TEXAS
Health and Human Services

Texas Department of State Health Services

Public Health Region Capacity to Respond During a Disaster

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Table of Contents

Executive Summary

Public health may be defined as promoting and protecting the health of people and the communities where they live, learn, work, and play. In Texas, public health is the responsibility of a complex and diverse system, composed of a wide array of traditional and non-traditional public health partners that include both public and private sector entities. The mission of the Texas Department of State Health Services (DSHS) is to improve the health, safety, and well-being of Texans through stewardship of public resources and a focus on core public health functions.

The DSHS' mission places the agency as the anchor of a complex public health system, which is driven by an increasing need for traditional public health services amidst the threats of emerging infectious diseases, natural and man-made disasters, and chronic disease. At the same time, the DSHS leadership role is challenged because most public health system participants are independent from DSHS. DSHS increasingly acts as a convener, bringing together diverse partners to achieve consensus on actionable strategies to address pressing public health objectives. Flexibility is necessary to meet the state's unique needs but also results in complexity in defining the system structure and jurisdictional responsibilities.

Despite the local and regional differences that exist regarding the depth, breadth, capacity, and capabilities of services provided to meet community needs, the system experiences common issues that impact DSHS' ability to respond to public health challenges and disasters. The most prevalent theme is that both during and outside of public health disasters, demand for public health services exceeds system capacity.

Senate Bill 969, Section 4(b), 87th Texas Legislature, Regular Session, 2021, charged DSHS to examine and report on the capacity and capabilities of DSHS Public Health Regions (PHRs) and regional offices to respond to a public health disaster. DSHS examined these issues from a systemic perspective and in consideration of the COVID-19 pandemic. DSHS identified the following overarching issues as areas for improvement:

- DSHS Geographic Coverage
- Financing and Resources
- Workforce and Employee Safety
- Training and Education

- Public Health Data Analytics
- Disaster Response Coordination

In preparation for this report, DSHS built on previous analyses, after action reviews, and legislatively-required reports and updated this information considering the COVID-19 experience. [1] Consultation with stakeholders, including the Public Health Funding and Policy Committee and local health department representation was conducted. This report provides substance related to common needs and recommendations for system improvement efforts with the potential for statewide benefit.

[1] See Appendix A Publications

1. Introduction

Since January 2020, Texas and the nation have been engaged in a public health emergency response to the global COVID-19 pandemic. This response has placed significant strain on the entire public health and health care system due to the nature of the virus, and its ability to affect the entire population and the duration of the event. DSHS and its PHRs were at the forefront of the COVID-19 response. DSHS activity closely interacted with Local Health Entity (LHEs) efforts to combat the virus within their jurisdiction.

Senate Bill 969, Section 4(b), 87th Texas Legislature, Regular Session, 2021, requires DSHS to evaluate the current scope, size, function, and public health response capabilities of PHRs and regional offices. DSHS must identify current capabilities, assess the need for geographic realignment, and identify ways to improve support to LHEs and areas in which DSHS serves as the primary public health provider. DSHS coordinated its evaluation with LHEs, areas served by DSHS PHRs, and the Public Health Funding and Policy Committee.

2. Background

DSHS is focused on core public health functions, with its central headquarters in Austin, Texas. The Division for Regional and Local Health Operations (RLHO) works in coordination with LHEs to ensure essential public health services are available throughout the state. RLHO provides oversight in the state's eight PHRs. Over 1,200 staff are based in the PHRs[2] to provide support and technical assistance to LHEs operating within each PHR. Each PHR also functions as the public health service provider in areas where no LHE exists or where the LHE does not provide certain services. DSHS PHRs cover the majority of the state's geographic areas, primarily in rural and frontier areas. Locally-directed LHEs cover the majority of the population, primarily in urban and suburban areas.

DSHS central office programs, DSHS regional staff, and LHEs work together to support the ten essential public health services[3] throughout the state to:

1. Monitor health status to identify and solve community health problems,
2. Diagnose and investigate health problems and health hazards in the community,
3. Inform, educate, and empower people about health issues,
4. Mobilize community partnerships and action to identify and solve health problems,
5. Develop policies and plans that support individual and community health efforts,
6. Enforce laws and regulations that protect health and ensure safety,
7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable,
8. Assure competent public and personal health care workforce,
9. Evaluate effectiveness, accessibility, and quality of personal and population-based health services, and
10. Research for new insights and innovative solutions to health problems

[2] See a map of the DSHS public health regions at dshs.texas.gov/regions/state.shtm
[3] Texas Health and Safety Code, Title 2, Subtitle F, Chapter 121, Section 121.002

Texas has 161 LHEs within the state. The term "local health entity" in this report includes entities outlined in statute as local health units, local health departments, and public health districts.[4] Public health services are provided by LHEs in 90 counties, with DSHS PHRs providing public health services in the remaining 164 counties. Due to the variation among LHEs within a region, the support provided by PHRs also varies based on need. In areas where no LHE exists, DSHS PHRs are responsible for providing public health services. DSHS also provides services in jurisdictions that may have an LHE that does not provide certain critical services, such as tuberculosis services or retail food inspections.

Even in jurisdictions where comprehensive public health services are available through an LHE, DSHS coordinates continuously with LHEs. DSHS staff may play a support role or fulfill certain responsibilities directly, such as in disaster preparedness and response. Additionally, DSHS is responsible for certain public health duties statewide, which may occur in any county. An example of this is food and drug manufacturing inspections.

Though LHEs tend to exist in more densely populated jurisdictions, DSHS PHRs are typically responsible for providing public health services in the more rural and frontier counties without an LHE. The expansive geographic areas for which DSHS regional staff provide coverage, along with limited staffing and resources, can create challenges in providing robust service delivery or public health disaster response in all areas.

The current public health system structure in Texas creates a dual role for DSHS. In addition to responsibility for regional and statewide system coordination, DSHS must provide public health services in areas where the jurisdiction does not perform this function. These varied responsibilities require that staff time and resources be divided between these two major efforts of coordination/technical assistance and direct public health service provision, making it challenging to dedicate the necessary attention to either.

[4] Texas Health and Safety Code, Title 2, Subtitle F, Chapter 121, Sections 121.004, 121.031, and 121.041

3. DSHS Role in Public Health Disasters

The Texas Government Code[5] delineates the emergency management structure in Texas, and Texas Health and Safety Code outlines the duties of DSHS during a public health disaster and/or emergency.[6] The Texas Division of Emergency Management's (TDEM) State Emergency Management Plan identifies lead agencies for each Emergency Support Function (ESF). DSHS is the lead agency for ESF-8, Public Health and Medical Response. ESF-8 responsibilities include coordination of public health and medical-related preparedness, response, and recovery activities.

Depending on the size and scope of an incident, DSHS may activate the State Medical Operations Center (SMOC) to serve as the state public health and medical coordination point. In its role as the public health and medical arm of the State Operations Center (SOC), the SMOC coordinates with regional and state public health and medical partners, as well as with federal agencies. Activation of the SMOC ensures that state resources are effectively applied to the response before requesting additional support from outside of the state.

Texas takes an all-hazards approach to preparedness and response, which means that TDEM, DSHS, and other state agency emergency response partners maintain preparedness to respond to a range of events, including:

- Natural events
- Biological events
- Hazardous material spills
- Radiological accidents
- Terrorist acts
- Man-made disasters

ESF 8, Public Health and Medical Response, is the intersection of public health, healthcare, and emergency management.

Since 2008, DSHS has responded to a wide range of events under the umbrella of its ESF 8 responsibilities. Some of these events have been limited to a single region, like the Dallas Ebola cases or hurricane events. The more recent COVID-19

[5] Texas Government Code Title 4, Subtitle B, Chapter 418, Subchapter A
[6] Texas Health and Safety Code, Title 2, Subtitle D, Chapter 81, Section 81.0813

pandemic was unique in that the emergency response was statewide, in every jurisdiction both in the state and in the country.

4. Current Capabilities of Public Health Regions

DSHS response activities under Emergency Support Function (ESF) 8, Public Health and Medical Services, include responding to medical needs associated with mental health, behavioral health, and substance abuse considerations of incident victims and response workers. Specific response efforts vary depending on the nature of the event. Generally, during a public health disaster response, DSHS and its PHRs are responsible for:

- Coordination and control
- Medical evacuation and sheltering
- Responder safety and health
- Medical material management and distribution
- Fatality management
- Patient care
- Epidemiology and surveillance
- Communication/emergency public information

The eight PHRs ensure public health and medical planning and response activities are coordinated throughout the state. While DSHS operates the SMOC to coordinate out of the Texas Division of Emergency Management's (TDEM) State Operation Center (SOC), each PHR can activate a Regional Health and Medical Operations Center (RHMOC) to serve as the public health and medical arm of the Department of Public Safety (DPS) Disaster District Committees within their region.

5. Capabilities of Local Health Entities

Public health in Texas is funded with local, state, and federal dollars. Variation exists among local health entities (LHEs) as to how much funding they receive and from what sources. In turn, this creates variations among LHEs as to what services and what level of disaster response they can offer. This can create complexity within the system structure. However, there are recognized benefits in engaging local jurisdictions, as the provision of public health services is best performed locally. And, during a disaster, state support is best offered as an adjacent local support and coordination.

Participation in public health service delivery is voluntary at the local level, and there is no minimum threshold for the depth or breadth of services that must be provided. LHEs must only perform the services required by their governing body (e.g., county commissioners, city council).[7] If an LHE reduces or discontinues public health operations because of limited resources or local decision-making, DSHS PHRs are responsible for filling those gaps in services.[8] DSHS and its regional offices since DSHS may not have the capacity to absorb these increased responsibilities and costs.

The differences among LHEs and the impact to DSHS PHRs can become especially evident during a public health event or disaster. If an LHE does not have the capacity to absorb a localized emergency response, this responsibility falls to the PHR and to DSHS. While some jurisdictions support sophisticated disaster response capabilities, other jurisdictions rely on PHRs to a much greater level. For DSHS to support all types of jurisdictions regardless of their location or service levels, DSHS and each of its PHR must maintain capacity and capabilities to flexibly support local health departments during a disaster.

[7] Texas Health and Safety Code, Title 2, Subtitle F, Chapter 121, Sections 121.004, 121.031, and 121.041
[8] Texas Health and Safety Code, Title 2, Subtitle F, Chapter 121, Section 121.007

6. Areas for Improvement

The most common theme expressed among PHRs and LHEs when evaluating the PHR capacity and capabilities is that demand for public health services exceeds system capacity. This is true both during and outside of public health disasters or events. DSHS PHR staff are capable and knowledgeable, but they are under-resourced and must prioritize and address the most critical problem of the day, sometimes leaving other service areas vulnerable.

Though each PHR and LHE is unique and experiences different challenges, the following common themes emerge across all PHRs and are applicable when reviewing PHR capabilities and identifying ways to improve support to LHEs and areas in which DSHS serves as the primary public health provider.

The following overarching issues have been identified as areas for improvement:

- DSHS Geographic Coverage
- Financing and Resources
- Workforce Challenges
- Training and Education
- Public Health Data Analytics
- Disaster Response Coordination

In some of these areas, DSHS has been able to identify approaches for improvement through existing resources or federal COVID-19 grant funding.

DSHS Geographic Coverage

The geographic area covered by each DSHS PHR has remained relatively constant. What has changed is the population within these service areas. The number of DSHS physical locations have not kept up with the population growth due to resource limitations. This vulnerability was amplified during the COVID pandemic with the minimal health service coverage of rural and frontier areas coupled with increased service demand. Using temporary federal grant funding, DSHS was able to expand the workforce to better meet the need of rural areas. At the same time, using temporary federal funding, DSHS incorporated virtual visits to serve more rural and frontier Texans and to amplify the reach of DSHS services into communities. Virtual technology allowed DSHS to reduce the amount of travel time and correspondingly increase the time spent in directly serving Texans. All these

fixes were dependent on temporary funding, and without a permanent resource allocation, rural and frontier areas will again be susceptible to service shortages.

While consultation with LHEs and PHRs did not reveal a need to realign the geographic coverage of the DSHS PHRs, it did showcase the needs for additional access points in rural communities. Additionally, the need for ongoing use of virtual options became apparent. In recognition of DSHS' responsibility to better meet the needs of rural and frontier areas, DSHS has included these needs in its legislative appropriations request for the fiscal year 2024-2025 biennium. The request includes additional clinical access points, clinical expansions within existing offices, and ongoing support for virtual tele-public health tools.

Financing and Resources

DSHS and its local partners primarily rely on federal funds for public health preparedness and disaster response. At a federal level, prior to the pandemic, funding for most public health services has been level or has decreased, despite growing populations and greater need. Limited resources have forced public health to be reactive instead of proactive, which poses a risk to public safety and leads to increased spending on health care.

These resource limitations stress the public health system every day, and in turn lead to a less prepared system in the event of a disaster response – particularly if that response is as wide-spanning as the COVID-19 response. To increase capabilities to respond to the COVID-19 pandemic, DSHS has received over $15 billion of temporary funding and reimbursement from the federal government. The purpose and scope of those funding streams have been to:

- Enhance preparedness and response
- Implement and expand COVID-19 vaccine administration
- Increase and strengthen the public health workforce
- Increase COVID-19 vaccination rates among vulnerable populations
- Provide COVID-19 testing in schools
- Enhance laboratory capacity
- Improve electronic case reporting
- Enhance hospital preparedness and capacity
- Test wastewater and improve worker safety and health, and
- Provide personal protective equipment

Although these funds are temporary, they have been vital to supporting the two-and-a-half-year pandemic and allowed for traditional public health activities to continue in addition to responding to the pandemic. DSHS has evaluated the impact of these federal grants expiring and is including requests to maintain some of these capabilities and capacities in its legislative appropriations request.

Training

Additional and more convenient training opportunities are needed to develop and strengthen the Texas public health workforce. Specifically, more regional-based and virtual training opportunities would maximize effectiveness. The development of standard information for new employee training and orientation to the public health system would be extremely valuable. This could include a Public Health 101 course with an emphasis on the public health system in Texas. Tiered learning and continuing education on disease-specific topics would be valuable to and educate staff at different stages of their career. Increased access to training related to emergency response practices during a public health crisis is needed.

Cross-training and shadowing DSHS PHRs and DSHS central office would help create a common understanding of public health system operations, roles, responsibilities, as well as practices and standards related to service provision. Strengthening relationships with colleges and universities and partnering with academic institutions to provide public health curriculum development and internship opportunities for students would be mutually beneficial. In addition to providing needed field training opportunities for those students, this type of collaboration would help foster an interest and understanding of public health – and better prepare those who may enter the public health workforce or other professions that might intersect with public health. One area of particular interest for better collaboration with academic institutions is public health preparedness exercises and training.

DSHS is leading a coordinated approach to public health workforce development and training. This includes the following initiatives:

- Launch of a Public Health Workforce Training website for employees to access and receive relevant trainings and communicate workforce training needs.
- Development of a Public Health 101 Curriculum scheduled to launch by early 2023 and including six modules: Public Health Principles; Epidemiology; Public Health Law, Policy, and Ethics; Public Health System; Population Health and Health Disparities; and Public Health Interventions.

- Creation of a master training catalogue, with over 150 trainings so far identified as resources for public health employees.

DSHS is in the process of creating an Academic Public Health Consortium that will consist of Academic Public Health Partnerships with universities and academic institutions across Texas. The partnership is intended to enhance public health education and training, research, and service to the community.

DSHS also created the Texas Public Health Fellowship Program in 2022 to further develop interest in the public health field and encourage a better trained and prepared workforce. The Fellowship is a one-year, paid training program for individuals early in their public health careers or interested in starting a career in public health. Fellows receive hands-on experience in public health, professional development, and career guidance at DSHS or an LHE. There are currently 36 Fellows for the inaugural year, which runs from June 1, 2022 to May 31, 2023.

DSHS is also collaborating with the Texas Epidemic Public Health Institute (TEPHI), which was created by Senate Bill 1780, 87th Legislature, 2021, and is a network of public health professionals and resources that will ensure the state is at the forefront of pandemic readiness and response to keep Texans safe and the economy strong. TEPHI efforts to date include creation of a "Certificate in Pandemic Preparedness and Response," which is free to DSHS and LHE staff and covers the various fundamentals of pandemic preparedness and response professionals use to ensure a successful emergency response has been achieved. DSHS and TEPHI continue to work together to identify and develop ways to strengthen the state's public health workforce and readiness.

Workforce Challenges

Workforce shortages are concerning, as many LHEs and DSHS PHRs have difficulty with staff recruitment and retention. The challenges for hiring and retaining staff in the regions include the inability to provide competitive wages to skilled professionals, as well as a lack of trained and qualified professionals in some areas. Workforce shortages are particularly concerning for specialized staff such as clinical nurses, epidemiologists, qualified food inspectors, and social workers.

Worker safety is a concern for public health employees, as their duties often require fieldwork and public interaction. There are recognized health risks and safety standards when dealing with patients with communicable diseases. Public health staff must be prepared 24 hours a day, 7 days a week, to respond in the event of

disasters and emergencies. Response and recovery efforts may expose them to dangerous conditions such as flooding, fire, and hazardous materials.

Given the demanding and often unpredictable nature of frontline public health work, the current salary and career ladder structure at the PHRs presents an ongoing challenge. DSHS and its PHRs are incrementally working to better align salary structures to recruit and retain a qualified workforce. However, funding limitations remain a consideration in this effort.

DSHS received $157 million in federal funding from the CDC Crisis Response Cooperative Agreement: COVID-19 Public Health Workforce Supplemental Funding in July 2021. This is a two-year funding cycle intended to establish, expand, train, and sustain the public health workforce to support jurisdictional COVID-19 prevention, preparedness, response, and recovery initiatives, including school-based health programs. States may use this funding to recruit, hire, and train personnel to address projected jurisdictional COVID-19 response needs. Twenty-five percent of the award is supporting school-based health programs, including nurses. Of the remaining 75 percent, 40 percent is dedicated for LHEs. DSHS, PHRs, and LHEs are using these funds to promote a stable public health workforce. CDC is offering a new grant, the Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems grant, which offers an opportunity for both DSHS and LHEs to build on this effort to stabilize the state's public health workforce.

Public Health Data Analytics

The demand for complex and voluminous data during the COVID-19 pandemic strained Texas systems that were outdated, designed for low volume, manual, or simply did not exist. At the same time, the processing and analytics required to generate such data sets necessitated a large public health and technical work force that did not exist at a sufficient level before the pandemic.

The demands for data impacted not only DSHS, but also created significant new burdens for many public health and emergency response partners. These partners included LHEs, hospitals and health care facilities, regional advisory councils, and testing laboratories. In the case of LHEs, they had the responsibility to collect and submit data to DSHS, and also required DSHS data analytics to feed data and trend information back to them.

Throughout the pandemic, DSHS has worked with these partners to continuously improve COVID-19 data submission, uniformity, and quality. Significant federal

funding has allowed DSHS to procure new systems, perform systems upgrades, and hire a temporary workforce to support the data demands of the COVID-19 pandemic. These issues and related recommendations are discussed in greater detail in the legislative report submitted in accordance with Senate Bill 969, Section 4(c), 87th Legislature, 2021.[9]

DSHS has undertaken specific efforts to better serve LHE data needs. Building on pre-pandemic work with LHEs and the PHRs, DSHS has used federal COVID-19 funds to develop the State Health Analytics and Reporting Platform (SHARP). SHARP is designed to expand data analytics capabilities and reduce manual processes to produce reliable reports and analyses. SHARP also enables and enhances the data governance of the agency's data assets. While SHARP has many benefits and capabilities for DSHS and PHR staff, the outcomes are beneficial for LHEs. Benefits of SHARP for the PHRs and LHEs include:

- Better data quality – additional data quality checks and ongoing data quality monitoring
- Access to data visualizations – ability to view maps and graphs to gain summary information about their area and the state
- Access to line-level data – ability to access data in place and run analyses without having to download a file

SHARP allows DSHS to better meet the intent of House Bill 3703, 86th Texas Legislature, 2019.[10] This law states that DSHS may enter into an agreement with an LHE that provides essential public health services to provide the entity access to identified public health data relating to the entity's jurisdiction and any public health data relating to a jurisdiction contiguous to the entity; and deidentified public health data maintained by the department relating to the jurisdiction of any other local public health entity.

Disaster Response Coordination

DSHS is the lead agency for the public health and medical planning, coordination, and response to any event in Texas. The department works under the Texas Division of Emergency Management Emergency Operations Plan and partners with other state agencies and health partners. DSHS is now engaged in its after action review process for the COVID-19 pandemic as of this report's publication date.

[9] DSHS Legislative Reports - 2022
[10] Texas Health and Safety Code, Title 12, Chapter 1001, Section 1001.89

DSHS review efforts feed into other statewide evaluation efforts, and include evaluation of how DSHS, its regional offices, and LHEs can better coordinate and respond during a disaster. DSHS is examining internal processes, data collection, data use and connections with LHE partners to assess strengths and weaknesses of the COVID-19 response. This allows DSHS and its LHE partners to identify mechanisms to sustain strengths into the future and provides opportunity to implement improved processes going forward.

7. Conclusion

The DSHS PHRs play a vital role in public health disaster response. The PHR staff are dedicated experts whose community knowledge forms an integral part of the public health system. The PHRs work to provide essential services and respond to public health emergencies and disasters in the most effective and efficient way, often in difficult circumstances.

DSHS built on prior analyses and coordinated with LHEs, the Public Health Funding and Policy Committee (PHFPC), and PHRs to examine current capabilities, assess the need for geographic realignment, and identify ways to improve support to local health departments and areas in which the department serves as the primary public health provider. Through this analysis and considering lessons learned during the COVID-19 response, DSHS has identified areas of concern for improvement:

- DSHS Geographic Coverage
- Financing and Resources
- Workforce and Employee Safety
- Training and Education
- Public Health Data Analytics
- Disaster Response Coordination

DSHS has made progress in these areas through existing and temporary federal resources. However, opportunity for ongoing and sustained improvement is evident. DSHS is committed to continuing work with its LHE partners to increase the public health system's effectiveness and coordination both outside and during disaster events.

List of Acronyms

Acronym	Full Name
DPS	Department of Public Safety
DSHS	Department of State Health Services
ESF	Emergency Support Function
LHE	Local Health Entities
PHR	Public Health Regions
RHMOC	Regional Health Medical Operation Center
RLHO	Regional & Local Health Operations
SOC	State Operations Center
SMOC	State Medical Operations Center
TCEQ	Texas Commission on Environmental Quality
TDEM	Texas Division of Emergency Management
TEPHI	Texas Epidemic Public Health Institute

Appendix A. Publications

1. Public Health Service Delivery in Texas. 2016.

   Available at https://www.dshs.state.tx.us/legislative/2017-Reports/PublicHealthServiceDeliveryinTexas-ASystemforCategorizingLocalHealthEntities033017.pdf

2. The Texas Public Health Action Plan: Improving the Future Performance of the Public Health System 2017-2021. 2016.

   Available at https://www.dshs.texas.gov/legislative/2016-Reports/Rider81TexasPublicHealthActionPlan.pdf

3. Public Health System Inventory. 2016.

   Available at https://www.dshs.texas.gov/ConsumerandExternalAffairs/legislative/2016Reports/2016PublicHealthInventoryActionPlan.pdf

4. Public Health and Healthcare Response to Hurricane Harvey. 2018.

   Available at https://www.dshs.state.tx.us/IDCU/about/TaskForceID/docs/Hurricane-Harvey-Update-022718.pdf