Texas Department of State Health Services

Hurricane Harvey Response

After-Action Report

May 30, 2018

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INCIDENT OVERVIEW

Incident Name	Hurricane Harvey Response (WebEOC incident name: 17-0021 Harvey 2017)
Incident Dates	August 23, 2017 to September 26, 2017
Scope	Hurricane Harvey was a real-world incident response involving full-scale deployment of assets and personnel. The extent of this report is limited to Texas Department of State Health Services (DSHS) Central Office and Public Health Region involvement.
Domain Area(s)	Response
Threat or Hazard	Natural: Major (Category 4) hurricane with historic rainfall and flooding.
Agency	Texas Department of State Health Services (DSHS)
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EXECUTIVE SUMMARY

PART I: Overview

The DSHS After-Action Report (AAR) for Hurricane Harvey reflects a post-incident review of state-level public health and medical preparedness and response activities. DSHS compiled inputs for this report through a series of over ten information gathering sessions (Hotwash schedule on pg. 62) spanning the months of September 2017 to February 2018 which were conducted in multiple locations across the state including Austin and the regional headquarters' offices. DSHS agency executive leadership and programs, DSHS Public Health Regional staff, and external partner agencies provided input. The report is an assessment of areas of success and those requiring improvement and will guide future hurricane and disaster resource needs, protocols, planning, training and exercise.

Hurricane Harvey struck the coast of Texas on Friday August 25th centered on Rockport as a Category 4 hurricane. The storm lost much of its strength over the course of the subsequent 12 hours; however, over a period of four days, unprecedented rainfall impacted the state as Harvey meandered up the coastal bend from just north of Corpus Christi to Jefferson County. The effect was the equivalent of three simultaneous disasters: Wind and storm surge in the Rockport area where the hurricane made landfall, severe flooding in Houston, compounded by controlled releases of the Addicks and Barker reservoirs, and flooding from extreme rainfall centered on the Beaumont/Port Arthur area.

Impacting over 39 thousand square miles and 32% of the state's population; Hurricane Harvey - adjusted for inflation - is second only to Hurricane Katrina as the most-costly hurricane in U.S. history. Hurricane Harvey's projected cost exceeds $7.2 billion of which DSHS' total cost exceeds $34 million. As of April 2018, 94 Texas deaths have been attributed to this storm.

Chapter 418 of the Texas Government Code delineates the emergency management structure in Texas. The Texas Division of Emergency Management's 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. These 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. The SMOC serves as

the public health and medical arm of the State Operations Center (SOC) and includes state-level public health and medical partners and representatives from 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. DSHS has eight Public Health Regions (PHRs) that ensure public health and medical planning and response activities are coordinated throughout the state. Comparable to the SMOC, each PHR has a Regional Health and Medical Operations Center (RHMOC) that serves as the public health and medical arm of the Department of Public Safety (DPS) Disaster District Committees within their region. During Hurricane Harvey, the SMOC was activated for over 30 days and all PHRs supported the response efforts.

During Harvey, DSHS' responsibilities included statewide health system command and control (federal, state, regional, and local), coordination of medical and public health response, resource provision through contract and direct service for EMS assets, medical sheltering, pharmaceutical, vaccine, mosquito vector, and fatality management.

An analysis of the ESF-8 response indicated numerous strengths which contributed to successful public health and medical operations, and areas that require further review and improvement. This AAR delineates these items focusing on actions that DSHS will lead as Texas prepares for the future. DSHS will subsequently issue an Improvement Plan (IP) that identifies specifics of the corrective and improvement process.

PART II: Summary of System Successes and Areas for Improvement

(*does not include internal DSHS issues*)

System Successes

Incorporation of lessons learned post-hurricanes Rita, Ike, Dolly, and Katrina and a 2017 full-scale hurricane evacuation exercise provided direct benefits during the Harvey response. These included:

- Medical shelter operations
- Pre-incident pharmaceutical contracts
- Personal and hospital oxygen canister contracts
- Emergency Medical Task Force (EMTF) development and implementation

Federal and other state partner coordination resulted from continuous engagement during non-emergency periods and mutual exercise participation.

Mutual aid operations between DSHS PHRs contributed to optimum use and deployment of DSHS staff and support to local partners.

State medical shelter operations conducted quickly and effectively and supported the state's needs.

Rapid gubernatorial disaster declaration allowed for pre-emptive and immediate mobilization of needed services.

EMTF operations were effectively coordinated and executed due to:

- Embedding EMTF State Coordinating Office (SCO) Liaison Officer (LNO) in DSHS State Medical Operations Center (SMOC) to provide direct link between command/control and operational activities
- Use of Medical Incident Support Teams for assessment and management of medical operations
- Medical Unit Rehabilitation Teams to support first responders

Vector response operations were effectively coordinated and executed due to:

- Establishing a DSHS Vector Control Task Force as an extension of the SMOC
- Military and federal liaison officers embedded in DSHS operations
- Presence of DSHS medical entomologist
- GIS support
- Government Affairs interactions with impacted communities and close coordination with the Vector Control Task Force

Pre-existing contracts for critical services provided timely resources including:

- Medical shelters
- Personal oxygen
- Pharmacy services
- Federal ambulances (air and ground)
- Vector control

GIS support to all facets of operations provided critical incident support and common basis for activities to include:

- Vector control coordination and management
- EMS deployment
- Accessible roads/areas vs non-accessible roads/areas
- Resource allocations

Communications were strong in the areas of:

- Medical asset deployment and operations due to frequency of coordination calls
- Presence of DSHS Public Information Officer (PIO) in the SMOC and in executive meetings
- Coordination of DSHS PIO with other agency, partner and press communication links

Vaccine operations were successfully coordinated to meet all requests:

- The SMOC assumed responsibility for all vaccination requests ensuring coordinated response, needs assessment and distribution
- DSHS activated pharmacy and immunization staff in support of vaccination response and technical assistance provision
- A remote team was established to support SMOC operations in handling the amount of vaccine requests
- DSHS required all requestors to use the STAR system as a mechanism to formally request and track immunization needs and delivery

Areas for Improvement

(The following areas for improvement involve DSHS and partner agencies.)

Revisit the 120-hour pre-hurricane impact timeline to accommodate rapidly developing or changing tropical events.

Assess pre-event communications to better coordinate information dissemination.

Improve coordination of dialysis needs and dialysis patient movement.

Develop standardized equipment requirements for federal assets deployed in support of Texas operations.

SMOC operations:

- Assess SMOC and Regional Health and Medical Operations Center information flow and need for additional liaison officers
- Enhance SMOC resource tracking methods for large scale incidents
- Improvement of health care facility status tracking to include standardized reports and better definition/identification of facility type
- Development of standardized surveys for assessing health facility status and use of EMResource software

Shelter operations:

- Clarify DSHS role in general population shelters
- Improve interactions between public health staff (local, regional, and state) and American Red Cross (ARC) staff in ARC shelters
- Improve triage protocols to determine an individual's need for medical shelter placement
- Review shelter types and services
- Identify process and responsibilities for shelter disease and sanitation surveillance

Patient tracking:

- Revise and improve statewide patient tracking methods
- Identify patients in need of evacuation support
- Develop processes and identify roles and responsibilities to return evacuated hospital patients to originating hospital
- Increase para-transit capacity across the state
- Identify and support patients highly susceptible to disease/health/behavioral health issues that would impact the general population and those who cannot support their medical needs without assistance

Logistics:

- Improve supply line management to include distribution to areas impeded by flooding/debris or road closures
- Improve the STAR process – address deficiencies in knowledge of STAR system, correct transfer of STAR paperwork, and ability to access/sort STARs to identify needs

Fatality management/tracking:

- Include fatality statistics training in future exercises
- Determine fatality case definitions
- Identify communication processes between Texas Division of Emergency Management, DSHS, and local jurisdictions

Communications among ESF-8 partners and stakeholders:

- Identify direct and indirect ESF-8 stakeholders and establish standard communication pathways
- Improve coordination of statewide public information efforts
- Increase social media presence on existing DSHS pages and establish presence on all other available social media platforms
- Develop capability to monitor external social media and integrate into response operations

EMTF operations:

- Enhance staging areas to support first responder health, safety and rehabilitation
- Define command and control authorities and transfer of command procedures

Vector control operations:

- Develop a dedicated Vector Control team within the DSHS SMOC response structure
- Develop processes that link to local and federal entities

Vaccine operations:

- Develop emergency vaccine protocols to include logistics, first responder guidance, and guidance for state and local public health coordinated operations

Volunteer and donations management:

- Develop protocols and establish an organizational structure to manage donation of vaccine and other public health and medical supplies and equipment
- Ensure this public health and medical volunteers and donations are coordinated with a statewide volunteer and donation management system
- Develop protocols for volunteer management to include credentialing of licensed healthcare providers, and distribution of volunteers.

Behavioral health:

- Enhance existing integration of behavioral health capabilities into ESF-8 operations to include behavioral health services assets in shelters, first responder staging areas, and reception centers

Next Steps

Subsequent to this AAR, the DSHS Health Emergency Preparedness and Response Section (HEPRS) will manage the process to develop an Improvement Plan (IP). The IP will take the successes, strengths, and areas for improvement identified in this AAR and identify tasks to sustain or resolve them, assign a DSHS program responsible for each task, and determine estimated completion dates. Many of the recommendations identified in this AAR are already being implemented in programs across DSHS.

ANALYSIS OF CORE CAPABILITIES

Aligning response activities with preparedness domains and core capabilities provides a consistent framework for evaluating individual responses in the context of other responses and to support preparedness reporting and trend analysis. Table 1, on the following page, includes the preparedness domains, Public Health Preparedness (PHP) and Health Care Preparedness and Response (HCPR) capabilities, and performance ratings for each area, as observed and documented during the real-world incident.

Performance Ratings Definitions:

Performed without Challenges (P): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws.

Performed with Some Challenges (S): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws. However, opportunities to enhance effectiveness and/or efficiency were identified.

Performed with Major Challenges (M): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s), but some or all of the following were observed: demonstrated performance had a negative impact on the performance of other activities; contributed to additional health and/or safety risks for the public or for emergency workers; and/or was not conducted in accordance with applicable plans, policies, procedures, regulations, and laws.

Unable to be Performed (U): The targets and critical tasks associated with the core capability were not performed in a manner that achieved the objective(s).

The following sections provide an overview of the performance related to each objective and associated core capability, highlighting strengths and areas for improvement.

Table 1. Summary of Core Capability Performance

Domain	Core Capability	Performance Rating
Community Resilience: Strengthen the day-to-day health and wellbeing of Texas to reduce the negative impact of a major hurricane and historic flooding.	PHP 1: Community Preparedness	S
	PHP 2: Community Recovery	S
	HCPR 1: Foundation for Health Care and Medical Readiness	S
Incident Management: Effectively direct and support public health and medical response and recovery efforts resulting from Hurricane Harvey by establishing a standardized, scalable system of oversight, organization, and supervision consistent with jurisdictional standards and practices and with the National Incident Management System (NIMS).	PHP 3: Emergency Operations Coordination	S
	HCPR 2: Health Care and Medical Response Coordination	S
Information Management: Develop, coordinate, and disseminate information, alerts, warnings, and notifications to the public and responders. Conduct	PHP 4: Emergency Public Information and Warning	S
	PHP 6: Information Sharing	S

Domain	Core Capability	Performance Rating
multijurisdictional, multidisciplinary exchange of health-related information and situational awareness data.	HCPR 2: Health Care and Medical Response Coordination	S
Countermeasures and Mitigation: Acquire, maintain, transport, distribute, and track medical materiel during the Hurricane Harvey incident and to recover and account for unused medical materiel, as necessary, after an incident.	PHP 8: Medical Countermeasure Dispensing	S
	PHP 9: Medical Materiel Management and Distribution	S
	PHP 14: Responder Safety and Health	S
	HCPR 2: Health Care and Medical Response Coordination	S
Surge Management: To provide adequate medical evaluation and care during the Hurricane Harvey incident that exceeded the limits of the normal medical infrastructure of an affected community. It encompasses the ability of the health care system to survive a hazard impact and maintain or rapidly recover operations that were compromised.	PHP 5: Fatality Management	S
	PHP 7: Mass Care	S
	HCPR 4, PHP 10: Medical Surge	S
	HCPR 3: Continuity of Health Care Service Delivery	S
	PHP 15: Volunteer Management	S

ANALYSIS OF RESPONSE EFFORTS

The DSHS emergency response to Hurricane Harvey was overwhelmingly successful. DSHS coordinated efforts which saved countless lives through evacuations of medical patients from the impacted areas, implemented the nation's largest emergency vector control operation, and distributed thousands of doses of vaccine. DSHS Health Emergency Preparedness and Response Section (HEPRS) continues to seek to improve such efforts and has conducted several information gathering sessions with key response partners (both within and external to DSHS) to determine which aspects of the response were successful (in order to sustain and replicate them in future responses) and which aspects could be improved. These findings are outlined in this document.

Items noted in parenthesis following strengths or areas for improvement identify the item with its associated Public Health Preparedness (PHP) or Health Care Preparedness and Response (HCPR) Capability. More detail on these capabilities is provided under the *Analysis of Core Capabilities* section of this document.

For the purposes of this AAR, the DSHS response efforts have been grouped into the following categories:

I. Executive Leadership and Government Affairs
II. Operations
III. Communications
IV. Vector Control
V. Surveillance
VI. Behavioral Health Services
VII. Logistics and Finance
VIII. Contingency Contracts
IX. Immunizations
X. Volunteers and Donations
XI. Planning and Documentation
XII. WebEOC
XIII. State of Texas Assistance Request (STAR) Process
XIV. SMOC Activation and Call-Downs
XV. Personnel
XVI. Shift Change Procedures

I. Executive Leadership and Government Affairs

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: The Governor's disaster declaration made in advance of storm provided authorization for spending ability. *Recommend working with the Texas Division of Emergency Management (TDEM) to support requests for a disaster declaration early in response operations.* (HCPR 2, PHP 3)

Strength 2: Communications with DSHS executive leadership was efficient and effective in providing high-level situational awareness. HHS Executive Commissioner Charles Smith, DSHS Commissioner Dr. John Hellerstedt, Senior Advisor Kirk Cole, Associate Commissioners David Gruber and Janna Zumbrun were frequently present in the SMOC, which increased accessibility to executive leadership. *Recommend continued frequent communications with executive leadership during disaster response operations.* (HCPR 2, PHP 6)

Strength 3: Executive leadership was quick to act in support of SMOC operations on issues requiring high-level intervention and decision, such as interacting with the finance department following repeated Pro-Card declinations from vendors. *Recommend executive leadership continue to be accessible for support of disaster response operations.* (HCPR 2, PHP 3)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: Communications with stakeholder associations and partner organizations (HCPR 2, PHP 6)

Analysis**:** Stakeholder associations and partner organizations received questions from their membership and in their attempt to answer their members, reached out through normal business channels (DSHS staff relationships) that were unavailable during the disaster.

Recommendation: Develop a protocol with Government Affairs for response to communications/questions from stakeholder associations and partner organizations during disaster response when normal business processes are unavailable. Coordinate with and provide established protocol information to known stakeholder associations and partner organizations prior to and again early in each disaster response.

Area for Improvement 2: Awareness of agency resources (HCPR 1, PHP 1)

Analysis: Staff in the SMOC were not aware of resources throughout the agency available for use. For instance, 20 vehicles were available within Regulatory programs.

Recommendation: Determine and create a reference inventory of all assets throughout DSHS that could be available during disaster response.

Area for Improvement 3: Waiver Requests (HCPR 3 & 4, PHP 10)

Analysis**:** There was no pre-identified list of waivers, so it was not clear which should be requested. Also, there was a lack of legal input into the process. There was also no standard mechanism to communicate waivers.

Recommendation: Pre-identify appropriate waivers to issue related to the incident and involve legal consultation. Also, consider creating a specific page for waivers on the DSHS website. Lastly, discuss waivers with response partners to ensure they are clearly understood and to limit the number of inappropriate waiver requests in the future.

Area for Improvement 4: Transition from response to recovery (HCPR 2, PHP 2)

Analysis**:** The National Disaster Recovery Framework (NDRF), including the Recovery Support Functions (RSF), are rarely implemented at the local and state levels. After most disasters, Emergency Support Function (ESF) leads, at all levels of government, transition to recovery operations without reconfiguring themselves into an RSF structure. Consequently, the RSF organization and implementation is largely unfamiliar to state agencies, local jurisdictions, and the DSHS preparedness staff.

Recommendation: Develop an exercise for preparedness staff regarding local and regional recovery activities to include information regarding Federal Emergency Management Agency (FEMA) recovery activities. Additionally, provide feedback to federal partners describing challenges related to RSF transition/implementation.

Area for Improvement 5: Staff safety (HCPR 2, PHP 14)

Analysis**:** Some DSHS staff assigned to duty within the affected area were not accounted for early on during the incident.

Recommendation: Central office and PHRs should develop and implement a required procedure for accounting for all assigned staff in the event of a disruption to normal business practices.

II. Operations

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: Lessons learned from the state-level Hurricane Charlie Full-Scale Evacuation Exercise of 2017 were successfully applied to this response. *Recommend continuing to participate in annual state-level exercises with TDEM and other partners.* (HCPR 1, PHP 1)

Strength 2: Embedding the EMTF SCO LNO physically in the SMOC significantly enhanced communications, the ability to manage the deployment of EMTF assets (including, but not limited to Ambulance Strike Teams (ASTs), Medical Incident Support Teams (MISTs), and Mobile Medical Units (MMUs)), and SMOC visibility of missions. *Recommend embedding the EMTF SCO LNO in the SMOC during future large-scale activations and retaining language in the SCO contractual statement of work requiring this support.* (HCPR 2, PHP 3)

Strength 3: Collaboration with federal partners was very effective. Regional Emergency Coordinators (REC) were pre-positioned and embedded in the SMOC and the State Operations Center (SOC) prior to the declared disaster and provided extensive guidance on available assets and the process for requesting and deploying federal resources. Federal assets, including Federal Medical Stations and Disaster Medical Assistance Teams (DMATs), were pre-staged in anticipation of the disaster declaration and as such were able to be rapidly deployed to meet medical needs in affected areas. Ground (over 200) and air (over 25) ambulances activated under the federal ambulance contract were easily integrated into the existing SMOC and EMTF response structure. Military C-130s expanded state capacity to conduct aerial vector control operations and coordinated well with DSHS' private contractors. *Recommend continuing planning efforts with RECs and*

embed RECs in the SMOC during future large-scale activations. (HCPR 2, PHP 3)

Strength 4: Relationships built with neighboring states through previous collaborative planning and information sharing meetings contributed to quick resolution of issues that crossed state lines. *Recommend continuing to participate in collaborative planning efforts with neighboring states.* (HCPR1, PHP 1)

Strength 5: DSHS PHRs supported other regions and shared resources, including staff. For example, PHRs 1 and 4/5N both deployed staff to support response coordination in PHR 6/5S. *Recommend unaffected PHRs continue to support staffing and resource needs of affected PHRs during a disaster.* (HCPR 2, PHP 3)

Strength 6: Medical Incident Support Teams (MISTs) coordinated transportation of residents during the evacuation of a state supported living centers and other facilities, including triaging resident needs to match them with appropriate transportation, and ensuring necessary supplies and personnel traveled with the residents. *Recommend continuing to offer training to new and existing MISTs. Recommend deploying MISTs to support evacuations of medical facilities as appropriate.* (HCPR 1 & 2, PHP 1 & 3)

Strength 7: State medical shelter operations conducted by BCFS Health and Human Services (HHS), including repopulation and case management, were successful. BCFS HHS was flexible and able to support medical sheltering needs in multiple jurisdictions as the situation and needs evolved. *Recommend maintaining contract with BCFS HHS for medical sheltering operations and case management.* (HCPR 1, 3, & 4 PHP 1 & 7)

Strength 8: The Medical Unit Rehab Crew (MUR-C) was highly effective at providing needed medical treatment to responders in the disaster area. The MUR-C was originally deployed to support medical responders at ambulance staging areas, but their mission expanded to include providing medical care for all responders at staging in need of care. *Recommend deploying MUR-C to support responder health and safety at ambulance staging during future large-scale deployments.* (HCPR 2, PHP 14)

Strength 9: Due to the duration of the response, the SMOC utilized incident management teams from Washington and North Dakota via an Emergency Management Assistance Compact (EMAC) request as well as a team from BCFS HHS to support ongoing operations. *Recommend continuing Emergency Support Services (ESS) contract with BCFS HHS and identifying ways to incorporate BCFS HHS into future exercises.* (HCPR 1, PHP 1)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: Timing of initiation of processes and resources (HCPR 2, PHP 3)

Analysis**:** The H-120 timeline did not include initiating all current contracts and other resources. In some cases, it was unclear what steps were required to initiate a contract or action.

Recommendation: Revise H-120 timeline to include all current contracts and resources including the initiation of contracts, running estimates, and templates. H-120 timeline should specifically list all known contracts by name/type at the appropriate time in the sequence. Develop task sheets with specifics on how to activate certain contracts.

Area for Improvement 2: Situational awareness of emerging disaster (HCPR 2, PHP 3)

Analysis**:** Prior to the SMOC being fully activated, there were routine state-wide conference calls being conducted, but call invitations were not shared and the information from the calls was not shared with all rostered SMOC chiefs and other partner programs (such as Immunizations Unit and Zoonosis Branch).

Recommendation: Revise protocols to ensure improved situational awareness, prior to SMOC activation, for rostered SMOC chiefs and other essential partners as the event develops. Consider sharing briefing information from calls.

Area for Improvement 3: Catastrophic Medical Operations Center (CMOC) activity situational awareness in SMOC (HCPR 2, PHP 3)

Analysis**:** Information flow from the CMOC to the SMOC was dependent on the availability of the CMOC staff who were often too focused on coordinating local operations and therefore unable provide the SMOC with full situational awareness.

Recommendation: Deploy and embed a DSHS liaison (either from PHR or SMOC) to the CMOC for future responses involving DSHS operations.
Area for Improvement 4: Deployed resource tracking (HCPR 2, PHP 3)

Analysis**:** No specific roles were pre-identified in the SMOC operation task sheets for resource tracking.

Recommendation: Revise SMOC operations task sheets and organizational chart to include a resource unit leader. Develop task sheets describing specific roles for tracking deployed resources, including personnel (EMTF, DSHS, and Federal).

Area for Improvement 5: Deployable assets (HCPR 1, PHP 1)

Analysis**:** Some assets, such as generators, were not maintained in deployable condition.

Recommendation: Develop protocols to ensure that DSHS and HPP/PHEP assets are maintained in deployable condition.

Area for Improvement 6: Health care facility status (HCPR 2, 3, & 4, PHP 3 & 10)

Analysis: The SMOC lacked a predetermined format for reporting on health care facility status. Methods of obtaining facility status differed by region (EMResource data was extensive and frequently updated in some regions but not in others) and facility type (dialysis and hospitals was mostly available in EMResource, long-term care facilities and others were provided by the Health and Human Services Commission (HHSC) or collected via phone calls). Staff developed a format during the response but frequently updated it due to evolving information requirements.

Recommendation: Develop standardized template for tracking facility status for use during disaster response. Work to make statewide use of EMResource more robust.

Area for Improvement 7: Health care facility surveys (HCPR 1, PHP 1)

Analysis**:** Ad hoc surveys of hospitals in affected regions were developed and deployed during the response. Surveys included some information not previously collected from hospitals, such as current census, utility status, and available generator fuel supply.

Recommendation: Develop standardized EMResource surveys and have available in the system for deployment. Share the pre-developed surveys with hospitals and include in future EMResource drills.

Area for Improvement 8: Dialysis access (HCPR 3, PHP 7)

Analysis: Widespread flooding and reduced transportation options left some dialysis patients unable to reach either their usual location or an alternate location to receive dialysis treatment. Many patients were unable to pre-dialyze in case of delays due to the rapid approach and unpredictability of the storm.

Recommendation: Work with the End Stage Renal Disease (ESRD) Network to develop and distribute best practices for communications with dialysis patients prior to the need to evacuate. Identify transportation support for dialysis patients.

Area for Improvement 9: DSHS' role in general population shelter case management (PHP 7)

Analysis: Public Health Region case workers were sent to the general population shelter to conduct case management. In some instances, other agencies were already providing case management services. In other instances, DSHS case workers could not provide services needed by the shelter (e.g. placement of homeless guests when the shelter ceased operations).

Recommendation: Determine and clarify with local emergency management the role and responsibility of DSHS as it relates to case management in general population shelters.

Area for Improvement 10: Coordination of transportation and financial for return of evacuated hospital patients to originating hospital (HCPR 3, PHP 2)

Analysis: There were limited cases when hospitals, which were evacuated with state support, reopened but refused to transport or accept their previously-evacuated patients. It was not clear what obligations the evacuating hospital had to their patients once they had been evacuated.

Recommendation: Work with HHSC Regulatory staff, possibly Texas Hospital Association, and other healthcare facility stakeholders to determine the role and responsibility (specifically coordination and payment) regarding reverse transportation (repopulation) of hospital patients evacuated from an impacted facility, once the facility is reopened and able to take patients.

Area for Improvement 11: Interactions with American Red Cross (ARC) shelters (PHP 7)

Analysis:

a) DSHS sanitarians had challenges obtaining a detailed listing of ARC shelters, which was needed to plan and conduct food safety inspections
b) ARC nurses did not provide medical care for shelter guests
c) DSHS received resource requests from the ARC related to access and functional needs rather than medical needs

Recommendation: Work with TDEM Mass Care Coordinator (ESF-6) and ARC leadership to gain an understanding of the services ARC shelter staff can and will provide. Work with TDEM, ARC leadership, and local jurisdictions to determine how best to obtain information of shelter openings for sanitarian use. Work with TDEM/SOC to ensure proper routing of requests related to access and functional needs.

Area for Improvement 12: Assignment of individuals requiring medical sheltering and those with access and functional needs to appropriate shelters (HCPR 4, PHP 7)

Analysis**:** DSHS received requests to open medical shelters for guests with access and functional needs (AFN), not medical needs. DSHS also received requests for medical support of general population shelters whose guests' needs, upon further investigation, included support with activities of daily living, which are AFNs rather than medical needs.

Recommendation: Work with TDEM Mass Care Coordinator (ESF-6) to increase education and training on the distinction between guests appropriate for medical sheltering and those who may need functional needs support services (FNSS) in a general population shelter. Target education and training to local jurisdictions, including further education about meeting the access and functional needs of guests in a general population shelter. General population shelter managers must clearly understand requirements as they relate to AFN.

Area for Improvement 13: Paratransit resources (PHP 7)

Analysis**:** There were inadequate paratransit resources available to support the extensive evacuation operations. During the evacuation of a state supported living center, EMTF ambulance buses (AMBUS) were reassigned from medical transportation to paratransit due to the size of the AMBUS and ability to strap down wheelchairs for safety during transport.

Recommendation: Work with TDEM Mass Care Coordinator (ESF-6) and TDEM Transportation unit to include paratransit vehicles on the TDEM Coach Bus contract, and to identify existing paratransit resources across the state. Coordinate with HHSC regarding contracted paratransit resources. Explore integrating paratransit resources into the EMTF. Consider modifying some AMBUSes to include bariatric lifts/winches.

Area for Improvement 14: Patient tracking (HCPR 3, PHP 7)

Analysis**:** State medical transportation assets were using routine patient transfer record-keeping procedures rather than the Emergency Tracking Network (ETN). Federal assets do not use ETN bands and were not entering patients into the ETN system.

Recommendation: Work with TDEM and other emergency management partners, including the ETN Advisory Group of the Texas Emergency Management Advisory Committee (TEMAC) to better integrate patient tracking with ETN. Explore possibility of changing day-to-day EMS transport protocols to better merge with disaster response evacuation operations. This could include banding of every EMS transport during daily operations so that new banding procedures are not necessary during disaster evacuation operations. Further integration of normal (non-disaster) patient tracking systems with ETN is needed.

Area for Improvement 15: Staging support (HCPR 2, PHP 3 & 14)

Analysis**:** The rapidly escalating and moving disaster led to response assets deploying ahead of their staging supports. This meant staging facilities were not always set up to provide fleet support and responder rehab (including beds, toilets, showers, laundry, etc.) when and where they were needed.

Recommendation: Work with EMTF SCO to develop processes and procure assets to ensure the availability of rapid deployment of required staging support to ensure responder safety and health.

Area for Improvement 16: FEMA ambulance equipment (HCPR 4, PHP 10)

Analysis**:** Some ambulances deployed under the FEMA ambulance contract did not have IV pumps or other essential equipment, and some had unusually-sized or outdated equipment/supplies.

Recommendation: Engage federal partners in discussions about equipment needs of deployed ambulances. Develop plan to meet gaps between actual needs and provided assets.

Area for Improvement 17: Accessing and sharing information in EMResource (HCPR 2, PHP 6)

Analysis**:** The federal Regional Emergency Coordinators (RECs) in the SMOC needed to be able to provide U.S. Health and Human Services (HHS) leadership with situational awareness specific to hospitals and other health care facilities in affected areas. To meet this need, DSHS created accounts for U.S. HHS staff in EMResource and provided just-in-time training on navigating the system. There were overnight shifts staffed with responders who were inexperienced with EMResource.

Recommendation: Eliminate need to create accounts during a response by creating multiple read-only statewide-view accounts for EMResource. Develop task sheets specific to EMResource, including developing surveys, managing permissions, and accessing information. Ensure 24-hour SMOC coverage by responders well-trained on EMResource during major responses.

Area for Improvement 18: Command and control of deployed resources (HCPR 2, PHP 3)

Analysis**:** Some units were transferred from the San Antonio to Houston area, but continued to receive direction from the Regional Medical Operations Center (RMOC) in San Antonio rather than the Catastrophic Medical Operations Center (CMOC) in Houston due to confusion about reporting structure. This was a factor in part because of the extreme size and duration of the response, which necessitated redeployment of operational assets across large geographical areas. Furthermore, there was confusion about which controlling or coordinating entity (SMOC/SOC/RHMOC/CMOC/RMOC) responders and other operations centers should contact about different issues.

Recommendation: Continue efforts to refine policies and procedures, and to include stakeholders at all levels in future exercises to socialize them to those policies and procedures. Provide clear communication instructions with deployment orders, including redeployment and change of mission orders, from SMOC or SCO. All orders must specifically include reporting and check-in instructions.

Area for Improvement 19: Communicable diseases in shelters (PHP 7)

Analysis**:** People presented at general population shelters with significant infections (specifically MRSA). Some of these people were resistant to voluntary isolation. As a result, there were multiple requests for isolation procedures/orders for these shelters.

Recommendation: DSHS PHRs should develop standardized shelter protocols/recommendations for rapid identification and isolation of those with known or suspected communicable diseases.

Area for Improvement 20: Coordination of aviation evacuation assets (HCPR 2 & 4, PHP 3 & 10)

Analysis**:** There were rotary air assets (helicopters) from a wide range of organizations (private providers, military, U.S. Coast Guard, FEMA, etc.) executing missions during the response, with no central coordination or visibility of all the assets. Hospitals reported helicopters landing on closed helipads with no warning to drop medical and non-medical evacuees. Substantial air traffic in affected areas with minimal communication and coordination between the air assets created hazardous conditions.

Recommendation: Work with partner agencies to develop a standard approach to coordinating multiple rotary air assets and improving communications among various agencies.

Area for Improvement 21: Use of emPOWER data (emPOWER is a data-set of Medicare billing information for each type of durable medical equipment and dialysis, oxygen tank, and home health care service in use within a state, territory, county, or zip code. emPOWER data is provided by U.S. HHS to public health authorities in the event of an emergency that requires life-maintaining and saving outreach assistance.) (HCPR 1 & 2, PHP 3 & 7)

Analysis**:** While DSHS obtained identified emPOWER data from U.S. HHS during the response, the data was not utilized effectively due to lack of prior planning and exposure.

Recommendation: Convene a workgroup to determine how emPOWER data can be best used in future responses. Provide feedback to federal partners describing delays in getting the data, lengthy request process, and need to receive/share the data ahead of the disaster. Also work to receive identified and actionable emPOWER data and conduct planning ahead of the disaster to make the best use of the information.

Area for Improvement 22: Identification of patients in need of evacuation support (HCPR 1, PHP 1)

Analysis: Information from Medicaid/managed health care plans about their members needing evacuation support was not available before the response.

Recommendation: Work with the Disability Task Force on Emergency Management, HHSC, and Medicaid/managed health care plans to better plan for people in need of medically-supported evacuations.

Area for Improvement 23: Federal Resource Request Form (RRF) process (HCPR 2, PHP 3)

Analysis: There was no established protocol on how to develop an RRF. Logistics did not have clear visibility on all RRFs causing difficulty in reconciling with the SOC. RRFs were created that did not show accurate requester data and lacked documentation.

Recommendation: Develop a SMOC task sheet for completing RRFs, including the internal SMOC approval process required prior to submitting an RRF. Ensure those involved with requesting and documenting RRFs are trained on the process and provided situational awareness of RRFs during the response. Reinforce RRF process in the annual SMOC training and exercise.

Area for Improvement 24: Communication with and integration of Consumer Protection Division's foodborne illness Rapid Response Team into response and recovery (PHP 6)

Analysis: There was room for improvement on the integration and the visibility of the Rapid Response Team operations in the SMOC.
Recommendation: Gain mutual understanding of capabilities, objectives and requirements of the Rapid Response Team. Develop standard communication protocols for their integration into the SMOC during response and recovery operations.

III. Communications

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: Daily ESF-8 coordination calls and afternoon meetings worked to maintain consistent situational awareness. *Recommend hosting daily ESF-8 coordination calls focused on issues that require coordination with the SMOC or other regions during future large-scale response operations.* (HCPR 2, PHP 3 & 6)

Strength 2: Assignment of liaisons from BCFS HHS and EMTF SCO to the SMOC enhanced situational awareness and communication. *Recommend embedding BCFS HHS and EMTF SCO liaisons in the SMOC during future large-scale response operations involving medical sheltering and EMTF deployments, respectively.* (HCPR 2, PHP 3)

Strength 3: The presence of the DSHS Public Information Officer in the SMOC provided the PIO with solid situational awareness and enabled other SMOC responders to easily alert the PIO of emerging issues. *Recommend continuing to roster PIO staff in the SMOC for future large-scale response operations.* (HCPR 2, PHP 3, 4, & 6)

Strength 4: Daily calls with the EMTF SCO, RMOC, CMOC and Forward Operating Group (FOG) leadership were critical to the success of medical evacuation operations. *Recommend sustaining the plan to continue these calls in future responses and formalizing the schedule on the SMOC battle rhythm board in WebEOC.* (HCPR 2, PHP 3)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: Awareness of Public Information efforts (HCPR 2, PHP 4 & 6)

Analysis: Public information related to public health and medical issues was provided by a variety of sources, sometimes resulting in redundant messages, and/or without visibility in the SMOC. The SMOC and the RHMOCs received inquiries related to information posted to DSHS social media but did not have the same information in a shareable format.

Recommendation: Create and review disaster public information and warning content, including information that may be shared via social media, considering audiences and disaster types. Develop a repository (e.g. a website) for this information as well as a way for public health and medical responders to access the content.

Area for Improvement 2: Release of death information (PHP 5)

Analysis: Vital statistics requires a data use agreement to share death information including sharing information within DSHS.

Recommendation: Work with the Vital Statistics Unit (VSU) to develop and implement a data use agreement between HEPRS and VSU.

Area for Improvement 3: RHMOC email accounts (HCPR 2, PHP 6)

Analysis: Many email inboxes used during this response in the PHRs were name-based accounts (daily-use DSHS individual email) rather than standardized mailboxes, e.g. "6/5 planning," for bulk email delivery.

Recommendation: Develop a naming convention and establish standard disaster response email accounts for all RHMOCs. Public Health Regions should develop procedures for utilizing these accounts and integrate into ongoing training/exercises.

Area for Improvement 4: Distribution lists (HCPR 2, PHP 6)

Analysis: There were no standardized distribution lists available for general communication to DSHS executive leadership, Associate Commissioners, Regional Medical Directors and Deputy Regional Directors, and external partners.

Recommendation: Develop and maintain standard distribution lists for future use. Create separate distribution lists for Executive leadership, HPP providers, local health departments (LHDs), PHR RMDs/DRDs and Preparedness and Response Managers (PARMs). Pre-determine routine communications to be sent to each, e.g. Incident Action Plans (IAP), situational reports (SitReps), and call invitations, based on recipient needs. Develop and implement system (e.g. RedSky) to automate this process to ensure that all necessary recipients receive information appropriate to the type of disaster or response.

Area for Improvement 5: Routing of incoming calls to the SMOC (HCPR 2, PHP 3 & 6)

Analysis: Switchboard operators had varying degrees of understanding of SMOC operations and appropriate triage of incoming calls. Calls at times were routed straight to Section Chiefs and/or SMOC Director without triage.

Recommendation: Develop trainings and exercises specific to switchboard operators to include call scenarios for triage.

IV. Vector Control

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: The SMOC leadership established a Vector Control Task Force (VCTF), led by a medical entomologist, within the SMOC Operations Branch. *Recommend including the Vector Control Task Force in SMOC reorganization discussions to formalize procedures and roles.*

Strength 2: The VCTF consulted with federal medical entomologists from the United States Air Force (USAF) and the Centers for Disease Control and Prevention (CDC) and worked with the United Stated Department of Agriculture (USDA) to address organic farmer concerns. *Recommend documenting processes used to protect agricultural interests.*

Strength 3: Daily pre-flight vector coordination calls among SMOC staff, contractor, and regional staff provided up-to-date information on flight plans and possible changes. *Recommend documenting process for scheduling and managing calls, including list of recommended invitees, for replication in future large-scale vector control operations.*

Strength 4: Communication among SMOC staff, regional staff, spraying contractors, and DSHS leadership provided situational awareness and allowed DSHS to disseminate targeted public health messaging to affected areas. *Recommend documenting information sharing process for replication in future large-scale vector control operations.*

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: Emergency public information and warning

Analysis**:** Developing vector control public health messages/content prior to an event would shorten the notification timeline for local, regional, and state leaders, city and county judges, and emergency management coordinators.

Recommendation: Develop pre-scripted vector control protocols/messages and outline steps to establish webpages specific to responses and/or incidents.
A webpage specific to vector control would:

- Provide situational awareness to stakeholders such as local leaders, judges, and emergency management coordinators, eliminating the need to email stakeholders daily
- Expand the reach of public service announcements (PSAs) related to aerial spraying in the affected areas
- Communicate any aerial spraying scheduling changes to county judges and the public

Area for Improvement 2: Vector control policy waivers and exemptions

Analysis**:** Coordination between the SMOC, SOC, and FEMA regarding a Vector Control Policy Waiver was challenging and lengthy.

Recommendation: Develop a comprehensive checklist or job aid outlining all the potential policy waivers or exemptions that may be needed in a large vector control aerial spraying operation. Develop and document procedures for identifying and mapping no-fly zones for aerial spraying immediately prior to aerial vector control operations.

Area for Improvement 3: Cost associated with contracts

Analysis**:** Vector control contingency contracts should be reviewed annually to ensure contracts adequately address state needs and that costs are current and accurate.

Recommendations: Annually review vector control contingency contracts to update price sheets for contractors, add line items related to spray blocks, and specify chemicals to be used in aerial spraying.

Area for Improvement 4: VCTF staffing and resources

Analysis**:** SMOC staffing quickly outgrew the physical space available in the SMOC, initially leaving the newly created VCTF without space in the State Public Health Laboratory, where the SMOC is located (the VCTF was later accommodated within the laboratory, with some staff working virtually). Additionally, the VCTF needed additional resources such as dedicated administrative support and environmental epidemiologist, which were only added later in the response. Resource needs include:

- Designated workspace for VCTF
- IT support

- Dedicated email inbox
- Access to a plotter for large map print jobs
- GIS software, hardware and two GIS specialists
- Administrative support (e.g. Section Controller)

Recommendation: Permanently include VCTF in the SMOC structure for activation during large-scale aerial/ground spraying vector control responses. Assign a section controller and designate appropriate workspaces and resources to adequately sustain operations.

Area for Improvement 5: Vector control response operations timeline

Analysis: Texas does not typically conduct vector control operations at the state level, so there is not a state-level vector control operations plan. Further, the H-120 planning timeline did not include vector control, consequently vector control activities were not activated as early as optimal.

Recommendation: Develop a state-level vector control operations plan. Integrate vector control decision points into the H-120 timeline.

Area for Improvement 6: Vector control contractor daily activity reports

Analysis: Standardized template for contractors to report daily vector control activities does not exist.

Recommendation: Develop a standardized report format for reporting vector control activities.

Area for Improvement 7: Airfield selection

Analysis: The VCTF was not familiar with the criteria used by the Department of Defense (DoD) to select airfields from which to fly vector control missions. Flight crews could not always be accommodated near the selected airfields.

Recommendation: Work with DoD to gain better understanding of criteria for airfield selection. Include the process for working with DoD to select airfields in the VCTF plan, including blocking rooms for flight personnel. Use SMOC GIS support to map identified airfields while planning flight operations.

Area for Improvement 8: Prioritizing vector control requests

Analysis: The VCTF would have benefitted from a tool or matrix to help prioritize the different types of vector control requests received (e.g.: truck-based ground spraying, larvicide dunks, aerial spraying, DEET cans/wipes,

etc.) A tool should include decision points and allow for mitigating factors. The VCTF also needs protocols to process, assign, and fill vector control requests.

Recommendation: Develop process for VCTF personnel on how to prioritize, process, assign, and fulfill vector control requests.

Area for Improvement 9: Communication and collaboration with SMOC GIS specialists

Analysis**:** GIS support is an integral part of vector control activities. Improving communication between SMOC GIS and VCTF GIS personnel will eliminate duplication of efforts.

Recommendation: Develop protocols for GIS specialists to include adding all GIS personnel to a shared drive; provide adequate training once protocols are established.

V. Surveillance

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: Health department jurisdictions, such as Harris County Public Health, who regularly conduct CASPERs during the preparedness phase had the capacity and capability to plan CASPERs during the Harvey response and execute these CASPERs immediately upon entering Harvey recovery. *Recommend recognizing routinely conducting preparedness CASPERs as a best practice and supporting health department jurisdictions in replicating this activity to enhance their capacity and capability to conduct CASPERs during the recovery phase of a disaster.* (PHP 13)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: Rostering of Disaster Death Tracking Team (PHP 5 & 13)

Analysis**:** There were many legal and programmatic barriers encountered in conducting Harvey mortality surveillance and planning issues in standing up a disaster death tracking team (DDTT). The DDTT needs to be rostered with

DSHS central office staff who have programmatic access to specific data systems and whose DSHS programs have statutory authority to access death data and conduct disaster mortality surveillance.

Recommendation: Create a disaster mortality surveillance system. Develop a guidance document outlining the responsibilities and activities of DSHS central office programs involved in the disaster mortality surveillance system. Update death tracking procedures for the DDTT and the disaster mortality surveillance forms. Develop a rostering process for the DDTT needs and incorporate these processes into the guidance document. The guidance document should also clarify the overall expectation of the disaster mortality surveillance system and tracking by DDTT, including who should be tracked (expected vs. unexpected deaths) and who should receive mortality surveillance reports. Link any requirements for Justices of the Peace and medical examiners in this guidance document into the fatality management course.

Area for Improvement 2: American Red Cross (ARC) Shelter Surveillance (PHP 7 & 13)

Analysis**:** The ARC was reluctant to share shelter surveillance data with some DSHS epidemiologists. It was not clear if this was due to ARC policy or if shelters were not staffed well enough to be able to collect the data at the shelter.

Recommendation: Work with the ARC to determine roles and responsibilities for shelter surveillance data collection and sharing.

Area for Improvement 3: Process for identifying open and active shelters (PHP 7 & 13)

Analysis**:** Multiple entities (FEMA, TDEM, ARC, local emergency management, etc.) were contacting shelter locations daily and asking similar questions for different purposes (shelter census, verify open/closed). The location of open, active or planned shelters was not consistently shared with local and regional health department epidemiologists trying to establish shelter surveillance. Some shelter staff would say they had given the information to other entities and did not want to repeat this information again and would not cooperate with health departments in establishing or collecting surveillance specific information. There was also a lack of guidance to distinguish shelters vs. places of refuge and the expectation to conduct surveillance at places of refuge.

Recommendation: Work with TDEM (and ESF-6 partners) to develop a shelter location sharing process so situational awareness of open/active and planned shelters flows to the SMOC and down to the RHMOCs and LHD EOCs in a timely manner. Determine best/evidence based practice for conducting shelter surveillance, develop guidance and training.

Area for Improvement 4: Shelter surveillance reporting (PHP 7 & 13)

Analysis**:** There is no standard database template to enter shelter surveillance data. This template would be used by local, regional, and central office shelter surveillance teams to enter shelter surveillance data received from medical or general population shelter staff.

Recommendation: Convene a small workgroup to include epidemiologists from various sections within DSHS, including regional epis to research and develop a standardized shelter surveillance database. Database should align with the shelter surveillance forms being used by local, regional and central office public health jurisdictions. Develop a training module and include in exercise objectives.

Area for Improvement 5: Rostering of Shelter Surveillance Team (PHP 13)

Analysis**:** There was a lack of a rostered shelter surveillance team at DSHS central office to receive shelter surveillance data from local and regional health departments and compile and analyze this data for inclusion in SMOC documents (Situational Report).

Recommendation: Create and train a DSHS central office shelter surveillance team. Create a just-in-time training for the central office based shelter surveillance team and for epidemiologists who may be deployed to assist in shelter surveillance in an impacted area.

VI. Behavioral Health Services (BHS)

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: Overall SMOC staff morale remained high throughout the response, and staff monitored and supported each other. *Recommend including behavioral health considerations in SMOC staff trainings.* (HCPR 1, PHP 1 & 14)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: SMOC staff monitoring (HCPR 2, PHP 14)

Analysis: There was no designated safety officer assigned to the SMOC to monitor the well-being of activated staff. Response staff were tasked with working long hours over many consecutive days. The high operations tempo combined with the high-pressure environment caused some staff members to exhibit signs of stress. Tension, fatigue, lack of focus, irritability, short tempers, and anxiety were indications that staff were becoming overwhelmed and "burnt-out". Although staff did a good job looking out for each other, there was little assistance available off duty following a typical 14-16 hours shift.

Recommendation: Review the SMOC Safety Officer position to ensure the SMOC Safety Officer role includes both the physical safety aspects of the SMOC facility as well as the mental state of the SMOC staff.

Area for Improvement 2: BHS support and awareness in SMOC (PHP 7)

Analysis: There was not a dedicated BHS liaison in the SMOC during the early phases of the response. This position was needed to coordinate communications between the SMOC and BHS staff, and to provide the SMOC with situational awareness of BHS issues and activities. There was confusion about the role of the BHS liaison rostered in the SMOC, which affected the overall coordination of the BHS activities and STARs. SMOC was not aware of or invited to daily BHS calls with Local Mental Health Authorities until later in the response.

Recommendation: Ensure rostered BHS liaison position is activated for all phases of incident response and recovery. Work with BHS HHSC staff to determine SMOC information needs related to BHS during disaster response.

Area for Improvement 3: BHS support in congregate settings (PHP 7)

Analysis: There was a lack of overall BHS presence in congregate locations such as embarkation hubs, staging areas, reception centers, and shelters was sometimes lacking. The sheer scale and scope of the Hurricane Harvey response created choke points in the evacuation, transportation, and sheltering system, thus magnifying the need for BHS services. BHS support should be provided throughout the evacuation process to manage potential behavioral health issues.

Recommendation: Work with HHSC BHS program to expand BHS support to all phases of the evacuation process, especially in larger disasters where people may be shifted through locations multiple times.

VII. Logistics and Finance

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: Systems put into place pre-disaster, such as contingency contracts for oxygen resources, pharmacy needs, EMTF, medical sheltering and vector control expedited procurement and response processes. *Recommend maintaining existing disaster response contingency contracts.* (HCPR 1, PHP 1)

Strength 2: SMOC Logistics and Finance Sections did an excellent job tracking and updating response costs. *Recommend maintaining Disaster Finance position in the Health Emergency Preparedness and Response Section (HEPRS) Response and Recovery Unit as well as documentation of processes.* (HCPR 2, PHP 3)

Strength 3: The HEPRS Response and Recovery Unit (RRU) Finance Section Chief, along with representatives from the budget and contracts management offices, did an exceptional job quickly reviewing all invoices, compiling documents, and submitting all necessary paperwork to FEMA to quickly obtain reimbursement for eligible response expenses. *Recommend sustaining personnel, processes, and procedures related to post-disaster reimbursement.* (HCPR 2, PHP 2)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: Pro-Card purchasing caps (HCPR 1, PHP 3)

Analysis: The Pro-Card assigned to HEPRS was used to make necessary purchases, such as food, supplies, medical supplies, etc. during the response as an expedited purchasing method. However, the card was randomly declined at certain vendors. In one instance, the card was declined when purchasing bandages and alcohol pads.

Recommendation: Work with the DSHS Finance Department and HHSC Procurement and Contracting Services to solidify administrative preparedness protocols regarding the use of the Pro-Card for emergent purchases, including the possibility of central billing. Ensure spending authority is clearly defined and approved before or early in a response.

Area for Improvement 2: Procurement of medical supplies (HCPR 2 & 3, PHP 3)

Analysis**:** During a disaster there is no change in the way items are procured and during Harvey purchasing of medical supplies was a lengthy process, which delayed delivery of needed medical supplies to responders. There is no current method to expedite the process unless a Pro-Card is utilized for purchases.

Recommendation: Work with DSHS Finance and HHSC Procurement and Contracting Services (PCS) to streamline the procurement process during disaster response as a part of administrative preparedness. Consider including a PCS liaison in the SMOC Finance Section.

Area for Improvement 3: Supply delivery (HCPR 3, PHP 9)

Analysis**:** Flood waters and road closures caused deliveries to be diverted or postponed.

Recommendation: Individual DSHS programs needing to sustain deliveries can work with existing shipping and delivery vendors to develop protocols for providing deliveries during flooding incidents. Explore the possibility of using aircraft, high water vehicles, or other assets. Coordinate with external partners regarding prioritization of shipping and delivery needs through local emergency management.

Area for Improvement 4: Requests for DSHS PHR staff deployment (HCPR 2, PHP 3)

Analysis**:** Resource requests for regional staff deployment were sent to the regional director/deputy regional director, rather than being sent to the regional health and medical operations centers (RHMOCs). Because the deployment of DSHS staff was internal to DSHS, there was no need to utilize the State of Texas Assistance Request (STAR) process.

Recommendation: All DSHS staff requests should be directed to the RHMOCs for processing. Ensure training for DSHS staff in this area.

Area for Improvement 5: SMOC footprint capacity (HCPR 1, PHP 1)

Analysis**:** The expansive nature of this historic response required a surge of additional personnel, such as federal regional emergency coordinators, and partner organization liaisons, to be physically present for frequent, if not constant, interaction with SMOC personnel.

Recommendation: Work with the Laboratory Director to predetermine lab space to extend SMOC operations. Discuss this recommendation as part of the SMOC reorganization.

Area for Improvement 6: Travel arrangements (HCPR 2, PHP 3)

Analysis**:** Various issues regarding travel arrangements, billeting, the deployment process and payments to individuals arose when deploying personnel from central office to the region and deploying personnel from region to region. Travel office personnel are not available 24/7, nor is the travel agency assigned for DSHS personnel travel arrangements.

Recommendation: Convene a workgroup to determine the process for the deployment of personnel to an affected area. Include a liaison from the DSHS travel office in the workgroup and embed a DSHS travel office liaison in the SMOC finance section during a response requiring staff deployment.

Area for Improvement 7: Purchasing of IT supplies (HCPR 2, PHP 3)

Analysis**:** All IT related purchases within the agency require approval by the IT department. Multiple questions regarding purchase justification were asked delaying the needed expansion of IT capabilities within the SMOC. Purchases were approved and services were provided.

Recommendation: Escalate this concern to executive leadership and upper level management of the IT department for awareness of the criticality of the SMOC IT needs particularly during a disaster response and the need to expedite purchases for immediate accessibility.

Area for Improvement 8: Staff unprepared for deployment (HCPR 1, PHP 1)

Analysis**:** DSHS staff were deployed who had no prior deployment experience and were unprepared for what to expect.
Recommendation: Provide deployment basics training to all DSHS staff with the potential for future deployment. Consider including staff deployment in future exercise scenarios.

Area for Improvement 9: Provision of food for SMOC staff (HCPR 2, PHP 3)

Analysis**:** The plan for how to provide food during a large response was not documented so the food unit developed the process as the incident unfolded. The provision of food was essential to SMOC continuity of operations and morale, especially with many people working 13-15 hours a day. While the food unit did an excellent job meeting the needs most days, there were times food ran out or dietary restrictions were not met.

Recommendation: Identify and maintain current contact list of vendors who can manage large orders including those able to provide delivery and/or with overnight availability. Ensure food vendors can accommodate common dietary restrictions such as dairy- or gluten-free and food allergies. Consider a contingency contract with HEB or other stores as a possible source for bulk snacks or food delivery.

Area for Improvement 10: State Mission Assignment (SMA) Process (HCPR 2, PHP 3)

Analysis**:** At times multiple SMAs were included on one STAR. SMA requests were submitted through multiple methods, for example some requests came as routing notes on STARs, some came through email communications, and some came via telephone calls. This created a potential for duplication of effort or overlooking a request.

Recommendation: Develop, train, and exercise the SMA process. Ensure documentation for tracking purposes is attached to every SMA including origin of the SMA.

Area for Improvement 11: Mass fatality asset requests (HCPR 4, PHP 5)

Analysis**:** Local emergency management requested specific assets to support mass fatality operations and sometimes the assets requested were inappropriate for the need. For example, one jurisdiction specifically requested a National Guard unit to provide services the state was able to provide through other mechanisms.

Recommendation: With TDEM, develop and conduct a joint training targeting local jurisdictions regarding morgue/mass fatality assets. Vet STARs for clarification of actual needs. Additionally, work with TDEM to emphasize in all STAR trainings that requests should include a clear description of the need,

rather than requesting a specific asset, to ensure the correct resource is deployed to meet the need.

Area for Improvement 12: SMOC IT infrastructure (HCPR 1, PHP 1)

Analysis**:** SMOC laptop computers are outdated and responded slowly delaying the processing of STARs and SMAs. The SMOC server is also dated, has reached the end of its serviceable life, and requires replacement.

Recommendation: Replace SMOC server and associated IT assets.

Area of Improvement 13: IT support outside of SMOC footprint (HCPR 2, PHR 3)

Analysis**:** As the SMOC footprint expanded into other parts of the laboratory building, IT support was needed to ensure individuals could access the internet and to print. Non-DSHS staff within the SMOC also required support to be able to access the internet and to be able to print. Due to the nature of the response, some of these needs arose outside of regular business hours and IT personnel were not on-site.

Recommendation: HHSC IT should assign staff to support expanded SMOC operations, and provide the SMOC with a 24-hour contact.

VIII. Contingency Contracts

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: AirGas and PrecisionBlend Inc. (PBI) provided oxygen as outlined in their contracts and were accommodating of locating different sized cylinders when needed. *Recommend continue to maintain contingency contracts with oxygen providers.* (HCPR 1, PHP 1)

Strength 2: DSHS Contract management staff effectively managed and executed contracts. *Recommend rostering 24-hour contacts in contract management unit at outset of next major response activation for continued ease of contract activation and management.* (HCPR 2, PHP 3)

Strength 3: Established relationships with BCFS HHS and pharmacies enabled DSHS to execute response contracts quickly. *Recommend maintaining contingency contracts with BCFS HHS and pharmacy providers.*

Recommend including contingency contractors in future exercises, as funding and contract language allows. (HCPR 1, PHP 1)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: Communication with PHRs regarding contractors (HCPR 1, PHP 1)

Analysis**:** PHR 8 was not aware that BCFS HHS was responsible for case management and re-population of people in medical shelters. Also, they were not aware of a change in the contract with shipping vendor and did not immediately have information regarding the correct points-of-contact.

Recommendation: Share disaster response-related and contingency contracts with appropriate staff in DSHS central office and PHRs and other relevant stakeholders. PHRs and stakeholders should be familiar with the contents of existing contracts.

Area for Improvement 2: Training and exercising with current Emergency Support Services (ESS) contract holder (HCPR 1, PHP 1)

Analysis**:** Due to current interpretation of the HHS ESS Contract, DSHS is not allowed to conduct preparedness activities (e.g. training or exercise) with the current ESS contract holder. This adversely affects preparedness and response.

Recommendation: Work to resolve this issue to allow the conduct of preparedness activities, including training and exercise, under the existing ESS contract and with the current ESS contractor. Alternately, pursue other avenues for resolution, which could include the execution of a separate preparedness contract with the existing ESS vendor.

Area for Improvement 3: After-hours vendor contacts (HCPR 1, PHP 1)

Analysis**:** Contracts did not all include a point-of-contact available 24/7.

Recommendation: Include 24/7 point-of-contact in contract language.

Area for Improvement 4: Pharmacy contract activation (HCPR 3, PHP 9)

Analysis**:** PHRs needed to utilize the pharmacy contract prior to the contract being activated.

Recommendation: Establish standard protocol of when to activate contracts. Add to H-120 timeline.

IX. Immunizations

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: SMOC collaboration with immunizations staff to facilitate processing large quantities of vaccine orders. *Recommend SMOC and Immunizations staff formalize processes used during this response.* (HCPR 2, PHP 3 & 8)

Strength 2: Activation of DSHS pharmacy staff to meet demand for large vaccine orders. *Recommend documenting the process used to activate pharmacy staff and include decision points in H-120 timeline.* (PHP 9)

Strength 3: SMOC and Immunizations staff provided technical assistance to PHRs regarding need for vaccine, ordering process, and fulfillment. *Recommend documenting the process and frequently asked questions for use during next incident requiring large-scale distribution of vaccines.* (PHP 8 & 9)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: Provision of immunizations during an emergency response (PHP 8)

Analysis**:** Protocols related to the immunization cell will need to be established to include: guidance regarding the use of Adult Safety Net and other vaccines for first responders and guests in shelters; guidance regarding the provision of vaccines not recommended by the CDC during a response, such as Hepatitis A; and general protocols such as vaccine ordering and donations, vaccine supplies, and provider assessments.

Recommendation: Develop policies for providing immunizations to first responders, evacuees in shelters, and others affected by a disaster. Develop policies and procedures for immunization cell.

Area for Improvement 2: Responder vaccination requests (PHP 14)

Analysis**:** First responders are either not receiving their recommended vaccines, such as Tetanus-Diphtheria-Pertussis (Tdap), or they are not aware of their current vaccination status. During an incident, responders request vaccines they may already have or should already have received.

Recommendation: Increase Tdap vaccination rates for first responders in Texas. Work with partners and stakeholders to increase first responder vaccine awareness to reduce the need for just-in-time or last-minute vaccinations during response operations.

Area for Improvement 3: Storage and handling of vaccines (PHP 9)

Analysis**:** Improper storage of vaccine by a delivery company in a non-refrigerated location resulted in the near-loss of several hundred doses of vaccines. Failed generators in several locations caused vaccine to become unusable.

Recommendation: Develop vaccine storage and handling guidelines and include those as requirements in contracts with delivery companies. Include storage and handling guidelines with vaccine shipments. Provide receiving sites storage and handling tools (ex. temperature monitoring forms, data loggers) for the proper tracking and documentation of vaccine storage unit temperatures.

Area for Improvement 4: Vaccine request process (PHP 9)

Analysis**:** Staff in the SMOC were managing vaccine requests using an Excel spreadsheet, while the Immunizations Unit (off-site from the SMOC) was using a SharePoint site to track orders, provide notifications, and reconcile STAR requests. Any information regarding vaccine requests or quantities on-hand would have to be routed through the Immunizations Unit. This process caused delays in obtaining this information.

Recommendation: SMOC should be given access to the Immunizations Unit SharePoint site to track orders, provide notifications, determine available doses on hand, and reconcile STAR requests as part of SMOC operations. Establish a dedicated position in the SMOC for an Immunizations LNO to coordinate with the Immunizations Unit to obtain any needed information for the SMOC.

Area for Improvement 5: Scaling up the provision of vaccines (PHP 9)

Analysis**:** Lack of historical knowledge of previous large-scale responses involving vaccines led to an inadequate initial vaccine response effort:

- Extra vaccine doses were not immediately ordered to meet anticipated need because anticipated need was underestimated.
- Additional Immunizations Unit support staff were not immediately activated.
- Vaccine distribution plan was delayed and not immediately communicated to the LHDs.

Recommendation: Create policies and procedures related to vaccination cell activation and vaccine ordering. Add decision points related to vaccines and the activation of the vaccination cell to the H-120 timeline. Utilize Immunizations Public Information, Education, and Training (PIET) Group to provide timely and regular communications with stakeholders regarding vaccine handling.

X. Volunteers and Donations

Strengths

The following items were identified as successful aspects of the response which should be sustained in future responses:

Strength 1: Numerous volunteers, both clinical and non-clinical, desired to support the response operations to Hurricane Harvey. *Recommend sustaining, or enhancing, the existing volunteer recruiting and management efforts.* (HCPR 4, PHP 15)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: Volunteer Management (PHP 15)

Analysis**:** The SMOC received numerous calls from individuals offering to volunteer but there was no identified process to manage these offers.

Recommendation: Ask TDEM to develop a state-level virtual volunteer reception center and process for managing those volunteers.

Area for Improvement 2: Credentialing of out-of-state volunteers (PHP 15)

Analysis**:** There is no rapid method for credentialing some medical volunteers through the Texas Disaster Volunteer Registry (TDVR). Once an in-state volunteer registers in the TDVR, there is an electronic data exchange between the TDVR and the specific licensing board providing an electronic verification of licensure. There is no such data exchange with out-of-state

licensing boards, so individuals who register in the TDVR must be vetted manually, i.e. personal contact with the out-of-state licensing board. (PHP 15)

Recommendation: Gain further understanding of the process and challenges. Research best practice with other states. Develop and implement new processes which clarify and streamline the implementation of all volunteers into disaster response operations.

Area for Improvement 3: TDVR registration (PHP 15)

Analysis**:** The TDVR registration process is lengthy with questionable return on the questions asked.

Recommendation: Review the relevance of the questions required to be answered to register in the TDVR and revise accordingly. Implement appropriate and allowable modifications to the TDVR process to expedite volunteer registration. Lastly, share information related to TDVR with stakeholders to increase understanding of registration process and necessary components.

Area for Improvement 4: TDVR data currency (PHP 15)

Analysis**:** Some jurisdictions do not "scrub" the data within TDVR regularly, which causes challenges when attempting to activate some volunteers who may no longer be active.

Recommendation: Work with local Medical Reserve Corps units to ensure registered volunteer information is reviewed and updated on a regular basis.

Area for Improvement 5: Assignment of volunteers to local jurisdictions (PHP 15)

Analysis**:** Volunteers who were not already registered in the TDVR, both in state and out-of-state, were directed to register in the TDVR with the expectation they would be assigned to a local jurisdiction for further contact and processing. In the TDVR, volunteers are asked to choose a local MRC unit or jurisdiction in which to volunteer. Without knowledge of the state, volunteers did not know which unit or jurisdiction to choose. To rectify this, a single "Hurricane Harvey" jurisdiction was created. Volunteers were directed to select this "jurisdiction" to then be forwarded to local jurisdictions in the impacted area. However, the redirection to the local level did not occur and volunteers were not able to be utilized.

Recommendation: Convene a workgroup to research possible solutions and develop a plan for resolution.

Area for Improvement 6: Donations management (HCPR 3 & 4, PHP 9)

Analysis**:** The SMOC received numerous calls from organizations/companies with offers of large scale donations, e.g. medical supplies. There was no identified process to manage donation offers.

Recommendation: Request TDEM to develop a statewide system and process for donations management. In the interim, develop DSHS donations management process and procedures. Consider identification of a liaison position for large scale response.

XI. Planning and Documentation

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: The "Battle Book" was a helpful reference for staff in the SMOC. *Recommend keeping Battle Book updated and providing print copies in the SMOC during trainings, exercises, and real-world activations.* (HCPR 1, PHP 1)

Strength 2: SMOC staff was able to develop and/or update templates as required to meet changing information needs. *Recommend documenting a process to request and implement template updates during a response.* (HCPR 2, PHP 3)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: Reporting templates (HCPR 1, PHP 1)

Analysis**:** While SMOC staff was successful in developing or adapting templates to meet changing information needs, the frequent changes in reports made it difficult to meet deadlines and to provide accurate information.

Recommendation: Identify and develop reporting and data collection templates. Develop task sheets or embed instructions for use within the templates themselves.

Area for Improvement 2: PHR Contact information in WebEOC (HCPR 2, PHP 3)

Analysis**:** PHRs were inconsistent in posting their contact information to WebEOC daily, whether due to oversight or response tempo.

Recommendation: Create a process to ensure PHRs post their contact information to WebEOC daily.

Area for Improvement 3: Daily report production (HCPR 2, PHP 3)

Analysis**:** The SMOC produced multiple briefing documents, including the Incident Action Plan, that required updating throughout the day and had frequent changes made to the required information. The update and maintenance of multiple documents amid the frequent changes was challenging.

Recommendation: Convene a workgroup to evaluate the briefing documents and consider consolidating reports to lessen the reporting burden. Develop an automated process to populate current information across multiple documents, databases, etc.

Area for Improvement 4: Conference calls (HCPR 2, PHP 6)

Analysis**:** The high volume of conference calls and brief-outs were overwhelming and staff were not always certain on which calls they were required to participate.

Recommendation: Consider alternative methods of information sharing. Develop and share clear expectations of who will participate in which calls, including which are optional or required.

Area for Improvement 5: Activity Logs (ICS 214 forms) (HCPR 2, PHP 3)

Analysis**:** Staff in the SMOC did not consistently complete their daily activity logs – either due to the response tempo or a lack of understanding.

Recommendation: Reinforce the importance of activity logs in SMOC training curriculum and practice during SMOC annual exercise. Consider having section controllers maintain a section-level activity log.

Area for Improvement 6: Use of acronyms (HCPR 1, PHP 1)

Analysis: The use of acronyms created some confusion with individuals who do not routinely use them. Additional new acronyms were also used during the response.

Recommendation: Update the master acronym list to reflect newly identified acronyms. Ensure multiple printed copies of the acronym list are available on each section table in the SMOC during an activation.

Area for Improvement 7: Email documentation (HCPR 2, PHP 6)

Analysis: The current SMOC protocol is to copy the SMOC Planning email inbox for every email during a major activation, which resulted in emails coming in faster than they could be categorized and addressed.

Recommendation: Develop a protocol for documenting and archiving emails.

Area for Improvement 8: Assignment tracking (HCPR 2, PHP 3)

Analysis: There was no formal system used to keep track of internal assignments and due outs within various Sections of the SMOC.

Recommendation: Utilize the SMOC Mission Task Board in WebEOC to track internal SMOC tasks/due outs.

XII. WebEOC

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: New accounts were created rapidly and access issues were quickly resolved. *Recommend documenting the process by which accounts are requested and created and how access issues, such as forgotten passwords, can be resolved for use in future activations and exercises.* (HCPR 2, PHP 3)

Strength 2: EMTF Mission Assignment Boards provided visibility of EMTF assets in the field. *Recommend working with TDEM to ensure Mission Assignment Boards are visible across various WebEOC servers.* (HCPR 2, PHP 3)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: Use of ESF-8 board inconsistent across regions and SMOC (HCPR 2, PHP 6)

Analysis**:** Not all regions were posting information to the ESF-8 board consistently.

Recommendation: Standardize the use of ESF-8 board across DSHS PHRs and the SMOC. Include ESF-8 board utilization in the annual SMOC training and exercise. Also, PHRs should include ESF-8 board utilization in RHMOC training and exercise.

Area for Improvement 2: Emergency Tracking Network (ETN) (HCPR 3, PHP 3)

Analysis**:** ETN user-interface was difficult to use and medical transport providers maintained separate records.

Recommendation: Work with TDEM and the ETN Advisory Group of the Texas Emergency Management Advisory Committee to better integrate patient tracking into and improve the usability of ETN.

Area for Improvement 3: WebEOC board access (HCPR 1, PHP 1)

Analysis**:** With numerous WebEOC servers in use across Texas, not all users have access to the same boards. This inconsistency created challenges in many situations, including on visibility of boards across the SMOC/RHMOCs and the CMOC and RMOC.

Recommendation: Evaluate which users need visibility of which boards and work to ensure users on separate servers gain access. Work with TDEM to resolve WebEOC fusion issues and to clarify understanding and limitations of multiple WebEOC servers across all levels of response.

XIII. State of Texas Assistance Request (STAR) Process

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: STAR intake successfully processed and tracked a total of 439 incoming STARs. *Recommend documenting processes used by STAR intake position for replication in future activations.* (HCPR 2, PHP 3)

Strength 2: The SMOC successfully improvised a paper routing system for STARs during a WebEOC outage. *Recommend documenting the process used to manually route STARs to include as a contingency plan in future activations.* (HCPR 2 & 3, PHP 3)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: STAR routing to SMOC (HCPR 2, PHP 3)

Analysis**:** The SOC routed STAR requests to the SMOC for resources not related to the public health and medical response. SOC LNO should serve as a "gatekeeper" for all DSHS STARs and re-direct any STARs which are outside of public health and medical response. The SOC also routed STARs that originated in the SMOC back to the SMOC, even when the requested resources were from another ESF.

Recommendation: Request TDEM SOC staff to coordinate closely with DSHS SOC LNO on all potential public health and medical requests so DSHS SOC LNO is aware of all requests being routed from SOC to SMOC. Provide training to DSHS SOC LNOs on how to identify whether a resource request is related to public health and medical response. Educate external partners on the DSHS mission to minimize the number of STARs incorrectly routed to DSHS.

Area for Improvement 2: Understanding of STAR fulfillment process (HCPR 2, PHP 3)

Analysis**:** LHDs misrouted STARs, had unrealistic expectations about how long it would take to fill a request, and failed to include all information to fill requests, which resulted in further delays.

Recommendation: Educate LHDs and other partners on STAR processes and procedures, including providing realistic timeframes from delivery of requests by type.

Area for Improvement 3: STAR screening at intake (HCPR 2, PHP 3)

Analysis**:** STAR intake staff did not have a prepared resource list detailing what types of supplies could be ordered. Without a list, STAR intake had difficulty making determinations.

Recommendation: Prepare a resource list that details what types of supplies can be ordered.

Area for Improvement 4: STAR routing prior to reaching SMOC (HCPR 2, PHP 3)

Analysis**:** STARs for public health and medical needs were pushed to the SMOC without the local/regional MOCs being aware of the requests. CMOC could not see STARs since it operates on a different WebEOC server.

Recommendation: Work with TDEM to ensure STARs are routed through the appropriate channels of local and regional response partners prior to being escalated to the state level and that partners on different servers can have visibility of STARs.

Area for Improvement 5: WebEOC access for various DSHS Liaison Officers serving in different EOCs (HCPR 2, PHP 3)

Analysis**:** WebEOC permissions for the various DSHS LNOs needs to be reviewed. Some DSHS SOC LNOs were only able to view STARs, while others could view and submit STARs. The DSHS Air Operations Center (AOC) LNO at Camp Mabry was able to view and submit STARs. This inconsistency caused challenges as sometimes it was beneficial and time effective for the DSHS SOC LNO to submit a STAR on behalf of DSHS, at the direction of DSHS. The AOC LNO submitted STARs on behalf of DSHS without the direction of DSHS, which led to confusion and some incorrectly requested assets.

Recommendation: Work with SMOC Command staff to determine appropriate permissions for DSHS LNOs. Evaluate which boards are available to the various DSHS LNO positions and ensure all staff who may be rostered as a DSHS LNO has appropriate WebEOC access and permissions. Coordinate with TDEM Critical Information Systems to ensure all necessary staff have appropriate WebEOC access when working from the SOC. If DSHS LNOs have capability to submit STARs, ensure they understand to only submit a STAR when specifically requested by the SMOC Director.

Area for Improvement 6: Tracking STAR fulfillment status (HCPR 2, PHP 3)

Analysis**:** SMOC staff worked STARs and modified requests, but did not always notate actions in the STAR routing notes. While routing notes are helpful, the notes display at the bottom of the STAR and were often overlooked.
Recommendation: Train SMOC staff to notate all actions and edits in the STAR routing notes. Modify the way STARs record updates/edits so information is more prominently displayed toward the top.

Area for Improvement 7: STAR routing within the SMOC (HCPR 2, PHP 3)

Analysis**:** Not all SMOC responders understood their section's role in processing and routing STARs, which led to confusion and misdirected requests.

Recommendation: Ensure STAR routing process and required actions are included in section-specific trainings.

Area for Improvement 8: STAR status awareness (HCPR 2, PHP 3)

Analysis**:** Without an alert, SMOC Sections often were not aware STARs were routed to their section, which slowed the STAR process.

Recommendation: Work with TDEM on filtering options to improve the ability to identify assigned STARs. Additionally, explore with TDEM the possibility of creating a "tickler" system in the STAR board that alerts when a STAR is assigned to the SMOC. Train section controllers to utilize filtering and search functions and identify STARs assigned to their respective Sections.

Area for Improvement 9: Verifying filled STARs (HCPR 2, PHP 3)

Analysis**:** No mechanism exists to verify a resource has been received by a STAR requestor. Additionally, it was unclear if STARs should be marked "filled" if an already activated asset had been deployed out of staging. It was unclear at what point a STAR should be marked as "closed."

Recommendation: Develop a system to track filled STARs and protocols for when to update STAR status.

Area for Improvement 10: Protecting patient privacy in STARs (HCPR 1, PHP 1)

Analysis**:** WebEOC users submitted STARs which included protected health information (PHI). STARs are not easily edited to remove PHI and protect patient privacy.

Recommendation: Work with TDEM to ensure appropriate stakeholders are familiar with the Health Insurance Portability and Accountability Act (HIPAA) and understand the requirements to protect PHI. Develop a system for editing STARs in WebEOC when PHI is included.

XIV. SMOC Activation and Call Downs

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: Staff were quick to respond to the SMOC and were flexible about filling needed positions that may not have aligned with roster assignments. *Recommend cross-training SMOC responders to maximize their ability to fill critical roles.* (HCPR 2, PHP 3)

Strength 2: The SMOC request for additional staffing was met with a great response, with the Laboratory freeing up staff to support the Hurricane Harvey response effort. *Recommend adding some of the ad hoc respondents to the SMOC roster for future activations. Recommend highlighting lab staff participation in the SMOC in The Connection to help educate other leadership about how their staff can support disaster operations.* (HCPR 2, PHP 3)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: Call-down procedures (HCPR 2, PHP 3)

Analysis**:** After sending out the call-down notification through SendWordNow (SWN), there were many follow-up questions about when exactly staff had to report to their shifts, and for how long. Also, the shift (Alpha, Charlie, etc.) being cited in the message did not always correspond to the shift of those being activated. There needs to be a separate message for Alpha, Bravo, etc.

Recommendation: Refine the call-down process, develop templates for SWN messages, notification/alert emails, and routinely test the system throughout the year.

Area for Improvement 2: SMOC activation notification (HCPR 2, PHP 3)

Analysis**:** DSHS leadership, PHRs, and other stakeholders were not always notified of transitions in SMOC activation levels. Since information was not shared widely throughout the agency, some managers were unaware of the SMOC activation when their employees were asked to report to the SMOC.

Recommendation: Develop protocols to notify DSHS leadership and relevant stakeholders about SMOC activation and changes.

XV. Personnel

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: Administrative tasks related to personnel management, including the approval of overtime and the establishment of a timekeeping code, were completed early and quickly. *Recommend documenting the process used to gain early approval for use in future incidents.* (HCPR 2, PHP 3)

Strength 2: Having representation from both public information and government affairs present in the SMOC improved their understanding of the incident and enabled them to lean forward on emerging issues. *Recommend including PIO and government affairs staff in the SMOC during future large-scale activations.* (HCPR 2, PHP 3)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: Rostering SMEs and specialized teams (HCPR 1, PHP 1)

Analysis**:** There were no pre-identified rosters for specialized teams such as sanitarian strike teams or SMEs (such as GIS and epidemiological support) in the SMOC. Also, the epi teams were not established pre-disaster.

Recommendation: Identify rosters for all the specialized teams for use in future responses. Add a section controller to support specialized SMOC teams and task forces.

Area for Improvement 2: Staff training (HCPR 1, PHP 1)

Analysis**:** Response staff were not fully trained on specific job functions and on general administrative items.

Recommendation: Refine training for SMOC staff, and expand scope to include deployable teams.

Area for Improvement 3: SMOC staffing (HCPR 1, PHP 1)

Analysis**:** Staff turnover and transition of some staff to HHSC left the SMOC with vacant rostered positions. As a result, remaining staff were overscheduled and required to work extended stretches, which led to work schedules that often went weeks with no days off.

Recommendation: Explore options to increase redundancy across all positions on the SMOC roster.

Area for Improvement 4: HHSC representation at the SMOC (HCPR 1, PHP 1)

Analysis**:** While HHSC has a representative assigned to the SOC, there is not an HHSC LNO assigned to the SMOC (HHSC crosses ESF-8 and ESF-6). This position is needed for coordination on various health and medical issues that relate to healthcare facilities but also could be helpful for Medicaid related issues. The ongoing transformation process of HHSC, DSHS, and the other sister organizations increases this need as the institutional knowledge and familiarity of how some programs operate is lost in transformation.

Recommendation: Work with HHSC to roster liaisons on all shifts for the SMOC for future activations.

Area for Improvement 5: Shift staffing levels (HCPR 2, PHP 3)

Analysis**:** At the start of the disaster incident, the night shift was staffed with only Section Chiefs and Deputies, which was not adequate to support the response tempo.

Recommendation: Adjust scheduling and staffing so the SMOC stays adequately staffed during all shifts.

Area for Improvement 6: Personnel sign-in process (HCPR 2, PHP 3)

Analysis**:** Many SMOC staff members created new entries in the SMOC Personnel Sign-In Board for each shift rather than creating one during their first shift and checking back in with the original entry for subsequent shifts. This inconsistency created challenges in documenting hours worked.

Recommendation: Ensure sign-in procedures are included in the Battle Book. Train SMOC staff on sign-in procedures. Include check-in/check-out procedures as part of training and exercises.

Area for Improvement 7: Temporary duty stations (HCPR 2, PHP 3 & 14)

Analysis**:** Staff assigned to RHMOCs were sometimes expected to travel back and forth to their homes through hazardous conditions rather than stay at a nearby hotel. SMOC had difficulty finding safe lodging for staff from other PHRs who were deployed to affected PHRs due to high demand for hotel rooms in the area.

Recommendation: PHRs should work with DSHS travel office to evaluate existing policies and develop procedures to address travel safety concerns, lodging reimbursement restrictions, per diem, etc. Work with the travel office and the contract management section to establish contingency contracts with major hotel chains to provide responder lodging during disaster response operations.

XVI. Shift Change Procedures

Strengths

The following items were identified as successful aspects of the response and should be sustained in future responses:

Strength 1: The shift change briefings conveyed critical information. *Recommend documenting the critical elements which should be included in shift change briefings and developing a standardized presentation template for use in future activations.* (HCPR 2, PHP 3 & 6)

Strength 2: Some SMOC Sections had impromptu shift change briefings to provide awareness of significant ongoing issues. *Recommend each SMOC Section document the process for briefing the oncoming shift.* (HCPR 2, PHP 3 & 6)

Areas for Improvement

The following items were identified as areas for improvement:

Area for Improvement 1: Information sharing between shifts (day shift/night shift) (HCPR 2, PHP 3 & 6)

Analysis**:** No standard briefing guidance or template exists for SMOC staff. However, depending on the response tempo, there may not be time for staff to complete a tool for a written briefing.

Recommendation: Document the key components to include in a shift change briefing, both oral and written, in future trainings and exercises.

Area for Improvement 2: Operational period briefing slides accuracy and consistency (HCPR 2, PHP 3 & 6)

Analysis**:** The SMOC does not have a standardized template for operational period briefing slides or a checklist of items to be included in the briefings. To ensure accuracy of information, each section should develop and brief on their own slide.

Recommendation: Develop standard templates and/or content checklist for shift change slides and post on SharePoint.

ACRONYMS LIST

Acronym	Definition
AAR	After-Action Report
AFN	Access and Functional Needs
AMBUS	Ambulance Bus
AOC	Air Operations Center
ARC	American Red Cross
AST	Ambulance Strike Team
BCFS HHS	BCFS Health and Human Services
CDC	Centers for Disease Control and Prevention
CERC	Crisis and Emergency Risk Communications
CMOC	Catastrophic Medical Operations Center (Houston)
BHS	Behavioral Health Services
DDTT	Disaster Death Tracking Team
DMAT	Disaster Medical Assistance Team
DoD	Department of Defense
DSHS	(Texas) Department of State Health Services
EMAC	Emergency Management Assistance Compact
EMTF	Emergency Medical Task Force
ESF	Emergency Support Function
ESF-6	Mass Care
ESF-8	Public Health and Medical
ESRD	End Stage Renal Disease
ESS	Emergency Support Services
ETN	Emergency Tracking Network
FEMA	Federal Emergency Management Agency
FNSS	Functional Needs Support Services
FOG	Forward Operating Group
GIS	Geographic Information System
HCPR	Health Care Preparedness and Response Capabilities (for the HPP)
HEPRS	Health Emergency and Preparedness and Response Section (at DSHS)
HHS	U.S. Department of Health and Human Services
HHSC	Texas Health and Human Services Commission
HPP	Hospital Preparedness Program
IAP	Incident Action Plan
IP	Improvement Plan

Acronym	Definition
LNO	Liaison Officer
MIST	Medical Incident Support Team
MMU	Mobile Medical Unit
MRSA	Methicillin-resistant Staphylococcus aureus
MUR-C	Medical Unit Rehab Crew
NDRF	National Disaster Recovery Framework
NIMS	National Incident Management System
PARM	Preparedness and Response Manager
PBI	PrecisionBlend Inc.
PCS	Procurement and Contracting Services
PHEP	Public Health Emergency Preparedness Program
PHI	Protected Health Information
PHP	Public Health Preparedness Capabilities (for the PHEP Program)
PHR	Public Health Regions
PIET	Public Information, Education, and Training Group (Immunizations)
REC	Regional Emergency Coordinator
RHMOC	Regional Health and Medical Operations Centers
RMOC	Regional Medical Operations Center (San Antonio)
RRF	Resource Request Form (Federal)
RRU	Response and Recovery Unit
RSF	Recovery Support Function
SCO	State Coordinating Organization (for EMTF)
SitRep	Situation Report
SMA	State Mission Assignment
SMOC	State Medical Operations Center
SOC	State Operations Center (TDEM)
STAR	State of Texas Assistance Request
Tdap	Tetanus, Diphtheria, Pertussis vaccine
TDEM	Texas Division of Emergency Management
TDVR	Texas Disaster Volunteer Registry
USAF	United States Air Force
USDA	United States Department of Agriculture
VCTF	Vector Control Task Force
VSU	Vital Statistics Unit

HURRICANE HARVEY HOT WASH SCHEDULE

Participants	Date(s)
SMOC Section Chiefs 1-on-1	September 11-26, 2017
SOC Participating Agencies	September 14, 2017
DSHS Regional Directors and Deputy Regional Directors	September 21, 2017
EMTF members	September 26-27, 2017
DSHS Executive Team	October 5, 2017
RHMOCs (PHRs 2/3, 4/5N, 6/5S, 7, 8, and 11)	Various (October/November 2017)
SMOC responders	October 24, 2017
DSHS (open to all programs and partners engaged in Harvey response)	October 31, 2017
Immunizations Unit	November 14, 2017
Vector Control Unit	November 16, 2017
Shelter Surveillance Unit	February 9, 2018

DSHS Public Health Regions' After-Action Reports

DSHS Public Health Region 2/3

PHR 2_3 Harvey AAR.pdf

DSHS Public Health Region 4/5N

PHR 4_5 Harvey AAR.pdf

DSHS Public Health Region 6/5S

PHR 6_5 Harvey AAR.pdf

DSHS Public Health Region 7

PHR 7 Harvey AAR.pdf

DSHS Public Health Region 8

PHR 8 Harvey AAR.pdf

DSHS Public Health Region 11

PHR 11 Harvey AAR.pdf

Emergency Medical Task Force (EMTF)

EMTF Harvey AAR