

Key Findings

Public Health Preparedness: Strengthening CDC's Emergency Response

A CDC Report on Terrorism Preparedness and Emergency Response
(TPER)- Funded Activities

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Public health threats are always present.

Being prepared to prevent, respond to, and recover rapidly from public health emergencies can save lives and protect the health and safety of the public and emergency responders. The effects that public health emergencies have on the well-being of our nation were obvious in the aftermath of such events as Hurricane Katrina in 2005, the outbreak of severe acute respiratory syndrome (SARS) in 2003, and the terrorist attacks of 2001.

The Centers for Disease Control and Prevention (CDC) plays a key role in preparing our nation for public health threats that include natural, biological, chemical, radiological, and nuclear incidents. To prepare for public health emergencies, Congress appropriates Terrorism Preparedness and Emergency Response (TPER) funds to CDC. This funding supports a range of activities at CDC and state and local levels to help develop the capabilities and capacities needed to respond effectively to public health threats. In fiscal year (FY) 2007, Congress allocated approximately \$1.5 billion for TPER projects.¹

CDC's work in preparedness builds upon decades of science developed to promote public health. "People prepared for emerging health threats – people in all communities will be protected from infectious, occupational, environmental, and terrorist threats" is one of CDC's four overarching health protection goals. To achieve this goal, CDC's Coordinating Office for Terrorism Preparedness and Emergency Response (COTPER) established preparedness objectives within five core public health functions: Health Monitoring and Surveillance, Epidemiology and Other Assessment Sciences, Public Health Laboratory Science and Service, Response and Recovery Operations, and Public Health System Support.

This brochure presents key findings from the CDC report, *Public Health Preparedness: Strengthening CDC's Emergency Response*. The key findings summarize FY 2007 TPER-funded public health preparedness accomplishments and priorities as CDC continues to strive toward its preparedness goal.

Improving Preparedness

Health Monitoring and Surveillance

Objective: Integrate and enhance the existing surveillance systems at local, state, national, and international levels to detect, monitor, report, and evaluate public health threats.

Enhancing nationwide surveillance of emerging health threats through BioSense and the National Poison Data System

¹ This figure does not include non-TPER projects. CDC has other funding sources for preparedness activities associated with pandemic influenza; infectious disease research and response; and surveillance, investigation, and response to clarify and reduce the impact of the environment on human health.

- BioSense provided situational awareness during national events such as the Super Bowl and the State of the Union Address. In addition, BioSense detected data anomalies related to health problems associated with California wildfires.
- The National Poison Data System enhanced government response to the melamine outbreak in pet food and toothpaste. Poison control centers submit data to the system every 4 minutes to 10 minutes.

Providing surveillance tools to state and local epidemiologists for detecting potential health threats

- Approximately 100 organizations used CDC's Early Aberration Reporting System to improve health threat detection through analysis of data from diverse sources such as emergency departments, 911 calls, physician offices, and over-the-counter drug sales.

Tracking hazardous substances and alerting emergency partners about accidental releases

- The Hazardous Substances Emergency Events Surveillance program provided more than 1,600 alerts leading to evacuations of more than 35,000 people.

Epidemiology and Other Assessment Sciences

Objective: Support and strengthen human and technological epidemiologic resources to prevent, investigate, mitigate, and control current, emerging, and new public health threats and to conduct research and development that lead to interventions for such threats.

Assessing the vaccine and treatment options for anthrax

- CDC assessed the current administration routes and dosage for the licensed anthrax vaccine, with the goal of maintaining effectiveness with fewer side effects.

Developing methods to detect the presence of anthrax in potentially contaminated areas

- CDC developed, field tested, and is refining a new sampling strategy to better detect anthrax contamination.

Evaluating emergency medicine kits for at-home use

- CDC evaluated a strategy to provide emergency MedKits containing antibiotics for home use in the event of an anthrax release. The MedKit prototype is currently undergoing additional testing.

Enabling secure and rapid communication to detect health threats

- CDC's web-based Epidemic Information Exchange (*Epi-X*) alerted health officials about incidents including Salmonella infections, foodborne botulism, travel-related measles, and an outbreak of a rare type of adenovirus.

Supplementing the epidemiology workforce in states and localities through CDC's Epidemic Intelligence Service (EIS) and the Career Epidemiology Field Officer (CEFO) program

- Field EIS officers conducted 395 investigations in 43 states and three other countries, including 26 multistate investigations.
- CEFO contributions include helping state and local health departments plan for avian influenza in Pennsylvania and respond to a botulism outbreak.

Public Health Laboratory Science and Service

Objective: Enhance and sustain nationwide and international laboratory capacity to gather, ship, screen, and test samples for public health threats and to conduct research and development that lead to interventions for such threats.

Collaborating to detect health threats through laboratory networks

- CDC manages the Laboratory Response Network (LRN), a national network with biological and chemical testing capabilities. In 2007, CDC increased the analytical capability of the LRN from 24 to 38 chemical terrorism agents.

Developing new laboratory methods and refining existing methods

- CDC developed new methods for identifying chemical agents, allowing quicker and more effective response to emergencies involving chemical warfare agents.
- CDC mapped the DNA of the vaccinia virus (similar to smallpox) and tularemia bacteria, and expanded its ability to perform real-time DNA tests to detect viruses that cause smallpox, monkeypox, and related diseases.
- CDC developed methods to detect toxins, including differentiating among different types of botulinum toxin and processing samples at the rate of 500 per day. Rapid toxin identification enables more accurate diagnosis and faster treatment.
- CDC developed blood tests to detect plague and rapid tests to identify subspecies of tularemia bacteria.

Promoting the safety and security for entities that possess, use, or transfer select agents and toxins through the Select Agent Program

- CDC inspected 110 entities registered to possess select agents to ensure compliance with regulations.

Providing CDC capability and capacity for laboratory testing of biological and chemical agents

- Working with its laboratory network, CDC supported U.S. Department of Defense requests to test clinical samples from people with suspected exposure to nerve agents, sulfur mustard, hydrazine, and depleted uranium.

Deploying skilled personnel to investigate international health threats

- CDC staff investigated three major outbreaks in Africa: Rift Valley fever virus in Kenya, Marburg virus in Uganda, and Ebola virus in the Democratic Republic of the

Congo. Although not native to the United States, these dangerous viruses can be introduced when infected people enter the country.

Response and Recovery Operations

Objective: Assure an integrated, sustainable, nationwide response and recovery capacity to limit morbidity and mortality from public health threats.

Monitoring and coordinating emergency response through the Director's Emergency Operations Center (DEOC)

- CDC responded to 33 domestic and 12 international events for a total of 326 days in which the DEOC was activated or engaged. Incidents included Hurricane Dean and a person with a suspected case of extremely drug-resistant tuberculosis traveling on an international flight.

Planning, training, exercising, and evaluating to improve emergency response

- More than 200 CDC employees were trained on the Incident Command System, the common emergency response operating system.
- CDC conducted or participated in exercises for simulated incidents such as hurricanes, the detonation of radiological dispersal devices (e.g., dirty bombs), and an outbreak of pandemic influenza.

Ensuring the availability of key medical supplies during emergencies through the Strategic National Stockpile

- CDC manages the Stockpile, a national repository of antibiotics, antiviral drugs, chemical antidotes, antitoxins, vaccines, life-supporting medications, and medical supplies. In FY 2007, CDC conducted more than 200 site visits to assist state and local public health departments plan for receiving, distributing, and dispensing Stockpile assets.
- The Stockpile transported life-saving medications to help save the lives of a mother and young child with eczema vaccinatum, a life-threatening skin infection that was caused by inadvertent exposure to vaccinia virus in the smallpox vaccine.

Restricting the spread of threats at U.S. borders through the quarantine and migration health system

- CDC increased the number of U.S. quarantine stations from 8 in 2004 to 20 in 2007.
- The system stopped measles, polio, and Rift Valley fever cases from Kenyan refugee camps from entering the United States.
- CDC established intergovernmental collaboration with Australia, Canada, New Zealand, and the United Kingdom for overseas health screening of immigrants and refugees.

Providing risk and emergency communication capabilities through various tools

- CDC expanded the toll-free CDC-INFO public information contact center to ensure that the general public, clinicians, and emergency responders can obtain information during a public health emergency.

- Weekly e-mail updates of changes to information on a range of health issues were sent through the Clinician Outreach and Communication Activity to some 40,000 individual members and 145 partner health and medical organizations.

Supporting the protection of vulnerable populations

- CDC developed an electronic index that public health departments can use to produce county-based maps of vulnerable populations for response-planning purposes.

Protecting the health, safety, and resiliency of emergency responders during an event

- CDC established a research portfolio outlining strategic goals and research needs regarding worker safety for the emergency response community.

Public Health System Support

Objective: Expand and strengthen integrated, sustained national foundational and surge capacities capable of reaching all individuals with effective assistance to address public health threats.

Supporting state and local health departments through funding and technical assistance

- CDC expanded state and local health departments' access to agency preparedness experts.
- CDC developed an evaluation framework and performance measures for incident management and crisis and emergency risk communication with state and local public health agencies, national partner organizations, and others.

Collaborating, training, and providing tools to enhance preparedness at all levels of government

- The Centers for Public Health Preparedness program conducted nearly 600 education and training activities for more than 40,000 individuals.
- Advanced Practice Centers supported by CDC provided preparedness training to more than 500 local health departments.
- CDC's Crisis and Emergency Risk Communication course provided essential knowledge and tools to 1,656 participants in 22 training seminars at state and local public health departments and CDC.

Strengthening legal preparedness for public health emergencies

- CDC convened the National Summit on Public Health Legal Preparedness, where policymakers and public health practitioners developed 100 action options for use by state, local, and tribal officials to strengthen their legal preparedness.
- CDC developed resources that can be used by jurisdictions to strengthen cross-sector coordination in an emergency.

Moving Forward

CDC is prioritizing the allocation of resources for ongoing and future projects to respond to challenges that cut across multiple public health functions. Below are cross-cutting priorities of particular note.

Strengthening public health preparedness at federal, state, and local levels in a climate of decreasing resources

With the anticipated decline in TPER funding in FY 2009, CDC and state and local health departments must find new ways, including enhanced collaborations, to conduct programs activities. CDC may also have to make difficult decisions about what the highest priority activities are and what must be postponed. Public health departments at state and local levels may have to make similar choices.

Integrating biosurveillance systems and activities

Health professionals must be able to recognize potential health emergencies as early as possible to prevent human deaths and mitigate suffering. This capability requires surveillance and integration of timely health-related information to enable early detection and characterization of health threats and to maintain situational awareness. In response to Homeland Security Presidential Directive-21, CDC established a Biosurveillance Coordination Unit to lead the development of a national strategy and implementation plan for next generation biosurveillance capabilities, in collaboration with a wide range of public and private sector partners.

Improving public health workforce surge capacity

The cornerstone of effective preparedness is having sufficient numbers of skilled personnel to sustain surge operations during an incident. Although some progress has been made, improvements must continue. CDC priorities include support for public health laboratory staff surge capacity and continued expansion of CDC's pool of trained responders.

Helping vulnerable populations

Successful planning and response to public health hazards requires protecting the health and safety of vulnerable populations before, during, and after emergencies. Identifying effective strategies that provide interventions to protect these populations is an ongoing effort at CDC. Future priorities include developing an evidence base of effective public health interventions for these groups, and ensuring that their needs are included in CDC response planning and exercising.

Enhancing capabilities for specific public health emergency scenarios

CDC must address gaps in its response capabilities for specific public health emergencies. Priorities include response planning and exercising, particularly for threats that have not been included in previous exercises. Additional priorities address improvements to laboratory methods and capabilities for chemical and infectious agents, radiological materials, and for testing environmental samples. Priorities also include support for improving laboratory surge capacity for scenario-specific events, particularly for radiation emergencies and environmental investigations.

More Information

CDC's investments in preparedness have resulted in significant accomplishments, but much work remains to be done. For more details on CDC preparedness achievements and priorities, see the reports listed below (available at www.emergency.cdc.gov/COTPER). Future CDC updates will assess progress in preparedness at CDC and at local, state, tribal, territorial, and international levels.

The information in this brochure and the report from which it was excerpted (see p. 2) build on the analysis of state public health preparedness presented in the February 2008 CDC report, *Public Health Preparedness: Mobilizing State by State*. (See box for websites to access both reports.) Future updates from CDC will assess the progress in preparedness at CDC and at local, state, tribal, territorial, and international levels.

Reports

Public Health Preparedness: Strengthening CDC's Emergency Response (2009)

This report explains CDC's role in preparing the public health infrastructure to respond effectively to all types of hazards. The report also describes CDC's significant preparedness accomplishments, the diversity of challenges that remain, and priorities for ongoing and future work in a climate of decreasing resources.

Public Health Preparedness: Mobilizing State by State (2008)

This report highlights preparedness progress and challenges at state and local public health departments and outlines CDC's efforts to address those challenges. The report presents national data as well as state-specific snapshots for all 50 states and four directly funded localities: Chicago, Los Angeles County, New York City, and Washington, D.C.

This document is available at [www.emergency.cdc.gov/publications/jan09phprep/Key Findings](http://www.emergency.cdc.gov/publications/jan09phprep/KeyFindings)