Background

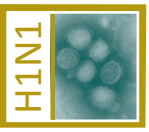
> Preparedness continues to be a core focus for CDC. The best approach to preparedness is the best approach for public health – identify the problems you can do something about, develop and implement programs, rigorously evaluate their effectiveness, and look for ways to improve them.

- Thomas Frieden, MD, MPH
CDC Director

Public health threats are always present. They include natural disasters; biological, chemical, and radiological incidents; and explosions. The impact of these threats can range from local outbreaks to incidents with national or global ramifications. The 2009 H1N1 influenza pandemic underscored the importance of communities preparing for potential threats to the public's health. Being prepared to prevent, respond to, and rapidly recover from public health threats can protect the health and safety of the public and emergency responders. The Centers for Disease Control and Prevention (CDC) plays a pivotal role in preparing our nation for all types of public health threats.[17]

This report was developed as the nation was responding to the 2009 H1N1 influenza pandemic. Preparedness activities conducted in 2008 and 2009, the primary timeframes reflected in this report, helped strengthen state and CDC capabilities for responding to the outbreak and increased the resiliency of communities across the nation. Text boxes on state and local response to the pandemic appear throughout this report.

Pandemic Planning Helps States Respond Rapidly to the 2009 H1N1 Influenza Pandemic



In April 2009, CDC and the public health workforce faced the first influenza pandemic in 40 years. As the initial cases of H1N1 influenza began to emerge in the United States, local, state, and federal public health entities quickly took measures to understand the patterns of the illness, slow its spread, and mitigate its effects.

States began to implement their pandemic plans as the number of 2009 H1N1 influenza cases increased throughout the spring in the United States, Mexico, and other countries. At the time, its course was far from certain, with the possibility of multiple waves of outbreaks throughout the fall and winter.

Federal investments in pandemic planning (see page 11) helped states lessen the impact of the pandemic through increased disease monitoring, ongoing communication updates to keep the public informed, more effective use of existing resources, appropriate use of mitigation measures, implementation of H1N1 vaccination campaigns, and coordination of response efforts with new and established partners nationwide and in other countries. Also critically important were the expansion of state laboratory capabilities for detecting and confirming the virus, and, when necessary, activation of processes for states and localities to receive medical supplies such as antiviral drugs and respirators from CDC's Strategic National Stockpile. Pandemic planning also allowed time for thoughtful deliberation and identification of challenging decision points, all of which supported accelerated decision making during real events.

Response to public health emergencies begins at the local level. Pictured is an H1N1 vaccination clinic in Calistoga, California. Federal investments in pandemic planning helped states lessen the impact of the pandemic.

Photo source: California Department of Public Health

Many lessons from the 2009 H1N1 influenza pandemic are being identified. An overarching lesson is the need for a sustained commitment to continued planning, training, and exercising to help ensure rapid and effective responses to future challenges that may threaten the public's health.

Preparedness and Response Efforts Require Work at All Levels

While response begins at the local level, public health preparedness requires a coordinated effort involving every level of government, the private sector, non-governmental organizations, and individuals. Being prepared to prevent, respond to, and recover from all types of public health threats requires that states improve their capabilities in the core public health functions of surveillance and epidemiology, laboratories, and response readiness.

Federal response to public health emergencies. Lead federal responsibility for emergency response lies with the U.S. Department of Homeland Security (DHS), whose National Response Framework established a single, comprehensive structure for responding to all types of hazards.[18] In addition, the DHS National Preparedness Guidelines provide the vision, capabilities, and priorities for national preparedness.

Under the National Response Framework, the U.S. Department of Health and Human Services (HHS) coordinates federal assistance supplementing state, tribal, and local resources in response to public health and medical disasters.[19] The Assistant Secretary for Preparedness and Response (ASPR) is the principal advisor to the HHS Secretary on all matters related to bioterrorism and other public health emergencies. ASPR works with other federal departments and agencies and is charged with the overall coordination and oversight of emergency preparedness and response activities within HHS. ASPR responsibilities include the coordination of public health response activities related to CDC, which is an operating division of HHS.

CDC is working collaboratively to implement the National Health Security Strategy (NHSS).[20] The NHSS is a comprehensive strategy established to galvanize efforts to minimize the health consequences associated with significant health incidents. National health security is a state in which the nation and its people are prepared for, protected from, and resilient in the face of health threats or incidents with potentially negative health consequences. The NHSS' vision for health security is based on a foundation of community resilience – healthy individuals, families, and communities with access to health care and with the knowledge and resources to know what to do to care for themselves and others in both routine and emergency situations. The vision also emphasizes strong and sustainable public health, health care, and emergency response systems.

CDC mission and preparedness. CDC's mission is to collaborate to create the expertise, information, and tools that people and communities need to protect their health. CDC seeks to accomplish this mission in preparedness by building and strengthening capabilities that can be used broadly for all types of hazards, whether they are biological agents, natural disasters, environmental exposures, chemical and radiological materials, or explosions. In addition, CDC develops capabilities that are tailored to particular hazardous incidents.

Public Health Preparedness

The capability of the public health system, communities, and individuals to prevent, protect against, quickly respond to, and recover from health emergencies, particularly those in which scale, timing, or unpredictability threatens to overwhelm routine capabilities.[21]

CDC support to states, localities, and U.S. insular areas. CDC also works with state, local, and U.S. insular area public health departments by providing funding, technical assistance, and coordination of activities for responding to public health threats. For severe emergencies, states, localities, and U.S. insular areas[22] can request additional public health resources from CDC to assist with a response.

To examine how this federal investment is improving the nation's ability to respond to public health emergencies, CDC has been developing and implementing capability-based performance measures. The passage of the Pandemic and All-Hazards Preparedness Act (PAHPA, 2006)[23] by Congress highlighted the

CDC's mission is to collaborate to create the expertise, information, and tools that people and communities need to protect their health.

Photo source: CDC

Background

importance of CDC's work in developing such metrics. PAHPA requires the development of measurable preparedness benchmarks and objective standards for recipients of CDC Public Health Emergency Preparedness (PHEP) cooperative agreement funding. Funding to state and local agencies was linked to their performance in these standards beginning in fiscal year (FY) 2009.[24] (For more information on performance measures, see page 12.)

Partnering to improve emergency response. CDC and public health departments work with multiple partners from a variety of sectors. Key partners include the American Red Cross, Association of Public Health Laboratories, Association of Schools of Public Health, Association of State and Territorial Health Officials, Council of State and Territorial Epidemiologists, National Association of County and City Health Officials, and National Emergency Management Association. These organizations share promising practices, conduct research, and provide training to public health professionals to improve preparedness and emergency response.

CDC's PHEP cooperative agreement funds 62 state, locality, and U.S. insular area public health departments to build and strengthen their abilities to respond effectively to public health emergencies.

Funding Supporting Public Health Preparedness and Response

Congress has supported CDC public health preparedness and response activities by appropriating approximately $1.5 billion per year since 2002. This Terrorism Preparedness and Emergency Response funding supports a wide variety of activities at CDC and at state and local levels.

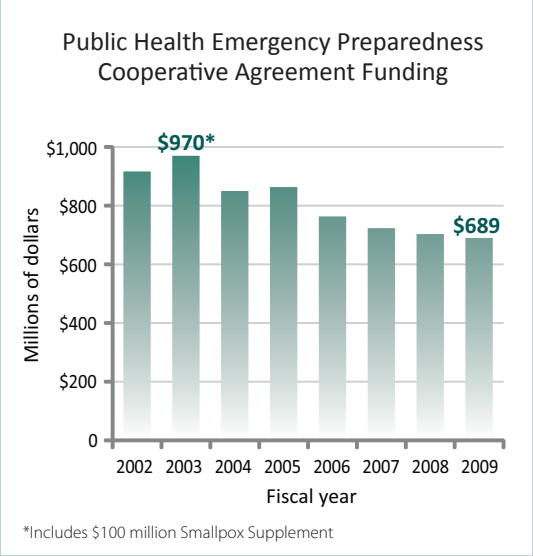
CDC's Office of Public Health Preparedness and Response (OPHPR; formerly the Coordinating Office for Terrorism Preparedness and Emergency Response)[25] is responsible for managing these funds. Congress appropriates over three-quarters of this funding for two CDC programs, the PHEP cooperative agreement and the Strategic National Stockpile. OPHPR allocates the remainder of this funding to preparedness programs across CDC. (See appendices 3 and 4 for more details on funding levels.)

Congress has also provided emergency supplemental funding to address preparedness needs related to specific health threats such as pandemic influenza.

PHEP cooperative agreement. CDC's PHEP cooperative agreement funds 62 state, locality, and U.S. insular area public health departments to build and strengthen their abilities to respond effectively to public health emergencies.[26] PHEP funding has declined from $970 million in FY 2003 to $689 million in FY 2009. (See box below and appendix 4 for historical PHEP funding levels.)

PHEP-funded emergency preparedness and response efforts support the National Response Framework and are targeted specifically for the development of emergency-ready public health departments that are flexible and adaptable. The Division of State and Local Readiness within OPHPR manages the PHEP cooperative agreement, provides direction on preparedness activities, and coordinates technical assistance.

Included in the PHEP cooperative agreement funding is support for the Cities Readiness Initiative of CDC's Strategic National Stockpile. This program focuses on enhancing



PHEP funding has declined from $970 million in FY 2003 to $689 million in FY 2009.

Source: HHS and CDC

Supplemental funding was used to provide additional resources for mass vaccination planning and implementation, and to support the 2009 H1N1 vaccination campaign. Pictured is an H1N1 vaccination clinic in Cambridge, Massachusetts.

Photo source: Cambridge Public Health Department

preparedness for responding to a large-scale bioterrorist event within 48 hours in the nation's largest cities and metropolitan statistical areas, where more than half of the U.S. population resides.[27]

Strategic National Stockpile. CDC's Strategic National Stockpile is a national repository of critical medical supplies designed to supplement state and local public health departments in the event of a large-scale public health emergency. Funds are also used to support technical assistance at state and local levels to receive, distribute, and dispense the supplies. Stockpile assets help ensure that key medical supplies are available to prepare for and respond to emergencies. Stockpile funding averaged approximately $495 million for FY 2002-2009. (See appendix 3 for Stockpile funding levels.)

Additional funding for pandemic influenza. Recognizing the need to prepare for a possible influenza pandemic, Congress appropriated two other sources of funding specifically for pandemic influenza preparedness activities. Beginning in 2005 and continuing through 2008, CDC awarded approximately $524 million in Pandemic Influenza Supplement funds to the 62 PHEP-funded states, localities, and U.S. insular areas for program operations to prepare for and respond to an influenza pandemic. (See appendix 4 for Pandemic Influenza Supplement funding levels.)

Subsequently, as the nation faced the 2009 H1N1 influenza pandemic, Congress provided funding through the 2009 Supplemental Appropriations Act[28] for the Public Health and Social Services Emergency Fund to prepare for and respond to an influenza pandemic. Since July 2009, CDC has administered $1.4 billion from this fund through the Public Health Emergency Response (PHER) grant specifically for the 2009 H1N1 pandemic influenza response. (See appendix 5 for PHER funding levels.) PHER funds were used for assessing response capabilities and addressing remaining gaps in vaccination; antiviral drug distribution/dispensing; and laboratory, epidemiology, and surveillance activities. Funds were also used to provide additional resources for mass vaccination planning and implementation, and to support the implementation of 2009 H1N1 vaccination campaign.

Cutbacks in state public health investments. The 2008-2009 economic crisis had a negative impact on state investments in public health programs. As states faced sharp downturns in tax revenues, many cut budgets and reduced services, including those affecting the public health system. A survey of 57 state and U.S. insular area health agencies conducted

by the Association of State and Territorial Health Officials reported that 76% of health departments made cuts to the FY 2009 budget and 61% reported FY 2010 budgets smaller than FY 2009.[29] Nationwide, a 2010 survey of local health departments conducted by the National Association of County and City Health Officials reported that between January 2008 and December 2009 health departments lost 23,000 jobs to layoffs and attrition, roughly 15% of their entire workforce. In 2009, an additional 25,000 local health department employees were subjected to reduced hours or mandatory furloughs.[30] These cutbacks have significant implications for public health and preparedness.

The 2008-2009 economic crisis had a negative impact on state investments in public health programs.

Measuring Preparedness

CDC has developed and continues to design additional capability-based performance measures to monitor how well federal investments have improved the nation's ability to prepare for and respond to public health emergencies. This report presents 2008 data (the most current available) on the performance measures listed below. The data were submitted to CDC by state, locality, and U.S. insular area public health departments that received PHEP cooperative agreement funding.

Laboratory testing performance measure. States must be able to detect and determine the extent and scope of potential outbreaks to minimize their impact. The intent of the laboratory testing performance measure is to determine if a laboratory can rapidly receive, test, and report disease-causing bacteria (*Escherichia coli O157:H7* and *Listeria monocytogenes*) within a specified timeframe.

Response performance measure. A state, locality, or U.S. insular area's emergency operations center serves as the central command and control facility for carrying out strategic preparedness, planning, and management of emergency situations, including ensuring continuity of operations.

The intent of the response performance measures is to demonstrate capabilities for response activities related to the following areas:

- Notification of emergency operations center staff
- Activation of the emergency operations center
- Assessment of response capabilities through after action reports and improvement plans (AAR/IPs)
- Re-evaluation of response capabilities following the approval and completion of corrective actions identified in a AAR/IPs

Additional performance measures are currently being implemented as well as pilot tested. Performance measures being implemented address the capabilities of crisis and emergency risk communication with the public, incident management, and laboratory services. Performance measures for epidemiological investigation, environmental exposure investigations, surveillance, and additional laboratory services are currently being pilot tested and will be implemented in the near future.

About This Report

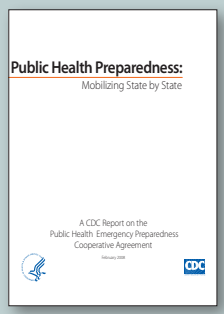
This report presents a snapshot of public health preparedness based on available information on state, locality, and U.S. insular area activities receiving Terrorism Preparedness and Emergency Response funding. Data included in the fact sheet section of the report are from CDC (i.e., data related to the PHEP cooperative agreement and data from other CDC programs) as well as from the Association of Public Health Laboratories and the National Association of County and City Health Officials. CDC data were confirmed by both CDC subject matter experts and the PHEP-funded states and localities.

While these data do not represent all preparedness activities occurring in states,

localities, and U.S. insular areas, they significantly expand on the information provided in CDC's first state preparedness report.[31] Both reports provide the most comprehensive picture available on the breadth of state public health preparedness and response efforts. Fact sheets in this report cover activities occurring primarily from October 1, 2007 to September 30, 2008 (FY 2008). In addition, some data from 2009 are included in this report. All data sources and timeframes are described in appendix 7.

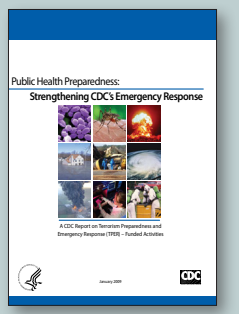
CDC has now released three preparedness reports; this is CDC's second report featuring state-by-state data. It includes updates (when available) to data presented in CDC's first state report, *Public Health Preparedness: Mobilizing State by State (2008)*[32] as well as new data on state and local preparedness activities. CDC's 2009 report, *Public Health Preparedness: Strengthening CDC's Emergency Response*[33] broadly described CDC activities supported by Terrorism Preparedness and Emergency Response funding. CDC, ASPR, and public health partners continue to work together to better define and measure national public health preparedness to ensure that federal funds are invested wisely in ensuring our national readiness to prevent, mitigate, and respond to all types of public health emergencies.

CDC Preparedness Reports



2008

CDC preparedness reports demonstrate results, drive program improvements, and increase accountability for federal investments.



2009

This report is organized into two main sections and seven appendices:

Section 1 begins with a description of surveillance and epidemiology activities and their importance to emergency preparedness. Following that are descriptions and national-level data on laboratories and response readiness activities critical to preparedness in states and localities. Section 1 concludes with information on additional preparedness activities funded by CDC that enhance preparedness at state and local levels.

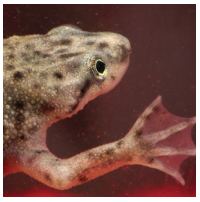
Section 2 presents fact sheets with information on a broad range of preparedness activities in the 50 PHEP-funded states and the 4 localities of Chicago, the District of Columbia, Los Angeles County, and New York City. The fact sheets also include data on the prevalence of several chronic conditions in the state or locality, which should be considered when developing effective response plans, and information on additional CDC-funded projects and activities located in those areas.

Section 2 concludes with a discussion of preparedness activities and challenges in the eight PHEP-funded U.S. insular areas. These areas include the three territories of American Samoa, Guam, and the U.S. Virgin Islands; the two commonwealths of the Northern Mariana Islands and Puerto Rico; and three freely associated states of the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau.

Appendices 1-7 provide explanations of the fact sheet data points in the report and their significance, an overview of CDC organizations involved in preparedness activities, funding tables, technical assistance review scores for the Cities Readiness Initiative of CDC's Strategic National Stockpile, and data sources.

Public Health in Action: Responding to Emergencies Across the Nation

Selected Biological Incidents



SALMONELLA

*December 2009, Multiple states – **Salmonella Typhimurium outbreak linked to frogs.*** Public health officials investigated infections and determined source of outbreak.

ANTHRAX

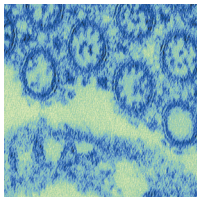
*December 2009, New Hampshire – **Anthrax linked to animal hides.*** State health departments determined that a case of gastrointestinal anthrax was linked to hides used in drum making and a drumming circle.

MUMPS

*August 2009-Spring 2010,[34] New Jersey and New York – **Mumps outbreak.*** Investigations and testing led to identification of thousands of cases, most in religious communities.

E. COLI

*June-July 2009, Multiple states – **E.coli O157:H7 outbreaks linked to raw prepackaged cookie dough and to beef.*** Public health officials and federal agencies investigated outbreaks and identified associations with food sources.



H1N1

Spring 2009, Multiple states - **2009 H1N1 Influenza Pandemic.** In April 2009, states began to implement their pandemic plans. Activities included disease monitoring, ongoing communication updates, appropriate use of mitigation measures, implementation of H1N1 vaccination campaigns, and the coordination of response efforts with partners.

SALMONELLA

*February 2009, Nebraska – **Salmonella Saintpaul outbreak linked to alfalfa sprouts.*** 235 persons from 14 states were infected; initial investigation by Nebraska health department led to investigations in 13 additional states.

SALMONELLA

*January 2009, Multiple states – **Salmonella Typhimurium outbreak linked to peanut butter.*** Public health epidemiologists, sanitarians, and laboratorians led investigations for product recalls that stopped the spread of outbreaks.

While state and local agencies devoted a significant amount of their time, energy, and resources to respond to the 2009 H1N1 influenza pandemic, many other events also required their attention and expertise. Support from CDC's Public Health Emergency Preparedness cooperative agreement helped state and local public health departments build and strengthen their abilities to respond effectively. Below are examples of biological incidents and natural disasters – including H1N1 – to which state and local health departments responded.

Selected Natural Disasters

December 2009, Northeast U.S. – **Severe Winter Weather.** Public health officials issued guidance for staying safe and healthy during severe snow storms. Guidance included protection against hypothermia, carbon monoxide poisoning from indoor heaters, and preparations for extended periods of confinement.

SEVERE WINTER WEATHER

September 2009, American Samoa – **Tsunami Response.** A magnitude 8.0 earthquake generated three separate tsunami waves. Public health and partners worked together to ensure appropriate medical response.

TSUNAMI

September 2009, Multiple states – **Southeast U.S. Floods.** Public health officials provided guidance on sanitation, hygiene, and safety to protect against disease and injury to the thousands affected by floods.

FLOODS

April-May 2009, Multiple states – **Wildfires.** Public health officials issued guidance about air quality and care and services for evacuees, evacuation centers, at-risk populations, and responders. The health department also issued guidance that addressed exposures, clean up from fires, and subsequent response.

WILDFIRES

February 2009, Kentucky – **Ice Storm.** Severe storm caused 36 deaths and left 770,000 residents without power. State health department secured equipment for shelters, provided prescription medications to individuals in shelters, and issued guidance on food safety and other public health issues related to power outages.

ICE STORMS

March 2009, Alaska – **Volcano.** Mt. Redoubt eruption cloud estimated at 50,000 feet. Public health officials monitored ash plume and issued air quality assessments, evacuation recommendations, and instructions for at-risk persons.

VOLCANO

March 2009, North Dakota – **Floods.** Public health officials coordinated evacuations, temporary housing, healthcare for acute injuries and other long-term health risks including hypothermia, bacteria, and mold.

FLOODS

Note: Information on pages 14-15 is adapted from a fact sheet from the Association of State and Territorial Health Officials.[35]