

**MEASURING CORE FUNCTIONS AND CAPABILITIES  
OF PUBLIC HEALTH LABORATORIES**

**A Report from the**

**Association of Public Health Laboratories**

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**APHL** ASSOCIATION OF  
PUBLIC HEALTH LABORATORIES



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### **APHL MISSION**

To promote the role of public health laboratories in shaping national and global health objectives, and to promote policies, programs, and technologies that assure continuous improvement in the quality of laboratory practice and health outcomes.

## EXECUTIVE SUMMARY

### Defining, Measuring and Capturing the Value of Public Health Laboratories

*The Core Survey measures activity in seven categories that either describe or affect public health laboratories' abilities to operate: administration, funding, infrastructure, personnel, laboratory improvement and regulation, research related to public health, and partnerships and communication.*

The Association of Public Health Laboratories developed the Core Survey in 2002 to measure state public health laboratory activity in line with the Core Functions and Capabilities of Public Health Laboratories in the 50 states and the District of Columbia. Because public health laboratories are a critical foundation for the public health system, reaching every facet of its infrastructure, these providers of essential services need to be surveyed for their ability to support and strengthen programs that protect health. The nation's public health response capacity depends on how state public health laboratories carry out these core functions and capabilities.

The survey also helps advance APHL's mission, which includes promoting the role of public health laboratories in shaping national health objectives and promoting policies, programs, and technologies that assure continuous improvement in the quality of laboratory practice and health outcomes. Measuring achievement in areas from relationships with key agencies to technology infrastructure provides insight on what is successful and what is needed in order to improve. This report provides a detailed analysis of the data collected from the 2007 Core Survey, which generated a response rate of 89 percent, and discusses the importance of the findings. The survey instrument has changed from 2002 to 2007; but where questions remained consistent, changes in results are examined.

The following are some highlights from the report:

- **Laboratory services:** Nearly 12 million samples tested in a one-year period made clear that public health laboratories are the backbone in the battle against environmental and foodborne hazards. Most laboratories provide valuable information on services to their communities and perform testing outside of normal business hours.
- **Funding:** Despite the infusion of funding after the 2001 terrorist events, laboratories are finding it difficult to keep up with expenses, especially the major expenditure of hiring and retaining qualified lab personnel.
- **Infrastructure:** Having properly designed laboratory facilities to conduct high-quality environmentally controlled testing is a primary necessity for public health laboratories. In 2007, all state public health laboratories reported having at least one bio-safety level 3 (BSL-3) laboratory.
- **Workforce:** Laboratories see this as a major impediment to improvement. Growth in staff numbers at state public health laboratories lags behind the national average for other types of laboratories. Additionally, an average of only 4 percent of full-time employees at state public health laboratories holds doctoral degrees.
- **Laboratory improvement:** Funding is still seen as the top impediment to improvement. Laboratories report strong relationships with key agencies, including state health officials and the FBI.
- **Research:** While scientific research is not traditionally considered a function of the public health laboratory, state public health laboratories are among the highest users of novel analytical methodologies and cutting-edge scientific instrumentation. A considerable number of laboratories take part in public health related research with other programs in their state agencies.
- **Partnership and communication:** As evidenced by events such as Hurricane Katrina and the novel H1N1 outbreak, the nation needs to set up and maintain a strong public health laboratory network that is capable of "turn on a dime" response, with all laboratories within it possessing inherent surge capacity and continuity of operations. Based on the survey information, laboratories could improve in several ways, including through memoranda of agreement (MOAs) and stronger media relationships.



## INTRODUCTION

### **The Road to Defining, Measuring and Capturing the Value of Public Health Laboratories**

Public health laboratories are a critical foundation for the public health system, reaching every facet of its infrastructure. As providers of essential services to support and strengthen programs that protect health, public health laboratories offer the solid science needed for informed public health decisions.

But despite more than 100 years of bringing communities value, a pervasive lack of awareness remained about the services public health laboratories provide. No organization or entity had clearly defined laboratories' critical activities. Neither other members of the public health system nor the public fully understood the role of public health laboratories—and without understanding, funding was hard to come by. Without a defined list of core functions and capabilities that all state public health laboratories endorse, no effective advocacy can function through legislation, policy development or the dissemination of public information. This became a cycle: Lack of knowledge of public health laboratories' essential activities led to challenges in funding, which threatened the laboratories' ability to perform these activities.

Stopping the cycle required a definition of public health laboratories' critical functions. In 2000, APHL created and published Core Functions and Capabilities of State Public Health Laboratories (available at [http://www.aphl.org/aphlprograms/lss/publications/Documents/Core\\_Functions\\_PHLs.pdf](http://www.aphl.org/aphlprograms/lss/publications/Documents/Core_Functions_PHLs.pdf)). It listed 11 core functions describing what state public health laboratories should accomplish as part of their organizational capacity:

- Disease prevention, control and surveillance
- Integrated data management
- Reference and specialized testing
- Environmental health and protection
- Food safety
- Laboratory improvement and regulation
- Policy development
- Emergency response
- Public Health Related Research
- Training and education
- Partnerships and communication



The development of this core functions list advanced the development of a National Laboratory System—an essential component of the larger public health system, needed to ensure the availability of laboratory services to protect public health against all hazards in an ever-changing environment. The list also made it possible to measure the abilities of state public health laboratories to perform these core functions.

**The Association of Public Health Laboratories**

The Association of Public Health Laboratories (APHL) represents the interests of public health laboratories at every level of government across the nation, from the local level through the states to the country’s national reference laboratory, the Centers for Disease Control and Prevention (CDC). APHL measures the ability of member laboratories to carry out their core functions and capabilities.

For almost 50 years, the Association of Public Health Laboratories (APHL) has been working with the Centers for Disease Control and Prevention (CDC) and its membership to collect detailed laboratory testing and operational data about public health laboratories across the country. Efforts extended through the use of LabNet, APHL’s web-based survey platform, and the Comprehensive Laboratory Services Survey, which was created to address Healthy People 2010 initiative objectives. Yet it became apparent that no survey was capturing information related to several important yet disparate areas of the public health laboratory system.

To this end, APHL in 2002 developed the Core Survey, which measures activity in seven categories that either describe or affect public health laboratories’ abilities to operate: administration, funding, infrastructure, personnel, laboratory improvement and regulation, research related to public health, and partnerships and communication.

This report offers a detailed analysis of the data collected from the 2007 Core Survey as well as discussion about the importance of the findings. The survey instrument has changed from 2002 to 2007; but where questions remained consistent, we address the changes in results.

The Core Survey provides a snapshot of laboratory operations across the country as a whole. However, while operations are often similar from one state to another, variations exist in who laboratories report to, the services they provide, and operational schedules, among other factors. Readers should keep these state-to-state differences in mind while getting an overall picture of how public health laboratories fulfill their core functions.

*The Core Survey measures activity in seven categories that either describe or affect public health laboratories’ abilities to operate: administration, funding, infrastructure, personnel, laboratory improvement and regulation, research related to public health, and partnerships and communication.*

**Methodology**

The survey was administered using MR Interview, a web-based survey tool created by SPSS. Results were coded for entry into SPSS for Windows Version 15.0. Unless otherwise noted, data were collected for a period of 12 months, covering activities representing CDC Cooperative Agreement FY 2007. The survey was sent to the 50 states, the District of Columbia (DC) and Puerto Rico. Forty-two responses (a response rate of 84%) were received, representing all states and the District of Columbia. For the purposes of this report, “states” or “state public health laboratories” will refer to all respondents, including the District. Each data point falls into one of the seven operational areas it was designed to measure: administration, funding, infrastructure, personnel, laboratory improvement and regulation, research related to public health and partnerships and communication. Where applicable, data collected from the Core 2002 survey is compared. (The 2002 Core survey was launched in January 2002 and was sent to the 50 States, the District of Columbia, Puerto Rico, Mariana Islands, Guam and American Samoa). APHL received 50 responses from a total pool of 56 recipients, a response rate of 89 percent.

Where appropriate and for a greater degree of accuracy in analyzing the 2007 data, the data set was broken out into three categories of laboratory size based on the number of full-time employees, categorized as small, medium, or large, as defined by the following table:

**Table 1: Defining Laboratory Size**

Laboratory Size	Number of Full-Time Employees (FTEs)
Small	23-73
Medium	74-140
Large	141 or more

# THE SURVEY RESULTS

## SECTION I: ADMINISTRATION—SERVICES

*The number and types of samples tested show that public health laboratories are the backbone in the battle against environmental and foodborne hazards.*

What types of testing does a public health laboratory do? To whom does it report results? And how aware is the laboratory's community of these tasks and efforts? This part of the survey was designed to provide some insight into these questions and pinpoint areas of vulnerability.

### Looking toward active LACs

Most laboratories report to state health departments, but some report to universities or other state agencies such as the Department of General Services, Senior Services or the Department of Environment. Thirty-eight percent of laboratories reported they have an active Laboratory Advisory Committee (LAC). A LAC is a statewide, voluntary, multidisciplinary network established by a state public health laboratory to facilitate communication, collaboration and cooperation with other private clinical laboratories that operate within the state's jurisdiction.

### Mission statements communicate purpose

Mission statements and strategic plans help to communicate an organization's statement of purpose to the public, as well as the scope of its most important activities for a given period of time. In both 2002 and 2007, 88 percent of laboratories reported having a mission statement (2002, N=50 and 2007, N=42). Of note, the number of state public health laboratories with a strategic plan in place dropped from 31 in 2002 to 18 in 2007. Even fewer laboratories published annual reports: 13 in both 2002 and 2007.

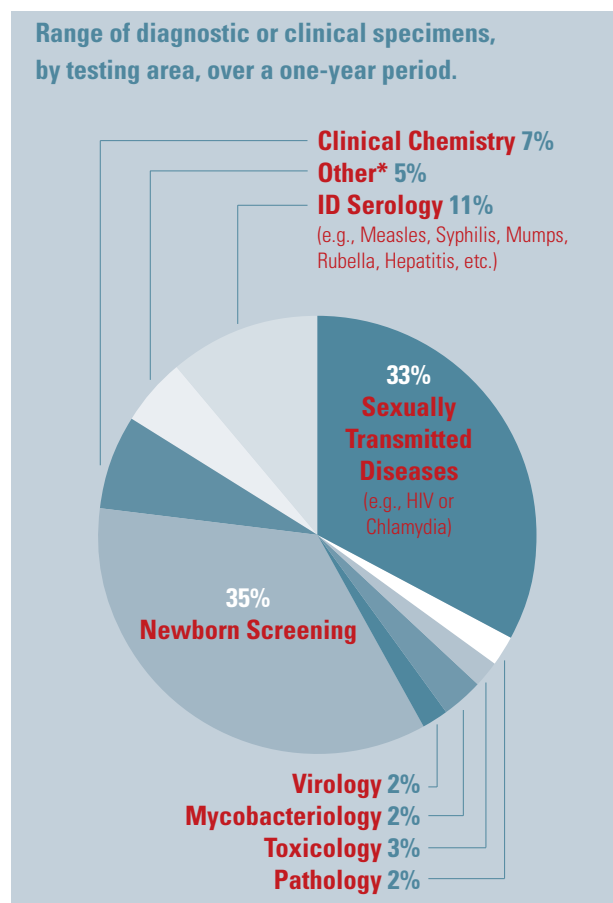
### Communities seek wide array of testing services

In a one-year period, the 42 survey respondents analyzed more than 12 million biological samples. Figure 1 shows the types of tests most commonly performed. Great variance can be seen when examining the specific services provided by laboratories; types of tests performed range from more routine tests, such as serology and bacteriology, to genetics/newborn screening, parasitology and environmental chemistry. While all laboratories responding perform bacteriology and molecular testing, only 1 percent provides pathology services.

### Water samples represent the majority of environmental testing

In addition to biological samples, public health laboratories analyze inorganic samples from the environment. Using biological, chemical and radiological methods, public health laboratories monitor pollutants in the air, water, soil and food. Of the survey respondents, 83 percent reported that they provide environmental chemistry testing services to the states they serve. State public health laboratories received 1,822,032 environmental samples for testing in fiscal 2007, and 63 percent of those samples received were water samples. (See Figure 2.)

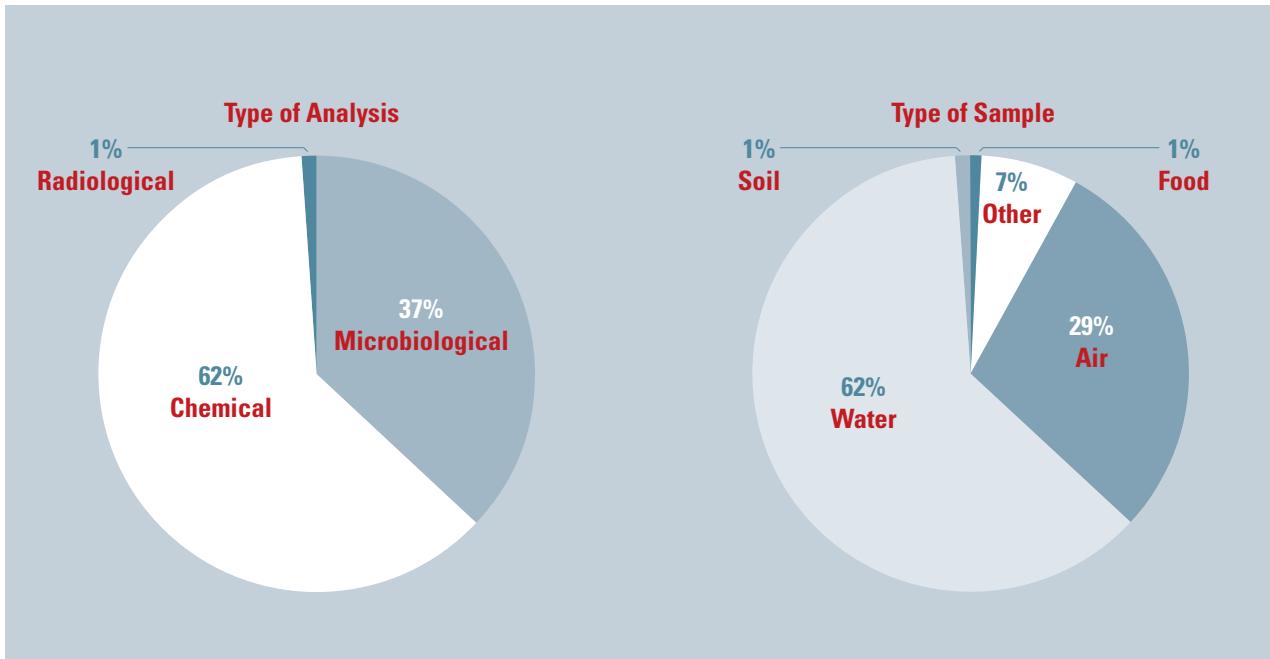
Figure 1: Specimen Testing



\* Includes low-volume tests such as: molecular detection, parasitology, antimicrobial susceptibility testing, mycology, hematology and clinical radiology.

**Figure 2: Environmental Samples Received (by sample and analysis type)**

Type of Analysis	Air	Water	Soil	Food	Other
Microbiological	10,616	600,561	2,553	22,793	43,604
Chemical	488,100	521,216	15,548	3,271	82,287
Radiological	7,704	18,277	1,492	947	3,018
Total Samples Received	506,420	1,140,054	19,593	27,011	128,909



**Food safety testing a critical activity**

Additionally, public health laboratories form the backbone of the response to foodborne emergencies by detecting clusters of related disease cases that may later be identified as outbreaks. Eighty-six percent of state public health laboratories reported conducting food safety testing in their jurisdictions, with 27,011 samples received for testing.

**How are communities informed about available testing?**

In order to inform clients of their testing availability, 88 percent of responding state public health laboratories reported that they publish a services guide. Of these laboratories, 32 make their service guide publicly available via the Internet; 62 percent publish a fee schedule of services; and 15 states make this fee schedule available via the Internet.

**Most laboratories provide testing outside of normal business hours**

In order to accomplish the needed testing, most laboratories work a typical Monday through Friday schedule, but a few states provide testing on Saturdays and Sundays: 19 percent work Monday through Saturday and 11 percent work seven days a week. However, even if laboratories do not classify Saturdays or Sundays as within their workweek, nearly all (98 percent) provide lab services outside of normal business hours. Some services cited as available on Saturdays or Sundays are newborn screening, the reading of some technical results and specimen/sample receipt.

**Other laboratories in the jurisdictions**

Twenty-one state public health laboratories have local (county or city) public health laboratories in their jurisdictions. The total numbers of county and city laboratories within each state fluctuates a great deal as well, ranging from none to 22 laboratories.

## SECTION II: ADMINISTRATION—FUNDING

*Funding is the key factor in the ability of state public health laboratories to carry out their core functions.*

Where does the money come from to fund state public health laboratories? Where is it going? Although funding and spending differ among state public health laboratories, some factors remain in common, the most salient being that funding is often lacking. Despite increases since 2002, limited funding was still cited by respondents in 2007 as the largest impediment to their ability to function at full capacity (see “Laboratory Improvement and Regulation,” page 10).

In looking at the total operating budgets in Table 2, the changes in funding since the 2002 survey become obvious. One possible explanation is that the data from the 2002 survey could be viewed as baseline data of public health laboratory operating budgets before the terrorist attacks of September 2001. Since the terrorist events, there has been an infusion of

government funding into the greater public health system; hence, the state public health laboratories’ funding has increased dramatically as well. The small increase in large-laboratory budgets might be due to the fact that 4 out of the 15 large laboratories did not provide this data for 2007.

### Top expense is laboratory personnel

Total fiscal expenditures can differ significantly between laboratories depending on size (see Figure 3). But in all categories, personnel accounts for the largest portion of laboratory spending each year. As performing laboratory functions require more specialized personnel, getting and keeping professionals becomes more expensive. Operational expenses make up the second-largest portion of the budget for all three groups. At small laboratories, personnel and operational expenditures are much closer in value than at medium and large laboratories.

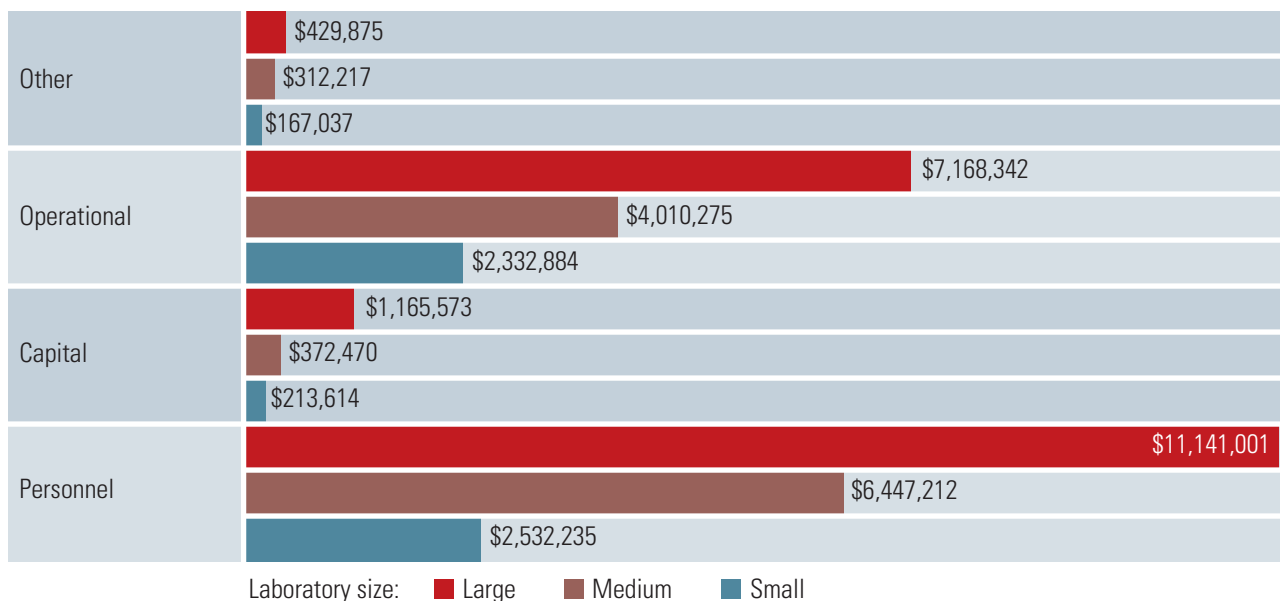
### Where do laboratories get their funding?

State public health laboratories receive funding from a variety of sources, such as state, federal, and local government; fees charged for testing services; and reimbursements from third-party payers. In medium- and large-size laboratories, state funding is the largest source of revenue; in small laboratories, federal funding is the largest source of revenue. Other funding sources cited by the laboratories included utilities (for

**Table 2: Average Total Operating Budgets**

Laboratory Size	2002	2006	% Increase
Small	\$3,407,535	\$6,065,654	78%
Medium	\$7,535,484	\$16,107,070	114%
Large	\$16,702,692	\$19,920,200	19%

**Figure 3: Average Total Expenditures, Calendar Year 2007**

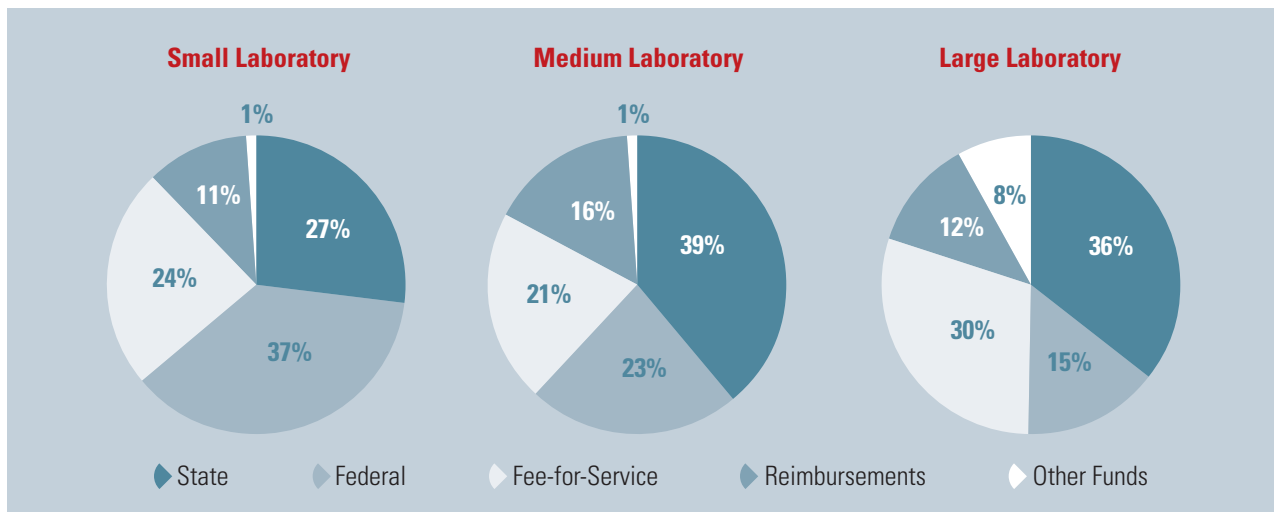




**Table 3: Total Funding Details for Calendar Year 2007**

Laboratory Size	Statistic	State	Federal	Local	Fee-for-service	Reimbursements	Other Funds
Small	Minimum	\$0	\$980,000	\$0	\$0	\$0	\$0
	Maximum	\$4,000,000	\$2,957,760	\$0	\$4,681,783	\$4,708,792	\$894,000
	Average	\$1,500,051	\$2,060,860	\$0	\$1,621,354	\$848,432	\$149,000
Medium	Minimum	\$171,731	\$442,726	\$0	\$0	\$0	\$0
	Maximum	\$11,318,600	\$7,007,000	\$0	\$7,159,906	\$10,200,000	\$1,620,000
	Average	\$4,610,774	\$2,719,980	\$0	\$2,689,064	\$2,389,614	\$181,009
Large	Minimum	\$0	\$0	\$0	\$0	\$0	\$0
	Maximum	\$17,564,745	\$6,807,929	\$451,972	\$21,181,211	\$10,000,000	\$13,634,620
	Average	\$6,800,231	\$2,899,561	\$41,088	\$6,200,388	\$2,413,503	\$1,634,811

**Figure 4: Percent Breakout of Funding Sources**



radiological chemistry), shellfish testing, water analysis, the Department of Environmental Quality and the Department of Agriculture. (See Table 3, Figure 4.)

**Changes noted in CDC funding levels**

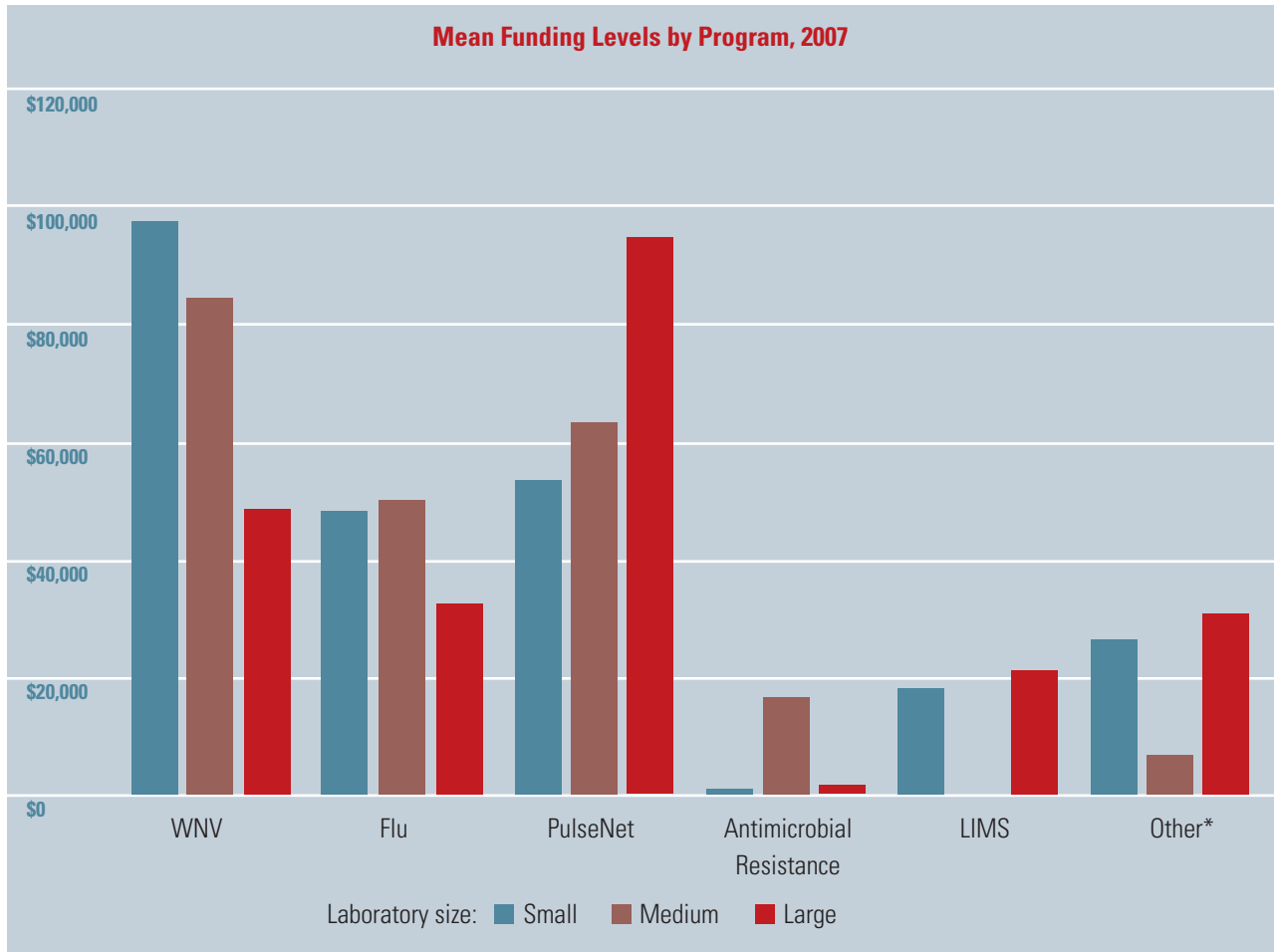
The Centers for Disease Control and Prevention is the federal agency that provides the most funding support to state public health laboratories. CDC funding increased significantly from 2002 to 2007 in each category of the laboratory. (See Table 4.) However, medium-size laboratories received more funding on average in 2007 than did larger-size laboratories, a statistic that is counter-intuitive. One reason for this discrepancy might be the fact that several larger-size laboratories did not report the amount of funding they received from CDC in 2007.

**Table 4: Average CDC Funding**

Laboratory Size	2002	2007	% Increase
Small	\$653,824	\$1,821,485	179%
Medium	\$1,297,619	\$2,727,063	110%
Large	\$1,365,363	\$2,577,783	89%

Laboratories receive funding from many CDC program areas or grant programs (see Figure 5), such as the Epidemiology-Laboratory Capacity grant and the Public Health Emergency Preparedness grant (which has separate categories for biological, chemical and influenza supplemental funding), as well as tuberculosis, HIV, sexually transmitted disease testing, informatics,

**Figure 5: CDC Epidemiology-Laboratory Capacity Grants**



environmental health, and newborn screening testing. Overall, state public health laboratories reported receiving the largest proportion of funding from the Public Health Emergency Preparedness grant for biological testing (\$28,331,806) and the least proportion of funding for informatics activities (\$183,116).

**Testing, insurance, and more: Other funding sources**

Beyond funding from state or federal government budgets, a number of laboratories generate revenue from other sources. Of laboratories responding, 88 percent (N=36) charge other agencies within their state as well as neighboring states for testing services. Of those charging for services, 92 percent accept specimens/samples on a fee-for-service basis. This is

about the same as in 2002, when 86 percent of laboratories (N=42) charged other agencies or other states for testing services. However, only 65 percent of those that did charge in 2002 accepted specimens/samples on a fee-for-service basis.

Insurance billing is another funding source in some states; 57 percent of laboratories bill for Medicaid and 31 percent bill private insurance. These numbers are up slightly from the 2002 survey, which reported 51 percent of laboratories billed Medicaid and 29 percent of laboratories billed private insurance plans. In general, the number of laboratories charging fee-for-service or reimbursement has not changed significantly over a six-year time frame.

### SECTION III: ADMINISTRATION— INFRASTRUCTURE

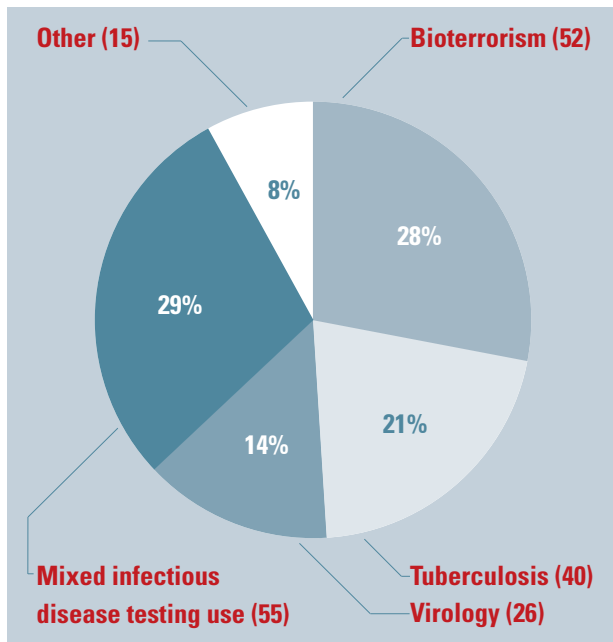
*Having properly designed laboratory facilities for high-quality environmentally controlled testing is a primary necessity for public health laboratories.*

What kinds of buildings and equipment do state public health laboratories need to perform up to community needs and expectations? Are their facilities safe and effective? For many years, the answer was no: public health laboratories did not have state-of-the-art laboratory buildings in which to provide testing services.

#### Bio-safety labs essential

Bio-safety level 3 laboratories protect laboratory staff and the environment from exposure to infectious agents that can be transmitted by the respiratory route and cause serious illness. In 2007, all state public health laboratories reported having at least one bio-safety level 3 (BSL-3) laboratory. Nationally, 188 BSL-3 suites are available in state public health laboratories for testing highly infectious agents (N = 42). (See Figure 6.)

**Figure 6: Types of Testing in BSL-3 Suites**



### SECTION IV: ADMINISTRATION—PERSONNEL

*Staffing growth at state public health laboratories is lagging behind the national average for other laboratories.*

The most important resource within a public health laboratory is its staff. In today's public health laboratories, staff must be highly trained and experienced to deliver high-quality work and preserve safety. State laboratories that provided numbers of total full-time employees (FTEs) by state for both the 2002 and 2007 Core Surveys reported totals of 4,083 and 4,378 FTEs respectively—this represents a mere 7 percent national increase in FTEs over a five-year period.

This increase in full-time public health laboratory staff was compared to the national employment estimate from the United States Department of Labor Statistics for a similar occupation, Medical and Clinical Laboratory Technologists. The U.S. Department of Labor defines a Medical and Clinical Laboratory Technologist as an employee who "performs complex medical laboratory tests for diagnosis, treatment and prevention of disease. May train or supervise staff." The national employment average for a Medical/Clinical laboratory technologist was 146,480 in 2002 and 163,240 in 2007. This represents an increase of 11 percent—4 percentage points over the increase in state public health laboratory staffing over the same time period.

While we recognize that the percent increase discussed represents all staff within the public health laboratory and not just analytical staff, we deemed it appropriate in this case, as comparing estimates for a broad category to a single occupation within the laboratory is the most conservative approach. High among the reasons why such a lag in employment is seen here: the inability of state public health laboratories to compete with the salaries being offered by their private clinical laboratory counterparts.

Of states reporting numbers of FTEs in both 2002 and 2007, 10 had fewer FTEs. Seven states' FTE numbers went up by 10 percent or less; 13 states went up between 10 percent and 50 percent, and two states went up by more than 50 percent. However, we must note that the survey question to ascertain total number of full-time laboratory staff was asked slightly differently in the 2002 and 2007 surveys. The 2002 surveys asked the question in two parts: the first for number of full-time laboratory employees in the central laboratory and the second

for number of full-time laboratory employees in branch laboratories where applicable. The 2007 survey combined these two into one question. For the purposes of analysis of the 2002 survey, numbers from the two questions were combined.

**The laboratory workforce represents specialized expertise**

Looking at the average number of FTEs reported a similar proportion is seen in the number of employees who perform analytical testing and in the number who hold doctoral degrees. In small laboratories, 71 percent perform analytical testing; in medium laboratories, this is 67 percent, and in large laboratories, 61 percent. In all three categories, an average of 4 percent of FTEs holds doctoral degrees.

Many state public health laboratories employ specialized personnel focusing on quality assurance and safety. Eighty-three percent of laboratories have at least one designated quality assurance officer, and 86 percent have a safety officer, of which one-third are full-time safety officers. In the laboratories overall, there is an average of 2.3 quality assurance officers. In most cases, quality assurance officers report to one of three laboratory leadership positions: lab director (51 percent), assistant lab director (27 percent) or laboratory manager (11 percent).

**Figure 7: Impediments to Successful Operation of Public Health Laboratories**

**What Makes Lab Operation Difficult?**

Survey respondents reported that these factors were the top impediments to successful operation of public health laboratories.

Impediments	
Funding	95%
Workforce	83%
Physical constraints (e.g. space)	77%
Intra-agency cooperation	33%
Other*	24%

\*Other:

- Too much time spent on grants, reports, requests, etc.
- Ongoing departmental reorganization and some deterioration in public health program management at state and federal levels.
- Personnel caps.
- State pay scale, no budget.
- Aging instrumentation.
- Loss of continuity with turnover.
- Lab network development and nurturing.
- Lack of direction from Division of Public Health.

**SECTION V: LABORATORY IMPROVEMENT AND REGULATION**

*It is APHL’s role to assess and measure the presence of any impediments to successful operation of public health laboratories—and in doing so, the Association can identify areas of critical need among them.*

What are the impediments to successful operation of public health laboratories? APHL’s assessments, including this survey, allow the association to conduct education and outreach on behalf of public health laboratories, as well as create tools and services to help laboratories offset these impediments.

**Top problems: Funding, workforce and more**

Even before the current economic downturn, funding was identified as the top impediment overall. (See Figure 7.) But there are other major restraining factors—and challenges that may not be as prevalent, but are just as troubling.

**How are your relationships?**

Public health laboratories provide critical services to many agencies, organizations and individuals within their states. Outreach and collaboration are important to the success of a national laboratory system—public health laboratories are but one of the providers of preventative healthcare services within a state. Survey respondents were asked to characterize the strength of their relationship with a number of key agencies/organizations/individuals that provide important services to communities within their state; most pointed to strong relationships with state epidemiologists, state health officials and the FBI.

## SECTION VI: PUBLIC HEALTH RELATED RESEARCH

*It is imperative that public health laboratories participate in systems research with other members of public health so their presence is defined and represented.*

While scientific research is not traditionally considered a function of the public health laboratory, state public health laboratories are among the highest users of novel analytical methodologies and cutting-edge scientific instrumentation. Public health laboratories are uniquely positioned:

- To conduct research to improve laboratory tests for more effective disease surveillance
- To improve rapid disease detection methodology development
- To advise the private sector regarding newly marketed tests and instrumentation

In addition to scientific research, a need exists across public health as a whole to conduct greater systems- and practice-based research.

### Assisting in research across the field

A considerable number of laboratories (62 percent) take part in public health related research with other programs in their state agencies. Of laboratories reporting, 45 percent cited staff members that published peer-reviewed journal articles related to laboratory activities or research projects during 2007.

Beyond research, some laboratories also help evaluate vendor test kits and instrumentation: 43 percent of respondents provide diagnostic test-kit evaluations and 29 percent provide laboratory instrumentation evaluations. Many (75 percent) are permitted to provide consultation services to manufacturers of commercial tests.

## SECTION VII: PARTNERSHIPS AND COMMUNICATION

*Maintaining partnerships and strong communication networks across the healthcare continuum – both public and private – is vital to protect the entire country from all hazards.*

Public health laboratories are a first defense against emerging infections—but their role is broader than this. They play an important role in monitoring and combating chronic diseases, in providing information that helps formulate public policy, in providing aid during natural disasters, and much more. As evidenced by events such as Hurricane Katrina and the novel H1N1 outbreak, the nation must set up and maintain a strong public health laboratory network that is capable of “turn on a dime” response, with inherent surge capacity and continuity of operations for all laboratories within it.

In order for public health laboratories to maintain their funding and staffing, they must “develop and strengthen statewide partnerships among state, county and city public health leaders, managed care organizations, academia and private industry to advance the understanding of the critical role they play,” as stated in the Core Functions document. In order for public health laboratories to participate in state policy planning and development, their laboratory leaders must nurture and grow the relationships within their state system. Table 5 shows how laboratories gauge the strength of these relationships.

### Different types of support agreements for different laboratories

Survey respondents were asked if their laboratory has in effect formal (e.g., memoranda of understanding) or informal partnership agreements with other state public health laboratories to provide diagnostic/analytical testing services. Of laboratories responding, 52 percent of laboratories indicated having both formal and informal support agreements in place.



### Fostering relationships with media

The media plays an important role in communities by creating a bridge between current events, the laboratories and the communities they serve. Looking at results gathered under the Laboratory Improvement and Regulation section, 29 percent of respondents characterized their relationship with media outlets as “very strong or strong” while 64 percent said they maintain a “neutral” relationship. When asked how frequently the

media contacts the laboratory, 21 percent of respondents reported they are “frequently” contacted and 71 percent said they are “sometimes” contacted. Many laboratories have designated spokespersons to communicate with the media and other organizations. Of laboratories that responded, 74 percent allow the laboratory director to fill this role. Half of the laboratories allow other staff members to talk to the media.

**Table 5: Strength of Relationships**

State public health laboratories reported the following when asked to gauge their relationships with various agencies.

	Very Strong	Strong	Neutral	Poor	Very Poor	N/A
State Epidemiologist	79%	12%	7%	2%	0%	0%
State Health Official	62%	26%	7%	2%	0%	2%
State Environmental Agency	24%	26%	33%	10%	7%	0%
State Agricultural Department	12%	33%	48%	0%	0%	7%
State Law Enforcement Agencies	26%	45%	26%	2%	0%	0%
Universities (Public or Private)	17%	38%	36%	7%	2%	0%
Media Outlets	5%	24%	64%	0%	2%	5%
Community	5%	29%	60%	2%	2%	2%
Clinical Laboratories	31%	55%	14%	0%	0%	0%
State Veterinarian/Veterinary Laboratory	17%	52%	26%	2%	0%	2%
USPS Postal Inspectors	10%	69%	19%	0%	2%	0%
State Food Agency	17%	45%	31%	0%	0%	7%
Military Laboratory within state	21%	36%	17%	2%	0%	24%
National Guard Bureau/Civil Support Team	38%	55%	5%	2%	0%	0%
FBI (WMD Coordinators)	57%	33%	7%	0%	0%	2%

■ More than 50%   ■ 30%–50%   ■ 10%–30%   ■ Fewer than 10%

## CONCLUSION

The ability to accurately define public health laboratories' core functions and capabilities is an important endeavor and key to maintaining the nation's public health response capacity. This report shows that while operations, services provided, and resource needs across state level public health laboratories are often similar, variations exist by size of laboratory, by needs and sometimes by priority.

*Quality laboratory practice is APHL's overarching goal, as articulated in its mission statement. The proven route to quality is through a systems approach to laboratory practice that treats discrete functions and entities as part of a larger integrated system.*

What do these variations mean to the goal of developing a strong, reinforced National Laboratory System? How can we use the knowledge of laboratories' core capabilities from this survey to continue to work toward this goal?

Identification is the first step; next comes improvement. The survey indicates state public health laboratories would benefit from concentrating on certain areas, including:

- Areas related to core public health laboratory activities, especially related to building and maintaining partnerships within and among the various constituents of state health departments as well as the entire healthcare continuum.

- Areas that, without increased visibility and funding, will never be able to advance beyond their current status—specifically, workforce recruitment and retention as well as maintenance and updating of laboratory infrastructure.

APHL takes on these issues in its strategic planning, as well. Workforce is a major area of concentration at the association: Advancing training, leadership development, recruitment and retention of a competent workforce to meet the needs of the public health laboratory system is a keystone of APHL's strategy. Supporting—with resources and training and through action—strategic communications and public relations, as well as effective outreach to build relationships and community, is another way APHL is coming at the challenges revealed in this report. And there are more areas of intersection: identifying emerging technologies for use in public health and participating in activities related to laboratory technology advancement is a way to strengthen research capabilities, for instance.

As laboratories improve in these areas, the drive for a National Laboratory System will benefit. A strong system requires strong individual components; and high-quality public health laboratory services depend on good core function capabilities. APHL will continue to monitor the ability of state public health laboratories to carry out their core functions while the association works to expand that assessment role to all levels of public health laboratories.





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The Association of Public Health Laboratories (APHL) is a national nonprofit dedicated to working with its members to strengthen governmental laboratories with a public health mandate. By promoting effective programs and public policy, APHL strives to provide public health laboratories with the resources and infrastructure needed to protect the health of U.S. residents and to prevent and control disease globally.



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