

An Assessment of Current Health and Medical Capabilities in Texas: A State-Level Review

Final Report to the Texas Department of State Health Services

Prepared by

The Litaker Group, LLC
P.O. Box 160505
Austin, Texas 78716

Prepared for

Texas Department of State Health Services
Division of Prevention and Preparedness
Community Preparedness Section
1100 West 49th Street
Austin, Texas 78756

July 20, 2007

Report Prepared by

John R. Litaker, Jennie Y. Chou, Julie Barron Morrill

Acknowledgements

Karen Hasty and Bonnie Webb

Suggested Citation

Litaker JR, Chou JY, Morrill JB. *An Assessment of Current Health and Medical Capabilities in Texas: A State-Level Review*. July 2007.

Contact Information

The Litaker Group is headquartered in Austin, Texas. For more information, please contact the Managing Director.

John R. Litaker, Ph.D.
Managing Director
The Litaker Group, LLC
P.O. Box 160505
Austin, TX 78716-0505
(512) 804-5545
jlitaker@litakergroup.com

© 2007 • The Litaker Group, LLC • All Rights Reserved

Table of Contents

1 EXECUTIVE SUMMARY.....	1
1.1 INTRODUCTION.....	1
1.2 FINDINGS.....	1
1.3 SUMMARY.....	2
2 INTRODUCTION.....	3
3 METHODS.....	5
3.1 DATA SOURCES.....	5
3.2 DATA EVALUATION.....	7
3.3 LIMITATIONS.....	7
4 RESULTS.....	8
4.1 OVERVIEW.....	8
4.2 HEALTH AND MEDICAL AREAS WITH EVIDENCE OF REPORTED READINESS ACTIVITY.....	9
4.2.1 <i>Communications</i>	10
4.2.2 <i>Emergency Public Information and Warning</i>	11
4.2.3 <i>Epidemiological Investigations</i>	12
4.2.4 <i>Exercises</i>	15
4.2.5 <i>Isolation and Quarantine</i>	16
4.2.6 <i>Laboratory Testing</i>	18
4.2.7 <i>Mass Care Capacity</i>	19
4.2.8 <i>Mass Prophylaxis</i>	20
4.2.9 <i>Medical Supplies Management and Distribution</i>	22
4.2.10 <i>Medical Surge</i>	23
4.2.11 <i>Planning</i>	25
4.2.12 <i>Responder Health and Safety</i>	26
4.2.13 <i>Training</i>	27
4.2.14 <i>Triage and Pre-Hospital Treatment</i>	28
4.3 HEALTH AND MEDICAL AREAS WITH MINIMAL EVIDENCE OF REPORTED READINESS ACTIVITY.....	29
4.3.1 <i>Animal Health Emergency Support</i>	30
4.3.2 <i>Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) Detection</i>	31
4.3.3 <i>Citizen Protection: Evacuation and / or In-Place Protection</i>	32
4.3.4 <i>Critical Resource Logistics and Distribution</i>	33
4.3.5 <i>Economic and Community Recovery</i>	34
4.3.6 <i>Environmental Health and Vector Control</i>	35
4.3.7 <i>Fatality Management</i>	36
4.3.8 <i>Food and Agriculture Safety and Defense</i>	37
4.3.9 <i>Hazard and Vulnerability Analysis</i>	38
4.3.10 <i>Information Gathering and Recognition of Indicators and Warnings</i>	39
4.3.11 <i>Intelligence Analysis and Production</i>	40
4.3.12 <i>Intelligence / Information Sharing and Dissemination</i>	41
5 APPENDICES.....	42
5.1 APPENDIX A: DESCRIPTION OF THE 26 HEALTH AND MEDICAL CAPABILITIES.....	42
5.2 APPENDIX B: STAKEHOLDERS GROUPS REPRESENTED AT WORK GROUP SESSIONS.....	45
5.3 APPENDIX C: ACRONYMS USED IN THIS REPORT.....	46

List of Tables

Table 1: Areas targeted for improvement by Centers for Disease Control and Prevention (CDC) funding for Fiscal Years 2002 - 2005	3
Table 2: Areas targeted for improvement by U.S. Health Resources and Services Administration (HRSA) funding for Fiscal Years 2002 - 2005	4

List of Figures

Figure 1: Health and medical areas categorized by evidence of reported readiness activity between 2004 and 2006	2
Figure 2: Locations of the 19 work group sessions held during August and September 2006	6
Figure 3: Health and medical areas categorized by evidence of reported readiness activity between 2004 and 2006	8

1 Executive Summary

1.1 Introduction

In May 2006 the Texas Department of State Health Services (DSHS), using a competitive bidding process, commissioned The Litaker Group to create a 2010 strategic vision for health and medical preparedness in Texas. Part of this project involved conducting a comprehensive assessment of health and medical activities in Texas related to disaster prevention, preparedness, response, and recovery. This document reports the results of this assessment.

1.2 Findings

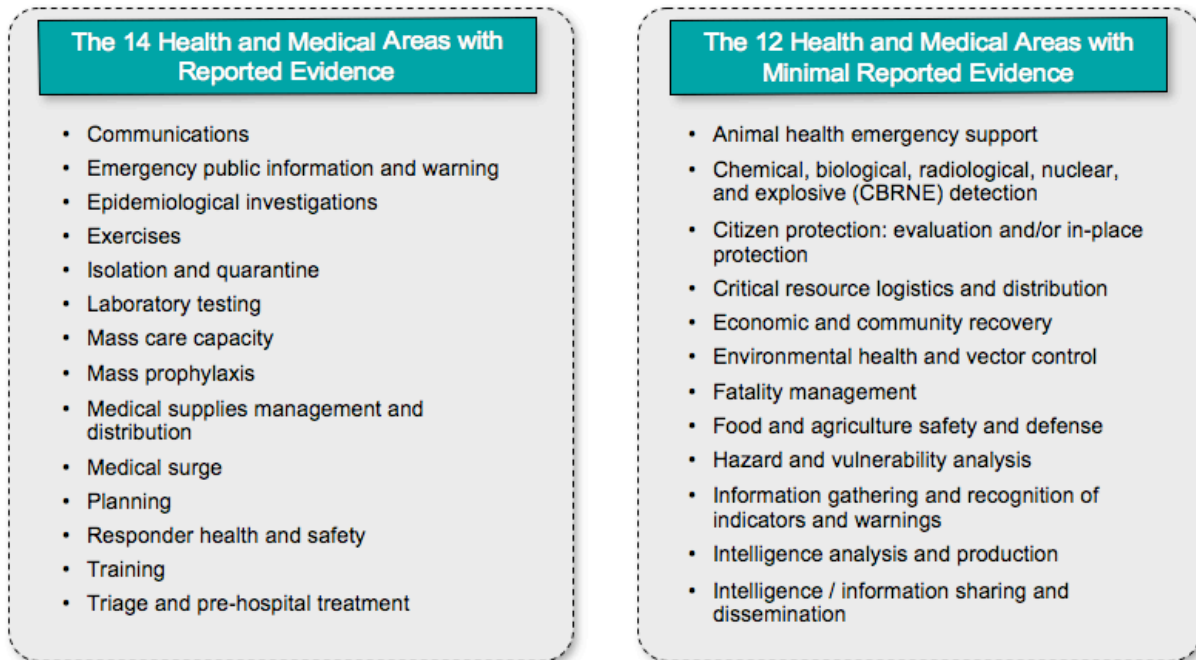
Data were evaluated to determine the presence of readiness activities from calendar years 2004 through 2006 based on a framework of 26 health and medical areas. This framework was adapted from the 36 capabilities developed by the U.S. Department of Homeland Security and reported in the Target Capabilities List Draft Version 2.0.¹ The 26 areas assessed in this report represent functions that a health and medical response could include. See [Appendix A](#) for a description of these 26 areas.

The majority of reported and documented preparedness activities occurred from calendar years 2004 through 2006 and were focused on 14 of the 26 health and medical areas (See Figure 1). Activities in these 14 health and medical areas reflect national concerns and priorities related to bioterrorism preparedness after the terrorist attacks on September 11, 2001 and subsequent natural disasters. For the remaining 12 health and medical areas, there was minimal evidence of reported readiness activity from calendar years 2004 through 2006 (See Figure 1). Based on information gathered during this project, the lack of reported activity in these 12 areas may be attributed to several factors including a lack of documentation or data collection; an unrecognized need to augment a particular health and medical area; and/or a lack of resources to develop a particular area.

The findings also show limited preparedness for some crosscutting themes. For example, despite the importance and need to provide mental health services to both first responders and victims, direct evidence of reported preparedness for mental health services was limited.

¹ Target Capabilities List Draft Version 2.0. U.S. Department of Homeland Security. Date published not available.

Figure 1: Health and medical areas categorized by evidence of reported readiness activity between calendar years 2004 and 2006



1.3 Summary

There is reported evidence of readiness activity for 14 health and medical areas. Yet, additional work remains to be done for these 14 areas to attain optimal preparedness. For example, while technological advances have improved the ability of stakeholders to both provide and access critical information during a disaster, voice communication interoperability is not yet in place in all parts of the state. Therefore, specific gaps addressed in this report should be used to help further strengthen capacity building efforts for these 14 areas.

Similarly, the 12 areas with minimal reported evidence have yet to achieve optimal preparedness. However, unlike the 14 areas noted above, capacity building for these 12 areas often occurred as specific circumstances warranted. For example, the need to augment the fatality management area intensified due to high mortality estimates associated with a potential pandemic influenza outbreak. Specific gaps addressed in this report should be used as a starting point to strengthen capacity building efforts for these 12 areas.

2 Introduction

From 2001 to 2005 the United States faced a series of man-made and natural disasters. These disasters, starting with the terrorist attacks on September 11, 2001 and continuing with the anthrax mailings in the fall of 2001 and the hurricanes occurring throughout this period, required the nation to mount extensive health and medical response efforts. These incidents identified gaps in the nation's ability to respond to the medical needs of citizens affected by these disasters and precipitated legislation and funding to enhance health and medical preparedness activities. As a result, the United States Congress passed the Public Health Security and Bioterrorism Preparedness and Response Act in 2002 and the Pandemic and All-Hazards Preparedness Act in 2006.

Since 2002, Texas has received funding from the U.S. Centers for Disease Control and Prevention (CDC) and the U.S. Health Resources and Services Administration (HRSA) to augment health and medical capacity building at the local, regional, and state level. As the coordinator for public health preparedness in Texas, the Department of State Health Services (DSHS) is responsible for administering funding to the local level and for providing strategic leadership related to public health preparedness, bioterrorism, epidemics, and other public health threats and emergencies in Texas. Tables 1 and 2 show health and medical functions targeted for improvement with federal funds in Texas.

Table 1: Areas targeted for improvement by Centers for Disease Control and Prevention (CDC) funding for Fiscal Years 2002 - 2005

Goals Defined in the CDC Cooperative Agreement
• All-hazards planning
• Economic and community recovery
• Emergency public information
• Emergency response communications
• Hazard and vulnerability analysis
• Health intelligence integration and analysis
• Improvements
• Information collection and threat recognition
• Isolation and quarantine
• Laboratory testing
• Mass prophylaxis and vaccination
• Medical and public health surge
• Public health epidemiological investigation
• Recovery
• Worker health safety

Table 2: Areas targeted for improvement by U.S. Health Resources and Services Administration (HRSA) funding for Fiscal Years 2002 - 2005

Benchmarks Defined in the HRSA Cooperative Agreement
• Bed surge capacity
• Behavioral (psychosocial health)
• Communications and information technology
• Decontamination
• Education and preparedness training
• Emergency medical services
• Emergency Systems for Advance Registration of Volunteer Health Care Professionals (ESAR-VHP)
• Isolation capacity
• Linkages to public health departments: hospital laboratories
• Linkages to public health departments: surveillance
• Personal protective equipment
• Pharmaceutical caches

In its continuing effort to provide leadership on health and medical emergency preparedness in Texas, DSHS sought a vendor to create a 2010 strategic vision for health and medical preparedness in Texas. Through a competitive bidding process, DSHS commissioned The Litaker Group, an Austin-based research consulting firm, to conduct this assessment and to develop the 2010 strategic vision for health and medical preparedness. Part of this project involved conducting a comprehensive assessment of health and medical activities related to disaster prevention, preparedness, response, and recovery in Texas. This document presents findings from the state-level current capabilities assessment.

3 Methods

3.1 Data Sources

Documentation of health-related prevention, preparedness, response, and recovery activities was requested via email from potential stakeholders throughout Texas in June 2006. Documents covering the period from calendar years 2004 through 2006 were collected and accepted through October 31, 2006, with approximately 750 documents submitted. Entities that provided documentation included the Department of State Health Services (DSHS) central office in Austin, DSHS Health Service Region offices, local health departments, Regional Advisory Councils, local health and medical authorities, and Councils of Government.

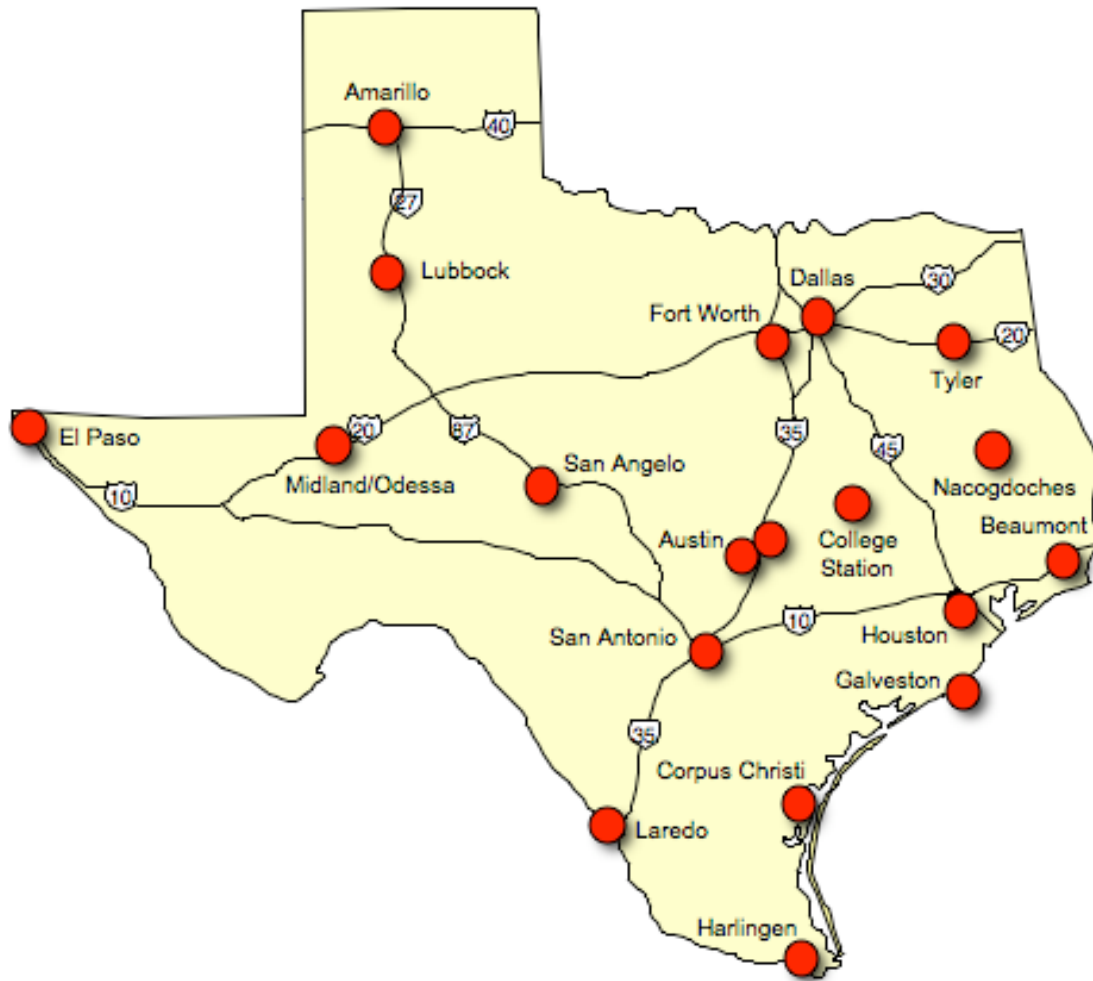
Additional information about current health and medical readiness activities was also solicited from participants at 19 work group sessions held throughout Texas in August and September 2006. Nearly 350 individuals representing multiple stakeholder groups (e.g., public health, emergency management, hospitals, physicians, pharmacists, state agencies, faith-based organizations, etc.) participated in these sessions. Locations for the work groups were selected to maximize geographic representation from all parts of the state and to include an urban and rural perspective to the issues discussed (see Figure 2). [Appendix B](#) presents the types of stakeholder organizations that sent individuals to participate in these work groups.

Both qualitative and quantitative data were obtained from document review and the work group sessions. Qualitative data provided descriptive information regarding disaster-related health and medical activities. These data were extracted from documents submitted by health and medical stakeholders and discussion notes from the work group sessions. Quantitative data consisted of numerical information (e.g., number of mutual aid agreements implemented with neighboring jurisdictions, number of volunteers to support mass prophylaxis activities, and number of hospital beds available to meet surge capacity needs). These data were obtained from fiscal year 2006 quarterly reports² from regional and local health departments³ and from the results of the *DSHS 2005 Hospital Bioterrorism Survey*. The *2005 Hospital Bioterrorism Survey* data provided information on public health preparedness activities for Texas hospitals based on U.S. Health Resources and Services Administration benchmarks.

² The quarterly reports provided information on local and regional health department activities with regard to CDC public health preparedness critical tasks and performance measures. Only those health departments that receive funds via the CDC Cooperative Agreement submit these reports. Quarterly reports for the first three quarters of Fiscal Year 2006 were used in this report (September 2005 through May 2006).

³ Fifty-six unique quarterly reports were evaluated, 49 of which had Q3 FY '06 data available.

Figure 2: Locations of the 19 work group sessions held during August and September 2006



3.2 Data Evaluation

Data were evaluated to determine the presence of readiness activities from calendar years 2004 through 2006 based on a framework of 26 health and medical areas. This framework was adapted from the 36 capabilities developed by the U.S. Department of Homeland Security and reported in the Target Capabilities List Draft Version 2.0.⁴ The 26 areas assessed in this report represent functions that a health and medical response could include. See [Appendix A](#) for a description of these 26 areas.

3.3 Limitations

This evaluation was based on documents collected through October 31, 2006 and based on work group sessions conducted in August and September 2006. Therefore, information and data used in this assessment will only reflect activities that occurred up to the summer of 2006 to the extent that such information and data were provided. In addition, readers are advised to consider the following limitations.

- Data used in this assessment reflect findings on prevention, preparedness, response, and recovery activities related to health and medical readiness occurring throughout Texas from calendar years 2004 through 2006. The nature of data collected may vary during this time period due to increased activities at the local level or increased use of technology to capture data electronically. Therefore, data collected in one time period may not be directly comparable to data collected in another time period.
- Documentation for county-level activities did not necessarily provide the information needed to make a complete assessment against all benchmarks within the assessment framework.
- A broad range of private and public agencies and entities was invited to provide documents and other information for this assessment, however, whether all documents responsive to this project were provided is unknown.
- All assessed information is based on self-reported data by an entity or an organization. On-site data verification was not conducted.

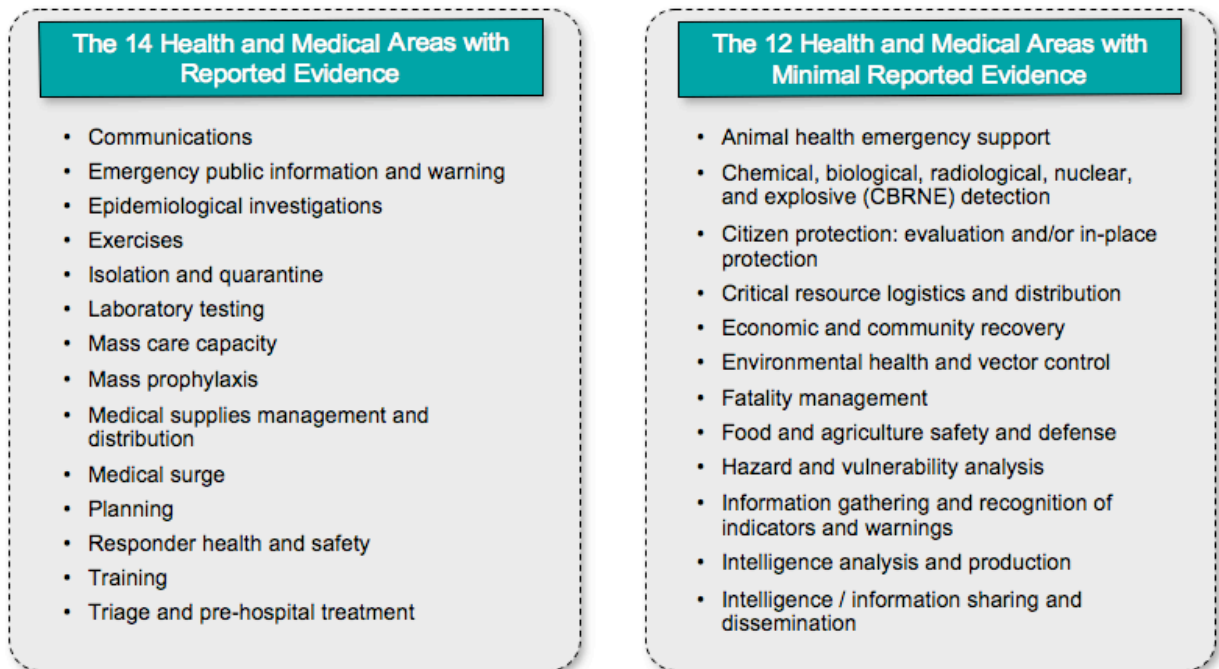
⁴ Target Capabilities List Draft Version 2.0. U.S. Department of Homeland Security. Date published not available.

4 Results

4.1 Overview

Findings suggest that reported readiness activity occurred from 2004 through 2006 for 14 of the health and medical areas as evidenced by documentation, data, or feedback. The remaining 12 health and medical areas had minimal evidence of reported readiness activity during this same time period. This could be due to a lack of documentation or data collection, or it could be that these areas were not directly targeted for improvement during the past five years. Figure 3 shows the health and medical functions categorized by level of reported evidence provided.

Figure 3: Health and medical areas categorized by evidence of reported readiness activity between calendar years 2004 and 2006.



4.2 Health and Medical Areas with Evidence of Reported Readiness Activity

The 14 health and medical areas listed below had evidence of reported readiness activity from calendar years 2004 through 2006. These 14 areas are based on capabilities identified by the U.S. Department of Homeland Security (DHS).⁵ In total, DHS identified 36 capabilities needed to prevent, prepare, respond, and recover from incidents of national significance. Twenty-six of these capabilities represent functions that a health and medical response could include and are described in more detail in [Appendix A](#).

1. Communications⁶
2. Emergency public information and warning
3. Epidemiological investigations⁷
4. Exercises
5. Isolation and quarantine
6. Laboratory testing⁷
7. Mass care capacity
8. Mass prophylaxis
9. Medical supplies management and distribution
10. Medical surge
11. Planning
12. Responder health and safety
13. Training
14. Triage and pre-hospital treatment

⁵ Target Capabilities List Draft Version 2.0. U.S. Department of Homeland Security. Date published not available.

⁶ The Department of Homeland Security refers to this as *Interoperability Communication*. In this assessment, the term *Communications* is used and is defined as both technical (i.e., interoperable communication) and interpersonal communication.

⁷ The Department of Homeland Security refers to these two capabilities as a single capability called *Public Health Epidemiological Investigation and Laboratory Testing*. In this report, *Epidemiological Investigations* and *Laboratory Testing* are reviewed separately as each has unique characteristics with regard to health and medical response activities.

4.2.1 Communications

Communications involves an exchange of information among various agencies and entities during all phases of an emergency response. In Texas, health and medical responders have communication equipment available to use in an emergency situation. Available communication technologies currently in use include landline and satellite phones, facsimile, email; 800 MHz and HAM radio systems; and Internet-based software systems (e.g., WebEOC and EMSystem). Most public health agencies have demonstrated the ability to contact key staff members during an emergency event and have staff members trained to utilize WebEOC, as evidenced by data from quarterly reports. In addition, results from the *2005 Hospital Bioterrorism Survey* report that 65 percent of hospitals statewide have provided training to staff on the use of emergency communication equipment. Despite the wide range of communication equipment and systems available in Texas, not all of these systems are interoperable, thereby limiting information exchange during an emergency response. Many localities request state guidance to improve communication interoperability.

Another concern is that local asset requests are not always processed as outlined by the State Emergency Management Plan (i.e., county judge → disaster district committee → state operations center). Such requests should follow the State Emergency Management Plan. Similarly, a mechanism should be created to identify “life and death” health and medical requests so they can be routed expeditiously. A related concern is that communication among and within agencies needs to be improved. These agencies need open channels of communication during an event to facilitate an efficient response.

Recommendations for Communications

- Promote communication device interoperability to enable information exchange between health and medical responders during an emergency response.
- Build and develop professional relationships with appropriate individuals at local, state, and federal agencies prior to an event in order to enhance communication ties during an emergency response.
- Encourage all health and medical stakeholders to utilize the asset request process as outlined by the State Emergency Management Plan.
- Develop a mechanism to recognize “life and death” health and medical requests when seeking assets as outlined by the State Emergency Management Plan. Such a mechanism should flag and route these requests expeditiously.

4.2.2 Emergency Public Information and Warning

The ability to develop and coordinate the rapid release of accurate alerts, warnings and other emergency information to the public during an emergency is a critical component of preparedness. In Texas, local health departments (LHD) are required by the CDC Cooperative Agreement to assess and report their capacity to deliver public information and warnings on a regular basis. The majority of LHDs in the state reported sufficient capacity to answer incoming telephone calls and to provide information to the public during an event. Some of these LHDs reported capacity to provide information over the Internet. However, the capacity to provide public information and warnings to citizens living along the Texas / Mexico border needs to be strengthened.

Local health departments are also required by the CDC Cooperative Agreement to test their capacity to disseminate public information and warnings. The majority of LHDs in Texas reported being able to provide information to the public on health and medical issues for a real event or as part of an exercise / drill. However, challenges remain in providing information to geographically isolated areas due primarily to a lack of media outlets (e.g., a weekly newspaper and limited local radio and television coverage).

Findings also suggest that residents may not know 211 is an outlet for information during a disaster. Likewise, 211 system operators require current information in order to be responsive to requests for information. Processes should be developed to provide health and medical information to 211 on a regularly scheduled basis and to promote 211 as an outlet for health-related public information and warning.

Recommendations for Emergency Public Information and Warning

- Strengthen cross-border relationships with Mexico to promote health-related public information and warning exchange for events likely to impact communities along the Texas / Mexico border.
- Identify outlets to provide health-related public information and warning to populations that lack local media outlets and to populations that live in rural or isolated areas of the state.
- Develop a systematic process to provide disaster-related health and medical information to the 211 system on a regularly scheduled basis during a disaster at both the local and state level.
- Promote 211 to the public as an outlet for health-related public information and warning during a disaster.

4.2.3 Epidemiological Investigations

The ability to conduct epidemiological investigations is a critical component of health and medical preparedness. This includes identifying infectious agents, conducting syndromic surveillance activities, and recommending and implementing control measures.⁸ To successfully perform these tasks, accurate and timely information about potential threats must be readily available to public health personnel (i.e., epidemiologists and support staff) conducting these investigations.

Since 2002, jurisdictions and local public health agencies in Texas have gained access to systems or have acquired tools for surveillance with regard to health and medical preparedness. Reporting tools currently used by local public health agencies vary across Texas, but include:

- **Electronic Surveillance System for the Early Notification of Community-Based Epidemics (ESSENCE II):** This system “is a prototype syndromic surveillance system for capturing and analyzing public health indicators for early detection of disease outbreaks.”⁹ It is used for “evaluating nontraditional health-care indicators; developing and evaluating analytic techniques for early identification of abnormal disease patterns, and for providing an integrated view of [the National Capital Region] military and civilian health department data.”¹⁰
- **National Retail Data Monitor (NRDM):** This public health surveillance tool collects and analyzes point-of-sale data for selected over-the-counter medications to identify disease outbreaks in real time.¹¹ This tool “redistributes data in raw or analyzed form to public health departments.”¹²
- **Real-time Outbreak and Disease Surveillance (RODS) System:** RODS is “an electronic public health surveillance system” that uses routinely collected data (for other purposes) and provides this data on a secure Web-based interface to public health authorities. The RODS developers are currently exploring the use of non-traditional data (e.g., daily call volume to 911 and poison control centers, insurance claim data, absenteeism information, etc.) to determine its suitability for use as signal generators.¹³

⁸ The Department of Homeland Security Target Capability List, Draft Version 2.0

⁹ Lombardo JS, Burkom H, Pavlin J. Essence II and the Framework for Evaluating Syndromic Surveillance Systems. *MMWR* 2004;53(Suppl):159-165. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/su5301a30.htm>

¹⁰ *Ibid.*

¹¹ National Retail Drug Monitor Fact Sheet. http://rods.health.pitt.edu/NRDM_Fact_Sheet_for_Retailers.pdf. Accessed January 24, 2007

¹² The Future of National Retail Drug Monitor. November 2003

<http://rods.health.pitt.edu/NRDM%20Site%20Docs/NRDM%20The%20Future%20of.pdf>. Accessed March 23, 2007

¹³ University of Pittsburgh. RODS implementation: an overview. August 2004

<http://rods.health.pitt.edu/Fact%20Sheets/RODS%20Implementation%20Info.pdf>. Accessed March 23, 2007

- **RedBat:** This is a syndromic surveillance system designed for use in hospitals and public health departments.¹⁴ The system is set up to automatically import and export existing data at the hospital level and to merge this data with other hospital level data for use by a health department. It generates reports automatically and sends out alerts based on pre-established alert thresholds.
- **Syndrome Reporting Information System (SYRIS):** This is a real-time, Web-based early warning surveillance system used to identify potential biological or biohazard threats.¹⁵
- **BioSense:** This refers to *both* a national program “intended to improve the nation’s capabilities for disease detection, monitoring, and real-time situational awareness through access to existing data from health care organizations across the country” and a Web-based system by the same name developed and hosted by the CDC for use by “healthcare facilities and state and local public health partners.”¹⁶

The CDC has also developed software and tools to support information exchange and disease reporting. Two systems used in Texas are described below.

- **Epi-X** is “a Web-based communication solution for public health officials. Through [this system], CDC officials, state and local health departments, poison control centers, and other public health professionals can access and share preliminary health surveillance information quickly and securely. Key features include scientific and editorial support, controlled user access, digital credentials and authentication, rapid outbreak reporting, and peer-to-peer consultation.”¹⁷ This system is accessible to public health officials responsible for identifying, investigating, and responding to health threats.
- **National Electronic Disease Surveillance System (NEDSS)** “promotes the use of data and information system standards to advance the development of efficient, integrated, and interoperable surveillance systems at federal, state, and local levels. It is a major component of PHIN.”¹⁸ Its associated application is NEDSS-BS (Base System), which is a CDC-developed platform upon which “modules can be built to meet state and program area data needs as well as providing a secure, accurate, and efficient way for collecting and processing data needed for surveillance and notification purposes.”¹⁹

¹⁴ ICPA. RedBat. <http://www.icpa.net/redbat-features.html>. Accessed March 23, 2007

¹⁵ ARES Corporation. SYRIS.

http://www.arescorporation.com/products.aspx?style=2&percent20pict_id=189&menu_id=103&id=87. Accessed January 24, 2007

¹⁶ Centers for Disease Control and Prevention. PHIN: BioSense.

http://www.cdc.gov/biosense/files/BioSense_Overview_Handout9-06.pdf. Accessed March 23, 2007

¹⁷ Centers for Disease Control and Prevention. Epi-X. <http://www.cdc.gov/epix/>. Accessed January 31, 2007

¹⁸ Centers for Disease Control and Prevention. National Electronic Disease Surveillance System.

<http://www.cdc.gov/nedss/>. Accessed January 24, 2007

¹⁹ *Ibid.*

In addition to gaining access to and acquiring needed tools for surveillance, staff members of public health agencies in Texas have received training and education about detecting aberrations, conducting epidemiological investigations, and using surveillance systems. However, the number of persons trained varies across the state for reasons such as position vacancies, limited number of staff, staff turnover (e.g., new hires and retirements), lack of approved access to certain surveillance systems, and varied availability of training opportunities. To strengthen the ability of Texas to investigate potential disease outbreaks, enhanced recruitment and training of individuals with appropriate skill sets in epidemiology, biostatistics, and public health is needed.

Recommendations for Epidemiological Investigations

- Promote recruitment and workforce development for positions related to epidemiological investigations. Such efforts will include developing recruitment and training opportunities related to epidemiology, biostatistics, and public health.
- Improve access and training to syndromic surveillance applications used at the local, regional, and state level.
- Provide technical standards and guidance on data collection at the local and regional level. This would include defining information requirements and data collection standards and providing trained individuals capable of interpreting findings and launching subsequent epidemiological investigations.

4.2.4 Exercises

Exercises are used to assess health-related disaster prevention, preparedness, response, and recovery activities. Most, if not all, health and medical entities for which information was provided for this assessment participated in at least one exercise annually. Exercises conducted in the past three years across the state include the following.

- Strategic National Stockpile receipt, storage, and staging
- Mass dispensing of prophylactic medications
- Pandemic influenza preparedness
- Hurricane evacuation and sheltering
- Anthrax biological protection
- Infectious disease outbreaks in local schools
- Regional mass casualty events

Exercises also have provided opportunities for health, medical, and emergency management stakeholders to build collaborative relationships. Stakeholders participating in health and medical exercises include local public health departments, DSHS, Regional Advisory Councils, hospital staff, emergency management officials, and medical care providers.

Suggested recommendation by work group participants for improving future exercises include:

- Exercises should test vulnerabilities that are likely to occur during a disaster. For example, exercises should test how hospitals will handle the loss of electricity or air conditioning under multiple illness / injury scenarios. Similarly, exercises should test the impact of a sustained event on employee fatigue.
- Exercises should seek to test known gaps in a community's ability to meet the health and medical needs of citizens during a disaster.

Recommendations for Exercises

- Promote participation by all health and medical stakeholders in exercises that include a health and medical component in order to build and strengthen relationships with other health, medical, and emergency management stakeholders.
- Conduct exercises to test vulnerabilities that are likely to occur during a disaster (e.g., loss of electricity at a hospital or the impact of a sustained event on employee fatigue).
- Conduct exercises to test known gaps in a community's ability to meet the health and medical needs of citizens during a disaster.

4.2.5 Isolation and Quarantine

Isolation and quarantine (I&Q) measures are used to separate ill individuals (i.e., isolate) or restrict movement of individuals who have or may have been exposed to an infectious agent and to monitor the health of these individuals (quarantine). Implementing these measures requires legal, logistical, and medical support.

In Texas, the Communicable Disease Prevention and Control Act²⁰ allows state, regional, and local public health authorities to request court-ordered management of care directives and to enforce those directives in cases of noncompliance. The legal authority vested in the Act is a valuable tool for local officials to use in declaring and enforcing isolation or quarantine orders. However, findings from work group participants suggest that the legal community at the local level may not be familiar with the Act. Training on the legal aspects of isolation and quarantine are a current area of emphasis for DSHS.

Results from the *2005 Hospital Bioterrorism Survey* indicate that 448 Texas hospitals can maintain 3,507 patients in negative pressure isolation.²¹ However, despite this capacity, only 38 hospitals can provide fixed isolation services for 10 adult and 10 pediatric patients simultaneously. Of hospitals with an emergency department, 90.4% (357/395) can maintain at least one case in negative pressure isolation whereas 68.4% (91/133) of hospitals without an emergency department can maintain at least one case in negative pressure isolation.

Findings suggest local jurisdictions have the following concerns about preparing and responding to an I&Q event:

- Establishing a legal basis for enacting and enforcing an I&Q order;
- Understanding the roles and responsibilities of public health officials, legal counsel, law enforcement, health practitioners, and the general public with regard to an I&Q event;
- Developing and coordinating plans and policies that address public needs and expectations, government responsibilities, and the health and medical care needs of those impacted by an I&Q event;
- Providing supplies (e.g., food, water, medication) and support services to individuals impacted by an I&Q event;
- Establishing and / or designating health and medical facilities with appropriate infrastructure to provide medical care services during an I&Q event (e.g., negative pressure rooms);
- Lacking an opportunity to conduct training and exercises that test inclusive I&Q scenarios (i.e., from when an I&Q order is issued to the point of recovery in a community); and
- Providing information to the public about an I&Q event, what it means, and the public's responsibilities during such an event.

²⁰ Texas Health and Safety Code, Communicable Disease and Prevention Act, 1989. Chapter 81.

²¹ The negative pressure isolation capacity reported by hospitals in the *2005 Hospital Bioterrorism Study* likely represents fixed isolation rooms.

At the state level, the Department of State Health Services (DSHS) has developed four control measures applicable to I&Q activities in Texas: (1) people; (2) property; (3) common carriers; and (4) areas. Currently, DSHS is training officials at the local level to implement these control measures on a voluntary basis as a first approach and on a mandatory basis as a second approach. DSHS is also creating a 24/7 contact list of each county's local health authority and public attorney. This contact list will be used to initiate immediate contact with a county's medical and legal authorities should control measures be required.

Recommendations for Isolation and Quarantine

- Provide education and training to local officials on issues related to declaring and enforcing an isolation and quarantine order.
- Strengthen isolation and quarantine preparedness efforts at the local and regional levels that include plans for providing staff, supplies, physical infrastructure, and public information.
- Promote education and awareness of isolation and quarantine activities to the general public prior to an event. Such education should include definitions of isolation and quarantine, information on what the public should expect to occur during an isolation and quarantine event, and the need for voluntary compliance during an isolation and quarantine event.
- Continue to provide training to local jurisdictions regarding the four control measures applicable to Texas and information on voluntary and mandatory control options.

4.2.6 Laboratory Testing

Laboratory services are critical for identifying biological, chemical, and food-borne agents. In general, Texas has a well-developed capacity to provide laboratory services during times of disaster. Currently, laboratory capacity in Texas includes private laboratories, hospital laboratories, and the Texas Laboratory Research Network (LRN).²² Nearly 70 percent of hospital laboratories in Texas report being able to rapidly increase capacity to test samples in case of a high volume emergency request; 81.7 percent report having identified alternate laboratories to handle these functions in case of contamination or inundation; and 83.9 percent report having protocols and procedures in place to contact appropriate authorities with information on syndromic or diagnostic data suggestive of a bioterrorism or other highly infectious disease.

Findings also suggest areas within laboratory testing that could be improved. Some communities report delayed access to the LRN due to geographical distance from the closest LRN. As such, alternate methods for delivering specimens in a timely manner are needed. Cities located along the Texas border with Mexico identified a need to strengthen cross-border collaboration on laboratory issues (e.g., cross-border transport protocols for laboratory specimens).

There also is concern within the laboratory profession about the high average age of professional laboratorians and that younger workers are not entering the profession. This will lead to a shortage of qualified laboratorians over time if recruitment and workforce development is not encouraged for this profession.

Recommendations for Laboratory Testing

- Identify methods to decrease time to transport specimens from a local jurisdiction to the Laboratory Research Network (LRN) during both normal and emergency situations.
- Promote cross-border cooperation and planning for laboratory testing, especially with regard to protocols related to cross-border specimen shipments.
- Promote recruitment and workforce development of the laboratory profession.

²² Texas Laboratory Research Network (LRN) consists of 10 laboratories that are part of the CDC's Laboratory Research Network (LRN). These 10 LRNs are located throughout the state and provide laboratory testing for suspected bio-threat agents for the Federal Bureau of Investigation, local law enforcement, public health departments, hazardous material teams, fire departments, hospital and reference laboratories, the United States Post Office, and other agencies as appropriate.

4.2.7 Mass Care Capacity

Providing safe and effective mass care requires support staff, volunteers, supplies, and planning.²³ Findings show that Texas has the capacity to provide medical care shelters to support victims during an emergency.

During Hurricanes Katrina and Rita, human resources were available to provide health and medical care in a mass care environment. Physicians, nurses, allied health professionals, mental health professionals, and others volunteered to provide care. However, to strengthen future response efforts, there is a need to identify and credential medical volunteers pre-event (see [Section 4.2.10: Medical Surge](#)).

During Hurricanes Katrina and Rita, evidence indicates that Texas was able to obtain medical supplies, medications, and durable medical equipment to support patient care. However, work group participants raised concerns about obtaining medical supplies during a disaster of long duration - without advance planning. To strengthen future response efforts, plans and processes should be developed pre-event to obtain required health and medical supplies (see [Section 4.2.9: Medical Supplies Management and Distribution](#)).

A number of challenges related to providing mass care were identified that should be addressed prior to future mass care events. One challenge involved recognizing the needs of specific patient populations. Such populations include the elderly, children, people with disabilities, and patients with medical special needs. These populations are likely to require specialty care, age appropriate supplies and medication, and personal assistance. A second challenge involves the need to make medical care decisions when resources are limited. During a disaster, standards of care within a community may not be able to be maintained.

Recommendations for Mass Care Capacity

- Develop plans and procedures to identify, recruit, credential, and train medical and non-medical volunteers to support health and medical response efforts during a disaster.
- Develop plans and procedures for obtaining, distributing, and managing supplies and equipment during a mass care event.
- Develop plans and procedures to address the needs of specific patient populations who will require treatment at shelters.
- Create guidelines addressing ethical issues related to resource allocation during a disaster.

²³ Also see Citizen Protection: Evacuation and / or In-Place Protection (see Section 4.3.3).

4.2.8 Mass Prophylaxis

Mass prophylaxis refers to the administration of medications and measures to the public in order to prevent the development and / or spread of disease. It includes developing plans and protocols for procuring, stockpiling, and distributing these medications. In Texas, findings suggest that there is a well-developed capacity to provide mass prophylactic services to the general public during a disaster.

From the planning perspective, Texas has made strides in developing mass prophylactic plans to distribute medications from the Strategic National Stockpile (SNS) and to provide smallpox vaccinations. With regard to medication distribution, Texas has increased capacity in identifying points of distribution (POD) sites, procuring medications and supplies, and implementing memoranda of understanding with neighboring jurisdictions to support mass prophylactic activities. As reported by work group participants, some jurisdictions have developed local caches and have plans to integrate these caches into retail pharmacy stocks to minimize expired shelf life. Similarly, a number of hospitals and Regional Advisory Councils have reportedly purchased medication stockpiles. More than 40 percent of Texas hospitals report that they can provide prophylactic treatment to their employees for up to 72-hours post-event. Work group participants also reported that a number of communities have developed plans to provide mass prophylaxis to first responders.

Local jurisdictions report progress in identifying, recruiting, and training volunteers to support mass dispensing and collateral duties during an emergency. Jurisdictions have active campaigns to recruit such volunteers, yet the number of volunteers currently enrolled varies by community. Training also varies by community and is offered either to new volunteers as they sign up, as part of just-in-time training during an event, or a combination of both.

Findings identified challenges with regard to mass prophylaxis. These included concerns at the local level about implementing mass prophylactic plans and dispensing medications to the defined population and first responders within 48 hours. Findings also suggest that mass prophylactic plans may not address pediatric and geriatric dosing or how to provide mass prophylaxis to people with disabilities, the special needs population, or homebound citizens. In addition, not all hospitals that have stockpiled medications have solved the problem of minimizing drug expiration with stock rotation.

Recommendations for Mass Prophylaxis

- Review mass prophylactic plans to: (1) promote integration and compatibility with plans from other agencies or levels of government; (2) address needs of specific patient populations (e.g., the elderly, children, people with disabilities, medical special care patients, and homebound citizens); and (3) provide prophylaxis for first responders.
- Strengthen current methods to identify, recruit, and train medical and non-medical volunteers.

4.2.9 Medical Supplies Management and Distribution

Medical supplies management and distribution involves procuring and maintaining pharmaceuticals and medical supplies prior to an incident and obtaining additional supplies during an incident, if needed. It also involves transporting, distributing, and tracking pharmaceuticals and medical supplies during an incident.

Findings indicate that Texas has capacity in place to obtain and distribute medical supplies. Local jurisdictions have memoranda of understanding in place to share supplies during a disaster and 231 hospitals reported in the *2005 Hospital Bioterrorism Survey* that they were able to provide pharmaceutical prophylaxis to hospital personnel for 72-hours post-event. Similarly, most hospitals report access to 72-hours worth of supplies (assuming normal patient loads). Hospitals that are subsidiaries of larger hospital networks can tap parent company resources during an emergency. As reported by work group participants, some hospitals also have contracts with medical supply wholesalers / distributors to acquire supplies during an emergency.

However, Texas faces several challenges with regard to medical supplies management and distribution. One such challenge is the need to obtain supplies for mass care or shelters during an emergency. During recent events, such supplies were obtained ad hoc. While this may suffice for an emergency of limited-duration, potential long-term disasters will require pre-planning. A second challenge is the ability to obtain specialized medical equipment. This would include ventilators, portable oxygen tanks, and wheelchairs. Identifying potential needs and executing contracts with vendors pre-event to provide these goods during a disaster can likely address both of these challenges. Another challenge is the need to develop policies and protocols to rotate pharmaceutical stocks to lessen the likelihood that cached medications will expire before use.

Findings also suggest that there is a concern that supply lines may not be maintained during a disaster. Geographically remote areas or those at the end of the distribution chain may have difficulty obtaining supplies if transport routes are hindered or blocked during a disaster.

Recommendations for Medical Supplies Management and Distribution

- Develop plans for mass care and shelters to obtain supplies and equipment during times of emergency. Such supplies should be age appropriate and consider the needs of specific populations.
- Develop processes to rotate pharmaceutical stocks to lessen the likelihood that cached medications will expire before use.
- Develop plans to provide medications and supplies to all areas of the state that may face disruption in the delivery of supplies during an emergency.

4.2.10 Medical Surge

Medical surge capacity refers to an increased demand for medical resources beyond those available for day-to-day operation. This includes the ability to augment personnel, physical infrastructure, and equipment.

Personnel

Findings suggest that Texas hospitals have developed plans to augment staffing during an emergency. These include developing databases of available personnel, developing callback lists, and working with state medical and nursing organizations to identify and recruit individuals who are available during an emergency. In Texas, 65.9 percent of hospitals reported having a database of credentialed clinicians while 52.8 percent reported having a database of other health professionals to contact during a surge event.

However, there is concern about being able to meet staffing demands over the long term. Likewise, there are concerns about having appropriate staff (e.g., physicians and nurses) available to treat specific patient populations (e.g., children and the elderly) (see [Section 4.2.7: Mass Care Capacity](#)). The Medical Reserve Corps has been identified as a potential resource for augmenting personnel and is considered a local asset. The ability to provide staffing will be a limiting factor in being able to meet surge demands during a health and medical emergency.

Physical Infrastructure

Findings suggest that most Texas hospitals have the ability to increase bed capacity and supporting physical infrastructure (e.g., HVAC²⁴, oxygen, and negative pressure capabilities) during a disaster. The majority (59.7 percent) have a bed expansion plan in place and local health departments, city and county governments, and other entities have created plans and processes to open medical shelters if needed (see [Section 4.2.7: Mass Care](#)). Alternative plans and procedures for increasing physical infrastructure capacity have been developed (e.g., discharging patients to make room for disaster victims).

Resource and Equipment Needs

The ability to increase medical surge capacity during an emergency will depend partly on the availability of material resources and equipment (see [Section 4.2.9: Medical Supplies Management and Distribution](#)). Currently, availability of resources and equipment to support a surge capacity event varies throughout Texas. Hospitals typically keep 72 hours of inventory in stock. To support resource availability, work group participants report that some hospitals and Regional Advisory Councils are creating or contracting with distributors to create equipment and supply caches. Similarly, a number of hospitals have pre-purchase contracts in place to deliver specified supplies within 72 hours of a disaster in the event communication systems are disrupted.

²⁴ HVAC is the abbreviation for heating, ventilation, and air conditioning.

Recommendations for Medical Surge

- Develop plans and procedures to identify, recruit, credential, and train medical and non-medical volunteers to support health and medical response efforts during a disaster.
- Develop plans and procedures to stand-up additional beds and physical infrastructure to support a surge capacity event.
- Develop plans and procedures to obtain supplies, pharmaceuticals, and equipment (as needed) to support a disaster-related health and medical response. Tasks for achieving this goal may include establishing contracts with suppliers pre-event, creating pre-positioned supply caches around the state, and establishing an emergency fund to be tapped during an emergency.

4.2.11 Planning

Planning involves developing, validating, and maintaining procedures for responding to an emergency. Since 2002, findings suggest that both public and private entities are continuing to improve planning capacity throughout Texas.

These findings show that most local health departments have created all-hazards plans or have updated the Health and Medical Annex to their local emergency management plan to include a health and medical preparedness component. In addition, findings show improved collaboration among stakeholders at the local level (e.g., with local and state health departments, universities, independent school districts, hospitals, Regional Advisory Councils, and Councils of Government).

Findings also suggest areas for improvement. One such area is the need to integrate planning efforts across all levels of stakeholder involvement. Currently, some stakeholders create plans in isolation without informing other stakeholders of their involvement until assistance is actually needed. A second area of improvement is the need to assist rural communities with developing a health and medical preparedness / response plan. Rural communities could benefit from state-level guidance and technical assistance in developing and writing these plans.

Recommendations for Planning

- Promote collaboration across all levels of disaster-related health and medical planning.
- Develop processes for all involved stakeholders to review and comment regarding disaster-related health and medical plans that involve them. Such a review should identify areas of planning overlap and should promote an integrated response from all stakeholders.
- Provide technical assistance, as requested, to communities in developing, writing, or updating their health and medical preparedness / response plans.

4.2.12 Responder Health and Safety

First responders must be protected from injury or harm during a disaster response. This includes the need for personal protective equipment (PPE), appropriate training, mental health support, responder prophylaxis, and the need to protect the health and safety of responder family members.

A primary measure of preparedness for responder health and safety is the availability of PPE; however PPE availability for first responders in Texas varies. Hospitals provide PPE to their employees while city and county governments provide PPE to emergency response staff and EMS employees. About half of the hospitals statewide reported having enough PPE for healthcare personnel. Work group participants reported that most urban emergency services departments have adequately outfitted their staff members with appropriate PPE, but that volunteer and rural emergency services departments often lack funds to purchase even basic PPE.

Training in the use of PPE is a concern. Hospitals reported that not all employees are trained properly to wear and use PPE. Training for public health preparedness staff on how to use PPE varies across the state.

Another concern is access to mental health assistance and crisis counseling for first responders. Reported capacity for such assistance is low. Only 35.8 percent of hospitals report having a Critical Incident Stress Debriefing capability while local health departments reported varying levels of success with regard to training individuals to provide worker crisis counseling. A few local health departments have implemented mutual aid agreements with other jurisdictions to provide crisis counseling.

For prophylaxis, there is variability in the ability to provide prophylaxis to first responders. Less than half of all hospitals reported having a 72-hour supply of prophylactic treatment available for hospital personnel.

Recommendations for Responder Health and Safety

- Provide all first responders with appropriate personal protective equipment.
- Promote training opportunities on personal protective equipment use to all first responders.
- Provide Critical Incident Stress Management and other post-disaster counseling services to all first responders who require these services.
- Provide first responders with access to medication prophylaxis prior to general distribution to the public.

4.2.13 Training

Training is the ability to educate and prepare individuals to respond to an emergency. Throughout Texas, findings suggest that both the public and private sectors have embraced the need to train employees on how to respond to bioterrorism and all-hazards emergencies. Training is available in different parts of the state year round and is often coordinated among several entities within a region (e.g., independent school districts, local health departments, hospitals, Regional Advisory Councils, emergency management, etc.). Recent training sessions have included the following scenarios.

- Basic and advanced disaster life support
- Biological response
- Evacuation
- Hazmat
- Hospital Emergency Incident Command System (HEICS)
- Incident Command System (ICS)
- Mass care
- Mass prophylaxis
- National Incident Management System (NIMS)
- Public health leadership training

Information from work group participants indicates that there are opportunities for improvement within this health and medical function. One such area of improvement is the need to include small, rural communities in training programs. These communities are important to overall disaster-related health and medical response efforts. Another area for improvement is to promote cross-training so that individuals can perform duties other than their own if needed during a disaster response.

For information on chemical, biological, radiological, nuclear, and explosive (CBRNE) detection activities see [Section 4.3.2: CBRNE](#).

Recommendations for Training

- Continue providing health and medical preparedness training to all appropriate stakeholders.
- Develop methods to provide training opportunities that are inclusive of all communities throughout Texas.
- Promote cross-training as an essential part of future training activities.

4.2.14 Triage and Pre-Hospital Treatment

This capability encompasses the ability to assess patient care needs and to provide appropriate care consistent with a patient's condition at the time of disaster. Findings show that Texas has demonstrated capacity in providing triage and pre-hospital treatment during times of disaster. For example, during the response to Hurricanes Katrina and Rita, triage sites were established to assess and transfer patients to appropriate care facilities. Other findings include:

- Memoranda of understanding are in place between jurisdictions to provide EMS and other services during a disaster;
- Trained and equipped EMS services are available in most urban jurisdictions in the state;
- Pre-designated triage systems are in place at the local or regional level (e.g., the Simple Triage and Rapid Treatment system or Regional Advisory Council triage algorithms);
- Field-based triage units are available in some parts of the state;
- Designated triage centers are in place in some parts of the state so that patients injured during a disaster or evacuated from a disaster zone are brought to a central location, assessed, and then transferred to an appropriate care facility; and
- Plans, protocols, and training for triage and pre-hospital activities are in place.

There are also areas for improvement within this function. One area of need is increased coordination between first responders (e.g., EMS and fire officials) and those responsible for triage and pre-hospital planning. Such coordination is important so that all first responders, whether they are volunteer, public, or private providers, are knowledgeable about triage and pre-hospital protocols.

Recommendations for Triage and Pre-Hospital Treatment

- Promote the use of common triage systems among hospitals and EMS providers within Health Service Regions.
- Strengthen collaboration between first responders and those responsible for triage and pre-hospital planning in a community. All first responders should be active participants to promote a coordinated, efficient triage and pre-hospital treatment.

4.3 Health and Medical Areas with Minimal Evidence of Reported Readiness Activity

The 12 health and medical areas listed below had minimal evidence of reported readiness activity from calendar years 2004 through 2006. These 12 areas are based on capabilities identified by the U.S. Department of Homeland Security (DHS).²⁵ In total, DHS identified 36 capabilities needed to prevent, prepare, respond, and recover from incidents of national significance. Twenty-six of these capabilities represent functions that a health and medical response could include and are described in more detail in [Appendix A](#).

1. Animal health emergency support
2. Chemical, biological, radiological, nuclear, and explosive (CBRNE) detection
3. Citizen protection: evacuation and / or in-place protection
4. Critical resource logistics and distribution
5. Economic and community recovery
6. Environmental health and vector control
7. Fatality management
8. Food and agriculture safety and defense
9. Hazard and vulnerability analysis
10. Information gathering and recognition of indicators and warnings
11. Intelligence analysis and production
12. Intelligence / information sharing and dissemination

²⁵ Target Capabilities List Draft Version 2.0. U.S. Department of Homeland Security. Date published not available.

4.3.1 Animal Health Emergency Support

This capability encompasses the ability to prevent, respond to, and protect against animal diseases, especially those that can impact human health or the food supply. Because Texas is a large state with a considerable livestock population, there are potential challenges associated with this health and medical function.²⁶ In the event of a major animal disease outbreak (e.g., foot and mouth disease or avian influenza), local populations may be susceptible to zoonotic²⁷ diseases or other consequences of an animal illness.

No additional information was provided on Animal Health Emergency Support, except that some stakeholders noted that the Texas Animal Health Commission (TAHC) is the primary agency charged with animal health issues. TAHC provides support in preventing and responding to animal health issues through a partnership with the U.S. Department of Agriculture's Veterinary Services. Within TAHC is the Animal Issues Committee. This committee has created plans to help state and local jurisdictions appropriately deal with animal health issues during a disaster. These include the *State of Texas Foreign and Emerging Animal Diseases Response Plan, Hurricane Evacuation and Mass Care Plan – Attachment 6 “Animal Care,”* and *State of Texas Animal Issues Committee Plan.*²⁸

In addition, the Health and Medical Section (Appendix H) of the State Emergency Management Plan addresses Foreign Animal Diseases in Appendix 4, the purpose of which is to: “provide guidance for mitigating against, preparing for, identifying and responding to, and recovering from any highly contagious animal disease affecting Texas livestock and wildlife.”²⁹

Recommendations for Animal Health Emergency Support

- Increase collaboration among human and animal health officials at the local level, state level, and with private entities regarding potential animal health issues, zoonosis, and animal health disaster planning activities.

²⁶ According to the U.S. Department of Agriculture, Texas had more than 14 million cattle, over one million sheep, and upwards of 930,000 hogs and pigs in 2005. Source: U.S. Department of Agriculture: http://www.nass.usda.gov/Statistics_by_State/Ag_Overview/AgOverview_TX.pdf. Accessed January 30, 2007

²⁷ A zoonosis is an infection or infectious disease transmitted from vertebrate animals to humans under natural conditions. Source: A Dictionary of Epidemiology. John Last (ed.). 3rd edition, Oxford University Press, 1995.

²⁸ Texas Animal Health Commission State and Local Planning Documents. Available at: <http://www.tahc.state.tx.us/emergency/planning.shtml>. Accessed March 30, 2007

²⁹ Texas Emergency Management Plan on Foreign Animal Diseases, Appendix 4 in Annex H. Available at: ftp://ftp.txdps.state.tx.us/dem/plan_state/state_annex_h_apdx_4.pdf. Accessed: March 30, 2007

4.3.2 Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) Detection

This capability encompasses the ability to detect and protect the public from CBRNE threats as well as the ability to mitigate a CBRNE disaster outcome. Direct evidence of response activities related to radiological, nuclear, and explosive incidents was not available for this assessment. However, indirect findings suggest that the following planning, infrastructure development, and training activities have occurred.

- With assistance from Regional Advisory Councils, hospitals have developed bed surge capacity plans, increased the number of temporary and permanent isolation rooms, obtained personal protective equipment, and improved decontamination facilities with funding from the HRSA-sponsored National Bioterrorism Hospital Preparedness Program.
- Epidemiological and syndromic surveillance systems are in place to detect CBRNE exposure in its earliest stages (see [Section 4.2.3: Epidemiological Investigations](#)).
- Public health laboratories in Texas have analytical investigation capabilities to identify suspected CBRNE agents (see [Section 4.2.6: Laboratory Testing](#)).
- Training and exercises related to the health and medical response of bioterrorism events have been conducted at the local, regional, and state level (see [Section 4.2.13: Training](#) and [4.2.4: Exercises](#)).

Recommendations for CBRNE Detection

- Continue developing bioterrorism preparedness, detection, and surveillance infrastructure to support CBRNE detection and response activities.

4.3.3 Citizen Protection: Evacuation and / or In-Place Protection

Citizen protection involves implementing measures that will allow safe and effective evacuation or sheltering-in-place of a population at risk. From the health and medical standpoint, individuals at risk of being affected by a disaster will likely require medical care for acute or chronic illnesses and injuries during the event. Texas has the capacity to provide citizen protection. During the response to Hurricanes Katrina and Rita, health and medical care were provided to evacuees in shelters throughout the state. Medical shelters were established at convention centers, schools, universities, hospitals, clinics, and health science centers. After the hurricanes, Texas continued its efforts to improve this health and medical area. Alternate care / treatment sites and facilities have been identified throughout the state for future evacuation efforts. However, an opportunity exists to better develop plans and procedures prior to a disaster that will in turn support the health and medical needs of evacuees during a disaster.

Recommendations for Citizen Protection: Evacuation and / or In-Place Protection

- Continue efforts to plan, train, and exercise for medical shelter activities. These activities should include health and medical capacities related to specific disaster types, various patient populations (e.g., pediatrics, geriatrics, and homebound patients), and should promote human and material resource availability pre-event.

4.3.4 Critical Resource Logistics and Distribution

This capability involves the allocation, distribution, and transportation of material and human resources required to enhance safety, security, and life during an emergency. Material resources refer to supplies, medications, and equipment needed during a health and medical response. Human resources include non-medical and medical volunteers such as physicians, nurses, pharmacists, certified nursing assistants, and allied health professionals who can assist with logistical and administrative functions, particularly those functions associated with mass care, mass prophylaxis, and medical surge.

For material resources, findings suggest that Texas has improved capacity with regard to the Strategic National Stockpile (SNS) (see [Section 4.2.8: Mass Prophylaxis](#)). Throughout Texas, local jurisdictions, often in conjunction with regional and state partners, have developed sites to receive, store, and distribute pharmaceuticals and supplies in the event of a mass disaster. However, opportunities to further develop plans and procedures to purchase, store, and distribute *non-SNS* supplies are needed.

With regard to human resources, progress has been made in identifying, recruiting, and training medical and non-medical volunteers to support mass dispensing efforts (see [Section 4.2.8: Mass Prophylaxis](#)). During the response to Hurricanes Katrina and Rita, medical and non-medical professionals volunteered to provide care to evacuees. However, identifying, recruiting, credentialing, and training medical and non-medical volunteers pre-event can still be improved. Recruitment and workforce development for the health professions is encouraged.

Recommendations for Critical Resource Logistics and Distribution

- For material resources, create systems to provide supplies, pharmaceuticals, and equipment during an emergency. This may include establishing contracts with suppliers, creating pre-positioned supply caches around the state, and establishing an emergency fund to be tapped during an emergency.
- For human resources, develop plans and procedures to identify, recruit, credential, and train medical and non-medical volunteers to support health and medical response efforts during a disaster.
- Promote workforce development, education, and training for the health professions (e.g., physicians, nurses, pharmacists, allied health professionals, and public health professionals) to alleviate current and potential shortages in qualified practitioners.

4.3.5 Economic and Community Recovery

Economic and community recovery as related to health and medical preparedness refers to the ability to restore public health and medical care services after an emergency. In Texas, there was limited reported readiness activity for this area, even though some local health departments in Texas have developed continuity of operation plans that focus on maintaining essential services during and after a disaster. Evidence indicated that local health departments have used pre-approved messages to inform citizens of disaster-related health issues, have used vector control measures to prevent infections post-disaster, and have tracked cases and exposures of disaster-related illnesses.

Recommendations for Economic and Community Recovery

- Continue to develop, plan, train, and exercise economic and community recovery activities related to the restoration of health and medical care and public health services.
- Develop plans and procedures to communicate availability of post-disaster services to disaster victims.

4.3.6 Environmental Health and Vector Control

Environmental health and vector³⁰ control involves providing ground and aerial vector control and environmental health services to support public health protection. Available evidence indicated that local health departments in Texas have sanitarians to support vector control activities and that aerial spraying occurred in East Texas to minimize mosquito-borne diseases after Hurricane Rita.

Recommendations for Environmental Health and Vector Control

- Continue to support vector control activities.
- Provide subject matter experts to: (1) advise on potential human health outcomes due to specific vectors; (2) disseminate information to physicians on the treatment of victims exposed to vectors; (3) coordinate health and medical care, including specimen collection, for individuals exposed to a vector; and (4) provide tracking of victims exposed and / or treated due to the vector.

³⁰ A vector is an insect or living carrier capable of transmitting an infection from an infected individual to a susceptible individual. Source: A Dictionary of Epidemiology. John Last (ed.). 3rd edition, Oxford University Press, 1995.

4.3.7 Fatality Management

From a health and medical perspective, fatality management is the management of deceased individuals during and after a disaster. Available evidence suggests that some areas of the state have agreements with vendors to provide refrigeration trucks and that ice rinks have been considered as temporary storage places for corpses. A DSHS Health Service Region reported having a fatality management plan in place but not having tested it. Currently, DSHS is having ongoing discussions with the Texas Funeral Service Commission to develop plans to handle mass fatalities associated with pandemic influenza.

Recommendations for Fatality Management

- Develop plans and procedures for handling large numbers of fatalities that address body identification, local and religious burial service traditions, transport availability, short-term storage of remains, and public health measures.

4.3.8 Food and Agriculture Safety and Defense

Food and agriculture safety involves the detection, surveillance, and response activities regarding the food supply. In Texas, local health departments may employ sanitarians to investigate food-borne illness complaints. Laboratory capacity is also in place at the local and state level to collect, transport, and test for food-borne illnesses (see [Section: 4.2.6: Laboratory Testing](#)). Surveillance activities are also in place. DSHS uses the CDC's Web-based Electronic Food Borne Outbreak Reporting System to report food-borne illnesses to federal officials. DSHS and local health departments are also members of the CDC's PulseNet group, which is a "network of public health and food regulatory agencies [coordinated by the CDC]." ³¹ The purpose of PulseNet is to identify and detect food-borne illnesses, identify illnesses as outbreak sources, and to assist in epidemiological investigations. Using pulsed-field gel electrophoresis, public health agencies around the country can analyze, share, and compare samples via the Internet.

Recommendations for Food and Agriculture Safety and Defense

- Continue developing detection, surveillance, and response activities to support food supply safety.

³¹ Centers for Disease Control and Prevention. <http://www.cdc.gov/pulsenet/whatis.htm>. Accessed: February 1, 2007

4.3.9 Hazard and Vulnerability Analysis

A Hazard and Vulnerability Analysis (HVA) reports hazards that a jurisdiction is likely to face (e.g., man-made or natural disasters, sensitive industries, etc.). Most local jurisdictions in Texas have completed and filed a HVA report with the Governor’s Division of Emergency Management. However, health and medical officials may not always be consulted during HVA development, thus limiting the amount of input these officials can provide.

From the health and medical perspective, information contained in these documents can help promote an integrated response from all appropriate stakeholders (e.g., emergency management, law enforcement, fire, EMS, hospitals, nursing homes, private physicians, home healthcare, public health, and other city / county agencies). However, the release of information in these documents to health and medical preparedness officials – even at the state level – is restricted due to the sensitive nature of the information contained in these documents. Therefore, local health and medical preparedness officials do not have the ability to determine if appropriate health and medical personnel, equipment, and supplies are in place pre-event to meet the needs of potential community hazards.

Recommendations for Hazard and Vulnerability Analysis

- Encourage the inclusion of health and medical subject matter experts when developing Hazard and Vulnerability Analyses at the community level so that plans emanating from these assessments can be responsive to the health and medical needs of the community.

4.3.10 Information Gathering and Recognition of Indicators and Warnings

Information gathering is essential in recognizing indicators and warnings of events that could impact the well-being of citizens. The information gathering process requires input and efforts of multiple agencies. Specifically, syndromic surveillance and other mechanisms for capturing data are used to formulate indicators and warnings of potential health and medical issues.

Texas has developed capacity in syndromic and other surveillance activities specific to health and medical preparedness (see [Section 4.2.3: Epidemiological Investigations](#)). Data were successfully gathered during sheltering operations for Hurricanes Katrina and Rita. For example, symptoms and illnesses were reported to DSHS by shelter and field staff on a timely basis.

Future activities for this function should focus on developing mechanisms for identifying data needs pre-event, developing mechanisms to obtain this data efficiently, encouraging collaboration with data holders (e.g., private industry or government agencies), and creating processes to authenticate data results.

Recommendations for Information Gathering and Recognition of Indicators and Warnings

- Identify and develop clear and concise information needs required to support health and medical preparedness efforts in Texas. This includes pre-identifying examples of activities that may signal an upcoming health and medical emergency.
- Communicate information needs to appropriate local, state, and federal agencies that gather information on an ongoing basis (e.g., law enforcement, public health agencies, emergency services, etc.).
- Engage and support private industry (e.g., pharmacies, hospitals, benefit managers, etc.) in identifying and reporting activity that may signal an emerging health and medical concern (e.g., large sales of over-the-counter medication may signal an emerging outbreak).
- Gather information from all sources on a routine basis that could be used to support health and medical preparedness efforts. Information gathering should be coordinated with current syndromic surveillance and epidemiological investigation activities.
- Develop processes to receive gathered information, authenticate it, and screen for relevance in a timely manner.

4.3.11 *Intelligence Analysis and Production*

Intelligence analysis and production refers to analyzing data from multiple sources to generate information on likely threats or events. This capacity has improved during the last few years with advanced technology, which has allowed integration of data from multiple sources and access to integrated data. Available evidence suggests that Texas can perform this function to some degree, particularly with the increased use of national tracking and syndromic surveillance systems. With increased ability to gather data, more qualified professionals will be needed to scrutinize data patterns, as well as to verify and validate results before distributing the findings. (See [Section. 4.3.12: Intelligence / Information Sharing and Dissemination.](#))

Recommendations for Intelligence Analysis and Production

- Continue to promote the use of integrated technology for analysis of health and medical data to monitor potential emerging illnesses.
- Continue to provide qualified professionals to review and scrutinize data prior to internal or external release.

4.3.12 *Intelligence / Information Sharing and Dissemination*

From a health and medical perspective, intelligence sharing and dissemination means the ability to obtain and report information on disease diffusion, emerging diseases, and potential threats to the nation's health and medical safety. With Web-based technology, health and medical surveillance information can be disseminated to a national audience. The Centers for Disease Control and Prevention uses a Web-based communication system called Epi-X that gathers and reviews information to quickly notify health professionals of critical events. (See [Section 4.3.11: Intelligence Analysis and Production](#).)

In Texas, the number of local health departments that have received access and / or training to use Epi-X varies. In order for health departments to have access to this information-sharing tool, and the ability to contribute information to it, appropriate personnel at the local level should be trained to use and access Epi-X. Professional relationships need to be established to enable horizontal and vertical flow of appropriate information among agencies. In addition, additional methods of sharing and disseminating health and medical information at the state level (e.g., as part of a fusion center) need to be identified.

Recommendations for Intelligence / Information Sharing and Dissemination

- Promote horizontal information sharing and dissemination flows across disciplines and vertical flows between federal, state, and local authorities.
- Promote access and training for appropriate health and medical officials to utilize information sharing and dissemination tools (e.g., local health departments have authorized and trained users to access and report on Epi-X).

5 Appendices

5.1 Appendix A: Description of the 26 Health and Medical Capabilities³²

Health and Medical Capability	Description
Animal health emergency support	This capability encompasses the ability to prevent, respond, and protect against animal diseases, especially those that can impact human health or the food supply.
Chemical, biological, radiological, nuclear, and explosive (CBRNE) detection	This capability encompasses the ability to detect and protect the public from CBRNE threats as well as the ability to mitigate the outcome of a CBRNE disaster.
Citizen protection: evacuation and / or in-place protection	This capability encompasses the ability to implement measures that will allow safe and effective evacuation or sheltering-in-place of a population at risk.
Communications ³³	This capability encompasses the ability of various agencies and entities to use equipment and systems to exchange information with one another during all phases of an emergency response. It also encompasses the ability to ensure appropriate intra- and inter-agency communication.
Critical resource logistics and distribution	This capability encompasses the allocation, distribution, and transportation of material and human resources required to enhance safety, security, and life during an emergency.
Economic and community recovery	This capability encompasses the ability to restore public health and medical care services after an emergency.
Emergency public information and warning	This capability encompasses developing and coordinating the release of accurate alerts, warnings, and other emergency information to the public during an emergency.
Environmental health and vector control	This capability encompasses providing ground and aerial vector control and environmental health services to support public health protection.
Epidemiological investigations ³⁴	This capability encompasses identifying infectious agents, conducting syndromic surveillance activities, and recommending and implementing control measures.
Exercises	This capability encompasses the ability to assess health-related disaster prevention, preparedness, response, and recovery activities.

³² Target Capabilities List Draft Version 2.0. U.S. Department of Homeland Security. Date published not available.

³³ The DHS TCL refers to this as *Interoperability Communication*. In this assessment, the term *Communication* is used and is defined as both technical (i.e., interoperable communication) and interpersonal communication.

³⁴ The DHS TCL refers to these two capabilities as a single capability called *Public Health Epidemiological Investigation and Laboratory Testing*. In this report, *Epidemiological Investigations* and *Laboratory Testing* are reviewed separately as each has unique characteristics with regard to health and medical response activities.

Health and Medical Capability	Description
Fatality management	This capability encompasses the ability to manage deceased individuals during and after a disaster.
Food and agriculture safety and defense	This capability encompasses the detection, surveillance, and response activities regarding food safety.
Hazard and vulnerability analysis	This capability encompasses the ability to report on specific hazards applicable to the local area that may increase the likelihood of a man-made or natural disaster.
Information gathering and recognition of indicators and warnings	This capability encompasses the ability to recognize indicators and warnings of activities that could impact the health and medical well-being of citizens.
Intelligence analysis and production	This capability encompasses the ability to evaluate data from multiple sources to create an assessment of current or likely threats.
Intelligence / information sharing and dissemination	This capability encompasses the ability to obtain and report information on disease diffusion, emerging diseases, and potential threats to the nation's health and medical safety.
Isolation and quarantine	This capability encompasses measures to separate ill individuals or restrict movement of individuals who have or may have been exposed to an infectious agent and to monitor the health of these individuals.
Laboratory testing ³⁵	This capability encompasses the ability to provide public health laboratory services in identifying biological, chemical, and food-borne agents associated with a medical crisis or disaster.
Mass care capacity	This capability encompasses the ability to provide safe and effective health and medical care during sheltering.
Mass prophylaxis	This capability encompasses the administration of critical interventions in response to a public health emergency to prevent the development of disease among those who are exposed or are potentially exposed to a threat.
Medical supplies management and distribution	This capability encompasses procuring and maintaining pharmaceuticals and medical supplies prior to an incident and obtaining additional supplies during the incident (if needed). It also involves transporting, distributing, and tracking pharmaceuticals and medical supplies during an incident.
Medical surge	This capability encompasses the ability to meet increased demand for medical resources beyond those available for day-to-day operations. This

³⁵ The Department of Homeland Security refers to these two capabilities as a single capability called *Public Health Epidemiological Investigation and Laboratory Testing*. In this report, *Epidemiological Investigations* and *Laboratory Testing* are reviewed separately as each has unique characteristics with regard to health and medical response activities.

Health and Medical Capability	Description
	includes the ability to augment personnel, physical infrastructure, and resource / equipment needs.
Planning	This capability involves developing, validating, and maintaining plans and procedures for responding to an emergency.
Responder health and safety	This capability encompasses protecting first responders from injuries and illness from a disaster. This includes ensuring the availability of personal protective equipment (PPE), appropriate training, mental health support, and responder prophylaxis, as well as ensuring the health and safety of responder family members.
Training	This capability encompasses the ability to educate and prepare individuals to respond to an emergency.
Triage and pre-hospital treatment	This capability encompasses the ability to assess patient care needs and to provide appropriate care consistent with a patient's injury at the time of disaster.

5.2 Appendix B: Stakeholders Groups Represented at Work Group Sessions

Stakeholder Groups Represented	Number of Participants
211 of Texas	5
Business Partners	1
Councils of Government	12
County Officials	4
Department of Aging and Disability Services	2
Department of State Health Services	49
Elected Officials	2
Emergency Management Officials	15
Faith-Based Partners	1
Federal Partners	1
Fire Officials	9
Geriatric Physician	2
Governor's Division of Emergency Management	4
Health and Human Services Commission	8
Hospital – Administration	13
Hospital – Emergency Department	17
Hospital – Laboratory	8
Hospital – Nursing	18
Hospital – Operations	21
Hospital – Pharmacy	10
Hospital – Respiratory	4
Hospital District	3
Local Health Department	57
Medical Society	7
Mental Health and Mental Retardation	14
Military	1
Pediatric Physician	10
Red Cross	7
Regional Advisory Council	19
Retail Pharmacy	1
State Government (non-Health and Human Services)	3
State Partners	5
University Health Science Center	12
Total	345

5.3 Appendix C: Acronyms Used in This Report

CBRNE	Chemical, Biological, Radiological, Nuclear, Explosive
CDC	Centers for Disease Control and Prevention
COG	Council of Government
DDC	Disaster District Committee (Texas)
DHS	Department of Homeland Security
DSHS	Department of State Health Services
EMS	Emergency Medical Services
ESSENCE II	Electronic Surveillance System for the Early Notification of Community-Based Epidemics
HEICS	Hospital Emergency Incident Command System
HRSA	Health Resource Services Administration
HSR	Health Service Region (DSHS)
HVA	Hazard and Vulnerability Analysis
HVAC	Heating, Ventilation, and Air Conditioning
I&Q	Isolation and Quarantine
ICS	Incident Command System
LHD	Local Health Department
LRN	Laboratory Research Network
NEDSS	National Electronic Disease Surveillance System
NIMS	National Incident Management System
NRDM	National Retail Data Monitor
POD	Point of Distribution
PPE	Personal Protective Equipment
RAC	Regional Advisory Council
RODS	Real-time Outbreak and Disease Surveillance
SNS	Strategic National Stockpile
SOC	State Operations Center (Texas)
SYRIS	Syndrome Reporting Information System
TAHC	Texas Animal Health Commission
TCL	Target Capabilities List (DHS)