From Spinach Suspicion to Salinas Cows: How PulseNet Broke the *E. coli* Investigation (page 4)
Taking Strides to Prepare for Pandemic Flu

Public health laboratorians have long been concerned about the risk of an impending flu pandemic. We worry about inadequate surge capacity, lack of reagents and protocols, unvaccinated staff—and much more. And while these anticipated shortcomings loom, we must also accept that laboratories are just one part of the public health system that conducts surveillance and prepares for a pandemic.

APHL and CDC recently hosted a productive meeting with our commercial laboratory partners to discuss pandemic flu preparations. Representatives of CDC, APHL, the American Clinical Laboratory Association, the American Society for Microbiology, the American Society for Clinical Pathology, the Council of State and Territorial Epidemiologists, the College of American Pathologists and FDA convened to share expertise, plan and air the inevitably differing opinions.

Each group was given a chance to speak from prepared remarks, which focused on testing requirements, surveillance roles, partnership needs and communication. My comments were based upon input received from committee and influenza working group members and addressed, in part, public health laboratories’ preference to maintain sovereignty over influenza subtype specific testing. Although some commercial laboratories are ready to leap into the fray, the difficulties of expanding subtype testing correctly are possibly greater than the risk of inadequate surge capacity. My comments are available at www.aphl.org/docs/Speeches/PHL_perspective_on_pan_flu_October_2006.pdf.

The group then had an open discussion on expanding surge capacity. The synergy at the table was remarkable. Wisconsin’s Pete Shult did an excellent job leading the meeting, ensuring that everyone got their moment at the table. The group—while admittedly not in lock step on how things ought to be done—exhibited collaborative energy as we discussed avian influenza, pandemic surveillance and diagnostic response needs. If we are correct in anticipating the sheer volume of testing, it is incredibly important that we maintain this communal spirit.

Each public health laboratory needs to develop relationships with its commercial partners to ensure that the surveillance and diagnostic infrastructure is solid; we are only as strong as our weakest link. Some of our partners were pleased with efforts made by their state laboratory; others were less so. One thing that seemed clear to me: we, as public health laboratorians, may believe that we are doing an excellent job of sharing information and of collaborating, but the perception of our partner labs may differ. We must continue to strive for clarity and constancy of communications.

In addition to healthy collaborations with laboratory partners, we need to educate practitioners. If they’re taking a sample to be tested for avian flu, they need to get in touch with public health first to ensure the patient meets testing criteria and that the specimen is collected and handled properly. They can’t just send a specimen to a commercial lab. In Delaware we are trying to get the word out through press releases and letters to practitioners.

The laboratory partners’ meeting engendered an invigorating exchange of ideas. While more work needs to be done, I have a renewed sense that public health and commercial laboratories are on the same page and that we are taking resolute strides forward. Two of my presidential goals were to guide preparation for pandemic flu and to improve relationships with commercial laboratories—meetings like this one are moving APHL in the right direction.

Jane P. Getchell, DrPH
President, APHL
Director, Delaware Public Health Laboratory
From Spinach Suspicion to Salinas Cows: How PulseNet Broke the E. coli Investigation

As of October 6, 199 people in 26 states and one Canadian province were reported to be suffering from illness due to E. coli O157:H7 infection in one of the biggest foodborne disease outbreaks in the US since 1993. Robert Tauxe, deputy director of CDC’s Division of Foodborne, Bacterial and Mycotic Diseases, called the occurrence “huge” and “among the biggest outbreaks for this organism. Period.”

Thus far, more than half of the infected patients have required hospitalization and three people—an elderly Wisconsin woman, an elderly Nebraska woman and an Idaho toddler—have died from an advanced form of E. coli O157:H7 infection.

Although the outbreak investigation is still open, authorities have begun to take stock of the incident. Some have questioned the laxity of food safety oversight that allowed tainted foodstuffs to reach the market in the first place. But one thing is certain: from the standpoint of disease detection and investigation, public health systems worked extremely well, preventing many more cases of illness and probably additional deaths.

In particular, the incident highlights the successful performance of public health laboratory scientists and epidemiologists and of PulseNet USA—a network of public health laboratories that perform advanced testing to detect and investigate foodborne disease outbreaks and food terrorism. It also underscores the danger of inconsistent and dwindling federal funding for PulseNet testing, which is primarily supported through CDC Epidemiology and Laboratory Capacity (ELC) and bioterrorism grants.

Before It Was an Outbreak

It began in Wisconsin. Several people fell ill after attending Manitowoc County's annual fair over the summer. The state public health laboratory, the Wisconsin State Laboratory of Hygiene (WSLH), confirmed that Escherichia coli O157:H7 was the infectious agent and implicated multiple subtypes of the bacterium.

On the last day of August, when another E. coli O157:H7 isolate reached the public health laboratory, Tim Monson thought it was probably related to the fair outbreak. In fact, it was the leading edge of a vastly bigger outbreak whose source lay far from Manitowoc County.

Monson, a WSLH microbiologist who oversees food- and waterborne disease testing, sees a couple hundred isolates of E. coli throughout the year. At the beginning of September, he was seeing no more than one or two per day. So when three E. coli O157:H7 isolates arrived on September 5 and three more on September 6, he said, “That was a lot.”

In this E. coli gel, lanes 1, 5 and 9 are control organism Salmonella Braenderup H9812; lane 2 has a strain of E.coli O157:H7 not linked to the spinach outbreak; lanes 3, 4, 6, 7 and 8 are E. coli O157:H7 isolates linked to the spinach outbreak.

Lab Finds Matching PFGE Patterns

As is standard protocol in such cases, Monson’s staff—Linda Machmueller, Simone Warrack, Nate Woolever and Tim Lom—performed a procedure called pulsed-field gel electrophoresis (PFGE) to generate a DNA “fingerprint” of each and every E. coli isolate received by the lab. Because the process takes a couple of days to complete, results from the three sets of isolates could not be compared immediately. On September 8, the data were in: the PFGE patterns were identical, meaning...
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On September 8, the data were in: the PFGE patterns were identical, meaning that the *E. coli* bacteria were essentially clones of one another, likely originating from a common source of infection.

In the meantime eight more isolates arrived on September 7, two on September 8 and two more the next day. These too would turn out to have PFGE patterns matching what scientists could now confidently call an outbreak strain. But the extent of the outbreak was still unknown.

**Lab Sounds the Alarm**

By the afternoon of September 8, Monson’s team knew that they had a potentially significant finding, and they proceeded to alert others. They uploaded the PFGE patterns to the PulseNet database maintained by the CDC, enabling scientists in every federal, state and local PulseNet laboratory to compare the Wisconsin data with their own. They posted the patterns on PulseNet’s electronic WebBoard to notify other laboratorians that this finding—seven matching *E. coli* isolates—was unusual. And they contacted the state epidemiologists.

September 8, however, was a Friday, and the data reached the CDC (located in a different time zone from Wisconsin) late in the day after the PulseNet staff had gone home for the weekend. By Monday morning, the WSLH had received even more *E. coli* O157:H7 isolates and the state epidemiologists were in the midst of an investigation. Said Monson, “They had (patient) questionnaires coming back. The epidemiologists noticed a high percentage of patients were female. Several of the patients had noted eating spinach.”

At this point, events began to snowball. The PulseNet database manager saw the Wisconsin WebBoard posting and found nine additional matches, spread out across nine separate states. The affected state public health laboratories had already begun to report their matching PFGE patterns independently to the WebBoard. Peter Gerner-Smidt, chief of PulseNet USA, said, “At that time it was evident we had a multi-state outbreak and CDC had to be involved. Then the ball was rolling…”

Full-scale laboratory and epidemiological investigations were now underway in several states and at the CDC to identify and remove the immediate source of the outbreak. Already at this early stage, there was a suspicion of spinach.

**Elsewhere, Spinach is Also Flagged as Likely Culprit**

Even though the WSLH was first to post the microbe’s “fingerprint” on PulseNet, it actually received the initial *E. coli* isolate a day after the Oregon State Public Health Laboratories (OSPHL), Robert Vega, who manages the OSPHL general microbiology laboratory in Portland, said “The outbreak started for us on August 30; that’s when we received the first sample.” Oregon received three more isolates on September 5 and two more on September 6.

Over the next day and a half, two scientists—Cathy Ciaffoni and Janie Tierheimer—cultured the microbes and performed PFGE. The patterns matched. “At that point, all the bells and whistles go off,” said Vega. As in Wisconsin, the state epidemiologist was engaged and began an investigation. Using a 400-item questionnaire, the epidemiologist soon honed in on spinach.

On Wednesday, September 13, the outbreak investigations in Wisconsin and Oregon converged. Said Tauxe, “There was an electrical moment here when in the space of one hour the two epidemiological hypotheses matched and the two (Wisconsin and Oregon) PFGE patterns matched.”

The next day, “within 24 hours of really putting the pieces together saying this could be spinach,” said Tauxe, the FDA issued a warning advising consumers to “not eat bagged fresh spinach at this time.” And within 48 hours of that “Aha!” moment, the agency announced the first of several voluntary spinach recalls. “That part doesn’t get faster than that,” said Tauxe, “not by much.”

But no one had yet found the smoking gun: a bag of fresh spinach tainted with the outbreak strain of *E. coli* O157:H7. This would not be long in coming.

**Looking for the Smoking Gun**

In Albuquerque, Paul Torres and his colleagues at the New Mexico Scientific Laboratory Division were in “milk-testing mode” on the afternoon of September 14—the day the FDA warned consumers away from spinach. Late in the afternoon, their work was interrupted by officials from the city environmental health department who arrived bearing two bags of spinach, retrieved from the kitchens of patients suffering with *E. coli* illness. One bag was fresh, the other frozen.

The biggest challenge facing the scientists at this point was simply to recover a viable form of any *E. coli* pathogens from the spinach—a difficult task given that bacterial pathogens are generally present in low numbers in food samples and are mixed in amongst millions of other types of microbes. Torres, a supervisor in the lab’s environmental microbiology section, said the frozen sample was “really bad” from a microbiological perspective. “Ground beef,” he explained “is high in fat, and all that fat keeps ice crystals to a minimum, enabling more bacteria to survive. Spinach is mostly water. There is just not that kind of insulation. Freezing will lyse the bacteria when the water inside of them expands upon being frozen.”

So Torres and his team set up to recover *E. coli* from the fresh spinach using the standard culture method outlined in the
Continued on page 16
Rapid analysis and reporting of laboratory results in Wisconsin, combined with the preliminary findings of an investigation in Oregon, helped federal agencies quickly detect and contain an outbreak of E. coli O157:H7. Active involvement of laboratory and epidemiology staff in both states was a hallmark of the early stages of this investigation. Collaboration with federal agencies, including the use of PulseNet data by CDC epidemiologists, helped define the scope of what turned out to be a major nationwide outbreak associated with contaminated fresh spinach from California. Sound scientific practices used by New Mexico’s Scientific Laboratory Division helped further the investigation by pinpointing the product involved, followed by findings of contaminated product by public health laboratories in Colorado, Wisconsin, Nevada, Ohio, Pennsylvania, Utah, Illinois and Arizona.

APHL organized three national conference calls to discuss laboratory issues related to the outbreak, with at least 40 laboratories present on each call. Information was provided on sample handling, scientific protocols and reagents, the latest laboratory results, recommended testing algorithms from CDC and the availability of free reagents through CDC’s Director’s Emergency Operations Center. APHL gratefully acknowledges the efforts of CDC staff to provide needed reagents to member laboratories.

The good work performed across the nation was recognized by CDC’s Peter Gerner-Smidt, MD, PhD, when he told public health laboratories, “This outbreak is getting more and more interesting thanks to your scientific curiosity and enthusiastic work. It is a pleasure to work on a team like this.” While many parts of this investigation went very well, future investigations can always be improved by strengthening relationships among local, state and federal food safety partners. Also, outreach to clinical laboratories may reduce the average time interval for clusters of infections to come to the attention of the public health community.

IAFP Acknowledges Public Health Efforts at Annual Meeting

Over 100 exhibitors and more than 1,700 attendees from all fields of food safety attended the International Association for Food Protection (IAFP) annual meeting in Calgary, Canada, in August 2006. Several APHL members and food safety program staff Heather Green and Shari Rolando attended, along with partners from academia, regulatory agencies and consumer advocacy groups, to discuss the newest food safety innovations.

“A Progress Paradox: If We Have the Safest Food Supply, Why Am I Working So Hard?” was the title of the Ivan Parker lecture given by Art Liang, MD, MPH, CDC’s acting associate director for food safety. Liang resolved that food safety staff continue to work hard due to enhancements in pathogen detection that have increased the number of detected cases.

Symposia on food microbiology highlighted laboratory detection and epidemiological issues concerning foodborne viruses, Enterobacter sakazakii, and Salmonella, and included lectures from John Painter, DVM, MS, and Chris Braden, MD, of the CDC. The meeting also featured roundtables, technical discussions and poster sessions.

The closing John Silliker Lecture, “Rising from the Ocean Bottom - The Evolution of Microbiology in the Food Industry,” was given by William Sperber, PhD, senior corporate microbiologist for Cargill, Inc. He noted several significant advances that have improved the field of food microbiology over the course of his long career. Among them were technological advances in biology, most notably pulsed field gel electrophoresis (PFGE) and the advent of PulseNet.

The IAFP 2007 annual meeting will be held July 8-11 in Lake Buena Vista, FL.
APHL Works Closely with CIFOR

The Council to Improve Foodborne Outbreak Response (CIFOR), an initiative to increase collaboration and coordination of food safety efforts between federal agencies and member organizations, is co-chaired by the Council of State and Territorial Epidemiologists (CSTE) and the National Association of County and City Health Officials (NACCHO). CIFOR includes delegates from CSTE, NACCHO, CDC, APHL, FDA, USDA, the Association of State and Territorial Health Officials (ASTHO) and the National Environmental Health Association (NEHA).

APHL was well represented by members John Besser, MS, and Victor Waddell, PhD, during a CIFOR meeting in September. APHL representatives discussed objectives and updates on programmatic deliverables and subsequently joined workgroups that will address: general performance guidelines for public health foodborne disease programs; guidelines for multi-jurisdictional outbreaks; program performance indicators; an online clearinghouse for foodborne disease resources; and the vision, mission and marketing of CIFOR.

CIFOR will also be harmonizing some of its performance metrics with APHL food safety laboratory indicators. These indicators will be generated by a taskforce commissioned by the Food Safety Committee. The taskforce, in an effort known as the “Yardstick Project,” has been charged with creating guidelines by which to evaluate the capacity and capability of any laboratory doing significant foodborne pathogen testing.

International Training Combats AI

APHL continues to collaborate with CDC’s Influenza Division to provide international training to develop and enhance real-time reverse transcriptase polymerase chain reaction (RT-PCR) capacity to detect and subtype influenza viruses. APHL has partnered with CDC in previous workshops to provide avian influenza training in Thailand, Brazil, Nigeria and Uganda. For pandemic preparedness, it is critical that these countries have the laboratory capacity for accurate and timely detection and reporting of avian influenza infections in humans.

In October, APHL and CDC, in collaboration with the Thailand National Institute of Health, hosted the third regional workshop on avian influenza detection in Southeast Asia. Faculty from the US include Stephen Lindstrom, PhD (CDC), Joanne Bartkus, PhD (Minnesota Department of Health), Richard Alexander (Contra Costa County, CA) and Erik Reisdorf (Wisconsin State Laboratory of Hygiene). Participants included laboratory personnel from Laos, Cambodia, Vietnam, Indonesia and Thailand. The focus of the workshop was to provide technical training in performing conventional and real-time PCR for detection of avian influenza.

Following the training in Thailand, Alexander will provide in-country support for three weeks to Laos on laboratory diagnostics and biosafety. During his time in Laos, Alexander will work with laboratory personnel to establish conventional RT-PCR capabilities and to help develop a strategy for quality assurance.

To assist CDC in recruiting additional trainers for international workshops, APHL co-hosted a three-day training session for potential trainers at CDC in September. Besides hands-on training on CDC’s influenza laboratory assays, the course included background information on influenza epidemiology and a lesson on country acculturation. Seven applicants from state and local public health laboratories were selected to participate in the training session.

Subcommittees Address HIV Algorithm

APHL’s Board of Directors has made addressing the current HIV diagnostic testing algorithm a priority this year and has formed two subcommittees, each tasked with developing new diagnostic testing algorithms for the domestic diagnosis of HIV. Both subcommittees will report progress to the APHL/CDC HIV Steering Committee.

The laboratory algorithms subcommittee will examine existing and potential sources of data to recommend the best combinations of tests for algorithms for the confirmation of HIV in the laboratory. Members of this multi-disciplinary workgroup include laboratorians and clinicians from APHL, ASM, CAP, CDC, commercial laboratories, DOD, FDA, industry and public health laboratories.

The point-of-care (POC) testing subcommittee, in addition to identifying the best combination of rapid tests that should be used in algorithms for the confirmation of HIV at the POC, will discuss the application (feasibility and performance) of such rapid test algorithms in the US. Members of this multi-disciplinary workgroup include laboratorians, clinicians and providers from APHL, CDC, FDA, NASTAD and public health laboratories.

The goal is to have draft algorithms from both subcommittees ready for discussion at the next HIV Diagnostics Conference, currently scheduled for late fall 2007.
Influenza Laboratory Partners Address Shared Concerns

How much laboratory capacity will be needed for surveillance and diagnostic support if an influenza pandemic occurs in the US? What is the best way for public health and private sector laboratories to support any surge in testing needs? These questions were under review at the influenza laboratory partners meeting convened by APHL, in collaboration with CDC’s Influenza Division, in October.

Along with representatives of four public health laboratories, meeting participants included representatives from the CDC’s Influenza Division, Division of Laboratory Systems, Division of Bioterrorism and Response, and Technology Transfer Office; FDA’s Office of In-vitro Diagnostics; the American Clinical Laboratory Association; the American Society of Clinical Pathology; the American Society for Microbiology; the College of American Pathologists; and the Council of State and Territorial Epidemiologists. APHL member Pete Shult, PhD, director of communicable diseases at the Wisconsin State Laboratory of Hygiene, moderated the meeting.

The goal of the forum was to gain understanding of different laboratory diagnostic response needs pertaining to avian and pandemic influenza surveillance and to discuss realistic expectations for public health support in building detection—and type specific and/or subtype specific—diagnostic capacity in both public and private sector laboratories.

The group collectively identified needs that must be addressed during the planning efforts. Pandemic control should include:

- federally-supported messages for health care providers and labora-
torians explaining the role of laboratory testing in patient management and public health control measures through each stage of a pandemic.
- pre-pandemic training for health care providers and laboratorians.
- a national assessment of laboratory capabilities to detect seasonal influenza viruses using the currently available rapid test, culture and molecular home-brew methods.
- vaccination of laboratory staff.
- enhanced outreach and communication from public health labora-
tories to clinical laboratories.
- industry development of standard-ized molecular assays for influenza detection.

APHL President Jane Getchell, DrPH, acknowledged the different roles of public and private laboratories. Public health laboratories focus on surveillance, particularly in support of response and control measures; private sector laboratories need to be responsive to clinicians and patients. The group agreed that broad-based influenza detection capacity, with type-specific assays for Influenza A and B, will be vital to differentiate influenza from other respiratory illnesses and to mitigate concerns of the worried well.

However, the need for expanded subtype specific testing capacity was not as straightforward. The nature of the virus itself presents a significant challenge to the prospect of expanding the number of laboratories able to identify highly pathogenic strains: the currently circulating strains have been undergoing rapid evolution, or mutations. It is likely that the strain that emerges to cause a pandemic will be genetically and antigenically different from the currently circulating strains. Therefore, assays provided to the public health laboratories are undergoing constant evaluation and revision at CDC to assure optimal sensitivity. Because careful monitoring will be required to assure that all laboratories performing the subtype specific testing are using the most up-to-date procedures, broad distribution of the tests is not recommended at this time.

There are currently two avenues available to the researchers, manufacturers and commercial entities interested in accessing the CDC-developed methods for influenza detection and subtyping. These include a Material Transfer Agreement process for non-profit use and a licensing agreement for commercial use. Additional information on these two processes can be obtained through CDC’s Technology Transfer Office.

APHL will prepare a summary report of the meeting for distribution among the participating partners. A follow-up conference call is planned for early December to continue the dialogue on pandemic planning issues.

APHL to Assist with New STD Testing Guidelines

The APHL STD Steering Committee determined that revising the 2002 testing guidelines for chlamydia and gonorrhea is a priority for the upcoming year. The CDC will fund APHL to convene two expert consultations to address this revision. The first meeting will address performance diagnostic characteristics of chlamydia and gonorrhea testing. The outcomes from this initial meeting will help formulate laboratory and clinical recommendations for the new guidelines at the latter meeting. These consultations are currently planned for the spring and summer 2007, respectively. APHL will update the membership when more details are available.
APHL Participates in WHO Laboratory Twinning Initiative

APHL has been selected to “twin” with seven countries in the first stage of the World Health Organization’s Laboratory Twinning Initiative, which aims to develop core surveillance capacity among laboratories in under-resourced countries by pairing them with qualified institutions in other parts of the world. (See “Developing Laboratory Partnerships to Detect Infections and Prevent Epidemics,” www.who.int/csr/resources/publications/WHO_CDS_CSR_LYO_2005_19/en/index.html.). These long-term partnerships—designed to be no less than three years—will promote the exchange of information and ideas on technologies, instrumentation, training and quality practices.

The seven countries participating with APHL are:

- Guyana (Georgetown)—National Laboratory Services
- Barbados (St. Michael)—Public Health Laboratory
- Trinidad and Tobago (Port of Spain)—Caribbean Epidemiology Centre (CAREC)
- Kenya (Nairobi)—National Public Health Laboratory Services
- Ethiopia (Addis Ababa)—Ethiopian Health and Nutrition Research Institute (EHNRI)
- Mozambique (Maputo)—National Institute of Health
- Tanzania (Dar es Salaam)—Ministry of Health and Social Welfare

Developing International Laboratory Networks

The twinning partnerships will address the competencies needed by international laboratories to fulfill essential functions and participate more efficiently in the detection of epidemic-prone diseases. Based on an assessment of needs and mutually agreed-upon priorities, twinning initiatives may include building capacity in the following areas:

- laboratory-based surveillance of communicable diseases
- diagnostic methods and reagents, e.g., new diagnostic methods in bacteriology, virology, parasitology; use of molecular tools; development of rapid diagnostic tests
- training and support in the development of standard operating procedures
- assistance in establishing and managing quality assurance and biosafety programs
- development of laboratory management skills
- joint research programs enabling capacity strengthening
- development of in-country laboratory networks.

China Delegation Visits APHL Headquarters

On September 21, APHL hosted a 15-person delegation from the Liaoning Provincial Health Bureau, China. The delegation represented regional and city health bureaus in Liaoning province. Their objective was to study the effective use of technological and epidemiological tools such as PulseNet and multilocus variable-number tandem repeat analysis for the surveillance of foodborne disease outbreaks, as well as to build upon their existing skills in general public health laboratory management. The delegation shared their experiences in foodborne disease surveillance, many of which were similar to American experiences. Through discussion, meeting participants traded insights.

Three APHL members participated in the meeting: Ming Chan Ph.D director of Florida’s Bureau of Laboratories Department of Health; Yvonne Hale, MS Chief of the Bureau of Food Laboratories, Florida Department of Agriculture and Consumer Services; and Dongxiang Xia M.D Ph.D,SV(ASCP), director, Norfolk (VA) public health laboratory. Chan moderated the meeting and, with Xia, provided simultaneous translation. Natasha Rodney of the APHL Global Health Program coordinated the planning and agenda for this interesting meeting.
Meetings in Japan Advance Global Newborn Screening

In September, Jelili Ojodu, APHL’s newborn screening and genetics program manager, attended two conferences in Japan to advance international collaboration in the field of newborn screening and genetics.

The first meeting, organized by the International Society for Neonatal Screening (ISNS), met in Awaji, Hyogo and Tokushima, Japan to consider scientific progress, ethics, legal and economic aspects of newborn screening.

The second meeting in Nara, Japan, focused on quality assurance and quality control. Local hosts, Masaru Fukushi, PhD, and Shohei Harada, MD, PhD, from the National Center for Child Health and Development, Tokyo, welcomed the 70 participants from 24 countries. Presentations addressed issues related to reference materials, tandem mass spectrometry testing, DNA analysis and program evaluation. Jelili Ojodu presented on the CDC’s Newborn Screening Quality Assurance Program (NSQAP). Since 1978, NSQAP, with APHL as a co-sponsor, has distributed dried-blood spot materials for external quality assurance services and maintained related projects, including performance evaluation for approved filter-paper sources. Currently, NSQAP provides comprehensive quality assurance services for more than 35 disorders for 477 laboratories representing 71 countries. Proceedings from the meeting are available to members of ISNS at www.isns-neoscreening.org.

APHL and ISNS to Collaborate on NBS

Newborn screening is expanding globally as a basic public health activity, yet the ISNS lacks an organized member section in North America. To expand representation from the region, APHL and ISNS have initiated a partnership to collaborate on newborn screening issues. As a first step, the ISNS will co-sponsor the 2007 Newborn Screening and Genetic Testing Symposium with APHL. The symposium, which convenes every 18 months in the US, will be held on May 7-10, in Minneapolis, MN. For more information, visit www.aphl.org/conferences/2007_nbsgts.cfm.

Closer ties to an international organization will promote opportunities for international networking among scientists, laboratorians and persons providing follow-up and treatment services and will enhance relationships of US laboratories with international vendors of newborn screening reagents, supplies and equipment.

APHL and ISNS have initiated a partnership to collaborate on newborn screening issues.

The International Society for Neonatal Screening (ISNS) promotes appropriate screening for fetal, neonatal and infant conditions and disorders worldwide by:

• developing, coordinating and maintaining practice and quality standards.
• commissioning scientific research and the enlargement of scientific knowledge concerning neonatal screening by means of meetings, symposia, discussions, reports and publications.
• contributing to development of newborn screening.
• harmonizing screening programs, methods and protocols.

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PHL and ISNS have initiated a partnership to collaborate on newborn screening issues.

The opening lecture, “ISNS in the Post-Genomic Era,” presented by Jean-Louis Dhondt, MD, of France’s Hospital St Philibert, explored the new face of newborn screening programs, which reflect the “genetic age” rather than the “Guthrie age.” The promising new methods present challenges for public health programs, which have traditionally focused upon the prevention of severe disabilities in newborns and now are expanding to include conditions that may not meet all of the traditional screening criteria (Wilson & Junger, 1968). New technologies, such as DNA micro-arrays, will permit the analysis of hundreds of genes in a single assay. Consequently, tools will be available to identify new diagnostic biomarkers and therapies, and as a result, Dhondt noted, “these technologies will move current screening actions from the field of preventative medicine to predictive medicine – screening for susceptibility to complex disorders.”
What is EPA's role in water security?
Promoting the security of the nation’s water infrastructure is one of the most significant undertakings of the agency in our post-September 11 world. We are responsible for working with water and wastewater systems, as well as state and local governments, to help develop the capacity to prevent, detect and respond to terrorist threats. Homeland Security Presidential Directive #9 tasked us to develop a drinking water monitoring system and laboratory support networks. As part of EPA’s overall water security responsibility, we have developed the Water Sentinel Initiative and the Water Laboratory Alliance (WLA). The goal of the Water Sentinel Initiative is to demonstrate an effective system for timely detection and appropriate response to drinking water contamination threats and incidents. A pilot of this monitoring system is currently in place. The WLA is in a conceptual phase and has received great support from our federal partners in building upon existing laboratory networks.

What are the most pressing water security issues today?
Increasing laboratory analytical and response capability are key water security issues. Whether from terrorism or natural disasters, we are well aware of the need to expand the water sector’s analytical capabilities to detect contaminants. We are aggressively developing a network of integrated federal, state and utility laboratories, which have the analytical capabilities and capacity to support monitoring, response and remediation activities in the event of a drinking water supply contamination involving chemical, biological or radiochemical contaminants.

How can public health and environmental laboratories be instrumental in addressing water security issues?
One immediate way for public health and environmental laboratories to contribute is to participate in the agency’s response planning in each EPA Region. EPA recently developed a Drinking Water Regional Laboratory Response Plan (RLRP) template that will be customized for each of the 10 regions. The goal is to establish a comprehensive, all-hazards approach to drinking water laboratory emergency activities, including preparedness, response and recovery. In addition to formalizing roles and procedures, this process will also help us identify areas needing improvements. Another opportunity: consider becoming a part of the solution by partnering with us in the WLA. Membership criteria will be established in 2007, at which time environmental and public health laboratories can pursue involvement.

What are the benefits of a "home base" for environmental laboratories?
The establishment of a national environmental laboratories’ “home base” will effectively promote communication and coordination between the regulatory and health protection sectors. We are excited that APHL will serve as a home base for environmental laboratories as the primary and central point of contact for communication with state environmental laboratories and governmental and non-governmental agencies. Potential benefits for environmental laboratories include: 1) analysis of laboratory capabilities, capacities, and needed enhancements; 2) coordination of technology transfer efforts from EPA and other federal agencies to laboratories; 3) promotion opportunities for state and local environmental health laboratory staff to serve as faculty at training events and conferences; 4) a central clearinghouse for review and comment on federal documents related to environ-

Mary Shaffran, APHL’s senior director of public health programs, discusses water security with Michael H. Shapiro, Deputy Assistant Administrator of EPA’s Office of Water
mental laboratory issues; 5) expansion of core capacities; 6) coordination and standardization of data reporting systems; and 7) enhanced communications between the regulatory and health protection sectors to protect public health from chemical and microbial contaminants in the environment.

In what areas might laboratories provide input in order to foster a greater understanding of laboratory needs, capabilities and capacities?
We are hopeful that the cooperative agreement with APHL will provide a coordinated means for the laboratory community and EPA to interact in a highly productive manner. Public health and environmental laboratories can provide input into laboratory needs by participating in the agency’s laboratory response planning in each EPA Region.

How should our member laboratories learn the latest information about the Office of Water and other relevant information?
Stakeholder involvement is critical to ensuring our efforts are truly reflective of the nation’s overall water security and public health needs. Our Web site, www.epa.gov, contains a wealth of information, including calendars of training courses and other information concerning numerous environmental protective programs. They can also visit the Water Security Division’s Web site at www.epa.gov/watersecurity/

Is there anything else you would like to add?
EPA is committed to leveraging support for establishing a network of the nation’s environmental laboratories. Where gaps do exist, we have and will continue to initiate efforts to identify and solve these disconnects. Once the WLA is fully realized, it will provide an important mechanism to strengthen capability and capacity for environmental labs.

Where would you go to learn about the wildlife trade and the spread of exotic diseases, as well as epidemiology and vector ecology? A one-day forum, “Biodiversity and Human Health: A Multidisciplinary Approach to Examining the Links,” co-sponsored by Yale’s Center for EcoEpidemiology, the Smithsonian Institution, the World Conservation Union and EPA, presented 14 different studies addressing these topics.

The recurring theme of the forum was that environmental surroundings have a direct and varied impact on human health.

The recurring theme of the forum was that environmental surroundings have a direct and varied impact on human health. Speakers reported that as physical environments are degraded and biodiversity is decreased, human health risks rise. They concluded that predicting disease emergence and developing intervention strategies are a challenge to public health agencies worldwide. The unanimous consensus was that as biodiversity is declining, infectious diseases are emerging at a faster rate.

With today’s global public health concerns—such as climate change, natural disasters and pandemics—speakers recommended that we need an international effort to coordinate the data. Global Earth Observation System of Systems (GEOSS), a Swiss-based international organization, with 65 member countries and 43 participating organizations, links environmental data across the globe to enhance human health, reduce disaster loss and protect biodiversity. With this worldwide collaboration, individuals and governments can make better policy decisions based on a greater variety and quantity of data.

Another study team from the CDC National Center for Infectious Diseases and the University of Montana highlighted the links between avian diversity and the incidence of West Nile virus (WNV). Their study suggests that greater bird diversity in Louisiana is correlated with the number of WNV reports over the study period.

Diana H. Wall, PhD, senior research scientist and professor of biology at Colorado State University, presented a unique paper on “Soil, Biodiversity and Links to Human Health.” Her work focused on the pathology of soil organisms as disease-causing and the need to study soil pathogens in relation to a location’s natural history, soil habitat or surrounding ecology. Wall reported that environmental factors lead to higher incidence of soil-borne organisms and human disease.

The presenters concluded with a cohesive recommendation for the public health sector: an aggressive and multidisciplinary effort to balance the links between biological conservation and public health is long overdue. To learn more, visit www.scgcorp.com/biodiversity/index.asp.
Status of Federal Public Health Appropriations

On October 1, 2006, the start of federal fiscal year 2007, only two appropriations bills had been signed into law: Defense and Homeland Security. All other federal governmental functions, including funding for CDC and the rest of HHS, are being operated under a continuing resolution that runs through November 17. Further, the appropriations bill that funds CDC and HHS is the only appropriations bill that has not been passed by the House, and is among the 10 bills that have not been passed by the Senate.

To reiterate earlier reports, the Senate bill sets funding for CDC at $6.195 billion ($261 million over the president’s request and $19.2 million less than the amount provided in 2006). This amount is slightly over the House figure of $6.173 billion.

Infectious Diseases Control is funded at $266.3 million ($20.9 million over the president and $39.5 million over 2006) in the Senate; and at $226 million in the House ($19.4 million less than the president and $830,000 less than 2006).

Emerging Infectious Diseases would receive $130 million ($33.3 million over the president and $28.4 million over 2006) in the Senate; $101 million in the House ($4.8 million above the president and level with 2006).

Pandemic Influenza gets $24.7 million ($10 million less than the president and $22 million over 2006) in the Senate; $2.6 million in the House ($34.7 million less than the president and $14,000 more than 2006)

West Nile virus is funded at $27.2 million in the Senate (level with the president and $18 million less than 2006); and $37.2 million in the House ($10 million over the president and $7.6 million less than 2006).

Tuberculosis funding is at $135.7 million in the Senate (level with the president and a $936,000 decrease from 2006); and $137.4 million in the House ($1.6 million over the president and $726,000 over 2006).

Health Promotion would be funded at $967 million in the Senate ($43 million over the president and $9 million over 2006); and $964 million in the House ($40 million over the president and $6 million over 2006).

Health Information and Service is slated to get $246 million ($16 million less than the president and $24 million over 2006); with Informatics funded at $86 million ($23 million less than the president and $16 million over 2006) in the Senate; and $226 million ($35 million less than the president and $4.3 million over 2006) with Informatics getting $74 million ($35 million less than the president and $3.5 million over 2006) in the House.

Environmental Health Laboratory would get $26.7 million (level with the president and $186,000 less than 2006) in the Senate; and $27 million ($300,000 over the president and $141,000 over 2006) in the House.

Public Health Improvement & Leadership gets $219 million ($30 million over the president and $45 million less than 2006) in the Senate; and $207 million ($18 million over the president and $57 million less than 2006) in the House.

Funding is restored for the Preventive Health and Health Services block grant at $100 million ($100 million over president and $1 million over 2006) in both the Senate and the House; and the Senate funds Business Services and Support at $323 million (level with the president and $5 million over 2006); while the House provides $327 million ($4 million over the president and $8 million over 2006).

The Senate and House both provide level funding for Upgrading State and Local preparedness capacity at $824 million; with $761 million directed to bioterrorism cooperative agreements. The Senate also makes strong recommendations on the formula for the distribution of preparedness funds based on its proposed set of risk factors.

The Public Health and Social Services Emergency Fund receives $167 million ($6.4 million over the president and $106 million over 2006), which includes $88 million for bioterrorism preparedness and $79 million for pandemic flu activities—both in the Office of the Secretary in the Senate; and $160 million (level with the president and $100 million over 2006), including $81 million for bioterrorism preparedness and $79 million for pandemic flu, in the House.

HRSA funding is set at $7 billion ($659 million over the president and $406 million over 2006); hospital preparedness grants are funded at $487 million (level with the president and $8 million less than 2006); Allied Health funding is restored to $4 million ($4 million over the president and level with 2006) in both the Senate and the House.

Health Professions programs are funded at $304 million in the Senate ($145 million over the president and $9 million over 2006); and $309 million in the House ($150 million over the president and $14 million over 2006).

For additional information, please contact Peter Kyriacopolous, APHL’s director of public policy, 240.485.2766, peter.kyriacopolous@aphl.org
LRN Partners Discuss Public Health Preparedness Initiatives

The Laboratory Response Network (LRN) Partners Working Group convened in September to discuss key preparedness issues, including surge capacity, pandemic influenza guidance and testing, food and animal safety, water safety initiatives, draft guidance for screening unknowns, chemical terrorism preparedness and other operational items.

Improving LRN Operations
CDC LRN staff provided updates on the re-qualification process for member laboratories. Lab re-qualification, which began in early October, is critical to the network’s infrastructure, as it will provide comprehensive and accurate information on laboratory capacity, capabilities and relevant contacts. LRN staff also addressed deployment of the LRN Results Messenger Version 2 (RMV2) to national and reference laboratories. In January 2006, the CDC released the RMV2 to the BioWatch laboratories. This new version was not simply an upgrade; it completely replaced Version 1 and now supports bi-directional messaging and has enhanced security requirements. LRN laboratories have the capability to manage and share laboratory data in a secure and standard way (Health Level 7 – HL7 v 2.5) in real time.

Assessing Surge Capacity of LRN National and Reference Labs
APHL reported on its collaboration with CDC and the RAND Corporation to develop a surge capacity assessment tool for the LRN. The tool, piloted to six LRN reference laboratories in early October, will provide data to assist in refining the tool prior to launch.

Collaborating for Food Safety
The LRN is working with Food Emergency Response Network (FERN) colleagues at the FDA and the USDA to harmonize methods and ensure that consistent guidance is provided to the membership of both networks. FERN and LRN are developing standardized food sample testing methods for use among member laboratories.

Promoting Safe Screening of Unknown Samples
The DHS, EPA, Department of Defense (DoD), FBI and APHL developed, constructed and implemented the All Hazards Receipt Facilities (AHRFs) for pre-screening unknown and potentially hazardous samples collected under unusual or suspicious circumstances. Initiated in response to concerns from states and federal agencies, particularly public health and environmental laboratories, the standardized guidance will protect laboratories and ensure sample integrity and the validity of analytical results.

At the meeting, DHS and DoD staff reviewed the draft interim AHRF protocol standard operating procedure, see http://aphl.org/docs/Draft_AHRF_SOP_Guidance_092506.pdf. DHS is seeking feedback from the public health and environmental communities on the feasibility of the procedures included in this guidance. In coming months, the procedures will be validated in the AHRFs. Implementation of this guidance may vary among locations, depending on laboratory capabilities: the AHRF and the protocol are designed to be adjusted in this way.

Developing ChemT Capabilities and Capacity
Staff from the CDC’s National Center for Environmental Health provided updates on training, technology development and other initiatives. Currently, 62 state, territorial and metropolitan public health laboratories are members of the chemical component of the LRN. These laboratories have capabilities ranging from packaging and shipping (Level 1) to analysis of clinical specimens for some chemical agents (Level 2) to analysis of clinical specimens for many chemical agents (Level 3). Only a handful of laboratories are Level 3 and capable of analyzing the deadliest chemical agents. In addition to methods development, NCEH continues to provide training opportunities to all network chemical laboratories.

The EPA is leading efforts to develop an Environmental Laboratory Response Network (eLRN). While EPA has extensive experience in environmental lab analyses for toxic industrial chemicals, capability and capacity is limited for chemical and biological warfare agents and for some radiological scenarios. When developed, the eLRN network will connect integrated, fully-equipped federal state and commercial laboratories, all with the capacity and capability to analyze environmental samples for a number of chemical agents, including chemical warfare agents. To date, the EPA has worked with the DoD and DHS to develop the two AHRF prototypes and the draft protocols for sample handling in these units. EPA has also

Continued on page 15
Joint Leadership Council Addresses Key Strategic LRN Issues

The Laboratory Response Network (LRN) Joint Leadership Council met at APHL headquarters in September to discuss strategic and operational issues broached at its July meeting.

The council discussed the current funding for Level 1 LRN chemical laboratories and the steps required to support the testing of clinical specimens for chemical terrorism agents. APHL’s chairman of the Emergency Preparedness and Response Committee and liaison to the Environmental Health Committee, Norman Crouch, PhD briefed APHL’s leadership at a board meeting in October. CDC’s National Center for Environmental Health (NCEH) is working with APHL to develop a funding strategy for these laboratories.

In addition to key funding issues, the council revisited topics such as the role of commercial laboratories in the network, opportunities for collaboration with the NIH Regional Centers of Excellence for Biodefense and Emerging Infectious Diseases, a proficiency testing program for sentinel laboratories, selection of laboratory equipment, need for validation data for LRN assays and operational issues, such as the re-qualification of network laboratories.

The Joint Leadership Council continues to be concerned about expanding the LRN to meet pandemic influenza surge capacity needs. In light of limited reagent supplies, prohibition on research, security of protocols and the availability of a non-LRN assay, which allows laboratorians to subtype for Influenza A/H5 (Asian lineage), the council emphasized that LRN expansion for influenza surge is inappropriate. APHL will continue to collaborate with CDC influenza leads to develop alternate mechanisms for addressing influenza surge capacity needs.

The committee also addressed operational items, including the re-qualification process for all LRN reference level laboratories and proposed policy changes. The re-qualification process is critical to the network’s infrastructure, as it will provide comprehensive and accurate information on laboratory capacity, capabilities and relevant contacts.

The Joint Leadership Council is comprised of staff from CDC/Coordinating Center for Infectious Diseases, CDC/Coordinating Office for Terrorism Preparedness and Emergency Response, CDC/Bioterrorism Preparedness and Response Program, CDC/National Center for Environmental Health, FBI/Hazardous Materials and Response Unit, FBI/Weapons of Mass Destruction Directorate and APHL members and staff.

LRN Partners Discuss Preparedness

Continued from page 14

field-tested three high capacity mobile laboratories referred to as Portable High Throughput Integrated Laboratory Identification System (PHILIS).

Protecting the Nation’s Water Supply

EPA provided an update on the Water Sentinel Initiative, which will develop a water surveillance system for dangerous contaminants using a standardized, cost-effective approach. This initiative will help protect hundreds of thousands of miles of drinking water systems and provide an early warning mechanism for chemical and biological terrorism. Lessons learned will be used in future state and local water system protection efforts. EPA will collaborate with APHL, CDC and the LRN to implement the system.

Leveraging the Scientific Expertise of the FBI

Representatives from the FBI’s Hazardous Materials Response Unit (HMRU) and the Chemical Biological Sciences Unit (CBSU) also participated in the meeting. CBSU representatives briefed the group on projects underway in microbial and chemical forensics. HMRU representatives continue to provide critical guidance to LRN leadership on the management and operation of the network. This unique collaboration between law enforcement and public health, in place since the inception of the LRN, brings much needed forensics expertise to support epidemiological and laboratory investigations.

For more information on the LRN’s Partners Working Group, see www.bt.cdc.gov/lrn/partners.asp.
On September 20, the New Mexico public health laboratory announced that it had in hand a smoking gun.

Kevin Reilly, a California food safety official, called the finding “significant” and said, “…it’s the first time we’ve linked a spinach or lettuce E. coli… outbreak to test results from a specific ranch in the Salinas Valley.” At the same time, he cautioned that manure may not be the source, or the sole source, of contamination. While laboratory testing continues, officials are conducting a follow-up investigation to assess animal management, water systems and agricultural practices that might have led to cross-contamination from cow patties to spinach. Thanks to PulseNet, their focus has narrowed to just four fields on four farms.

**PulseNet: Star of the Show**

Looking back at the investigation thus far, CDC’s Gerner-Smidt noted that “nothing ever goes according to textbook.” Nevertheless, experts interviewed for this article agree that the 2006 E. coli O157:H7 outbreak investigation came as close to textbook as possible. Said Tauxe: “From the view of public health, I think this was a tremendous success story; one that will be used as a benchmark for the future. We witnessed two networks in action: PulseNet and OutbreakNet (a network of public health epidemiologists). They were working in top form and working across the nation and working extremely well together. We could not have done it without both of them, I think, and the combination was phenomenal.”

Tauxe, who was a central figure coordinating the investigation at the national level, outlined six critical roles played by PulseNet:

1. PulseNet provided the early warning signal that an outbreak was taking place and showed that it was a multi-state event. Said Tauxe, “It was how the outbreak was detected.”

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**E. coli Investigation**

*Continued from page 5*

- PFGE—to generate a pulsed-field pattern to identify subtype.

Every test, at each level of resolution, was consistent with the outbreak strain of *E. coli* O157:H7. On September 20, the New Mexico public health laboratory announced that it had in hand a smoking gun.

(In addition to the *E. coli* O157:H7, the New Mexico team detected a second, less common, shiga toxin-producing *E. coli* (STEC) in the spinach: rough STEC strain, nonmotile. This particular strain had not yet been documented as part of the outbreak investigation, but was present in the New Mexico spinach sample in fairly high numbers. Almost three weeks later, Monson’s team of microbiologists would report finding the same rough STEC strain in a patient specimen in Wisconsin, as verified by PFGE.)

### Tracing the Origins of the Spinach

By the time the New Mexico public health laboratory could produce a bag of spinach known to be tainted, spinach was off the shelves in grocery stores nationwide and three spinach producers had announced voluntary recalls of dozens of brands of the leafy green vegetable. Few Americans were eating spinach.

The value of the new evidence lay in the packaging. Almost immediately, CDC, FDA and state investigators began to trace the origins of the spinach, and the lot codes led west.

On September 21, the FDA narrowed the source of the spinach to three counties in California’s Salinas Valley agricultural corridor and released a statement saying that spinach grown in “non-implicated areas” is safe to eat—an immediate boon to spinach growers elsewhere. On September 27, the agency narrowed the source further to 12 fields on nine farms in Santa Clara, San Benito and Monterey counties. And two days later the agency announced that all spinach associated with the outbreak traced back to one grower, Natural Selection Foods LLC—one of the producers that had recalled its fresh spinach products two weeks earlier.

The FDA and the state of California now expect the state produce industry to come up with a plan to minimize the risk of another outbreak due to *E. coli* O157:H7 in all leafy greens. And law enforcement officials are investigating the possibility of criminal negligence on the part of the spinach grower.

### What Happened to the Spinach?

“Salinas Valley is a beautiful, boculic valley,” said Paul Kimsey, director of the California State Public Health Laboratory (CSPHL). “But if you look on the hills, there are cows.”

As soon as New Mexico scientists broke the impasse in the investigation and pointed the way to Salinas Valley, officials descended upon this agricultural mecca—nicknamed “The Salad Bowl of the World”—searching for clues. Field investigators from both the FDA and the CSPHL collected more than 650 samples of soil, water, plants and animal feces and carted them away for laboratory testing. As before, what everyone was seeking was a matching series of PFGE bars and stripes.

On October 12, the CSPHL announced that it had generated not one, not two, but ten matching PFGE patterns: all stemming from *E. coli* O157:H7 isolated from samples of cattle manure found within a mile of spinach fields.

(The CSPHL is comprised of six separate units, and the Food and Drug Laboratory cultured the *E. coli* and handed the organisms off to the Microbial Diseases Laboratory for PFGE testing. All in all, 10 scientists participated in this critical work—Alex Badoiu, Olivia Badoiu, Raymond Bryant, Mary Lee Dodd, Sunee Himathongkham, Paul Park, Linda Guerertz, Jan O’Connell, Jessica Atwell and Samar Fontanoz.)

**E. coli**
2. PulseNet focused the epidemiological investigation on patients infected with a particular subtype of *E. coli* O157:H7. Because late summer and early fall are high season for *E. coli*, the outbreak occurred against a backdrop of many cases of *E. coli* O157:H7 illness that were not related to spinach. Without PulseNet data, epidemiologists would have had difficulty distinguishing between outbreak and non-outbreak cases and the identification of the immediate source of the bacteria would likely have been delayed.

3. PulseNet data conclusively demonstrated that the *E. coli* O157:H7 present on leftover spinach in patients’ refrigerators was identical to the *E. coli* O157:H7 present in patient stool specimens—the smoking gun.

4. PulseNet data enabled investigators to trace back from the proximate source of the outbreak—spinach—to a likely source of spinach contamination—cattle manure. This information will help to prevent similar contamination in the future.

5. PulseNet data will be used to ascertain when the outbreak is over. “Spinach is coming back on the market,” said Tauxe, “and we want people to feel confident, we want to feel confident, that the problem is successfully controlled. The way we will do that is to look very closely at any case with the outbreak (PFGE) pattern. This is PulseNet dependent.”

6. PulseNet data will define the global scope of the outbreak. Some of the tainted spinach was exported to Canada, Mexico, Europe and Hong Kong. “To the extent that (public health scientists in those countries) are using PulseNet,” said Tauxe, “they will know whether they have a case related to this outbreak.” PulseNet Canada has already detected at least one case of *E. coli* O157:H7 illness with a matching PFGE pattern.

“One of the questions that always comes up around here,” said Tauxe, “is ‘What would have been different if this had turned out to be an intentional attack?’” The answer: “If nobody steps forward and says, ‘I did this and here’s how I did it,’ the investigation would proceed just as it did.”

**Smart Systems and Trained Personnel Made Success Possible**

But precisely because PulseNet and associated public health systems worked so well, it is easy for the public and for policy makers to take them for granted. Shari Rolando, APHL’s senior food safety manager, noted that “many things can happen to cause this process to fail.”

One important link in the investigation, for example, was the delivery of patient *E. coli* O157:H7 isolates from hospital laboratories to public health laboratories for routine disease surveillance. When the Wisconsin, Oregon and nine other public health laboratories tested their first outbreak isolates, no one knew there was an outbreak. Nonetheless, the time between the first onset of illness in a patient and the first PulseNet outbreak posting (as clocked by the CDC) was a mere 15-day working period—a relatively short time for both clinical and public health laboratory testing to occur.
From the view of public health, I think this was a tremendous success story; one that will be used as a benchmark for the future.—Robert Tauxe, deputy director of CDC’s Division of Foodborne, Bacterial and Mycotic Diseases

It is perhaps no coincidence that Wisconsin and Oregon were so “quick off the mark,” as Tauxe said, to detect cases. Wisconsin, with 49 cases reported as of October 6, had a lot of cases to be found. But, significantly, Wisconsin and Oregon both have systems in place to assure the real-time transfer of E. coli O157:H7 isolates from clinical laboratories to the state public health lab.

The Wisconsin Enteric Pathogen Surveillance (WEPS) Program provides clinical laboratories with courier service and special specimen containers with screw top caps. Said Monson, specimen shipment “doesn’t cost them anything.” Without this type of program, he said, “Labs would wait and batch specimens and send them only once a week or so. Some labs wouldn’t send them at all.”

Monson credits the WEPS program with an unusually high rate of isolate delivery: 90 to 99% of all Salmonella, E. coli O157:H7 and Listeria isolates tested by clinical laboratories. The program was started with ELC grant money, but has switched to general CDC cooperative agreement funding as ELC funding has declined.

In Oregon, the state public health laboratory offers clinical laboratories free specimen collection kits, funded postage and access to a state-funded courier service. “We’ll take care of everything so they aren’t encumbered,” said Vega.

While a few other states have similar programs, they are not the norm.

PulseNet Endangered by Funding Cuts

A second point of potential system failure is funding. PulseNet, said Tauxe, has always been a “lean operation.” Moreover, both PulseNet and the many activities that support it rely on federal money.

In Wisconsin, Oregon and New Mexico, PulseNet testing is funded largely through the ELC grant. Dave Mills, director of the New Mexico Scientific Laboratory Division, said, “This work exists only because of the ELC funding at this point.” Declining grant funding, “is of tremendous concern to us.”

Greater federal support would not only sustain current activities as costs rise from year to year, but would hasten the deployment of the next generation microbial subtyping technique: multiple-locus variable-number tandem repeat analysis (MLVA). CDC scientists validated the MLVA protocol for E. coli O157:H7 just before the spinach outbreak began, and the agency is in the process of transferring the technology to four state public health laboratories. “We are really in need for more funds,” said Gerner-Smidt.

He explained that, like PFGE, MLVA is a DNA-based method but targets the genome in a completely different manner. The two methods “supplement each other and confirm the results of each other.” Had MLVA testing been in widespread use at the time of the outbreak, it might have speeded the investigation and explained some anomalies, such as outbreak patients who did not report eating spinach and occasional isolates that matched only one of two PFGE “fingerprint” patterns.

Ultimately, as Tauxe said, the spinach outbreak provided a glimpse into PulseNet and OutbreakNet “operating as they are.” He said, “A lot of people worked really, really hard to make this happen. This shows how far things have come and how important these (networks) are to our public health.”

PulseNet: Looking for Microbes?

In 1993, a large outbreak of foodborne illness caused by the bacterium Escherichia coli O157:H7 occurred in the western US. It was detected by an alert pediatrician 39 days after the first of at least 726 people fell ill. Using a DNA “fingerprinting” process called pulsed-field gel electrophoresis (PFGE), CDC scientists eventually showed that the strain of E. coli O157:H7 found in patients was identical to a strain detected in hamburger patties served at a chain of regional fast food restaurants.

This incident and a series of subsequent foodborne disease outbreaks led the CDC and APHL to create PulseNet, a national network of laboratories that perform standardized PFGE molecular subtyping. CDC maintains the PulseNet database to store DNA “fingerprints” of pathogens associated with foodborne illness. By locating identical or similar PFGE patterns through PulseNet, scientists can determine whether and where an outbreak is occurring, even if infected individuals are on opposite US coasts or different continents.

PulseNet USA consists of state and local health departments and several federal agencies (CDC, USDA and the FDA). There are also established or nascent PulseNet networks in Canada, Latin America, Europe, the Middle East and the Asia Pacific region. For more information, visit www.cdc.gov/pulsenet.
NLTN Responds to \textit{E. coli} Outbreak

As the \textit{E. coli} outbreak hit the news, the National Laboratory Training Network (NLTN) recognized the immediate need to share information with clinical laboratories. Working with Shari Rolando, APHL’s senior manager for food safety, NLTN’s Nashville office staff aired a nationwide teleconference in October.

The teleconference, “Shiga Toxin Producing \textit{E. coli}: Your Role in Discovering the Connection,” addressed the need to establish a protocol for clinical laboratories to detect shiga toxin producing \textit{E. coli} and delineated the role clinical laboratories play in support of the surveillance activities of PulseNet. Speakers included APHL members John Besser, MS (Minnesota) and Patricia Somsel, DrPH (Michigan); and Nancy Stockbaine, PhD, National Center for Infectious Diseases, CDC. Educational grant support for the teleconference was provided by Meridian Bioscience.

Response to the teleconference was phenomenal. The course was available for registration for less than two weeks; nevertheless, 735 sites registered, representing 2,805 attendees from laboratories all over the country. Evaluations have been overwhelmingly positive, reporting that the course presented new information that related directly to attendees’ job responsibilities.

NLTN Enters Key Planning Stage

Newly and fully funded by CDC, the National Laboratory Training Network (NLTN) has emerged from the shadow of budget cuts to plan an active calendar of courses for 2007. At a recent planning session, staff discussed operational issues and ways to sustain the program with less dependence on government funds. NLTN staff continues to value its partnership with CDC highly, but also hopes to carve an entrepreneurial path toward permanent funding streams.

At the request of its board of directors, APHL is developing a business plan for NLTN to guide its work through the next decade. In conjunction with a task force created to lead the planning process, the NLTN began prioritizing its programs, using past training needs assessments and impact evaluations.

Proposed changes include a national-ized marketing plan and greater centralization of services among the field offices. Regional programmatic and technical support will be maintained, but staff will integrate some shared functions into the APHL headquarters and among specific field staff.

NLTN staff also discussed course pricing, new products, delivery methods such as “pod-casting” and archiving previously live courses, as well as the formation of non-traditional partnerships and new groups of potential students. Member benefits and public health community outreach was addressed on several levels of planning. Core NLTN courses with successful histories—such as wet workshops, workshops-in-a-box, the public health series and public health focus courses—will be maintained.

There are many opportunities to reach non-traditional audiences, such as first responders, physicians and academic institutions. APHL and CDC staff discussed the best way to reach out efficiently to these audiences, while still maintaining its focus on providing low-cost training in areas of public health significance. The NLTN plans to refine its ability to provide continuing education materials with new design, flexibility and timeliness.

WHO Laboratory Twinning Initiative

Continued from page 9

Why Participate?
APHL member laboratories can have a sustainable impact on strengthening public health laboratory systems worldwide and helping meet the current demands of communicable disease surveillance and response by participating in the twinning initiative. State public health laboratories and other large institutions offer knowledge, expertise and access to current methodologies and techniques, all of which are extremely valuable to international colleagues. Chris Peter, PhD, chief of the public health laboratory in San Diego County confirms the value of involvement, “Twinning with laboratories from the Philippines, Mexico, Guatemala and Honduras has been an extremely rewarding experience for all of our public health laboratory staff.” According to Peter, interaction continues well after formal twinning projects end and everyone benefits from the resulting shared information. For more information, contact Nerissa Majid, 240.485.2742, nerissa.majid@aphl.org.
**APHL Initiates New EID Fellows**

In June, APHL initiated its twelfth class of Emerging Infectious Disease (EID) lab fellows following an orientation program at the CDC in Atlanta. The new class includes 22 training (bachelor’s and master’s level), five research (post-doc), and three international fellows. The fellows have been placed in state and CDC laboratories around the country, including:

- California Department of Health Services
- Colorado Department of Public Health and Environment
- New York State Department of Health
- North Carolina State Laboratory of Public Health
- Tennessee Department of Health
- University of Iowa Hygienic Laboratory
- Virginia Division of Consolidated Laboratory Services
- Washington State Public Health Laboratory.

**Recent Fellow Accomplishments**

Rebecca Garten presented the poster, “Analysis of H5N1 Influenza Viruses from Humans and Birds Reveals an Increase in the Diversity of the Hemagglutinin Gene and Genomes,” at the International Bioinformatics Workshop on Virus Evolution and Molecular Epidemiology in Athens, Greece, in September.

At the joint meeting of the American Society for Rickettsiology and the International Conference on Bartonella as Emerging Pathogens, Sandor Karpathy presented the poster, “Intergenic Region Subtyping of Rickettsia rickettsii isolates using DNA Sequencing and Denaturing High Performance Liquid Chromatography,” for which he received a travel award. He was also co-author and co-presenter of the poster, “Demographic History and Population Structure of an Emerging Disease Vector, Amblyomma americanum, and its Potential Coevolution with ‘Rickettsia amblyommii’.”

Yaoyu Feng was the primary author on an abstract presented at the Ninth International Workshops on Opportunistic Protists (IWOP-9) and the International Society of Protistologists 57th annual meeting in Lisbon, Portugal, in June: “Wide Occurrence of Cryptosporidium bovis and the Deer-Like Genotype in Bovines.”


Angela Fritzinger published “Identification of a Naegleria fowleri membrane protein reactive with anti-human CD59 antibody” in Infection and Immunology. The paper is based on her fellowship work at the Virginia Division of Consolidated Laboratory Services.

Julie Anderton presented the poster "A Putative Binding Domain of Streptococcus pneumoniae Reduces Bacterial Carriage in a Mouse Model" at the Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC) annual meeting in September in San Francisco. Anderton was awarded a George McCracken Infectious Disease Fellow travel grant to attend the meeting.
State Lab System Performance Standards

Beginning in late 2005, APHL began development of laboratory performance standards with a vision that they would support state laboratory system improvement; would help guide relationships between public health, commercial and other private laboratories; and inform an accreditation process. Draft performance standards and a measurement instrument were developed earlier this year by APHL work groups and a project steering committee, chaired by Stan Inhorn, MD. The draft standards were pilot-tested this summer in the Oregon and Wisconsin state laboratories.

In July 2006, APHL released a request for proposals seeking a consulting firm to assist in field testing, marketing and training for the performance standards for public health laboratories. The review committee selected Milne & Associates of Portland, OR. During this final phase of the project, the standards and measurement tool will be field-tested in 10 states. The tests will begin in December and will be completed by the end of March 2007.

APHL members and partners will have an opportunity to comment on the standards and measurement instrument after the field tests are completed and the materials are finalized and approved by the steering committee in April 2007. After a review by APHL’s Laboratory Systems and Standards Committee, the final product will be presented for approval by the Board of Directors and then unveiled at the 2007 APHL Annual Meeting, held June 3-5 in Jacksonville, FL. A marketing plan will guide promotion of the standards to APHL members and partners in the months following the annual meeting. For more information, or if you are interested in participating on the steering committee or workgroups, contact Vanessa White, MPH, senior manager, laboratory systems & standards, at vanessa.white@aphl.org or 240.485.2758.

Comprehensive Lab Services Survey

In November 2004, APHL conducted a Comprehensive Laboratory Services Survey (CLSS) of state public health laboratories to establish the baseline data necessary for the Healthy People 2010 Objective 23-13. The goal of this objective is to “Increase the proportion of Tribal and State public health agencies that provide or assure comprehensive laboratory services to support essential public health services.” This assessment addressed only state public health laboratories and their respective state agencies and has served as a baseline to periodically evaluate the level of improvement in the provision of comprehensive laboratory services over the decade ending 2010.

The survey has been revised from the 2004 version after the CLSS workgroup met from May-September. The survey was beta-tested in five states (MO, NH, TX, VT and WI) beginning October 11. It will be launched using MrInterview from November 1 through November 30.

2007 Fellowship Program Deadlines

APHL is now accepting applications for the 2007 EID Fellowship Program. The application deadline for APHL member local, state, and federal public health laboratories interested in hosting a fellow for the 2007 EID Laboratory Fellowship Program is March 1, 2007. The application and instructions can be found at www.aphl.org/hostlabapplication. The application deadline for prospective fellows is February 16, 2007. For more information, contact Heather Roney at 240.485.2778 or fellowships@aphl.org.

EID fellows Rachel Gast (left) and Mindi Russell suit up during BSL-3 training at the North Carolina State Laboratory of Public Health.
O
ne year after Hurricane Katrina unleashed floodwaters on New Orleans, life is ebbing back. Steve Martin, director of laboratory services for the state of Louisiana, said in a telephone interview September 20, “Most of the jazz and heritage sites are back up and operating. Tourism is picking up again and the first Saints home game is this week. Each of those brings a little more confidence.”

But the real barometer of progress lies beyond Bourbon Street and the Superdome. Said Martin, “If you came in for a convention and they drove you in from the airport, you’re not going to see areas that are blighted. It’s the neighborhoods where most of the people lived in this community that have been damaged the most.” And life in the neighborhoods has been slower to return.

In a city renowned as the “Big Easy,” Martin said, “People are worried.” The immediate repairs to the levees enclosing Lake Pontchartrain were temporary fixes and, said Martin; many residents are waiting to see how FEMA and US Army Corps of Engineers reconstruct the floodwalls before making long-term investment decisions. “There’s a lot of anxiety every time there’s a tropical storm... A lot will depend on the confidence people have in the levees and in the government.”

And yet, overall Martin is optimistic that greater New Orleans will recover. “People have to be very patient,” he said. “It’s not going to be the quick recovery that some people hoped for... People have changed the way they’re building and where they’re building and that slows down the recovery process, but I think it’s going to improve things.”

As for the Louisiana PHL, it too is seeking to regain a sense of normalcy. At one point after the double whammy of hurricanes Katrina and Rita, three of four branch facilities were out of commission. Fortunately, the regional laboratories in Amite and Lake Charles suffered no major damage and reopened within a couple of weeks.

The main branch of the laboratory, however, will never reopen; at least not in its previous location. The laboratory had been situated in the seventh and eighth floors of an office building in downtown New Orleans. That building was flooded beyond repair and is slated to be demolished. After a nomadic period during which Martin’s base of operations moved from New Orleans to Shreveport to Baton Rouge, he is now working from rented warehouse space in Metairie, a New Orleans suburb.

From there the state laboratory director is overseeing the construction of not one, but two laboratories: a temporary, leased facility in Metairie and a permanent new facility on the campus of Louisiana State University (LSU) Medical School in New Orleans, about six blocks from the original New Orleans branch laboratory.

The process has been slow. Even though site preparation for the new facility began about four weeks before Katrina reached shore, the state legislature re-examined all spending decisions in the wake of the storm. “There’s so many infrastructure needs down here that they went back through everything,” said Martin. It took almost a year for Martin to get the okay to carry on.

The architect, contractor and major subcontractors have only recently reconvened to develop a new timeline for the $23 million construction project. After Katrina, there will also be changes to the original design, notably a raised building foundation and extra generator capacity. (Martin explained that many hospital and research laboratories lost all their refrigerated reagents after Katrina even with back-up power to the refrigerators, because they had no power to run the air conditioning. “As hot as it gets here in late August, and with 80 to 90% humidity, where there isn’t any circulation of air the temperature gets probably up over 100 degrees,” said Martin. “Their low temperature freezer compressors should have saved their reagents, but they burned out.”)

Until the new building is complete in three years or more, Martin will set up shop in a former medical clinic that is under renovation. But until that project is finished, much of the testing that was previously performed in New Orleans will remain outsourced.

The University of Iowa Hygienic Laboratory is conducting newborn screening for Louisiana infants. The Texas PHL is conducting TB and water testing. The Arkansas PHL is conducting drinking water testing. The EPA laboratory in Houston is conducting heavy metals testing. And the LSU medical center in Shreveport is performing hepatitis and other miscellaneous clinical testing.

Staff too are dispersed. “We still have people who are essentially homeless,” said Martin. “In small rental apartments that are way too expensive, waiting to resolve insurance claims.”

Of the 84 people working in the New Orleans laboratory prior to Katrina, almost half are not returning to work. The remaining staff members have been spread out among other branches of the state PHL and other parts of the state government. Eventually Martin plans to bring them back to New Orleans. He recognizes, however, that filling his 38 vacancies will be a challenge until people “feel comfortable they can live in this area and feel safe.”

Another problem is equipment. Since the old laboratory was on the upper
Specific attention was directed toward modernization and pandemic preparedness. However, they likely have suffered some damage as a result of a year of non-usage, sitting in a building with no utilities. But no one knows for sure—and there’s the rub. “It didn’t float away down the Mississippi,” said Martin. “We could see it. But with no way to move it and prove it’s not functional, we can’t file the paperwork with the insurers; it doesn’t fit any part of the regulation for a lost piece of equipment.”

After giving FEMA officials a dozen or more tours of the dead building, and after months of arguments between the Louisiana government and FEMA, Martin has resigned himself to the arduous and expensive task of actually removing the equipment. This has involved a call for bids to supply construction elevators, choosing a vendor, awaiting shipment of the elevator parts from Maryland to New Orleans, overseeing the assembly of the elevators on-site and arranging to have 10-foot square entry holes blasted into the side of the building.

“Things are moving forward,” said Martin. “But getting approvals to do things has been a slow process.” Once workers relocate the testing equipment, vendors will run diagnostic tests and determine whether any of it can be repaired.

At some point thereafter—when both functional laboratory space and instrumentation are available—Martin can focus on the next hurdles to re-establishing testing programs. Testing protocols will have to be completely re-validated, and technical staff—many of whom have been away from the bench for the past year—will have to redo their competency testing. “It’s like we’re starting a new lab,” said Martin.

In addition to overseeing his $10 million to $12 million annual budget and carrying on with routine public health testing, Martin is contending with new, post-disaster needs. Hurricane Katrina devastated the health care infrastructure on the Louisiana coast, and local public health clinics are only now beginning to reopen and re-establish clinical testing programs. Some of Martin’s staff members are providing technical assistance to set up protocols for CLIA waived testing and to train clinic staff—some of whom are new employees. Said Martin, “Many of those clinics lost everything. They don’t have procedure manuals; they don’t have back-up information. It’s ground zero.” Moreover, an influx of construction workers into the coastal area has put added pressure on the public health system as many temporary workers lack health insurance and a medical home.

Before Katrina, said Martin, “We had focused on emergency preparedness as our lab helping other people; we hadn’t really planned on what to do if we became the people who needed help.” When the new laboratory is up and running, he will approach emergency planning differently: “Widen the scope and lengthen the time period.” Said Martin, “We just never looked out for ourselves like we should’ve.”

2006 ASTHO Meeting Discusses PHL Significance in EPR

The Association of State and Territorial Health Officials (ASTHO) convened its 2006 annual meeting in September. The theme of this year’s gathering was “Leveraging Public Health Leadership,” and focus areas included an array of traditional public health concerns, as well as current issues related to immunization and pandemic preparedness. Specific attention was directed toward the collaborative activities of public health partners, both traditional and non-traditional. Topics covered included information technology, workforce, public health and health care providers, mental health in terrorism events and natural disasters, laboratory issues, healthy communities and public health in state legislatures. In addition to state health officials, this year’s participants included federal representatives, local foundations, non-profit associations and academia. The meeting provided a forum for these groups to gain an improved understanding of each others’ roles, as well as to plan collaborative efforts to enhance the nation’s public health infrastructure.

In an ongoing effort to promote and maintain effective partnerships between state public health laboratories and state health officials, APHL hosted a session, “State Public Health Laboratories: Lessons Learned from the Front Lines,” moderated by M. Rony Francois, MD, MSPH, PhD, secretary of health, Florida Department of Health (FDH). The session examined the state public health laboratory response to Hurricane Katrina: speakers included APHL’s executive director, Scott Becker, MS; the former director of the University of Iowa Hygienic Laboratory (UHL), Mary Gilchrist, PhD; and David Beall, PhD, microbiology administrator, FDH.

Becker and Gilchrist shared experiences related to the public health impact of and response to the storm and discussed short- and long-term laboratory response/recovery issues and intrastate laboratory assistance. Becker focused on APHL’s coordination and outreach efforts during the hurricane and described the impact of the storm on Louisiana’s state PHL system. Gilchrist’s presentation highlighted the UHL’s efforts to provide interim newborn screening services for Louisiana when its state laboratory was rendered incapable. As of September, the UHL had performed newborn screening tests on 72,462 infants born in Louisiana.

Beall discussed hurricane-related challenges that Florida’s laboratory system has faced in past years, elaborating on how these lessons helped Florida laboratory staff deal with situations that arose in the aftermath of Hurricane Katrina. Beall described the challenges impeding sample processing and results communication when in a crisis situation.
Norfolk PHL: Changing with Tide of Public Health Challenges

**Director**

Dongxiang Xia, director of the Norfolk Public Health Laboratory (NPHL), Commonwealth of Virginia, came to his current position by way of China, Sweden, Kansas and Washington, DC. Xia earned his MD and PhD degrees in two of China's prestigious medical institutions. In the 1980s, he became heavily involved in the diagnosis and investigation of hemorrhagic fever with renal syndrome caused by Hantaan virus. Thanks to his significant achievement in this work, Xia was granted permanent residence in the US in the classification of outstanding professors and researchers (following a stint in Sweden). He worked for both the National Institutes of Health and the Armed Forces Institute of Pathology at Walter Reed Army Medical Center before accepting his current position in 2003. Said Xia, "I wanted to find a place to practice public health using all my expertise and experiences."

**Location**

The city of Norfolk, a “great and important place for public health surveillance and practice,” lies about 200 miles southeast of Washington, DC, 100 miles east of Richmond and 20 miles west of the Atlantic Ocean. The city itself has a population of 250,000 people, but the entire metropolitan region—known as Hampton Roads or the tidewater area—boasts 1.5 million residents. The essential character of the region has been shaped most by its proximity to water. Norfolk is home to the largest naval installation in the world, the second largest commercial port on the Eastern seaboard and a major cruise ship terminal. There are also a number of popular recreational beaches, wetlands, wildlife preserves and migratory bird flyways in this region.

**Facility**

Norfolk Public Health Laboratory headquarters is in the Norfolk Public Health Center building, which also houses the Eastern Virginia medical examiner’s office and Eastern Virginia Forensic Laboratory. The building is on the campus of Eastern Virginia Medical Center, including Eastern Virginia Medical School and two of the regional tertiary care hospitals. The main public health laboratory is about 15,000 square feet—including 3,000 square feet of BSL-3 space. The building was newly constructed in 1998 and is, said Xia, “a state-of-the-art facility (that) gives us the convenience of close contact with healthcare, environmental, epidemiological and forensic professionals.” The laboratory also has four satellite facilities in different locations.

**Staff**

17 staff members, including three doctoral-level scientists and two part-time staff persons, with multidisciplinary backgrounds in microbiology and immunology, clinical chemistry, cellular and molecular biology and food science. All of the laboratory’s staff members are employed by the Virginia Department of Health (VDH) Norfolk Health District.

**Revenue**

Because the laboratory is part of the VDH Norfolk Health District, approximately 88% of its budget is cooperatively funded by VDH and Norfolk City.

**Distinguishing Characteristics**

- Has a state-of-the-art BSL-3 facility.
- Is a member of the Laboratory Response Network (LRN).
- Serves the largest STD clinic in Hampton Roads.
- Was the first laboratory in Virginia to perform arbovirus surveillance testing, in 1998.

**Highest Volume Testing**

The highest volume clinical testing is for detection of sexually transmitted diseases. From July 2005 to June 2006, the NPHL performed testing for approximately 14,000 patient visits. Of these, just over 6,000 were STD clinic visits. Other high-volume clinical tests include urine analysis, hemoglobin testing, glucose-6-phosphate dehydrogenase testing and blood lead testing.

The highest volume environmental test is for arbovirus detection; in the last year, the NPHL has tested more than 5,000 mosquito pools and about 1,100 sentinel chicken serum samples for arbovirus. Other environmental test matrices include well water, river water, recreational beach water, animals (for rabies), dairy products and air (for pollen counts).
Notable Success Stories

• Moving into the new facility in 1999.
• Implementing biosafety, biosecurity and incidence response plans, along with associated staff training.
• Joining with the area’s hospital, military and private laboratories to form the Eastern Virginia Regional Laboratory Network in the Hampton Roads Metropolitan Medical Response System.
• Installing an in-house computer database management system in the late 1990s.
• Serving as a host laboratory for CDC/APHL Emerging Infectious Disease Program fellows.
• Publishing five-year arbovirus surveillance data in the Journal of Environmental Health in May, 2006, and presenting posters at American Society for Microbiology general meeting for past three years.
• Preparing the laboratory to successfully withstand hurricanes, such as Isabel in 2003.

Biggest Challenges

• Improving the laboratory’s computer management system.
• Maintaining the laboratory’s excellent disease surveillance programs.
• Increasing involvement with the LRN.
• Maintaining high performance standards.
• Recruiting staff to replace those who are expected to retire in the near future. “Half of our employees have been here for 20 to 30 years. I expect that some employees will retire in the coming years.”

Goals

• Update staff knowledge and skills. “The science develops very fast. I really push my staff to catch up with the most recent developments, especially in molecular biology.”
• Implement additional testing methods, especially in virology and molecular diagnostics.
• Implement testing for additional food matrices.
• Update the current computer system to a laboratory information management system.
• Continue to interface with the medical community in the regional response network.
• Strengthen the laboratory’s emerging infectious disease testing capacity “to meet the challenge of a changing world.”

New APHL Institutional Members

APHL offers institutional memberships to state and local public health laboratories, as well as state environmental and agricultural laboratories. Please join us in welcoming our newest APHL institutional members, listed below.

Public Health Institutional-Local Members
Sangamon County Public Health Laboratory, James Stone, MPH

Associate Institutional Members
Oklahoma Department of Environmental Quality Laboratory, Judith A. Duncan

Member Notes

WI State Laboratory of Hygiene
Ronald Laessig, PhD, director of the Wisconsin State Laboratory of Hygiene since 1980, has retired. Charles Brokopp, MPH, DrPH, has been named the new director of the lab. Brokopp previously was the director of the division of select agents and toxins at CDC. Prior to that, Brokopp compiled more than 16 years experience directing state public health and environmental laboratories in Idaho, Oregon and Utah.

Remembering Al Balows
Albert Balows, PhD, died unexpectedly in September following a short illness. From 1969 until 1981, Balows served as the Director, Bacteriology Division at CDC and later served as the Assistant Director of Laboratory Science at CDC until he retired in 1988. He was the founding editor-in-chief of several microbiology journals and the author and editor of more than 75 books on microbiology and infectious diseases. Throughout his career, including his work with the WHO, he advanced the concept that clinical microbiologists can make a vital contribution to improve the health of all peoples by establishing a cooperative network of collaborating laboratories.

APHL Staff News

In October, Ina Goocharan, MS, resigned as director of human resources.

Marguerite Oates, MPA, MT(ASCP)SBB manager of the Richmond NLTN office, retired in November to spend more time with her family and travel. Oates had been with APHL for more than 10 years.
APHL’s Board of Directors met in October on the CDC campus in Atlanta. The board reviewed the progress on the NLTN’s new business model, pandemic influenza preparedness efforts and diversity issues within the membership. After handling its standard business, the board met with CDC officials to explain the association’s work and discuss future collaborations. Later, the board hosted a reception for a broader CDC audience and the association’s Council of Chairs and Corporate Leadership Council.

The Council of Chairs then met with the board for a presentation on leadership by Joe Henderson, Senior Management Official, CDC New York.

In the afternoon, the group discussed cross-cutting issues, including the upcoming annual meeting and the potential re-structuring of the traditional “business meeting” to attract all categories of membership and to allow for more discussion and interaction. The council also proposed topics to include on the annual business meeting’s agenda, including a dues increase and the expansion of voting rights.

On a conference call the following week, the board also approved the first progress report on the association’s annual plan, ensuring that strides have been taken toward the goals of the 2006-2009 strategic plan.

Bob Martin, DrPH, MPH, acting director of CDC’s National Center for Public Health Informatics; David Carpenter, PhD, research associate professor at the Southern Illinois University School of Medicine; Kati Kelley, DrPH, past president of APHL’s board of directors; and Judy Delany, MS, MPH, of CDC’s Office of Workforce and Career Development catch up during a reception at the leadership meetings.
The work of public health laboratories has received some well-deserved recognition due to the recent *E. coli* outbreak that swept the country. Sometimes we have a difficult time conveying the vital nature of public health lab work to our customers. But here—in the midst of a widespread *E. coli* outbreak—our labs showed what they can do, through every step of the process: the initial detection, the outbreak recognition, the identification of the brand of spinach responsible and the likely origin of the contamination.

Watching the evening news, I got a chill watching footage of grocery stockers pulling spinach off the shelves. It was a powerful moment: a nexus of PulseNet success, quick action of laboratorians and epidemiologists and good communication with federal agencies—all resulting in getting the culpable product out of refrigerators in time to limit the outbreak and, no doubt, save lives. I also saw, on a local news affiliate in Maryland, the familiar face of New Mexico’s Dave Mills, explaining his lab’s role in identifying the brand of spinach responsible.

Isn’t it great when it all works? This is the fruit of hard work, good planning, strong systems and well-trained and motivated laboratorians.

This is also the best possible time to point out that PulseNet does not always get the funding it deserves. As ELC grants have been trimmed, PulseNet programs have been squeezed—sometimes to the point that STEC testing has been dropped altogether. This outbreak shows how important a sturdy PulseNet program is, and steady funding streams are the best way to ensure continued success.

The importance of sharing data extends beyond PulseNet and tracking *E. coli*. Exchanging information is vital to the effectiveness of most laboratory work—including pandemic flu surveillance—but the inability of LIM systems to do this fluently, and the slow adoption of nationally recognized data standards, have posed difficulties. In an effort to address the technical issue, APHL’s informatics program is spearheading a project that represents 18 months of work and cross-center collaboration with CDC. Funded with $1.8 million from CDC and planned for a 13-month timeframe, the Public Health Laboratory Interoperability Project (PHLIP) will pilot two data exchange architectures designed to enable labs to share information in a bi-directional manner with CDC; essentially, different LIMS will be able to exchange data by processing information through a router, which serves as a “translator.” What emerges will be standardized and shareable. The PHLIP project will also catalogue the necessary human and capital expenditures and establish user-groups to ease implementation.

It’s exciting that CDC is looking seriously at an enterprise-wide LIMS, which is an opportunity to showcase collaboration between states through APHL, and in concert with CDC, to demonstrate a new way to share data. States will be able to model data sharing with standards promoted by CDC, working towards a modern informatics infrastructure.

This work really brings us closer to the vision of APHL as a learning organization—a place where members can work together to consolidate best practices and share innovations. We realize that needs in this area are diverse, and growing, and we’re working to ensure that APHL stays on top of it. Due to members who donate hours of time and exhibit immense dedication, and our partners in federal agencies, APHL is increasingly able to address public health laboratory information needs—pulling labs a bit closer together in our quest to secure the public’s health.
Amplify APHL: Member-Get-A-Member Campaign

APHL is looking to its members to help expand our community of committed laboratorians dedicated to protecting the public’s health. To this end, the membership department has launched the Amplify APHL: Member-Get-A-Member campaign. From now until APHL’s next annual meeting in June 2007, we are asking APHL members to invite their colleagues to join APHL. Outstanding campaign participants will be recognized at the annual meeting.

A list of tips and resources for sharing information about the benefits of being an APHL member have been compiled to help you succeed in this campaign. For more information, please visit http://www.aphl.org/about_aphl/membership/

Contact Anna Dillingham at anna.dillingham@aphl.org if you need any assistance or have any questions. Good luck!

APHL Sustaining Member Program

The following corporations partner with APHL to support the nation’s public health laboratory systems.

Diamond Partners
- GEN-PROBE
- PerkinElmer
- Applied Biosystems
- CUB2A architecture, engineering, planning

Platinum Partners
- Abbott Diagnostics
- Invitrogen
- Labware LIMS Solutions
- STARLIMS

Gold Partners
- BD
- BIO-RAD
- United States Postal Service

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The Association of Public Health Laboratories (APHL) is a national, non-profit dedicated to working with its members to strengthen public health laboratories. 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 US residents and to prevent and control disease globally.

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