

Section 1: A National Snapshot of Public Health Preparedness Activities

- Surveillance and Epidemiology: Monitoring and Investigating Health Threats
- Laboratories: Identifying and Understanding Emerging Public Health Threats
- Response Readiness: Communicating, Planning, Exercising, and Evaluating
- Additional CDC Resources Supporting Preparedness in States and Localities
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Surveillance and Epidemiology: Monitoring and Investigating Health Threats

Surveillance and epidemiology are core public health functions that detect community health threats, investigate their sources and patterns of distribution, and monitor their impacts. These data are used to help in making decisions on actions meant to control or prevent disease or injury.

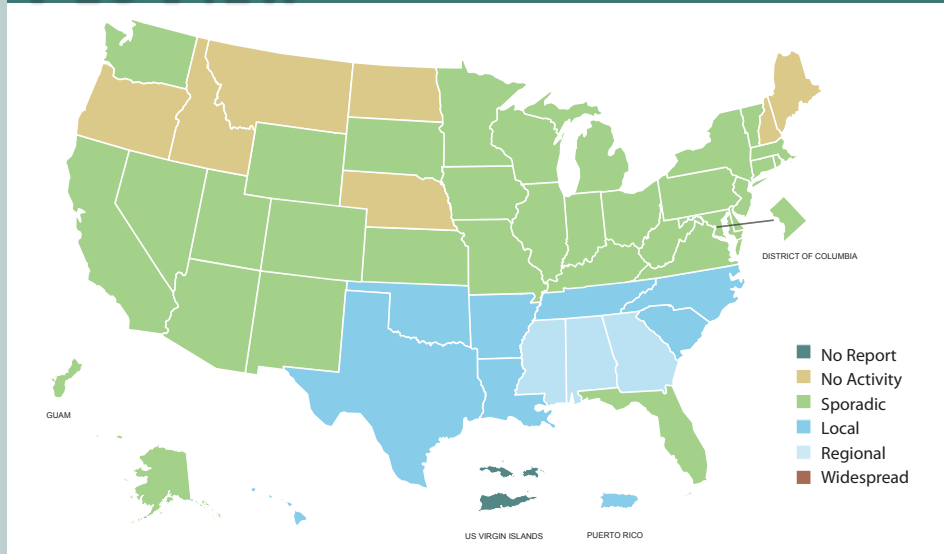
Surveillance: Data for Monitoring Health Threats

Public health surveillance is the ongoing, systematic collection, analysis, and interpretation of health data, and the dissemination of this information to those who need to know. Surveillance data may describe health problem trends, detect epidemics, provide details about disease patterns, monitor changes in disease agents like viruses (through working with laboratorians), help determine the most effective mitigation strategies, and evaluate the effects of control and prevention measures.

Public health officials use different types of surveillance data as a basis for decision making to protect the public's health. One of the first examples of a public health action stemming from the use of surveillance data likely occurred during the bubonic plague in the 14th century, when authorities boarded ships to prevent passengers with plague symptoms from coming ashore. Many early surveillance systems were based on identifying and reporting cases of disease.

In the United States, surveillance systems are a collaborative effort between CDC and its many partners in state, local and territorial health departments; public health and clinical laboratories; vital statistics offices; healthcare providers; clinics; and emergency departments. These surveillance systems resources helped support decision making by public health officials during the 2009 H1N1 influenza pandemic response (see boxes below and on next page).

FLUVIEW



Surveillance resources such as FluView, CDC's report on influenza disease activity, help support decision making by public health officials during outbreaks, including the 2009 H1N1 influenza pandemic.

Source: CDC

Supporting the 2009 H1N1 Influenza Pandemic Response

CDC supported numerous resources that were critical for responding rapidly to the 2009 H1N1 influenza pandemic. Resources included support for domestic and global laboratory and surveillance systems; epidemiological and laboratory capacity and expertise; vaccine distribution and monitoring of the vaccination program; and communications, partnerships, and pandemic preparedness activities. These resources supported decisions at international, federal, state, and local levels aiming to slow the rapid spread of illness and limit morbidity and mortality.

Surveillance data and epidemiological investigations from the 2009 H1N1 influenza pandemic revealed that certain health conditions increased the risk of being hospitalized from 2009 H1N1 influenza. These conditions included lung diseases like asthma or chronic obstructive pulmonary disease, diabetes, heart disease, neurologic disease and pregnancy. Knowledge about these risks helped decision makers prioritize groups who would receive the first vaccines. The data also helped public health officials establish guidelines on antiviral treatment; how long people should stay home while ill; and the steps healthcare personnel, schools, businesses, community- and faith-based organizations, parents, and others needed to take to prevent infection.

Current surveillance systems at the local, state, national, and international levels need to improve to meet the nation's growing challenge to manage and integrate data from a variety of different sources, ensure that decision makers have access to the data, and exchange data with other federal agencies and with public health partners. In 2007, Homeland Security Presidential Directive 21 called for the development of a nationwide approach to enhance the United States' ability to detect and respond to health-related threats. The National Biosurveillance Strategy for Human Health, an effort coordinated by CDC for the U.S. Department of Health and Human Services, provides a plan for building a nationwide, next-generation capability designed to generate timely, comprehensive, and accessible information for public health and clinical decision making.³⁶ The Strategy established six priority areas: electronic health information exchange, electronic laboratory information exchange, unstructured data, integrated biosurveillance information, global disease detection and collaboration, and biosurveillance workforce.

Epidemiology: Investigating Health Threats

Epidemiologists – known as “disease detectives” – work closely with laboratorians to identify health threats, determine their patterns in a community, and estimate their effects. They might identify contaminated food causing illness, assess the number and locations of people injured and types of injuries resulting from a disaster, or determine causes of a sudden onset of fever in a community. Epidemiologists also work to minimize the negative effects of community health threats.

Detection depends on accurate and complete surveillance data. Problems can arise if data are not available, especially for state and local health agencies. In particular, health problems may not be identified early and public health interventions (e.g., the provision of treatments or vaccines) may be delayed.

Epidemiologists conduct targeted investigations and surveys that complement surveillance to validate and identify the causes and effects of a health event. Analyses of these data can produce criteria (e.g., specific symptoms) for determining whether a person should be counted as affected by the particular event, the characteristics of those affected

Table 1: Epidemiological Capacity in the 50 States and the District of Columbia Health Departments; 2004-2009

	2004	2009	Percent Decrease
Number of epidemiologists working in state health departments	2,498	2,193	12%
Number of state health departments reporting substantial-to-full capacity in bioterrorism/emergency response	41	37	10%

Source: Council of State and Territorial Epidemiologists

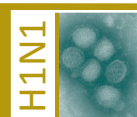
(e.g., age, medication use, socioeconomic status), and the geographic extent of the event. Further studies help identify populations at increased risk for the disease or other health event.

CDC epidemiological support to states and localities for FY 2008 included 26 Career Epidemiology Field Officers (CEFOs) located in states and localities supported through state Public Health Emergency Preparedness (PHEP) funding. CDC also deployed 71 field officers from its Epidemic Intelligence Service (EIS) to conduct 319 investigations in the same year. EIS is a two-year epidemiology training program modeled on a traditional medical fellowship. Officers in this program support states during responses to routine public health incidents and large-scale national emergencies. CEFOs are experienced, full-time epidemiologists located in state and local public health departments to enhance and

build epidemiologic capacity for public health preparedness and response.

State epidemiological capacity continues to decline. A 2009 assessment³⁷ by the Council of State and Territorial Epidemiologists reports that national epidemiological capacity has been eroding since 2004 (see Table 1). This trend contrasts with the significant increase in the number of epidemiologists that took place during 2001–2004, when emergency response and preparedness funds fueled rapid growth in the number of new and replacement epidemiologists in the public health workforce. The 2009 assessment also suggests that nearly 20% of current public health epidemiologists anticipate retiring or changing careers in the next 5 years and recommends that federal, state, and local agencies develop a strategy to address these projected downward trends and major gaps.

Enhancing Surveillance in Kansas to Assess Impact of the 2009 H1N1 Influenza Pandemic



The Kansas Department of Health and Environment strengthened its surveillance capabilities to provide comprehensive state-level, regional, and local information on the impact of 2009 H1N1 influenza. Using resources from CDC’s Public Health Emergency Response funding, Kansas increased the number of sites in the Influenza-like Illness Surveillance Network statewide from 22 to 73. This one-time funding also supported the development of a hospital-based reporting system assessing hospitalization rates, a school absenteeism surveillance system, and comprehensive weekly surveillance and epidemiology reports that updated responders on the ongoing situation.

Source: Association of State and Territorial Health Officials (2010)

Tracking the Impact of Hazardous Substance Incidents

The Hazardous Substances Emergency Event Surveillance system* works to reduce injury and death among first responders, employees, and the general public that result from releases of hazardous substances. By collecting data on hazardous substance releases and tracking subsequent health effects, it allows state public health officials to assess vulnerabilities and proactively plan for prevention and timely response. In FY 2008, this program tracked 8,150 hazardous substance incidents, 2,290 injuries, and 67 fatalities sustained in hazardous substance incidents, and 606 incidents that led to ordered evacuations of 48,464 people in 14 states.**

** As of September 30, 2009, the name of this program changed to the National Toxic Substance Incident Program. Seven states will be funded under the FY 2010 program announcement.*

*** The number of people evacuated does not include evacuees in incidents where a precise number is unavailable.*

Source: CDC, Office for State, Tribal, Local and Territorial Support (2008)

Assessing Capabilities for Surveillance and Epidemiology

CDC is developing performance measures related to surveillance and epidemiological capabilities. PHEP-funded states, localities, and U.S. insular areas will be required to report on measures that address the following:

- Timely recognition of a potential health emergency through disease reports submitted to public health agencies
- Ability to investigate an outbreak or exposure, summarize findings, and make improvements to the investigative process
- Timeliness of initiating interventions to limit the spread of disease

The intent of these new measures is to demonstrate an ability to turn data into actionable information that supports decision making in a public health emergency. For more information on new performance measures, see the Moving Forward section on page 38.

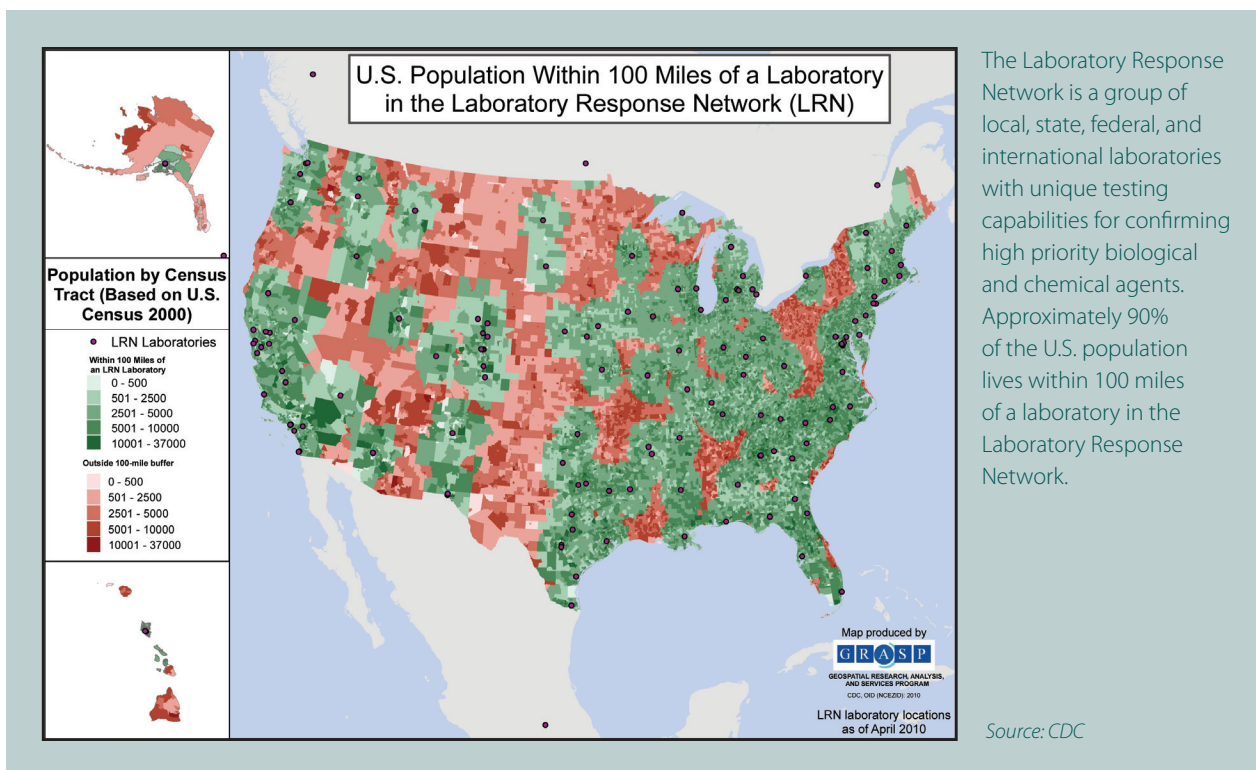
Laboratories: Identifying and Understanding Emerging Public Health Threats

Laboratories identify disease agents, toxins, and other health threats found in tissue, food, or other substances. Rapid detection and characterization of health threats is essential for implementing appropriate control measures. Identification of the bacterium *Salmonella* Typhimurium in some peanut butter products in 2008-2009, for example, led to product recalls that stopped the spread of illness due to this bacterium.³⁸ The ability to detect and characterize health threats relies on the availability of laboratory resources (including personnel), accurate and consistent methods, and quick data exchange systems.

CDC manages the Laboratory Response Network (LRN), a group of local, state, federal, and international laboratories with unique testing capabilities for confirming

high priority biological and chemical agents. Located strategically across the United States and abroad, LRN member laboratories play a critical role in their state or locality's overall emergency response plan to detect, characterize, and communicate about confirmed threat agents. Members 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 begin the response to a terrorist attack or naturally occurring outbreak.

Highlights of state and locality laboratory activities related to preparedness appear on the following pages. See the summary table on page 26 for national-level data on laboratory activities (Table 3).



Nationwide Testing for Responding to Biological Threats

The LRN was established in 1999 to create national laboratory capacity for testing biological threat agents and dangerous toxins. Specific examples of biological threats include anthrax, smallpox, plagues, and botulism.³⁹

LRN biological laboratories are designated as national, reference, or sentinel laboratories.

- National laboratories, including those at CDC, have the most advanced capabilities. These laboratories are responsible for specialized strain characterizations, bioforensics, select agent activity, and handling highly infectious agents.
- Reference laboratories perform tests to detect and confirm the presence of a threat agent.
- Sentinel laboratories are primarily hospital-based and can test samples to determine whether they should be shipped to other laboratories for further testing.

In FY 2008, a total of 151 LRN laboratories in the United States could test for biological agents; 148 of these were reference laboratories and 3 were national laboratories. These laboratories maintain relationships with numerous sentinel laboratories in their jurisdictions that refer suspicious specimens to them for more advanced testing.

CDC funded 54 LRN public health laboratories in FY 2008, one in every state and one in the District of Columbia (with the exception of California, Illinois, and New York, which have two laboratories) as part of the Public Health Emergency Preparedness (PHEP) cooperative agreement. Additional laboratories that participate in the LRN include state and locally funded public health laboratories as well as federal, military, international, university, agricultural, veterinary, food, and environmental testing laboratories.

LRN laboratories could be reached 24/7.

Because emergencies can happen day or night, emergency contacts for LRN member laboratories must be accessible 24 hours a day. In FY 2008, CDC successfully contacted 135 out of 151 LRN biological laboratories during a non-business hours telephone drill.

Laboratories improved their abilities to rapidly identify disease-causing bacteria.

States must be able to detect and determine the extent and scope of potential outbreaks and minimize their impacts. PHEP-funded states must report on their ability to test for two bacteria and report results within a target timeframe of 4 working days (a CDC performance measure; see page 12). Laboratories in the PulseNet network⁴⁰ (coordinated by CDC and consisting of public health and food regulatory agency laboratories) use CDC's pulsed-field gel electrophoresis (PFGE) protocols to rapidly identify specific strains of *Escherichia coli* O157:H7 and *Listeria monocytogenes*.

States are improving their abilities to rapidly identify these bacteria. The number of states that submitted at least 90% of *Escherichia coli* and *Listeria monocytogenes* test results to CDC within 4 working days increased from 2007 to 2008 (Table 2).



A scientist at a state public health laboratory tests a tomato sample during an investigation into a multistate *Salmonella* outbreak.

Photo source: New Mexico Department of Health

Table 2: Rapid Identification of Disease-Causing Bacteria by PulseNet Laboratories; 2007-2008

Disease-Causing Bacteria	Number of states submitting at least 90% of test results to CDC's PulseNet database within 4 working days		
	2007*	2008**	Percent Increase
<i>Escherichia coli</i> O157:H7	22 out of 48 (46%)	29 out of 50 (58%)	26%
<i>Listeria monocytogenes</i>	10 out of 30 (33%)	18 out of 32 (56%)	70%

*Data for the 50 states from the PHEP cooperative agreement Budget Period 7 (August 31, 2006 to August 30, 2007)

**Data for the 50 states from the PHEP cooperative agreement Budget Period 8 (August 31, 2007 to August 9, 2008)

Source: CDC, OPHPR (DSLRL)

Most laboratories passed proficiency tests for detecting biological agents. CDC conducts proficiency testing to evaluate LRN reference and national biological laboratories' abilities to receive, test, and report one or more suspected biological agents. If a laboratory is unable to successfully test for an agent within a specified period of time and report results, it will not pass the proficiency test. In FY 2008, LRN biological reference and national laboratories passed 261 out of 277 tests (94%) to identify biological agents in unknown samples.

Nationwide Testing for Responding to Chemical Threats

In 2003, the LRN started testing clinical specimens to measure human exposure to toxic chemicals. LRN laboratories that can test for chemical agents are designated as Level 1, 2, or 3.

- Level 1 laboratories have the most advanced capabilities. These are surge-capacity laboratories that can test for an expanded number of agents, including nerve agents, mustard agents, and toxic industrial chemicals. They also maintain the capabilities of Level 2 laboratories.
- Level 2 laboratories test for a limited panel of toxic chemical agents. They also maintain the capabilities of Level 3 laboratories.
- Level 3 laboratories work with hospitals and other first responders to maintain competency in clinical specimen collection, storage, and shipment.

In 2009, a total of 56 LRN laboratories in the United States could handle and/or test for chemical agents; 10 of these were Level 1 laboratories, 37 were Level 2 laboratories, and 9 were Level 3 laboratories.

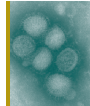
A majority of LRN chemical laboratories demonstrated proficiency in core methods to rapidly detect and measure chemical agents.

Level 1 and Level 2 chemical laboratories undergo proficiency testing to determine if they can use six core methods to rapidly detect and measure chemical agents that can cause severe health effects. These methods can help determine the scope of an incident, identify those requiring long-term treatment, assist with non-emergency medical guidance, and help law enforcement officials determine the origin of the agent. Laboratories are tested annually to evaluate ongoing proficiency in the six methods.

In 2009, 34 out of 47 Level 1 and/or Level 2 LRN chemical laboratories were able to demonstrate proficiency in all six core methods (an additional seven laboratories demonstrated capabilities in four or five core methods). It should be noted that the states and localities with Level 1 and/or Level 2 laboratories that are not proficient in all six core methods may have completed extensive work in the two steps that precede proficiency testing: training and validation in the core methods.

Budget and Workforce Cuts, Virus Uncertainties Strain State Response to 2009 H1N1 Influenza Pandemic

H1N1



Health officials anticipated and prepared for an influenza pandemic. The identification of a novel H1N1 influenza virus in April 2009, however, still stressed the response capabilities of the public health system. Although every state had laboratories with pandemic response plans in place, many were operating with a reduced workforce. Additional challenges to a rapid response included obtaining approved testing equipment and supplies, and training staff on the new testing protocols. Despite these difficulties, every state and the District of Columbia had at least one public health laboratory that could test for the 2009 H1N1 influenza virus by early June.

While public health staff across the nation met these challenges by working long hours for several months, the response placed increased and unsustainable strain on a system already weakened by workforce shortages. Preparing adequately for future public health responses requires predictable and adequate long-term funding to improve infrastructure, staffing, and training in public health laboratories. In his May 2009 testimony to Congress, Daniel Sosin, MD, MPH, Acting Director of CDC's Office of Public Health Preparedness and Response, noted that "with stronger laboratory capacity in states, we could accelerate the detection and study of new viruses such as the 2009 H1N1 virus, helping us to better understand and respond to emerging health threats."

Source: Association of Public Health Laboratories, On the Brink: H1N1 Drains Labs Hit by Cuts (2009)

Some LRN laboratories also demonstrated proficiency in additional methods. Proficiency in additional methods – required for Level 1 laboratories and optional for Level 2 laboratories – demonstrates a more advanced level of preparedness capability. CDC's LRN program for assessing proficiency in detecting and measuring chemical agents continues to evolve through the ongoing incorporation of additional methods. Because the list of additional methods continues to increase, state and local laboratories are not expected to be proficient in all additional methods. (As of September 2009, there were six additional methods.)

In 2009, 26 out of 47 Level 1 and/or Level 2 LRN chemical laboratories demonstrated proficiency in at least one additional method to rapidly detect chemical agents.

CDC continues to work with public health laboratories to assist them in expanding their chemical laboratory capacity to prepare for and respond to chemical terrorism incidents or other emergencies involving chemicals. CDC also partners with the Association of Public Health Laboratories to ensure support for public health laboratories involved in responding to chemical-exposure events from all sources, including those related to terrorism.

Maintaining Core Laboratory Functions During An Emergency

Improvements are needed in continuity of operations plans, which ensure that core functions of state public health laboratories are not disrupted during emergencies. In FY 2008, 23 of the 51 state public health laboratories and the District of Columbia had

continuity of operations plans, 15 had state plans that included laboratory operations, and 13 were developing plans. More work is needed to ensure that laboratories can withstand emergencies.

National Snapshot of Laboratory Activities

A summary table of national-level data on laboratory activities in 2008 and 2009 appears on the following page (Table 3). Note that these items represent available data for preparedness activities and do not fully represent all state and locality laboratory efforts. For individual state and locality information in the area of laboratory activities, see Section 2 starting on page 42. See appendix 1 for an explanation of data points.

States Facing Challenges in Maintaining Laboratorian Workforce

Laboratorians provide critical expertise to effectively identify and respond to public health emergencies. Their responsibilities during a public health event include testing to identify known agents and providing timely laboratory information to response agencies.

According to a 2008 national survey, public health laboratories across the country are experiencing significant difficulties maintaining the highly skilled workforce of laboratorians necessary to ensure an effective response. State public health laboratory directors reported that the factors most severely impacting their workforce were hiring (41%) and retention (28%). For those reporting hiring as a primary concern, 36% identified lack of funding and 31% cited hiring freezes as impacting their ability to hire staff.

Sources: Association of Public Health Laboratories (APHL), Summary on Standards Needed for Preparedness Education for Epidemiologists, Public Health Laboratorians, Public Health Nurses, and Environmental Health Specialists/Sanitarians (2007). APHL, State Public Health Laboratories: Sustaining Preparedness in an Unstable Environment (2008).

Table 3: National Snapshot of Laboratory Activities

Laboratories: General	
Maintaining core laboratory functions during an emergency	<p>Status of laboratory continuity of operations plan (COOP) for 50 states and DC:</p> <ul style="list-style-type: none"> • 23 out of 51 had a state public health laboratory COOP • 15 out of 51 had a state COOP that included laboratory operations • 13 out of 51 had a COOP that was under development <p style="text-align: right;"><i>APHL; 8/31/2007-8/30/2008</i></p>
Ensuring availability of Laboratory Response Network (LRN) laboratory results for decision making	<p>53 out of 54 states and localities had a standardized electronic data system capable of messaging laboratory results between LRN laboratories and also to CDC</p> <p style="text-align: right;"><i>CDC, OSELS; as of 9/30/2008</i></p>
Laboratories: Biological Capabilities	
Participation in LRN for biological agents	<p>148 out of 151 LRN laboratories were reference laboratories that could test for biological agents</p> <p>The remaining 3 LRN laboratories were national laboratories that could test for biological agents</p> <p style="text-align: right;"><i>CDC, OID (NCEZID); as of 9/30/2008</i></p>
Assessing if laboratory emergency contacts could be reached 24/7	<p>135 out of 151 LRN laboratories were successfully contacted during a non-business hours telephone drill</p> <p style="text-align: right;"><i>CDC, OID (NCEZID); 8/2008</i></p>
Evaluating LRN laboratory capabilities	<p>261 out of 277 proficiency tests were passed by LRN reference and/or national laboratories</p> <p style="text-align: right;"><i>CDC, OID (NCEZID); 1/2008-9/2008</i></p>
Rapid identification of disease-causing bacteria by PulseNet laboratories	<p>Rapidly identified <i>E. coli</i> O157:H7 using advanced DNA tests (PFGE):</p> <ul style="list-style-type: none"> • 50 out of 50 states performed tests on <i>E. coli</i> O157:H7 samples • 29 out of 50 of the states that performed tests submitted at least 90% of test results to the PulseNet database within 4 working days <p style="text-align: right;"><i>CDC, OPHPR (DSLRL); 8/31/2007-8/9/2008</i></p>
	<p>Rapidly identified <i>L. monocytogenes</i> using advanced DNA tests (PFGE):</p> <ul style="list-style-type: none"> • 32 out of 50 states performed tests on <i>L. monocytogenes</i> samples • 18 out of 32 of the states that performed tests submitted at least 90% of test results to the PulseNet database within 4 working days <p style="text-align: right;"><i>CDC, OPHPR (DSLRL); 8/31/2007-8/9/2008</i></p>
Assessing laboratory competency and reporting through exercises	<p>49 out of 51 public health laboratories in 50 states and DC conducted exercises to assess the competency of sentinel laboratories to rule out bioterrorism agents</p> <p style="text-align: right;"><i>APHL; 8/31/2007-8/30/2008</i></p>
	<p>Ability of CDC-funded LRN laboratories* to contact the CDC Emergency Operations Center within 2 hours during LRN notification drill:</p> <ul style="list-style-type: none"> • 35 out of 54 laboratories passed • 15 out of 54 laboratories did not participate • 4 out of 54 laboratories did not pass <p><small>*There is one CDC-funded LRN laboratory in DC and in each state, with the exception of CA, IL and NY, which have two.</small></p> <p style="text-align: right;"><i>CDC, OID (NCEZID); 3/2008</i></p>
Laboratories: Chemical Capabilities	
Participation in LRN for chemical agents (LRN-C)	<p>56 LRN-C laboratories in states and localities could respond if the public was exposed to chemical agents:</p> <ul style="list-style-type: none"> • 10 out of 56 are Level 1 laboratories (most advanced testing capabilities) • 37 out of 56 are Level 2 laboratories (testing capabilities for limited panel of agents) • 9 out of 56 are Level 3 laboratories (specimen collection, storage, and shipment) <p style="text-align: right;"><i>CDC, ONDIEH (NCEH); as of 9/14/2009</i></p>
Evaluating LRN-C laboratory capabilities through proficiency testing	<p>34 out of 47 Level 1 and/or Level 2 LRN-C laboratories successfully demonstrated all six core methods to rapidly detect chemical agents</p>
	<p>26 out of 47 Level 1 and/or Level 2 LRN-C laboratories successfully demonstrated at least one additional method to rapidly detect chemical agents</p> <p style="text-align: right;"><i>CDC, ONDIEH (NCEH); as of 9/14/2009</i></p>
Assessing LRN-C laboratory capabilities through exercises	<p>LRN-C laboratories ability to collect, package, and ship samples properly during LRN exercise:</p> <ul style="list-style-type: none"> • 49 out of 56 laboratories passed • 3 out of 56 laboratories did not participate • 4 out of 56 laboratories did not pass <p style="text-align: right;"><i>CDC, ONDIEH (NCEH); as of 11/9/09</i></p>
	<p>25 out of 31 Level 1 and/or Level 2 LRN-C laboratories successfully demonstrated the ability to detect 2 chemical agents in unknown samples during the LRN Emergency Response Pop Proficiency Test (PopPT) Exercise*</p> <p><small>*Not all Level 1 and Level 2 laboratories are eligible to participate in this exercise.</small></p> <p style="text-align: right;"><i>CDC, ONDIEH (NCEH); as of 8/31/2008</i></p>
	<p>Level 1 LRN-C laboratories took an average of 98.3 hours to process and report on 500 samples during the LRN Surge Capacity Exercise (range was 71 to 126 hours)</p> <p style="text-align: right;"><i>CDC, ONDIEH (NCEH); 1/9/2009</i></p>

Response Readiness: Communicating, Planning, Exercising, and Evaluating

While all response to public health emergencies begins at the local level, preparing for a response requires coordination among all levels of government as well as a clear understanding of expected roles and responsibilities. State and local public health departments continue to improve their response to threats by developing, exercising, and improving emergency response plans and responding to real incidents. Strengthening response capabilities and capacities also entails improving situational awareness through monitoring and communicating emerging health information.

Highlights of state and locality activities to enhance response readiness follow. See the summary table on page 34 for national-level response readiness data (Table 8).

Communicating Emerging Health Information

Rapid detection and communication of health threats allows public health officials to identify disease patterns and implement measures to lessen their spread and impact.

States and localities used rapid electronic methods to monitor and communicate emerging health information. All state and locality public health departments could receive urgent disease reports 24/7. In addition, state public health laboratories in 47 states and the District of Columbia used

rapid methods to communicate with sentinel laboratories and other partners for outbreaks, routine updates, and training events.

Participation in testing helped ensure that states received electronic information rapidly.

The ability of state and local public health staff to receive urgent emerging health information from CDC helps ensure that local problems are mitigated and national events are detected sooner. CDC conducts tests to identify and address problems in its Health Alert Network (HAN) and Epidemic Information Exchange (*Epi-X*) systems. These tests ensure that the systems will be fully operational during a real event.

The HAN system, a component of CDC's Public Health Information Network, transmits health alerts, advisories, and updates on urgent health events to more than one million recipients, including state and local public health practitioners, clinicians, and laboratories. The number of PHEP-funded areas responding to HAN test messages within 30 minutes increased from 2007 to 2009 (see Table 4).

Epi-X, a secure, CDC web-based communication system, enables state and local health departments, poison control centers, and other public health professionals to access and share preliminary health surveillance information quickly. *Epi-X* scientific staff are available 24/7 to provide assistance in editing

Table 4: Communicating Emerging Health Information; 2007-2009

	2007*	2009**	Percent Increase
State Public Health Departments Responding to HAN Test Message within 30 Minutes	39 out of 50 (78%)	48 out of 50 (96%)	23%

*Data for the 50 states as of August 2007 (District of Columbia also participated and passed)

**Data for the 50 states as of July 2009

Source: CDC, OPHPR (DEO)

and posting reports on the secure website. Staff also notify users routinely (by email) or as incidents arise (by pager, telephone, and email) about acute health events. To protect the sensitive nature of this information, access is limited to designated officials engaged in identifying, investigating, and responding to health threats. In FY 2008, 48% of approximately 5,500 active *Epi-X* users in the 50 states and the District of Columbia responded to a system-wide notification test that entailed logging into the system and viewing a report within the 3-hour targeted time frame.

Planning

Responding to a public health emergency often requires complex logistical planning for activities such as the distribution of medicines or other supplies to a community. Because these activities involve many different community agencies, everyone involved in emergency response must plan strategies and regularly exercise them together. All 62 states, localities, and U.S. insular areas funded by the Public Health Emergency Preparedness (PHEP) cooperative agreement have plans for receiving, distributing, and dispensing medical

Preparing for Rapid Response to Radiological Incidents

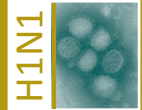
Many states are pre-positioning treatments for radiological exposures to reduce the estimated response time should an incident occur. Calcium and zinc DTPA (diethylene triamine pentaacetic acid) are agents to treat people with internal contamination from plutonium, curium, or americium exposure. As of March 2010, 89% of the 62 PHEP-funded state, locality, and U.S. insular area public health departments received 78,880 doses of calcium and zinc DTPA from CDC's Strategic National Stockpile.

Source: CDC, Office of Public Health Preparedness and Response, Division of Strategic National Stockpile (2010)

assets from CDC's Strategic National Stockpile and other sources. Assets include antibiotics, chemical antidotes, antitoxins, life-supporting medications, and medical supplies.

States can request these assets when local supplies are depleted or commercially unavailable. These assets, in combination with federal, state, and local technical expertise to manage and distribute them efficiently, help ensure the availability of key medical supplies during emergencies.

Planning and Training Critical to California's Rapid Response to the H1N1 Influenza Pandemic



All states, localities, and insular areas receiving PHEP funding develop and exercise plans to receive, store, distribute, and dispense supplies from the Strategic National Stockpile in the event of a public health emergency. Comprehensive planning and extensive training and testing prepared the California Department of Public Health to respond rapidly to the 2009 H1N1 influenza pandemic. The state health department established an emergency operations center and activated the state warehouse. Operating on a 24/7 schedule, the state warehouse deployed about two million courses of antiviral drugs to local health departments in the first month of the pandemic alone, with the majority of shipments received by local health departments within 24 hours of request. Like the state health department, California's local health departments report that previous Stockpile planning made efficient receipt, distribution, and dispensing of antiviral drugs possible.

Source: Association of State and Territorial Health Officials (2010)

Table 5: CDC Technical Assistance Review of State Strategic National Stockpile Plans; 2006-2009

	2006-2007	2007-2008	2008-2009
Acceptable (score of 69 to 100)	37 out of 50 (74%)	46 out of 50 (92%)	50 out of 50 (100%)
Unacceptable (score of 0 to 68)	13 out of 50 (26%)	4 out of 50 (8%)	–

Source: CDC, OPHPR (DSNS)

Ability of states to receive, distribute, and dispense medical assets improved. CDC conducts annual technical assistance reviews (TAR) to assess Stockpile plans and works closely with state and local agencies to identify and address gaps. Areas of assessment include the public health department’s coordination with traditional and nontraditional community partners; the state’s ability to receive, store, stage, distribute, and dispense medical assets; the state’s legal statutes that aid rapid dispensing of assets; and the type and frequency of trainings and exercises.

The number of states performing within an acceptable range in their plans to receive, stage, distribute, and dispense medical assets received from the Stockpile or other sources increased from 37 to 50 between 2006 and 2009 (Table 5). (On a scale of zero to 100, a score of 69 or higher indicates that a state performed within an acceptable range.⁴¹) See individual fact sheets in Section 2 for state-specific scores.

Major metropolitan statistical area scores improved over time. The Cities Readiness Initiative (CRI) of CDC’s Strategic National Stockpile focuses on enhancing preparedness in the nation’s largest cities and metropolitan statistical areas (MSAs), where more than 50% of the U.S. population resides. Through CRI, state and large metropolitan public health departments have developed plans to respond to a large-scale bioterrorist event within 48

hours. CRI has also enhanced communication and collaboration among state and local public health departments, resulting in optimal use of shared resources.

The CRI project began in 2004 with 21 cities and expanded to a total of 72 MSAs, with at least one CRI MSA in every state.

- 2004: CDC funded 21 cities (Cohort I)
- 2005: CDC funded 15 additional MSAs (Cohort II), for a total of 36 MSAs
- 2006: CDC funded an additional 36 MSAs (Cohort III), for a total of 72 MSAs

MSAs can consist of one or more jurisdictions (e.g., counties, cities, and municipalities) and can extend across state borders, resulting in the representation of several states within one MSA. Reviews are conducted annually in each local jurisdiction to ensure continued readiness. Scores (ranging from 0 to 100) for each planning jurisdiction are combined to compute an average score for the CRI MSA. A score of 69 or higher indicates that the CRI location performed in an acceptable range in its plan to receive, distribute, and dispense medical assets from the Stockpile or other sources. Average scores for each CRI cohort demonstrate that scores improve the longer MSAs are in the program. The average scores for each CRI cohort are presented in Table 6. (See appendix 6 for individual jurisdiction scores.)

Average scores for each CRI cohort demonstrate that scores improve the longer MSAs are in the program.

Table 6: CDC Technical Assistance Reviews of Strategic National Stockpile Plans for Cities Readiness Initiative Locations; 2008

	Cohort I (established in 2004)	Cohort II (established in 2005)	Cohort III (established in 2006)
Acceptable (score of 69 to 100)	18 out of 21 (86%)	10 out of 15 (67%)	17 out of 36 (47%)
Unacceptable (score of 0 to 68)	3 out of 21 (14%)	5 out of 15 (33%)	17 out of 36 (47%)
Did not report scores	-	-	2 out of 36 (6%)

Source: CDC, OPHPR (DSNS)

Exercises and Incidents

State emergency operations centers (EOCs) conduct exercises and drills to practice response to emergency incidents. These hands-on sessions educate responders about response plans and their roles during an incident and identify needed improvements. Exercises help organizations assess their capabilities objectively, so that strengths and areas for improvement are identified, corrected, and shared as appropriate before a real incident. Exercises also help build working relationships across disciplines that do not work together routinely.

During a real incident, the state EOC serves as a facility for carrying out response planning

and management of emergency situations, including ensuring continuity of operations. The common functions of all EOCs are to collect, gather, and analyze data; make decisions that protect life and property; maintain continuity of the organization and disseminate decisions to all concerned agencies and individuals.

One of the most critical components of an EOC is its staff. They must be properly trained and have the authority to carry out actions necessary to respond to an emerging disaster. All 50 states and 4 localities must comply with National Incident Management System requirements, which includes training for staff in their roles and responsibilities during



Operation "Cache-Out" Exercise

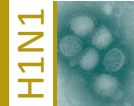
With funding from the Cities Readiness Initiative, two local health departments in Utah collaborated with community partners to conduct exercises that tested the ability to use bank and credit union drive-through windows for dispensing antibiotic or antiviral drugs to the public during an emergency.

These exercises required coordination by public health, the private sector, law enforcement, fire and emergency medical services, search and rescue, emergency management, and public information groups.



Photo source: Utah Department of Health

New Mexico and Illinois Ensure Availability of Drugs for the 2009 H1N1 Influenza Pandemic



To ensure that local providers could respond rapidly to the 2009 H1N1 influenza pandemic, the New Mexico Department of Health pre-positioned (placed ahead of need) antiviral drugs with 178 public and private organizations that agreed to receive, distribute, and dispense the drugs. These arrangements helped ensure that their population, especially high-risk groups, had quick access to the medications. The state provided assets to acute care hospitals, health centers and clinics, pharmacies, and the Indian Health Service.

Illinois pre-positioned both antiviral drugs and personal protective equipment with local health departments and hospitals as it anticipated an increase in 2009 H1N1 influenza during the holidays and winter. The state also developed a backup transportation plan that did not rely on state-owned trucks – often needed for plowing snow – to resupply and pre-position the medical countermeasures.

Source: CDC, Office of Public Health Preparedness and Response, Division of Strategic National Stockpile (2009)

an emergency as outlined by the Incident Command System (ICS). The ICS specifies that states and localities have a pre-identified list of personnel required to cover eight core ICS functional roles: Incident Commander, Public Information Officer, Safety Officer, Liaison Officer, Operations Section Chief, Planning Section Chief, Logistics Section Chief, and Finance/Administration Section Chief.

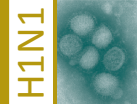
All of the functional areas may or may not be used based on incident needs. The widespread use of ICS by all levels of government – federal, state, local, and tribal – as well as by many nongovernmental organizations and the private sector, enables personnel to work together using common terminology, procedures, and organizational structures.

CDC's EOC supports state response by serving as the point of contact for state agencies reporting potential public health threats. This centralized facility organizes the agency's scientific experts in one location during an emergency, allowing efficient information exchange and connection with local, state,

federal, and international partners. For multistate or severe emergencies, CDC can provide additional public health resources and coordinate response efforts across multiple jurisdictions. To support state and local efforts during an emergency, CDC's EOC also coordinates deployment of CDC staff and equipment.

States and localities demonstrated abilities to ensure rapid response. To ensure timely and effective coordination within the public health agency and with key response partners in a complex incident, PHEP-funded states and localities must demonstrate the capability to rapidly notify staff to report for EOC duty. They must also track staff responses to this notification to ensure that each of the eight ICS functional roles can be filled. Rapid notification of staff depends, in part, on maintaining accurate contact information for pre-identified public health agency staff to fill each ICS functional role.

Activation of Emergency Plan Speeds New York Response to the 2009 H1N1 Influenza Pandemic



When the 2009 H1N1 influenza pandemic struck in spring 2009, New York activated the state's public health emergency preparedness response plan. This action focused attention on the imminent public health threat and streamlined processes expediting successive emergency responses. A number of measures were implemented that enabled state, city, and county health departments to keep close surveillance of emerging cases and to react quickly to reduce the transmission rates and impact of the disease. Measures included developing a testing protocol to ensure identification of severe illness; monitoring resources for the most efficient use of medicines, masks, and other supplies; and implementing rapid internet reporting of suspected illness to provide complete, real time understanding of the unfolding situation. The Department of Health also maintained ongoing communication with counties, hospitals, other health care providers, and schools across the state to assure the most up-to-date information was available.

Source: New York State Office of the Governor (2009)

In 2008, 53 out of 54 states and localities conducted or responded to a minimum of two drills, exercises, or real incidents to demonstrate rapid notification of pre-identified staff that the EOC was activated.

States and localities activated public health EOCs. An activation is defined as rapidly staffing all eight core ICS functional roles⁴² in the public health EOC with one person per position. PHEP-funded states and localities activated and staffed EOCs and evaluated response performance through after action reports.

The number of states and localities that activated their public health EOC at least

twice as part of a drill, exercise, or real incident (a CDC performance measure – see page 12) increased from 2007 to 2008 (see Table 7). In addition, 47 out of 54 states and localities conducted at least one unannounced activation.

In a related performance measure, in 52 out of 54 states and localities, pre-identified staff reported to the public health EOC within the target time of 2.5 hours at least once.⁴³ Although not every incident requires full staffing of the ICS, this capability is critical to maintain in case of large-scale or complex incidents.

Table 7: Activation of State and Locality Emergency Operations Centers; 2007-2008

	2007*	2008**	Percent Increase
Public health EOC activated at least twice as part of a drill, exercise, or real incident	46 out of 54 (85%)	48 out of 54 (89%)	5%

*Data for the 50 states and 4 localities of Chicago, the District of Columbia, Los Angeles County, and New York City from the PHEP cooperative agreement Budget Period 7 (August 31, 2006 to August 30, 2007)

**Data for the 50 states and 4 localities of Chicago, the District of Columbia, Los Angeles County, and New York City from the PHEP cooperative agreement Budget Period 8 (August 31, 2007 to August 9, 2008)

Source: CDC, OPHPR (DSLRL)

Evaluating Response Capabilities

States and localities evaluate their actions during both exercises and real incidents, identify needed improvements, and prepare plans for making improvements by developing after action reports and improvement plans (AAR/IPs). AAR/IPs should include how response operations did and did not meet objectives, recommendations for correcting gaps or weaknesses, and a plan for improving response operations.

In 2008, 52 out of 54 states and localities developed AAR/IPs at least twice following an exercise or real incident. In addition, 51 out of 54 states and localities re-evaluated response capabilities following the approval and completion of corrective actions identified in AAR/IPs.

National Snapshot of Response Readiness Activities

A summary table of national-level data on response readiness activities in 2008 and 2009 appears on the following page (Table 8). Note that these items represent available data for preparedness activities and do not fully represent all state and locality response efforts. For individual state and locality information in the area of response readiness, see Section 2 starting on page 42. See appendix 1 for an explanation of data points.

Table 8: National Snapshot of Response Readiness Activities

Response Readiness: Communication	
Communicating emerging health information	<p>54 out of 54 state and locality public health departments had a 24/7 reporting capacity system that could receive urgent disease reports any time of the day</p> <p><i>State and locality data; 10/1/2007- 9/30/2008</i></p>
	<p>48 out of 50 states responded to Health Alert Network (HAN) test message within 30 minutes</p> <p><i>CDC, OPHPR (DEO); 7/2009</i></p>
	<p>47 out of 51 state public health laboratories and DC used HAN or other rapid method (blast email or fax) to communicate with sentinel laboratories and other partners for outbreaks, routine updates, training events, and other applications</p> <p><i>APHL; 8/31/2007-8/30/2008</i></p>
	<p>48% of approximately 5,500 Epidemic Information Exchange users in 50 states and DC responded to a system-wide notification test within 3 hours</p> <p><i>CDC, OPHPR (DEO); 4/3/2008</i></p>
Improving public health information exchange	<p>53 out of 54 states and localities participated in a Public Health Information Network forum (community of practice) to leverage best practices for information exchange</p> <p><i>CDC, OSTLTS; as of 9/30/2008</i></p>
Response Readiness: Planning	
Assessing plans to receive, distribute, and dispense medical assets from the Strategic National Stockpile and other sources	<p>States with acceptable* CDC technical assistance review scores:</p> <ul style="list-style-type: none"> 50 out of 50 states for 2008-2009 46 out of 50 states for 2007-2008 <p><i>*A score of 69 or higher (out of 100) indicates state performed in an acceptable range in its plan to receive, distribute, and dispense medical assets. See state fact sheets for individual scores.</i></p> <p><i>CDC, OPHPR (DSNS); 2007-2008 scores are associated with funding from the PHEP cooperative agreement Budget Period 8 (8/13/2007-8/9/2008); 2008-2009 scores are associated with funding from Budget Period 9 (8/10/2008-8/9/2009)</i></p>
	<p>Cities Readiness Initiative (CRI) locations with acceptable* scores:</p> <ul style="list-style-type: none"> 18 out of 21 locations in CRI Cohort I (MSAs that enrolled in 2004) 10 out of 15 locations in CRI Cohort II (MSAs that enrolled in 2005) 17 out of 36 locations in CRI Cohort III (MSAs that enrolled in 2006) <p><i>*A score of 69 or higher (out of 100) indicates CRI location performed in an acceptable range in its plan to receive, distribute, and dispense medical assets. See appendix 6 for individual scores.</i></p> <p><i>CDC, OPHPR (DSNS); as of 7/30/2008</i></p>
Enhancing response capability for chemical events	<p>1,941 CHEMPACK nerve-agent antidote containers placed in the 50 states and 4 localities</p> <p><i>CDC, OPHPR (DSNS); as of 7/30/2008</i></p>
Meeting preparedness standards for local health departments	<p>150 local health departments in 24 states met voluntary Project Public Health Ready preparedness standards</p> <p><i>NACCHO; as of 9/30/2008</i></p>
Response Readiness: Exercises and Incidents	
Notifying emergency operations center staff	<p>53 out of 54 states and localities notified pre-identified staff to fill all eight Incident Command System core functional roles at least twice due to a drill, exercise, or real incident</p> <p>Note: States and localities must report 2 and could report up to 12 notifications.</p> <p><i>CDC, OPHPR (DSLRL); 8/31/2007-8/9/2008</i></p>
	<p>53 out of 54 states and localities had pre-identified staff acknowledge notification at least once within the target time of 60 minutes</p> <p><i>CDC, OPHPR (DSLRL); 8/31/2007-8/9/2008</i></p>
	<p>52 out of 54 states and localities conducted at least one unannounced notification outside of normal business hours</p> <p><i>CDC, OPHPR (DSLRL); 8/31/2007-8/9/2008</i></p>
Activating the emergency operations center (EOC)	<p>48 out of 54 states and localities activated their public health emergency operations center (EOC) at least twice as part of a drill, exercise, or real incident</p> <p>Note: States and localities must report 2 and could report up to 12 activations.</p> <p><i>CDC, OPHPR (DSLRL); 8/31/2007-8/9/2008</i></p>
	<p>52 out of 54 states and localities had pre-identified staff report to the public health EOC at least once within the target time of 2.5 hours</p> <p><i>CDC, OPHPR (DSLRL); 8/31/2007-8/9/2008</i></p>
	<p>47 out of 54 states and localities conducted at least one unannounced activation</p> <p><i>CDC, OPHPR (DSLRL); 8/31/2007-8/9/2008</i></p>
Response Readiness: Evaluation	
Assessing response capabilities through after action report/improvement plans (AAR/IPs)	<p>52 out of 54 states and localities developed AAR/IPs at least twice following an exercise or real incident</p> <p>Note: States and localities must report 2 and could report up to 12 AAR/IPs.</p> <p><i>CDC, OPHPR (DSLRL); 8/31/2007-8/9/2008</i></p>
	<p>52 out of 54 states and localities developed at least one AAR/IPs within the target time of 60 days</p> <p><i>CDC, OPHPR (DSLRL); 8/31/2007-8/9/2008</i></p>
	<p>51 out of 54 states and localities re-evaluated response capabilities following approval and completion of corrective actions identified in AAR/IPs</p> <p><i>CDC, OPHPR (DSLRL); 8/31/2007-8/9/2008</i></p>

Additional CDC Resources Supporting Preparedness in States and Localities

CDC supports a variety of other programs and resources in the states and localities to enhance preparedness. These activities are described below and summarized in Table 9.

Research, Training, Education, and Promising Demonstration Projects

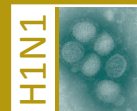
Centers for Public Health Preparedness (CPHP). The CPHP program strengthens preparedness by linking academic expertise to state and local health agency needs. This program is an important resource for the development, delivery, and evaluation of preparedness education. CPHPs collaborate with state and other health agencies to develop, deliver, and evaluate preparedness education based on community need. In FY 2008, 28 colleges and universities within the CPHP program provided preparedness

education to public health workers, healthcare providers, and students.

Preparedness and Emergency Response Research Centers (PERRC). PERRCs conduct research to evaluate the structure, capabilities, and performance of preparedness and emergency response activities in federal, state, and local public health systems. PERRC scientists must connect with multiple partners within the public health infrastructure to incorporate diverse perspectives into their research. In FY 2008, CDC awarded funding to seven accredited schools of public health for establishing PERRCs.⁴⁴

Advanced Practice Centers (APC). This network of local health departments develops resources and training that enhance the capabilities of all local health departments

Centers for Public Health Preparedness Respond to the 2009 H1N1 Influenza Pandemic



Academic-based Centers for Public Health Preparedness (CPHPs) provide learning opportunities to the public health workforce to strengthen their capabilities for responding to a crisis. During the 2009 H1N1 influenza pandemic, CPHPs provided subject matter expertise as well as training and technical assistance, and even helped enhance the state and local workforce capacity.

- Faculty from several CPHPs were called upon to advise college and university campuses on the 2009 H1N1 influenza response, provide counsel on risk communication efforts in disadvantaged populations, and conduct numerous interviews with television, radio, web-based, and print media.
- CPHPs developed free 2009 H1N1 influenza trainings for the public health workforce, and advised state and local health departments on continuity of operations planning and point-of-distribution site operations for flu vaccines.
- Graduate students across the country volunteered their services to staff information hotlines and help investigate possible cases.

Source: Association of Schools of Public Health, H1N1 Report: Centers for Public Health (2009)

and the public health system to prepare for, respond to, and recover from public health emergencies. In FY 2008, there were seven APCs nationwide.

Centers of Excellence in Public Health Informatics. These Centers contribute to the efforts of CDC's Public Health Informatics program by advancing the ability of healthcare professionals to communicate health recommendations to consumers, and by making the use of electronic information systems easier. They seek to improve the public's health through discovery, innovation, and research related to health information and information technology. In FY 2008, there were five Centers.

Pandemic Influenza Promising Practices Demonstration Projects. In FY 2008, selected state and local public health departments received Public Health Emergency Preparedness (PHEP) cooperative agreement pandemic influenza supplemental funding through a competitive process for 55 projects serving as innovative approaches for pandemic influenza preparedness. The goal was to develop promising practices or effective approaches that can be replicated nationally to improve national, regional, and local public health detection and response to an influenza pandemic.

Other CDC Resources Available to States and Localities

Epidemic Intelligence Service (EIS) Field Officers. The EIS program expands the epidemiology workforce through a two-year epidemiology training program modeled on a traditional medical fellowship. EIS officers (epidemiologists) serve as a critical component to CDC's support of states and localities during responses to routine public health incidents and large-scale national emergencies. In FY 2008, 71 officers were assigned to state and local public health departments, where they conducted 319 epidemiologic investigations (e.g., public health response, research, and surveillance system evaluations) and functioned as an integral part of the health department.

Deployments of CDC staff to states. CDC personnel are deployed routinely for emergency response operations and EPI-AID investigations. For EPI-AID investigations, CDC's EIS officers, along with other CDC staff, provide technical support to state health agencies requesting assistance for epidemiologic field investigations of disease outbreaks or other health emergencies. In FY 2008, there were 84 incidents with a total of 381 CDC staff deployed.

CDC's Public Health Advisors and Career Epidemiology Field Officers Facilitate Preparedness Activities at State and Local Levels

Since 2002, CDC has placed public health advisors (PHAs) and Career Epidemiology Field Officers (CEFOs) in state and local health departments. (States use PHEP funds to support CEFO positions.) PHAs serve as liaisons for CDC and provide on-site program technical assistance, guidance, and coordination. Examples of their activities include building epidemiologic capacity; building partnerships with other agencies and stakeholders; leading or participating in state and/or local emergency response exercises; supporting planning and response for preparedness activities, including pandemic influenza; and providing substantive and strategic program advice and assistance.

Source: CDC, Office of Public Health Preparedness and Response

Table 9: Additional CDC Projects and Activities Enhancing Preparedness in States and Localities; 2008

Research, Training, Education, and Promising Demonstration Projects		Number
Centers for Public Health Preparedness	<i>CDC, OPHPR (OD); FY 2008</i>	28
Preparedness and Emergency Response Research Centers	<i>CDC, OPHPR (OD); FY 2008</i>	7
Advanced Practice Centers	<i>NACCHO; FY 2008</i>	7
Centers of Excellence in Public Health Informatics	<i>CDC, OSELS; FY 2008</i>	5
Pandemic Influenza Promising Practices Demonstration Projects	<i>CDC, OPHPR (DSLRL); FY 2008</i>	55
Additional CDC Resources Supporting Preparedness in States and Localities		Number
Epidemic Intelligence Service	<i>CDC, OSELS; FY 2008</i>	
• Epidemic Intelligence Service Field Officers		71
• Investigations conducted by Epidemic Intelligence Service Field Officers		319
Deployments	<i>CDC, OPHPR (DEO); FY 2008</i>	
• Total number of incidents with deployments		84
• Total number of CDC staff deployed		381
Career Epidemiology Field Officers	<i>CDC, OPHPR (OD); as of 9/30/2008</i>	26*
Quarantine Stations	<i>CDC, OI (NCEZID); FY 2008</i>	19**

*One additional CEFO is located in American Samoa
 **One additional quarantine station is located in Puerto Rico

Career Epidemiology Field Officers (CEFOs). CDC places experienced, full-time epidemiologists in state and local public health departments to enhance and build epidemiologic capacity for public health preparedness and response. (States use PHEP funds to support CEFO positions.) CEFOs also serve as liaisons and consultants between CDC and public health departments, and as mentors for state and local public health department staff and EIS officers assigned to state or local health departments. In FY 2008,

26 CEFOs were located in 21 states and one CEFO was located in American Samoa.

Quarantine Stations. In FY 2008, CDC’s 19 domestic quarantine stations (one additional quarantine station is located in Puerto Rico), strategically located at U.S. ports of entry where the majority of international travelers arrive in the United States, helped detect and respond to diseases of public health significance.

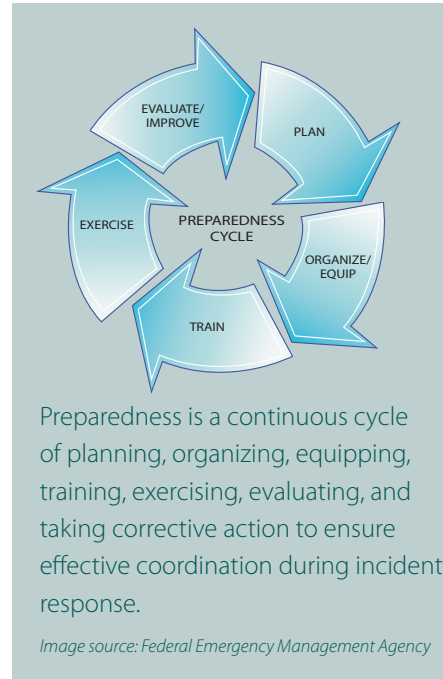
Moving Forward

State and local health departments are first responders for public health emergencies and CDC remains committed to strengthening their preparedness. Since 1999, CDC's Public Health Emergency Preparedness (PHEP) cooperative agreement has helped strengthen state and local public health functions that are critical for preventing, responding to, and recovering from health threats.

Much progress has been made to build and strengthen national public health preparedness and response capabilities. Accomplishments highlighted in this report include the following:

- Biological laboratory capabilities and capacities in place were strong in most states and localities. Most laboratories in the Laboratory Response Network (LRN) could be reached 24/7, rapidly identified certain disease-causing bacteria and sent reports to CDC, and passed proficiency tests for detecting other biological agents. (See Table 3 on page 26.)
- A majority of LRN chemical laboratories demonstrated proficiency in core methods for detecting and measuring exposure to chemical agents, and some were proficient in one or more additional methods identified by CDC as important for responding to chemical emergencies. (See Table 3 on page 26.)
- All states and localities could receive urgent disease reports 24/7, and most states used rapid methods (blast email or fax) to communicate with other laboratories for outbreaks, routine updates, and other needs. (See Table 8 on page 34.)
- All states and localities received acceptable CDC review scores for their plans to receive, distribute, and dispense medical assets from CDC's Strategic National Stockpile and other sources. (See Table 8 on page 34.)

- Most states and localities demonstrated the ability to activate and rapidly staff their emergency operations centers for drills, exercises, or real incidents, and developed after action reports/improvement plans following these activities. (See Table 8 on page 34.)



CDC has identified the areas listed below for improving state and local preparedness.

Maintain preparedness gains and resolve gaps. Important gains have been made since CDC's 2008 preparedness report in the areas of laboratory and response readiness. Data presented in this report show improvement in rapid laboratory testing for biological agents; and readiness to receive, distribute, and dispense assets from CDC's Strategic National Stockpile. CDC will continue to work with state and local health departments to maintain these improvements and to identify and resolve gaps in these and other core capabilities important for preparedness and response. Improvements are needed in continuity of operations plans for state public health laboratories.

Build on the successes and lessons learned from the response to the 2009 H1N1 influenza pandemic. The first influenza pandemic in 40 years provided a real world test of our response capabilities. CDC is working with all levels and sectors of the public health and medical communities toward systematically assessing this response, developing plans to address gaps and challenges, and incorporating needed changes. Assessments will include tools such as after action reports/improvement plans.

Ensure continuous funding to build and maintain a skilled state and local public health workforce. The surge in effort needed to respond to the 2009 H1N1 influenza pandemic placed an increased strain on a system already weakened by workforce shortages and budget shortfalls. The response revealed that the combination of the continued erosion of the general all hazards preparedness capacities, infrastructure, and staffing, along with fiscal issues facing state and local governments proved to be challenging for public health departments. Preparing adequately for future outbreaks – and other public health emergencies that are inevitable and may occur simultaneously – requires predictable and adequate long-term funding to improve infrastructure, staffing, and staff training in the areas of surveillance, epidemiology, laboratories, and response readiness.

Expand performance measurement to assess and monitor preparedness activities and to drive program improvement and accountability. CDC will continue to work with state and local partners to develop new performance measures that are indicators of preparedness and response capabilities and align with the objectives of the National Health Security Strategy⁴⁵ as well as the Pandemic and All-Hazards Preparedness Act.⁴⁶ The goal of these efforts is to implement measures that



address short-term activities and outcomes that can impact core preparedness functions in the long term.

Major gaps exist for measuring preparedness in the areas of surveillance and epidemiology. Draft performance measures in these areas, as well as in laboratory activities are being pilot tested and will be refined based on results obtained and input from partners.

While this report relied on available performance measurement data, future reports will provide information on more robust data generated from planned improvements in the new five-year PHEP program announcement that will go into effect in August 2011. As part of the development and implementation of the new program announcement, CDC is developing a PHEP capabilities model to better define the strategic focus and priorities of the PHEP program and a related planning tool to be used by states, localities, and territories to inform their program planning and priority setting. The PHEP planning tool also will be used to monitor progress in achieving PHEP objectives and capabilities annually and progressively over the course of the five-year cooperative agreement, driving program improvement and accountability.

Since 1999, CDC's PHEP cooperative agreement has helped strengthen state and local public health functions that are critical for preventing, responding to, and recovering from health threats.

Promote health and prevent disease, injury, and disability in communities. Healthy populations are more resilient to new health threats. State and local health departments must continue to strengthen their collaboration with individuals, families, and communities as essential partners in building

resilience to all types of public health hazards. Building healthier communities also helps provide greater protection to populations who are more vulnerable during emergencies and supports broader CDC health protection goals and national health reform efforts.