

Health Department

LOB #144:

LABORATORY

Purpose

The Health Department Laboratory provides comprehensive laboratory services to support essential public health services including communicable disease testing (e.g., sexually transmitted infection, rabies testing), environmental monitoring (e.g., water quality, environmental hazards) and patient specific health monitoring (e.g., drug testing). The Laboratory also serves as surge capacity for the state public health laboratory, particularly for testing to support emergency response.

Description

The Health Department Laboratory, the only BSL-3 public health laboratory in Northern Virginia, offers a wide range of testing to aid in the diagnosis, treatment, and monitoring of diseases of public health significance as well as surveillance and monitoring of environmental health hazards. These services support Health Department programs such as Tuberculosis (TB), Sexually Transmitted Diseases (STD), Rabies, Environmental Health, and the Disease Carrying Insects Program (DCIP) as well as mandated environmental tests and substance abuse tests for other County agencies such as the Community Services Board, the Juvenile and Adult Detention Centers, the Court System, and the Police Department. The work performed assists these County agencies and governmental entities with carrying out their programs in the prevention of disease and in the enforcement of local ordinances, state laws, and federal regulations, a Health Department core function.

The Laboratory holds two Certificates of Compliance through the Clinical Laboratory Improvement Amendments. The five Health Department Clinics sites are certified to perform moderate-complexity testing on site for screening of STDs. The Health Department Laboratory is certified to perform high-complexity testing on specimens for tuberculosis, enteric pathogens, intestinal parasites, sexually-transmitted diseases, HIV, and drugs of abuse. The environmental laboratory is certified by the Division of Consolidated Laboratories, an agent of the Environmental Protection Agency, as a “Certified Drinking Water Laboratory” and tests water for bacterial and environmental hazards from private wells, streams, and public water systems. The laboratory also performs Rabies testing of animal heads, monitoring and surveillance testing of County streams for bacteria, as well as molecular testing of mosquito pools for West Nile virus.

The Laboratory is recognized as an Advanced Sentinel Laboratory in the nation’s Laboratory Response Network. As such, the laboratory maintains the capability to perform testing outlined in the ASM *Sentinel Level Clinical Microbiology Laboratory Guidelines for Suspected Agents of Bioterrorism and Emerging Infectious Diseases* and demonstrates annual competency by participation in proficiency testing or exercises, such as the Laboratory Preparedness Exercise or state-developed challenge sets.

The Laboratory uses existing infrastructure, federal certifications, and staff to provide selected laboratory tests on a “fee for service” basis to surrounding counties and municipal governments. Revenue from these services significantly offset the cost of providing mandated laboratory testing for Fairfax County.

The Laboratory performs testing at the main site in central Fairfax and at specified times at each of the five Health Department District offices. The Laboratory operates from 8:00am to 5:00pm daily but responds to communicable disease and environmental testing request 7 days a week. Service is also provided at sexually-transmitted disease clinics during evening clinic hours. The Laboratory is partially staffed on Saturdays, Sundays and holidays to provide emergency rabies testing and to meet specialized testing requirements. During FY 2015, the laboratory performed 218, 403 clinical and environmental tests.

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Benefits

The Laboratory plays an important role in the early identification of food, waterborne, and other communicable disease outbreaks and in the planning of effective and timely public health interventions. It also supports other County agencies and government entities in the enforcement of state and federal regulations. Testing is essential to disease surveillance, the diagnosis of new and emerging infectious diseases, the assessment of hazards in the environment, substance abuse monitoring, and the evaluation of drinking water safety. Providing local public health laboratory testing services enables early identification of health hazards and diseases within the community. This results in faster access to care and earlier initiation of appropriate drug therapy, ultimately preventing the spread of disease in the community.

Having testing services at the site of patient care during sexually transmitted disease clinics provides the opportunity to diagnose and treat clients immediately. The local laboratory is able to tailor its testing services to local public programs and needs, while also serving as surge capacity for the state laboratory, particularly for testing to support emergency response efforts.

The laboratory is able to provide support to Health Department clinical services at significantly reduced costs when compared to tests offered by commercial labs. In addition, using the existing Laboratory infrastructure to extend services to other jurisdictions generates revenue and offsets the cost of testing.

The Health Department continues to enhance and expand its laboratory capabilities to improve disease surveillance and position the laboratory to meet the public health challenges of the future. In the fall of 2010, the laboratory was relocated to a new secure facility with expanded biosafety level 3 capacity for TB and molecular testing. The facility was a cost-effectively renovated County building that achieved LEED Gold® status. The new facility increased capacity and efficiency, allowing the laboratory to expand the scope of testing services in order to better protect the health of the community now and in the future.

Mandates

Services provided by the Laboratory are integral to the provision of mandated LOBs in the Health Department and other County agencies. As such these services are indirectly federally or state mandated. The percentage of this LOB's resources utilized to satisfy the mandate is 91 to 95 percent.

Trends and Challenges

Public health has traditionally focused on identifying and treating communicable diseases. With increasing frequency and complexity of communicable disease outbreaks, the Laboratory must be prepared to collaborate with a variety of program partners to detect, investigate, prevent and control emerging and reemerging public health threats. These threats include the emergence of new communicable diseases (Middle Eastern Respiratory Syndrome, Chikungunya); reemerging communicable diseases (multi-drug resistant tuberculosis, measles); outbreaks of illness from consuming contaminated food or water; environmental emergencies (chemical hazards); and bioterrorism.

Across the nation, Public Health Laboratories continue to face the challenge of an aging workforce and difficulties associated with recruitment and retention of a qualified workforce. In the next 3 to 5 years, the Health Department Laboratory has a number of highly specialized scientists who will be eligible for retirement. To address this challenge, laboratory management is assessing the current organizational structure of the laboratory to identify and target areas for improved efficiency. This will include succession planning efforts and intensive cross-training of all laboratory staff to ensure continuity of expertise.

Additional challenges include identifying resources to maintain and replace outdated, inefficient equipment; limited capacity and redundancy of equipment in case of failure or increase in test volume; and updating and maintaining information technology to ensure that data can be shared with and accessed by those who need it.

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Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #144: Laboratory			
FUNDING			
<u>Expenditures:</u>			
Compensation	\$1,146,319	\$1,127,269	\$1,382,117
Operating Expenses	1,100,729	934,985	621,874
Capital Equipment	46,186	110,463	0
Total Expenditures	\$2,293,234	\$2,172,717	\$2,003,991
General Fund Revenue	\$952,048	\$954,691	\$974,569
Net Cost/(Savings) to General Fund	\$1,341,186	\$1,218,026	\$1,029,422
POSITIONS			
<i>Authorized Positions/Full-Time Equivalents (FTEs)</i>			
<u>Positions:</u>			
Regular	17 / 17	16 / 16	16 / 16
Total Positions	17 / 17	16 / 16	16 / 16

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Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Total number of laboratory tests performed	235,289	213,696	218,403	200,000	200,000
Average cost/all tests	\$6.11	\$8.35	\$7.61	\$7.77	\$7.98
Percent of customers satisfied with services	96%	97%	97%	95%	95%
Percent of rabies tests involving critical human exposure completed within 24 hours	99%	99%	99%	95%	95%
Percent of individuals saved from unnecessary rabies post-exposure shots by timely receipt of negative lab results	99%	99%	99%	95%	95%

The number of tests performed by the Laboratory has fluctuated over the past several years due to various factors including budgetary constraints, changes in customer service delivery protocols, elimination of outdated test methods, and implementation of new testing methods. The number of environmental laboratory tests performed decreased with the closing of the last dairy plant in Fairfax County and the decrease in drinking water tests as cities have transitioned this testing to local water authorities. However, the number of laboratory tests performed on vectors for surveillance purposes has increased as laboratory staff has validated new test methods and extended services to surrounding localities on a fee-for-service basis.

A continuing focus of laboratory performance is the control of average cost per test, ensuring accessible laboratory testing for control of communicable disease and revenue enhancement. The high cost of laboratory tests is often prohibitive to individuals without some form of health insurance. Special public health pricing through test manufacturers allows the Laboratory to provide these critical testing services to the residents of Fairfax County to assist in the rapid diagnosis and treatment of communicable diseases. The average cost per test has remained relatively low despite escalating medical equipment and supply costs. These costs have been offset by increased revenue generated by tests performed on a fee-for-service basis to residents, private and public organizations throughout Northern Virginia.

Quality improvement is an ongoing process in the operation of any laboratory. The recent enhancement of the Laboratory Information System includes a web portal for ordering and viewing test results and the ability to create individualized statistical reports. This has allowed the Laboratory to improve service delivery, reduce turnaround time, improve customer satisfaction, and increase both testing volumes and testing revenues. Fairfax County Health Department Laboratory distributes an annual customer satisfaction survey in an effort to measure whether services provided by staff meet or surpass the needs of clients. The responses to the survey assist laboratory staff to develop and monitor quality improvement projects, assess test menus, monitor trends, and improve communication with customers. In FY 2015, 97 percent of customers were "satisfied" or "very satisfied" with the services provided by Laboratory, consistent with previous years.

Rabies is a preventable viral disease of mammals most often transmitted through the bite of a rabid animal. Rabies is almost always fatal once symptoms appear, but can be prevented almost 100 percent of the time when post-exposure prophylaxis is administered soon after an exposure occurs. The Laboratory provides 24 hour turnaround time for rabies testing in animals to prevent individuals from receiving expensive rabies post-exposure shots if not necessary. In FY 2015, 463 residents received their negative test results within 24 hours, saving an estimated \$1,852,000 on needless medical costs for a series of rabies post-exposure immunizations which average \$4,000 per series. The rabies laboratory reported rabies test results in less than 24 hours on 99 percent of critical human exposures to potentially rabid animals.