technological expertise to establish processes that are applicable around the world.

In order to establish the initiative and carry the project forward, APHL must address the following:

APHL Partnership Development

Federal agencies. In addition to APHL's traditional partner, the CDC, the project must also involve partners such as:

EPA

USDA

DHS

FDA

EPA

Public advocacy. The project must include a strategy and mechanism to communicate the importance of the mission to improve health care. Partners must be sought among influential public associations such as the Association for the Advancement of Retired Persons, and the National Education Association.

Professional associations. Laboratories operate under the medical and technical direction of pathologists and laboratory scientists that are members of several important professional associations including:

American Society for Microbiology

American Society of Clinical Pathologists

College of American Pathologists
American Association for Clinical Chemistry

Private laboratories. Private companies that are national in scope perform the majority of the outpatient laboratory testing in the US.

LabCorp
ARUP
Quest
Mayo Medical Laboratory

National Education Effort. An educational effort must be mounted to demonstrate the benefits of improved state laboratory capability provided by LIMS.

Congress
Federal Agency Partners
State legislatures
World partners, organizations and programs:
WHO
United Nations
PEPFAR
World Bank
Gates Foundation

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