

Section 2: Protecting People

PHPR protects people from public health threats by providing strategic direction, coordination, and support for all of CDC's preparedness and emergency response activities. Specifically, PHPR works to:

- strengthen public health preparedness and response infrastructure,
- improve the ability of the public health workforce to respond to health threats,
- increase the application of science to preparedness and response practice, and
- advance surveillance, epidemiology, and laboratory science.

Supporting and strengthening public health departments

In 2013, PHPR awarded 62 state, local, and insular area public health departments \$585 million through PHEP to support emergency preparedness activities.¹¹ PHEP awardees protect their communities using a capabilities-based approach that assists state and local health departments with their all-hazards planning. The 15 public health preparedness capabilities were established in 2011, and performance measure data is currently available for three.¹² (See the fact sheets beginning on page 33 for each awardee's performance for the three capabilities.) Within this capabilities-based framework, PHEP awardees use funds to protect people by:

- building and sustaining infrastructure, by ensuring state and local jurisdictions can develop response strategies and build systems needed to coordinate and support emergency operations during events with public health or medical implications;
- improving the workforce's ability to respond to emergencies by conducting training exercises so staff can practice response skills;
- maintaining biosurveillance systems that can identify health problems, threats, and environmental hazards and can receive, respond to, or investigate reports 24/7/365; and
- conducting laboratory testing and analysis to rapidly characterize actual or potential exposure to a wide range of hazards and reporting results so that appropriate actions can be taken.

¹¹ CDC, PHPR, PHEP Fiscal Year 2013 Funding. Accessed on July 3, 2013 at URL http://www.cdc.gov/phpr/documents/FY_2013_PHEP_HHP_Funding_June_26_2013.pdf.

¹² See Appendix B for the list of all 15 capabilities. The three capabilities with reportable data are public health laboratory testing, emergency operations coordination, and emergency public information and warning. CDC provides Technical Assistance Review scores.



CDC SUPPORTS TEXAS IN FIGHTING DEADLY WEST NILE VIRUS OUTBREAK

The 2012 West Nile Virus (WNV) outbreak in Texas started early and was more deadly than any WNV outbreak in state history. Nearly 1,900 people became sick with the virus during the 2012 outbreak, resulting in 89 fatalities. During a typical WNV season, approximately 10% of those infected will contract a neuroinvasive form of the disease, which can result in long term disabilities or death.

State and local health departments throughout Texas, particularly in and around the epicen-

ter of the outbreak in Dallas, fought this public health crisis on multiple fronts – from mosquito reduction to maintaining situational awareness to creative communications. Eliminating mosquitoes carrying the disease was essential to reducing the number of people infected. One of the most effective methods for killing these mosquitoes quickly and over large areas is spraying insecticides using airplanes; however, the state and local health department lacked adequate resources for spraying. CDC's PPHR provided desperately needed funds to enable this critical mosquito reduction method. CDC also sent a requested team of epidemiologists and entomologists to (1) compile epidemiologic and mosquito surveillance data, (2) provide technical advice for prevention and control activities, (3) evaluate the impact of mosquito control strategies on human and mosquito infection rates, and (4) assist with developing public health strategies for future WNV prevention and control efforts in Texas.

Situational awareness was maintained across all responding agencies during the outbreak through national, state, and local conference calls. Specialized equipment and supplies were purchased for state and local laboratories to test for infected mosquitoes, as well as support confirmation of human WNV cases.

On the communications side, the Texas Department of State Health Services developed and distributed Public Service Announcements and informational materials on preventing infections. They also formed innovative partnerships with both large and small retail stores to spread the message about how to minimize the risk of WNV infection. These stores used multiple communication methods, from posters to in-store television and audio announcements. Without these efforts by CDC and the state and local health departments, this terrible outbreak might have been even more dangerous and widespread.



Building and maintaining critical infrastructure

PHPR provides public health preparedness and response infrastructure through its Strategic National Stockpile. The SNS is a national repository of medical countermeasures, vaccines, and other medical supplies stored in strategic locations around the nation. These assets, including medical countermeasures that may not be commercially available, are designed to supplement state and local public health departments in the event of a large-scale public health emergency that causes local supplies to run out. Using the SNS, CDC is able to provide emergency medicines to protect the nation against the highest-risk threats for under \$2 per person, per year. PHPR also provides technical assistance, guidance, training, and exercise support to state and local public health departments on how to receive, distribute, and dispense medical countermeasures from the SNS.

All 50 states, 72 metropolitan statistical areas (MSA) (including the 4 directly funded localities), and the 8 insular areas funded by the PHEP cooperative agreement have plans for receiving, staging, storing, distributing, and dispensing medical assets from CDC's SNS. CDC conducts annual technical assistance reviews (TARs) to assess these plans to ensure continued readiness. The national median for state TAR scores was 98 (out of 100) in 2011-2012. (A score of 89 or higher indicated that a state performed in an acceptable range.) See the fact sheets beginning on page 33 for each awardee's TAR scores for the past three years.





GOVERNMENT AND PRIVATE BUSINESS BAND TOGETHER TO BUILD RESILIENT COMMUNITIES

In February 2013, more than 20 organizations in Arizona successfully demonstrated their ability to engage in life-saving activities during an emergency. The Arizona Department of Health Services led a Strategic National Stockpile full scale exercise with the participation of multiple state-wide partners. Maricopa and Pinal County Health Departments conducted the largest portion of the exercise for the state with 11 agencies engaging in closed point-of-dispensing (POD) operations. Closed PODs are critical components of communities' preparedness and response portfolios – especially when threatened with dangerous biological agents.

State and local public health departments are prepared to dispense life-saving medications from the SNS at locations within their communities, typically schools, arenas, or other public places. These locations are referred to as open PODs. However, even with extensive planning by the health departments, it is challenging to dispense medication to an entire community in a timely manner. With the support of CDC, specifically PHEP and the Community Resilience Activity, many public health departments are engaging with private sector partners, non-governmental organizations, and faith-based organizations to establish alternative PODs, or closed PODs, in their communities. The closed PODs are available exclusively to these organizations' employees and family members, alleviating the pressure on open PODs.

A total of 15 counties and 11 Maricopa County partner agencies participated in the Arizona full scale exercise. The Maricopa County partners included four cities, four county agencies, and three private businesses, resulting in more than 152,000 fewer people relying on open PODs for essential medications in a public health emergency. According to Maricopa County Public Health Department staff, closed POD partnerships and associated exercises are not possible without PHEP funding. PHEP funding supports outreach efforts and partnership building, which increases awareness of the availability of closed POD plans for other private organizations. One staff member said, "PHEP funding is the core of developing and exercising these closed PODs. It enables us to hire the personnel that create the relationships to get these critical partners to the table."

PHPR manages the SNS, including monitoring the shelf-life of pharmaceuticals to ensure that they meet Food and Drug Administration potency limits, conducting quality assurance activities, and ensuring that all materials are current and relevant based on the latest scientific data, threat levels, and overall ability to deploy during a public health emergency. Specific SNS assets include:

- **12-Hour Push Packages and Managed Inventory.** 12-Hour Push Packages can be delivered to anywhere in the United States or its territories within 12 hours. Each package contains 50 tons of a variety of medical assets, such as medical countermeasures and vaccines. If an incident requires additional or different supplies, these can be delivered within 24 to 36 hours from managed inventory. All states have plans in place to receive SNS supplies and distribute them as quickly as possible to local jurisdictions, and then dispense them to their communities.
- **CHEMPACKs.** CHEMPACKs are containers of nerve-agent antidotes placed in secure locations nationwide to facilitate rapid response to an incident. More than 92% of the U.S. population is within one-hour of these supplies. CHEMPACKs are located in more than 1,300 sites across the country.
- **Federal Medical Stations (FMS).** FMS are rapidly deployable stations that provide resources to care for displaced persons with nonlife-threatening health needs that cannot be met in a general population shelter during an incident. The stations are stocked with beds and supplies to care for up to 250 patients for three days. In response to Hurricane Isaac, 2 FMS with pharmaceuticals and 10 PHPR staff were deployed to Louisiana. CDC deployed 7 FMS and 25 response staff as part of the coordinated federal response to Superstorm Sandy.

PHPR also conducts training and exercises to prepare state and local health departments to respond effectively during an emergency when SNS assets are deployed. PHPR staff routinely visit state and local health departments to help them plan for receiving, distributing, and dispensing assets. During 2012, PHPR conducted eight types of SNS training courses, attended by public health personnel from 52 PHEP awardees, and facilitated nine anthrax exercises across the country.



“SUPER GRAS” REQUIRED SUPER PLANNING

New Orleans, Louisiana, hosted the Super Bowl for the 10th time in 2013. However, it was only the second time that the city hosted the game in the middle of Mardi Gras. This rare coincidence, coined “Super Gras,” drew more than one million visitors to the city of New Orleans and across multiple jurisdictions in the state. Large-scale events like this are at a high risk for terrorist activity due to the increased number of visitors as well as the immense viewership of the televised event. In addition, people are at an increased risk of illness and injury at special events with large crowds. In efforts to prepare for “Super Gras,” the coalition of partners on the Public Health and Medical Subcommittee designed a plan to provide medical support as well as assist law enforcement and public safety agencies for routine and mass casualty response.

The Public Health and Medical Subcommittee, made up of the New Orleans Emergency Medical Service, Louisiana Department of Health and Hospitals Office of Public Health, and New Orleans Office of Homeland Security and Emergency Preparedness Planning, among others, developed and implemented the plan for the event. Public health preparedness activities included food inspections and monitoring of over-the-counter drug purchases as an indicator for possible foodborne outbreaks. Flu vaccinations, biological surveillance, lab services, and medical countermeasures and mitigation were also incorporated in public health preparedness plans.

The subcommittee participated in planning efforts for a year leading up to the event, including learning about unusual outbreaks common during large-scale events. The success of the event can be attributed to effective communication and thorough preparation through on-going exercises, after action reviews, trainings, and preparation meetings. According to Cynthia Davidson, Region One Hospital Designated Regional Coordinator, “The leadership spear-headed by CDC and the Federal Emergency Management Agency (FEMA) was a very important piece of success for planning for the Super Bowl/Mardi Gras event. There [cannot be a] successful event [like this] without planning, training, and exercising to prepare.”



Applying science to public health preparedness and response

Translating the science of preparedness and response to real-world public health practice is another key function of PHPR. During 2008 and 2009, PHPR established Preparedness and Emergency Response Research Centers (PERRCs) at nine accredited university schools of public health. Over a five year project period, the PERRCs were awarded \$13.6 million to enhance the usefulness of workforce training, improve communications in preparedness and response, and evaluate the structure, capabilities, and performance of public health systems for preparedness and emergency response. The PERRCs receive this funding over five years to first research how public health agencies can improve preparedness and response systems and then translate results into practice. A requirement of the Pandemic and All-Hazards Preparedness Act, PERRC research is focused on identifying the elements most needed to enhance preparedness for all hazards and to close gaps in public health preparedness and response services. To inform the ongoing response to and recovery from Superstorm Sandy, PHPR is coordinating, in collaboration with health departments and other CDC programs, an applied research program to assess mold-related health effects and the effectiveness of mold mitigation efforts; characterize morbidity, mortality, and their associated risk factors related to Sandy; evaluate the effectiveness of the public health system response; and assess exposures and health hazards among response workers and volunteers.

PHPR also established Preparedness and Emergency Response Learning Centers (PERLCs) to ensure that state, local, and tribal public health agencies receive training that is based upon the best available science, evaluation, and quality improvement programs. Fourteen accredited university schools of public health were initially awarded \$13 million in 2010 to create a PERLC network to develop, deliver, and evaluate core competency-based preparedness training and education for the public health workforce. The PERLCs reached 210,000 learners by 2012 and demonstrated their value in 2012 and 2013 during both natural and man-made disasters. Specifically, the PERLCs helped the communities affected by Superstorm Sandy, the Boston marathon bombing, and tornadoes in Oklahoma and Alabama in preparing for, responding to, and recovering from disaster.

Advancing laboratory capabilities

Public health laboratories are a critical component of protecting people, as they speed the identification of disease agents to help contain outbreaks and get people to the right treatment faster. Specifically, laboratories identify and characterize disease agents, toxins, and other health threats found in clinical specimens, food, or other substances. The information generated by laboratories is essential for responding to public health threats. As such, CDC launched the Laboratory Response Network (LRN) in 1999 to improve our ability to detect and respond to biological and chemical threats and other public health emergencies. More than 150 laboratories participate in the LRN. These labs have unique testing capabilities for confirming high priority biological (LRN-B) and chemical (LRN-C) agents.



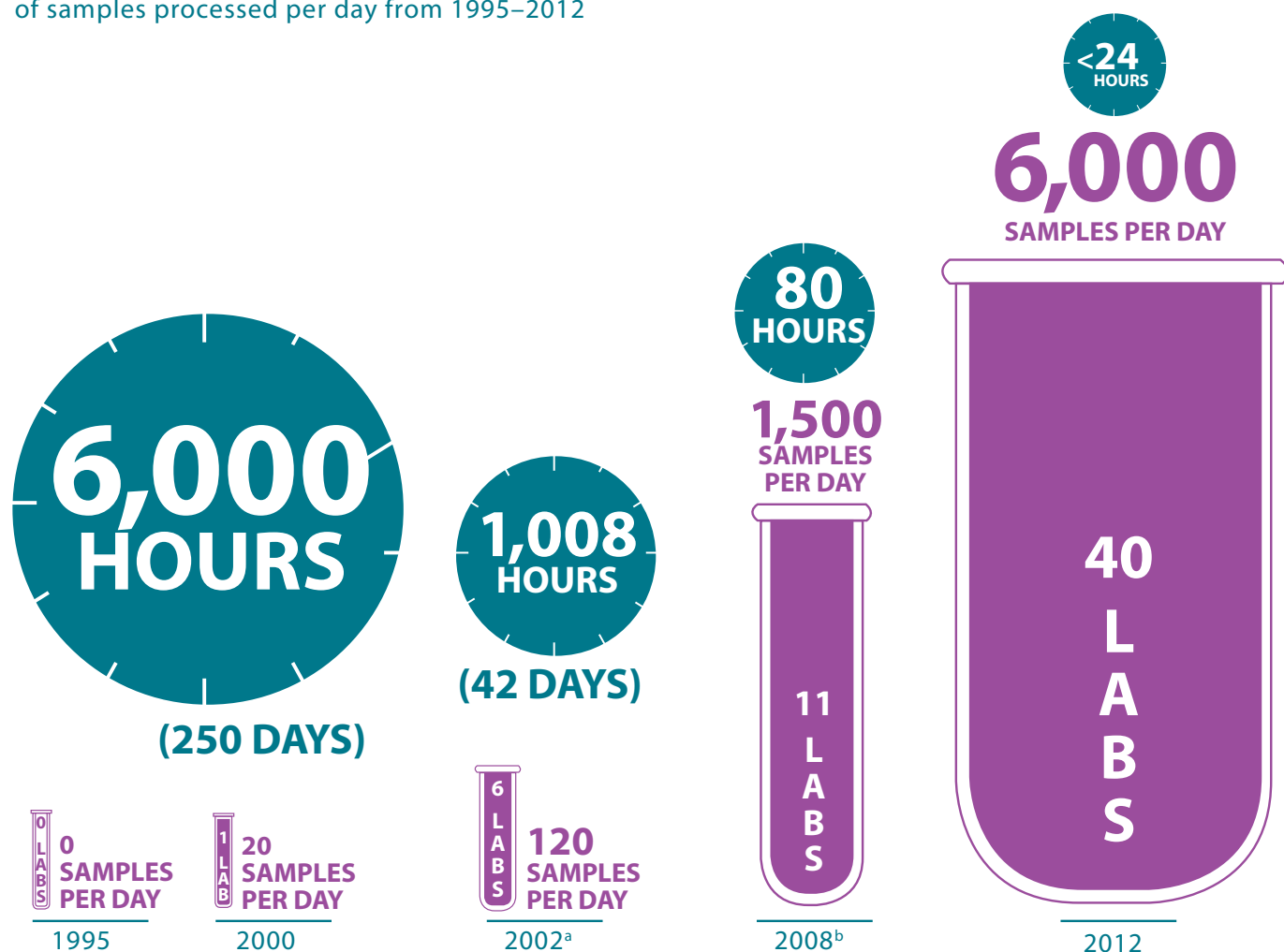
CDC funds LRN laboratories in the 50 states and 4 localities (Chicago, New York City, Washington, D.C., and Los Angeles County) through the PHEP cooperative agreement. In addition to the LRN-B laboratories that receive PHEP funding, other biological laboratories participate in the LRN, including federal, military, international, agricultural, veterinary, food, and environmental testing laboratories. Located strategically across the United States and abroad, LRN-B and LRN-C laboratories significantly contribute to their state's or locality's ability to detect, characterize, and communicate threat agents. LRN laboratories can perform standardized tests yielding reliable results within hours. Approximately 90% of the U.S. population lives within 100 miles of an LRN laboratory, decreasing the time needed to detect and respond to local disease outbreaks.

All LRN laboratories are subject to annual proficiency tests and exercises, which are supported by PHPR's EOC. A key exercise for assessing LRN-C preparedness is an annual surge capacity exercise, which demonstrates the ability of each of 10 participating labs to test and report on 500 samples (a total of 5,000 samples from all labs) on a 24/7 basis. This exercise demonstrates the ability of all Level 1 and Level 2 LRN-C labs in the U.S. to respond to a large-scale chemical incident, such as the Tokyo subway sarin attack of 1995, should one occur here.¹³ The response time for the exercise is determined from the time the 500 samples are received to the time the last test result is reported to CDC. LRN-C laboratories' surge capacity has significantly increased, while the time required for processing and reporting test results has significantly decreased, since 1995.

¹³ Only Level 1 LRN-C labs participate in the exercise, though both Level 1 and Level 2 LRN-C labs can respond to a large-scale chemical incident. See Appendix B, page 164, for a definition of Level 1 and Level 2 LRN-C labs.

LRN-C SURGE CAPACITY

Length of time to process 5,000 samples and number of samples processed per day from 1995–2012



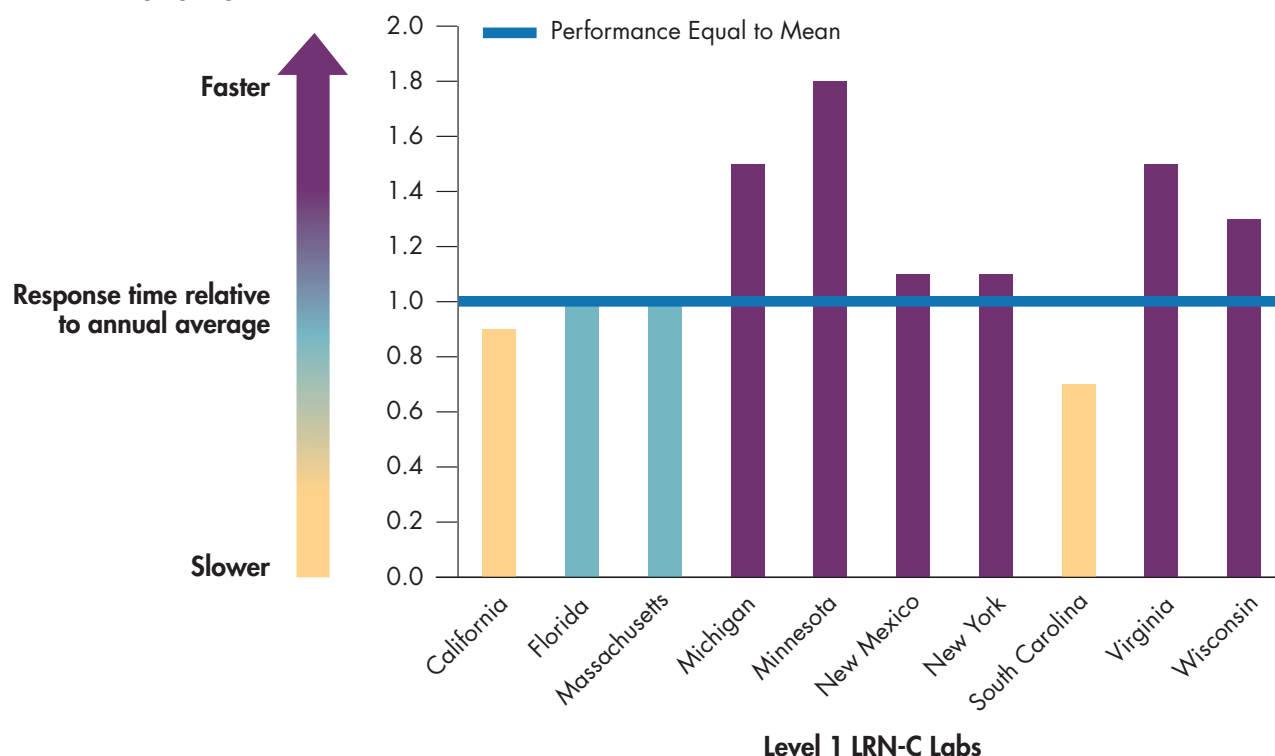
^a Note: CTLN=Chemical terrorism laboratory network (predecessor to LRN-C including NY, MI, VA, CA and NM)

^b Note: Improved analysis method

During the 1995 Tokyo subway sarin attack, a large-scale chemical incident where approximately 5,000 people sought treatment at hospital emergency rooms, there was no capacity to process patient samples to assess the exposure to this toxic chemical. Between 1995 and 2012, the LRN-C was created, rapid analysis methods were developed, and membership increased from 0 labs to 40 labs which could process 6,000 samples in less than 24 hours after receipt.

The graph below shows each participating Level 1 LRN-C laboratory's performance in the surge capacity exercise over the past three years. The data is presented to show each participating laboratory's average performance from 2010-2012, illustrated by the number of times each lab's response time was faster than the average.

Figure 2: LRN-C Surge Capacity Exercise Average Laboratory Performance, 2010-2012



Source: CDC, Office of Noncommunicable Diseases, Injury and Environmental Health, National Center for Environmental Health; 2010 data: 9/13/10; 2011 data: 7/18/11; 2012 data: 8/6/12.

In addition to the work of the LRN laboratories, the lab testing and reporting capability of PHEP-funded states and localities is monitored to (1) demonstrate the ability to identify specific strains of *Escherichia coli* (*E. coli*) and *Listeria monocytogenes* (referred to as *Listeria*) and (2) report results to the CDC PulseNet database within a target timeframe of four working days from receipt of the samples. PulseNet is a national network of public health and food regulatory agency laboratories. Biological laboratories in the PulseNet network use CDC's pulsed-field gel electrophoresis (PFGE) protocols to rapidly identify specific strains of *E. coli* and *Listeria* in order to detect and identify foodborne outbreaks. During 2012, 43 states and localities submitted at least 90% of *E. coli* test results and 31 submitted at least 90% of *Listeria* test results to CDC's PulseNet database within four working days. This is an improvement over both 2010 and 2011 – in 2010, 39 states and localities submitted at least 90% of *E. coli* test results and 21 submitted at least 90% of *Listeria* test results to CDC's PulseNet database within four working days. In 2011, the number of states and localities were 37 and 22, respectively.

See fact sheets beginning on page 33 for all laboratory capabilities performance indicators.