

Appendix 1: Explanation of Fact Sheet Data Points

The data points included in the national summary tables on pages 26 and 34 and the individual fact sheets beginning on page 42 are bulleted below, followed by an explanation of its significance.

Laboratories: General

Maintaining core laboratory functions during an emergency

- *Status of continuity of operations plan (COOP)*
A COOP is critical in an emergency situation to ensure that core functions of state public health laboratories are not disrupted.

Ensuring availability of Laboratory Response Network (LRN) laboratory results for decision making

- *State and locality had a standardized electronic data system capable of messaging laboratory results between LRN laboratories and also to CDC*
States need the capability to manage and share laboratory data related to their LRN testing, and it is critical that all LRN laboratories use the same data standards and vocabulary. An electronic messaging system allows data to flow between laboratories and to CDC through a reliable mechanism using consistent data standards, ensuring that data are available quickly for decision making.

Laboratories: Biological Capabilities

Participation in LRN for biological agents

CDC manages the LRN, a group of local, state, federal, and international laboratories. CDC funds one biological LRN public health laboratory in every state and in the District of Columbia as part of the Public Health Emergency Preparedness (PHEP) cooperative agreement (with the exception of California, Illinois, and New York, which have two laboratories). 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 provides a critical laboratory infrastructure to detect, characterize, and communicate about confirmed threat agents, decreasing the time needed to begin the response to an intentional act or naturally occurring outbreak.

- *LRN reference and/or national laboratories that could test for biological agents*
LRN biological laboratories are designated as national, reference, or sentinel laboratories. National laboratories, including those at CDC, 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 reference or national laboratories for further testing.

Assessing if laboratory emergency contacts could be reached 24/7

- *LRN laboratories successfully contacted during a non-business hours telephone drill*
The LRN emergency contacts telephone drill tests CDC's ability to reach biological laboratory emergency contacts 24 hours a day, seven days a week.

Evaluating LRN laboratory capabilities

- *Proficiency tests passed by LRN reference and/or national laboratories*

CDC proficiency tests are composed of a number of unknown samples that are tested in order to evaluate the abilities of LRN reference and/or national biological laboratories to receive, test, and report on 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, then the laboratory will not pass the proficiency test.

Rapid identification of disease-causing bacteria by PulseNet laboratories

States must be able to detect and determine the extent and scope of potential outbreaks and to minimize their impacts. The intent of this performance measure is to determine if a laboratory can rapidly receive, test, and report disease-causing bacteria within a specified timeframe. Laboratories in the PulseNet network use CDC's pulsed-field gel electrophoresis (PFGE) protocols to rapidly identify specific strains *Escherichia coli* O157:H7 and *Listeria monocytogenes*.

The 4 working-day timeframe of the performance measure allows states to demonstrate their ability to analyze samples and submit to the PulseNet database. This database is used by the PulseNet network (consisting of local, state and federal public health and food regulatory agency laboratories), which is coordinated by CDC.

- *Rapidly identified E. coli O157:H7 using advanced DNA tests (PFGE)*
 - *Samples for which state performed tests*
 - *Test results submitted to PulseNet database within 4 working days (target: 90%)*
- *Rapidly identified L. monocytogenes using advanced DNA tests (PFGE)*
 - *Samples for which state performed tests*
 - *Test results submitted to PulseNet database within 4 working days (target: 90%)*

Assessing laboratory competency and reporting through exercises

- *State public health laboratory conducted exercises to assess competency of sentinel laboratories to rule out bioterrorism agents*

These exercises assess the competency of sentinel clinical laboratories to rule out bioterrorism agents. Sentinel laboratories represent the thousands of hospital-based, clinical institutions, and commercial diagnostic laboratories that have direct contact with patients. Some but not all sentinel laboratories are part of CDC's LRN. Sentinel laboratories provide routine diagnostic services, rule-out testing, and referral steps in the identification process and can play a key role in the early detection of biological agents by referring a suspicious sample to the right reference lab.

- *CDC-funded LRN laboratory ability to contact the CDC Emergency Operations Center within 2 hours during LRN notification drill. (Note: There is one CDC-funded LRN laboratory in the District of Columbia and in each state, with the exception of California, Illinois, and New York, which have two.)*

LRN notification drills ensure that biological laboratories can contact the CDC Emergency Operations Center (EOC) to report results to EOC watch staff and duty officers within 2 hours of obtaining a result. Only laboratories funded through CDC's Public Health Emergency Preparedness cooperative agreement participate in this drill. These drills are associated with participation in a specific proficiency test; CDC-funded laboratories that

cannot participate in the test are excluded from this drill. Reasons for non-participation in the proficiency test include the following: laboratory does not test for agent, facility renovations or permit issues prevent laboratory from accepting samples, and laboratory has equipment issues.

Laboratories: Chemical Capabilities

Participation in Laboratory Response Network for chemical agents (LRN-C)

CDC manages the LRN, a group of local, state, federal, and international laboratories. The LRN provides a critical public health laboratory infrastructure to detect, characterize, and communicate about confirmed threat agents, decreasing the time needed to begin the response to an intentional act or accidental exposure.

- *LRN-C laboratories with capabilities for responding if the public is exposed to chemical agents (Note: There are three levels, with Level 1 having the most advanced capabilities.)*
 - Level 1 laboratories are national surge capacity laboratories that maintain the capabilities of Level 2 and Level 3 laboratories, can test for an expanded number of agents using highly automated analysis methods, maintain an adequate supply of materials to analyze 1,000 patient samples for each method, and can operate 24/7 for an extended period of time.
 - Level 2 laboratories maintain the capabilities of Level 3 laboratories, can test for a limited panel of toxic chemical agents, and stock materials and supplies for the analysis of at least 500 patient samples for each qualified analysis method.
 - Level 3 laboratories work with hospitals, poison control centers, and first responders within their jurisdictions to maintain competency in clinical specimen collection, storage, and shipment.

Evaluating LRN-C laboratory capabilities through proficiency testing

- *Core methods successfully demonstrated by Level 1 and/or Level 2 laboratories to rapidly detect chemical agents*

LRN methods can help determine how widespread an incident was, identify who does/does not need long-term treatment, assist with non-emergency medical guidance, and help law enforcement officials determine the origin of the agent. Level 1 and Level 2 laboratories undergo proficiency testing to determine if they can rapidly detect and measure chemical agents that can cause severe health effects. CDC has identified six core methods for detecting and measuring these agents, and conducts testing to determine a laboratory's proficiency in these methods. This report presents final proficiency testing results as the number of these core methods successfully demonstrated by the laboratories in each state or locality. The maximum number is 6 core methods. However, it should be noted that the states and localities with Level 1 and 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.
- *Additional methods successfully demonstrated by Level 1 and/or Level 2 laboratories to rapidly detect chemical agents*

In addition to proficiency in core methods, certain LRN laboratories demonstrate proficiency in up to six additional methods. Level 1 laboratories are required to gain

proficiency in these additional methods, while Level 2 laboratories may choose to do so or not. There are currently six additional methods in which Level 1 laboratories must demonstrate proficiency, and five additional methods in which Level 2 laboratories may choose to become proficient. A successful demonstration in the testing indicates ongoing proficiency. The figures presented in the fact sheets represent the number of additional methods for which laboratories in the state or locality demonstrated proficiency relative to the number of tests they undertook. Because the list of additional methods continues to increase, state and local laboratories are not expected to be proficient in all additional methods. Laboratories may have trained in additional methods, and/or undergone validation for additional methods, which are steps that precede proficiency testing.

Assessing LRN-C laboratory capabilities through exercises

- LRN-C laboratory ability to collect, package, and ship samples properly during LRN exercise*

This annual exercise evaluates the ability of a laboratory to collect relevant samples for clinical chemical analysis and ship those samples in compliance with International Air Transport Association regulations. Multiple sites in Florida and Illinois have the opportunity to participate in this exercise. For these two states, all results are reported.
- Chemical agents detected by Level 1 and/or Level 2 laboratories in unknown samples during the LRN Emergency Response Pop Proficiency Test (PopPT) Exercise*

This annual exercise tests a laboratory's emergency response capabilities, focusing on the detection and measurement of specific agents. To participate in a PopPT exercise, the laboratory must have attained a "Qualified" status for the method. To attain "Qualified" status, a laboratory must have completed training, the validation exercise, and passed at least one scheduled PT exercise. Laboratories participating in the PopPT exercise are called the day before the exercise, are sent a minimum of 10 unknown samples, and must test these samples within a certain number of hours (depending on the methods needed). The August 2008 exercise tested a lab's ability to detect, identify, and quantify two unknown agents. The exercise also tested the laboratory's emergency contact process and its ability to report results to the LRN.
- Hours to process and report on 500 samples by Level 1 laboratory during the LRN Surge Capacity Exercise (range was 71 to 126 hours)*

This exercise demonstrates the ability of each Level 1 laboratory to test and report on 500 samples (a total of 5000 samples) on a 24/7 basis as would be required by a large scale chemical incident. The response time was determined from the delivery of the 500 samples until the time the last sample was reported to CDC.

Response Readiness: Communication

Communicating emerging health information

- State and locality public health department had a 24/7 reporting capacity system that could receive urgent disease reports any time of the day*

State and locality public health departments with a 24/7 reporting capacity system are able to receive urgent disease reports any time of the day instead of just during regular business hours.

- Responded to Health Alert Network (HAN) test message within 30 minutes*

As a component of CDC's Public Health Information Network, HAN provides information to state and local public health practitioners, clinicians, and public health laboratories about urgent health events. Responding to a HAN test message within 30 minutes demonstrates that state and locality public health staff are able to receive urgent messages quickly.
- State public health laboratory 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*

This number demonstrates the frequency with which state public health laboratories used rapid methods to communicate with sentinel laboratories and other partners. See page 157 for a definition of sentinel, reference, and national laboratories.
- Epidemic Information Exchange (Epi-X) users responded to system-wide notification test within 3 hours*

Epi-X is a secure, CDC web-based communication system that enable CDC officials, state and local health departments, poison control centers, and other public health professionals to access and share preliminary health surveillance information quickly. *Epi-X* provides rapid reporting, immediate notification, editorial support, and coordination of health investigations for public health professionals about disease outbreaks and other public health events that potentially involve multiple jurisdictions. To protect the sensitive nature of the preliminary information it provides, access is limited to designated officials who are engaged in identifying, investigating, and responding to health threats. To determine the effectiveness of *Epi-X* as a rapid communication and notification system, users were tested on their ability to log into the system and view a test report within 3 hours. The test, which was conducted in April 2008, was designed to identify and address problems that could occur before a real event.

Improving public health information exchange

- Participated in a Public Health Information Network forum (community of practice) to leverage best practices for information exchange*

The Public Health Information Network is a national CDC-sponsored initiative to improve public health use and exchange of information by promoting the use of standard and technical requirements. Communities of practice provide a forum for members to work together to identify and leverage best practices and standards for public health information technology and informatics. The goal is to enhance preparedness through improved public health information exchange.

Response Readiness: Planning

Assessing plans to receive, distribute, and dispense medical assets from the Strategic National Stockpile and other sources.

The CDC Strategic National Stockpile has large quantities of medicine, vaccines, and medical supplies placed in strategic locations around the nation to supplement state and local public health agencies in the event of a large-scale public health emergency.

- CDC technical assistance review (TAR) state score*

All 62 PHEP-funded states, localities and U.S. insular areas have plans for receiving, distributing, and dispensing medical assets from the Stockpile. State technical assistance reviews to access these plans are conducted by CDC on an annual basis to ensure continued readiness. Using a scale from zero to 100, a CDC TAR score of 69 or higher indicates that a state performed in an acceptable range in its plan to receive, distribute, and dispense medical assets. (The acceptable threshold score has increased to 79 or higher for 2009-2010.)
- Cities Readiness Initiative (CRI) Location and 2007-08 TAR score*

CRI focuses on enhancing preparedness in the nation's major population centers, where more than half of the U.S. population resides. A CRI location is a metropolitan statistical area (MSA) composed of multiple counties based on Census Bureau data. Through CRI, state and large metropolitan public health departments have developed plans to respond to a large-scale bioterrorist event within 48 hours.

The first CRI cohort started in 2004 with 21 cities; the second cohort added 15 MSAs in 2005; the third cohort added 36 MSAs in 2006, for a total of 72 and at least one CRI MSA in every state. MSAs can be composed 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. To ensure continued readiness, TARs are conducted annually in each local jurisdiction. CDC is responsible for conducting 25% of the TARs while the state is responsible for the other 75%. The TAR scores (ranging from 0 to 100) for each planning jurisdiction are combined to compute an average score for the CRI MSA.

Enhancing response capability for chemical events

- CHEMPACK nerve-agent antidote containers*

CHEMPACK is a nationwide program to place containers of nerve-agent antidotes at state and local levels, which increases the capability to respond quickly to a chemical event.

Meeting preparedness standards for local health departments

- Local health departments meeting voluntary Project Public Health Ready preparedness standards*

The vision for this voluntary project is to fully integrate local health departments and the response community. This competency-based project assesses preparedness and assists local health departments or groups of departments working collaboratively to respond to emergencies. Participating local health departments work through a set of criteria for preparedness planning and workforce competency goals, and conduct exercises to test and identify gaps in their preparedness plans.

Response Readiness: Exercises and Incidents

Notifying emergency operations center (EOC) staff

Rapid notification of EOC staff is critical for an effective response. To ensure timely and effective coordination within the public health agency and with key response partners in a complex incident, states and localities must demonstrate the capability to rapidly notify staff to report for EOC duty. They must also track responses to ensure that eight core Incident Command System (ICS) functional roles can be staffed with one person per position.

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. This capability is critical to maintain even though not every incident requires full staffing of the ICS.

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

- *Pre-identified staff notified to fill all eight Incident Command System (ICS) core functional roles due to a drill, exercise, or real incident*

The intent of this performance measure is to demonstrate the capability to rapidly notify staff with incident management functional responsibilities that the EOC is being activated (see Activations below). States and localities are required to report details on a minimum of two notification drills, exercises, or real incidents. States and localities can report an unlimited number of drills, exercises, or real incidents, but can only provide details for a maximum of 12 for the entire year (a maximum of six for each of the two reporting periods within the entire year). This CDC report provides information on the detailed notification drills, exercises, or incidents. States and localities may have conducted additional notifications.

- *Pre-identified staff acknowledged notification within the target time of 60 minutes*
This performance measure, related to the measure above, considers the time for staff with public health agency ICS functional responsibilities to acknowledge the notification.
- *Conducted at least one unannounced notification outside of normal business hours*
States and localities must be able to demonstrate that all eight core ICS functional roles can be staffed rapidly outside of normal business hours without advance warning.

Activating the emergency operations center (EOC)

Activation is defined as rapidly staffing all eight core Incident Command System (ICS) functional roles in the public health emergency operations center with one person per position. This capability is critical to maintain even though not every incident requires full staffing of the ICS.

- *Public health EOC activated as part of a drill, exercise, or real incident*
The intent of this performance measure is to demonstrate the capability for all eight staff having core ICS functional responsibilities to report for duty at the public health EOC. States and localities are required to report a minimum of two activations. States and localities can report an unlimited number of activations, but can only provide details for a maximum of 12 for the entire year (a maximum of six for each of the two reporting periods within the entire year). This CDC report provides information on the detailed activations. States and localities may have conducted additional activations.
- *Pre-identified staff reported to the public health EOC within the target time of 2.5 hours*
This performance measure, related to the measure above, considers the time for staff with public health agency Incident Command System functional responsibilities to report for duty at the public health agency's EOC.

- *Conducted at least one unannounced activation*
States and localities must be able to demonstrate that all eight core ICS functional roles can be staffed rapidly outside of normal business hours without advance warning.

Response Readiness: Evaluation

Assessing response capabilities through after action report/improvement plans (AAR/IPs)

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

- *AAR/IPs developed following an exercise or real incident*
The intent of this performance measure is to demonstrate the capability to analyze response actions, describe needed improvements, and prepare a plan for making improvements. States and localities are required to report details on a minimum of two AAR/IPs. States and localities can report an unlimited number of AAR/IPs, but can only provide details for a maximum of 12 for the entire year (a maximum of six for each of the two reporting periods within the entire year). This CDC report provides information on the detailed AAR/IPs. States and localities may have developed additional AAR/IPs.
- *AAR/IPs developed within target time of 60 days*
Development of an AAR/IP within 60 days is calculated using the date following the end of the exercise or public health emergency response operations as determined by the incident commander, and the date the draft AAR/IP was submitted for clearance within the public health agency.
- *Re-evaluated response capabilities following approval and completion of corrective actions identified in AAR/IPs*
The systematic reevaluation of response capabilities is critical for providing evidence that planned corrective actions have been effective in improving response.

Research, Training, Education, and Promising Demonstration Projects

In addition to the state activities listed above, CDC supported projects and additional activities to enhance state preparedness efforts. Snapshots of these CDC efforts are provided below.

- *Centers for Public Health Preparedness (CPHP)*
This program is an important resource for the development, delivery, and evaluation of preparedness education. Colleges and universities within the CPHP program provide preparedness education to public health workers, healthcare providers, and students. CPHPs collaborate with state, local and tribal health agencies to develop, deliver, and evaluate preparedness education based on community need. (CPHPS will be known as Preparedness and Emergency Response Learning Centers in FY 2011.)

- *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. Scientists in the PERRCs at schools of public health must connect with multiple partners within the public health infrastructure to incorporate diverse perspectives into their research.
- *Advanced Practice Centers (APC)*
This network of local health departments develops resources and training that enhance the capabilities of all local health departments and the public health system to prepare for, respond to, and recover from public health emergencies.
- *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.
- *Pandemic Influenza Promising Practices Demonstration Projects*
Selected state and local public health departments received PHEP cooperative agreement and pandemic influenza supplemental funding through a competitive application process for projects serving as innovative approaches for pandemic influenza preparedness. These projects will provide 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.

Additional CDC Resources Supporting Preparedness in States and Localities

- *Epidemic Intelligence Service (EIS)*
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 during responses to routine public health incidents and large-scale national emergencies. Officers are assigned to CDC or to state and local health departments.
- *Deployments*
CDC personnel are deployed routinely for emergency response operations and EPI-AID investigations. For EPI-AID investigations, CDC's Epidemic Intelligence Service officers, along with other CDC staff, provide technical support to state health agencies requesting assistance for epidemiologic field investigations of disease outbreaks or health emergencies. Data points include the type of incident and number of CDC staff deployed.
- *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 as well as mentors for state and local public health department staff and EIS officers assigned to state or local health departments.

- *Quarantine Stations*

CDC's domestic quarantine stations, strategically located at U.S. ports of entry where the majority of international travelers arrive in the United States, are essential for detecting and responding to diseases of public health significance. The public health officials who operate these stations implement measures to prevent the spread of infectious diseases.