



Hurricane Beryl

After-Action Report/Improvement Plan

9/18/2024

The After-Action Report/Improvement Plan (AAR/IP) aligns incident objectives with preparedness doctrine and related frameworks and guidance.

INCIDENT OVERVIEW

Incident Name	Hurricane Beryl
Incident Dates	July 7 th , 2024, to July 17 th , 2024
Scope	Hurricane Beryl was initially a strong Category 5 hurricane that weakened to a Category 1 hurricane before making landfall near Matagorda, Texas, and impacting the Southeast Texas Region.
Focus Area(s)	Response
Capabilities	Capability 1: Foundation for Health Care and Medical Readiness Capability 2: Health Care and Medical Response Coordination Capability 3: Continuity of Health Care Service Delivery Capability 4: Medical Surge

Incident Name	Hurricane Beryl
Objectives	<ul style="list-style-type: none"> • Maintain situational awareness of real time medical surge capability and medical infrastructure. • Maintain readily deployable assets to support medical operations as requested. • Monitor conditions (weather, traffic, events) for adverse effects to long term care facilities and healthcare facilities and agencies. • Assist local jurisdictions as requested. • Assist healthcare facilities and agencies with guidance and resource requests when needed. • Monitor healthcare needs and maintain constant communications with Hospitals, Long term Care facilities, Home based and outpatient services, dialysis, Emergency Medical Services (EMS) and other health clinics, also serving as a link between the various types of providers. • Patient tracking and assistance with placement as requested. • Assistance in placement, evacuation, and repatriation of medical population in the SETRAC area. • Screen requests for placement in Medical Shelters, and coordinate with hospital, National Emergency Management and Response (NEMR), and Emergency Medical Task Force (EMTF) to transfer.
Threat or Hazard	Natural Hazard/Hurricane
Sponsor	Catastrophic Medical Operations Center (CMOC)
Point of Contact	<p>James Meaux 281-822-4445 James.Meaux@SETRAC.org</p> <p>Timothy Chapman 281-822-4439 Timothy.Chapman@SETRAC.org</p>

ANALYSIS OF CAPABILITIES

Aligning exercise objectives and capabilities provides a consistent taxonomy for evaluation that transcends individual exercises to support preparedness reporting and trend analysis. Table 1 includes the exercise objectives, aligned capabilities, and performance ratings for each capability as observed during the exercise and determined by the evaluation team.

Objective	Capability	Performed without Challenges (P)	Performed with Some Challenges (S)	Performed with Major Challenges (M)	Unable to be Performed (U)
Maintain situational awareness of real time medical surge capability and medical infrastructure.	Capability 1: Foundation for Health Care and Medical Readiness		S		
Maintain readily deployable assets to support medical operations as requested.	Capability 3: Continuity of Health Care Service Delivery		S		
Monitor conditions (weather, traffic, events) for adverse effects to long-term care facilities, healthcare facilities and agencies.	Capability 1: Foundation for Health Care and Medical Readiness		S		
Assist local jurisdictions as requested.	Capability 2: Health Care and Medical Response Coordination		S		
Assist healthcare facilities and agencies with guidance and resource requests when needed.	Capability 3: Continuity of Health Care Service Delivery		S		

Objective	Capability	Performed without Challenges (P)	Performed with Some Challenges (S)	Performed with Major Challenges (M)	Unable to be Performed (U)
Monitor healthcare needs and maintain constant communications with Hospitals, Long term Care facilities, Home based and outpatient services, dialysis, EMS and other health clinics, also serving as a link between the various types of providers.	Capability 2: Health Care and Medical Response Coordination		S		
Patient tracking and assistance with placement as requested.	Capability 4: Medical Surge		S		
Assistance in placement, evacuation, and repatriation of medical population in the Regional Healthcare Preparedness Coalition region (TSA Q, R, and H)	Capability 4: Medical Surge		S		
Screen requests for placement in Medical Shelters. And coordinate with hospital/NEMR to transfer.	Capability 4: Medical Surge		S		

Table 1. Summary of Core Capability Performance

Ratings Definitions:

Performed without Challenges (P): The targets and critical tasks associated with the 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 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 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 capability were not performed in a manner that achieved the objective(s).

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

Objective 1

Maintain situational awareness of real time medical surge capability and medical infrastructure.

Capability 1

Foundation for Health Care and Medical Readiness

Strengths

The full capability level can be attributed to the following strengths:

Strength 1: Event notifications for bed boards were sent throughout the region to maintain situational awareness.

Strength 2: Updates on dialysis center closures were maintained through EMResource to help identify potential medical surges throughout the region.

Strength 3: CMOC monitored power outages and internal disaster issues and following up with facilities to identify any potential needs for that facility

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: Messaging sent through technological platforms used to communicate with the region had confusing responses in the drop-down options.

Analysis: The utility status survey in EMResource had confusing questions, making it difficult for facilities to interpret and accurately report their status. This impacted the ability to maintain real-time awareness of medical infrastructure issues.

Objective 2

Maintain readily deployable assets to support medical operations as requested.

Capability 3

Continuity of Health Care Service Delivery

Strengths

The full capability level can be attributed to the following strengths:

Strength 1: The mission tasking of EMTF assets supported medical operations and reduced the load on medical systems.

Strength 2: RCVQ and 2 Mobile Medical Units (MMU) were readily deployable as requested and used throughout the region to maintain critical healthcare infrastructures.

Strength 3: Identifying STAR requests and filling locally or routing to the state when requests were made throughout the region.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: Communication to hospital leadership/Emergency Management Coordinators (EMC's) about EMTF strike teams in their Emergency Departments.

Analysis: Facility leadership and staff experienced confusion at times when EMTF strike teams arrived to assist 911 with wall times. There was a delay in communication with facilities, highlighting the need to streamline information sharing to avoid delays and improve coordination throughout the region.

Area for Improvement 2: Throughout the incident, CMOC identified issues with WebEOC concerning STAR requests.

Analysis: When incidents were created in WebEOC, they were identified differently between the state and Houston. This lack of merging created issues with identifying and fulfilling STAR requests that had been made.

Objective 3

Monitor conditions (weather, traffic, events) for adverse effects to long-term care facilities, healthcare facilities and agencies.

Capability 1

Foundation for Health Care and Medical Readiness

Strengths

The full capability level can be attributed to the following strengths:

Strength 1: Timely and accurate weather updates allowed facilities to plan effectively and mitigate potential adverse effects on healthcare infrastructure.

Strength 2: Conducted monitoring of EMResource and WebEOC to follow up with organizations whose statuses had changed and to identify resource needs as they arose.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: Facilities need to update their 24/7 contact information in EMResource.

Analysis: When reaching out to facilities, CMOC identified several inaccuracies in the contact information for individuals listed as available for 24/7 communication. This led to delays in communication and hindered the ability to identify needs when status changes were made in EMResource.

Area for Improvement 2: Ensure that CMOC phone numbers are updated and monitor that calls are properly routed.

Analysis: During the initial establishment of CMOC at the HEC, the phone lines did not roll over to the desk phones. This issue created challenges for facilities trying to communicate with CMOC, as busy lines prevented calls from getting through and hindered the ability to leave messages. Facilities also expressed concerns that the phone numbers were different from those used in previous incidents, leading to confusion.

Objective 4

Assist local jurisdictions as requested.

Capability 2

Health Care and Medical Response Coordination

Strengths

The full capability level can be attributed to the following strengths:

Strength 1: CMOC provided liaisons to assist local and regional emergency operation centers, helping to facilitate coordination with jurisdictional partners.

Strength 2: CMOC responded to requests for ambulance strike teams to reduce EMS patient offload, EMTF oxygen delivery teams, and strike teams to assist EMS services in handling increased 911 call volumes.

Strength 3: CMOC collaborated with Texas Department of Emergency Management (TDEM) to address the City of Houston's need for a medical shelter, aimed at relieving pressure on local hospitals.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: Reducing the demand for EMTF O2 strike teams and preventing hospitals from receiving an influx of patients needing oxygen

Analysis: During storms, vulnerable populations continue to need oxygen delivery and the ability to charge their concentrators. DME providers have often failed to deliver these services during major power outages, leading to an influx of patients seeking alternative sources for oxygen or power. CMOC set up oxygen exchanges, and EMTF assisted in completing mission-tasked deliveries. Shelters were established in various jurisdictions as cooling and charging stations, but the information was not always communicated to hospitals, which could have helped reduce the number of people seeking places to charge their concentrators.

Area for Improvement 2: Many EMS services and ERs throughout the region experienced increased wall times and throughput issues following the storm.

Analysis: EMTF assets were used to help 911 services reduce wall times and resume handling calls throughout the region. Throughput issues during normal business hours already create excess wall time, and the additional strain from a disaster exacerbates the pressure on both EMS and hospitals.

Objective 5

Assist healthcare facilities and agencies with guidance and resource requests when needed.

Capability 3

Continuity of Health Care Service Delivery

Strengths

The full capability level can be attributed to the following strengths:

Strength 1: CMOC was readily available to provide guidance and assistance with resource requests when needed.

Strength 2: CMOC staff were professional, responsive, and consistently addressed the needs of healthcare facilities, ensuring timely resource allocation.

Strength 3: Assistance was provided with inputting STAR requests and following up on these requests throughout the region.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: Regional partners and some newer staff experienced difficulties understanding the process for resource requests.

Analysis: At times, STAR requests were not properly routed or filled by CMOC due to a lack of understanding of the process. Facilities often failed to provide the necessary information to identify and locate the requests. Additionally, some facilities did not assign the requests to CMOC logistics, which further complicated efforts to locate and act on the submitted requests.

Objective 6

Monitor healthcare needs and maintain constant communications with Hospitals, Long term Care facilities, Home based and outpatient services, dialysis, EMS and other health clinics, also serving as a link between the various types of providers.

Capability 2

Health Care and Medical Response Coordination

Strengths

The full capability level can be attributed to the following strengths:

Strength 1: Email communication from CMOC was timely and well-informed, offering critical updates on the status of facilities and resources.

Strength 2: Ongoing communication through conference calls and various tools helped maintain strong connections between CMOC and healthcare providers across different services.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: Development of a common operating picture throughout the region and CMOC is crucial for coordinating efforts and ensuring clear communication among all involved parties.

Analysis: Communication with organizations and insight into system operations were sometimes inconsistent. After conference calls, there was a need to send brief situational reports to those who were unable to attend, to provide a clear common operating picture throughout the region. Additionally, regularly sending out situational reports to the region would have been helpful in keeping everyone informed about ongoing activities at the CMOC.

Area for Improvement 2: Providing new staff with the necessary tools to navigate and communicate more effectively with healthcare providers is essential for improving coordination and efficiency.

Analysis: New staff at CMOC had difficulty obtaining contact information and understanding the acronyms used throughout the response. There was no information available to help them

navigate each chair's role and responsibilities. The absence of job aids and reference guides created challenges in communicating more efficiently with healthcare providers.

Objective 7

Patient tracking and assistance with placement as requested.

Capability 4

Medical Surge

Strengths

The full capability level can be attributed to the following strengths:

Strength 1: Utilization of EMTF assets to mission-task, track, and place patients at NRG Stadium was carried out as requested.

Strength 2: Working with EMTF assets to track and manage the delivery of oxygen bottles throughout the region was essential.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: Understanding of the processes and procedures for locating beds throughout the region as requested.

Analysis: Due to staff turnover and a lack of familiarity with protocols, newer CMOC personnel faced uncertainty regarding bed allocation and the utilization of patient manifests during evacuations. This uncertainty resulted in inefficiencies in the patient tracking and placement process, affecting the overall effectiveness of their operations.

Area for Improvement 2: EMS expressed concerns about their ability to identify patient censuses before arrival, which is essential to prevent overwhelming facilities.

Analysis: The inability to view transportation destination data from other EMS services makes it difficult to accurately determine a facility's true bed availability, complicating the process of balancing patient loads throughout the region. Additionally, the various factors affecting a hospital's daily patient load create challenges in fully preventing overloading facilities.

Objective 8

Assistance in placement, evacuation, and repatriation of medical population in the SETRAC area.

Capability 4

Medical Surge

Strengths

The full capability level can be attributed to the following strengths:

Strength 1: CMOC worked with state and local agencies to efficiently place patients at the NRG medical shelter.

Strength 2: CMOC sent liaisons to local and regional emergency operations centers to support the placement, evacuation, and return of medical patients in the SETRAC area.

Strength 3: The NRG Medical Shelter alleviated pressure on emergency rooms by accepting patients with basic needs such as medication, oxygen, and scheduled dialysis. This allowed hospitals to concentrate on patients requiring more intensive care.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: CMOC and the region need a better overall understanding of how to effectively use Pulsara.

Analysis: Pulsara is a new platform in the region, and many individuals, including CMOC staff, are facing a significant learning curve in using its tools effectively. The limited familiarity with Pulsara, combined with unresolved issues, has led to concerns about CMOC's capability to track the placement, evacuation, and repatriation of the medical population.

Objective 9

Screen requests for placement in Medical Shelters. And coordinate with hospital/NEMR to transfer.

Capability 4

Medical Surge

Strengths

The full capability level can be attributed to the following strengths:

Strength 1: CMOC created a JotForm for NRG patient shelter transfers that streamlined the process by efficiently logging, screening, and filtering potential admissions.

Strength 2: The mission-tasking of EMTF assets to assist hospitals with patient placement was key to ensuring smooth patient transfers from hospitals to the NRG Medical Shelter.

Strength 3: Communication with Hospitals acceptance to NRG with hospitals was crucial for ensuring patients were ready for transport. This helped prevent delays and avoided backup of EMTF assets caused by waiting for patient discharge orders to be completed.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: Hospitals raised concerns about communication regarding the shelters set up throughout the region and found it challenging to accurately identify which patients were appropriate for transfer.

Analysis: Even though SETRAC did not control the medical shelter criteria, confusion over these criteria and capabilities sometimes led to improper transportation and the denial of patients. Inconsistent communication between shifts made it difficult for hospitals to identify eligible patients for transfer, further exacerbating the issue and causing delays. Consequently, EMTF assets were unnecessarily held up at facilities. Additionally, there was a lack of communication about other shelters set up throughout the region to care for discharged individuals who only needed to charge their concentrators.

Appendix A: IMPROVEMENT PLAN

Capability	Issue/Area for Improvement	Corrective Action	Capability Element	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Capability 1: Foundation for Health Care & Medical Readiness	Messaging sent through technological platforms used to communicate with the region had confusing responses in the drop-down options.	Review the forms on EMResource to identify any necessary changes. Assess each form for inconsistencies, errors, or areas that could be improved. Update the forms directly or contact Juvare Solutions to address these issues. Follow up with them to ensure that the changes are implemented effectively.	Organizing	SETRAC		17th September 2024	17th March 2025
Capability 3: Continuity of Health Care Service Delivery	Communication to hospital leadership/Emergency Management Coordinators (EMC's) about EMTF strike teams in their Emergency Departments.	Continue to educate and train staff while also enhancing job aids as we update reference guides for CMOC positions.	Training	SETRAC		17th September 2024	17th March 2025
Capability 3: Continuity of	Throughout the incident, CMOC identified issues with	Coordinate with the WebEOC administrator to	Organizing	SETRAC		17th September 2024	17th March 2025

Capability	Issue/Area for Improvement	Corrective Action	Capability Element	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Health Care Service Delivery	WebEOC concerning STAR requests.	resolve issues related to STAR requests.					
Capability 1: Foundation for Health Care & Medical Readiness	Facilities need to update their 24/7 contact information in EMResource.	Discuss with the region to update contact information for 24/7 availability during incidents.	Planning	SETRAC		17th September 2024	17th March 2025
Capability 1: Foundation for Health Care & Medical Readiness	Ensure that CMOC phone numbers are updated and monitor that calls are properly routed.	Work with City of Houston (COH) IT to ensure that phone numbers are updated, and processes are reviewed to ensure phones roll over during CMOC activation.	Organizing	SETRAC/COH		17th September 2024	17th March 2025
Capability 2: Health Care and Medical Response Coordination	Reducing the demand for EMTF O2 strike teams and preventing hospitals from receiving an influx of patients needing oxygen	Bring information to the ED work group to discuss potential improvements in processes.	Organizing	SETRAC		17th September 2024	17th March 2025
Capability 2: Health Care and Medical Response Coordination	Many EMS services and ERs throughout the region experienced increased wall times and throughput issues following the storm.	Bring information to the ED work group to discuss potential improvements in processes.	Organizing	SETRAC		17th September 2024	17th March 2025
Capability 3: Continuity of Health Care Service Delivery	Regional partners and some newer staff experienced difficulties	Provide re-education on how to input and route STAR requests to both staff and	Training	SETRAC		17th September 2024	17th March 2025

Capability	Issue/Area for Improvement	Corrective Action	Capability Element	Primary Responsible Organization	Organization POC	Start Date	Completion Date
	understanding the process for resource requests.	regional partners. Ensure that the region has access to reference sheets to use as reminders when inputting STAR requests.					
Capability 2: Health Care and Medical Response Coordination	Development of a common operating picture throughout the region and CMOC is crucial for coordinating efforts and ensuring clear communication among all involved parties.	Educate the region and CMOC staff on posting situational reports in WebEOC position logs to help develop a common operating picture and ensure clear communication throughout the region.	Training	SETRAC		17th September 2024	17th March 2025
Capability 2: Health Care and Medical Response Coordination	Providing new staff with the necessary tools to navigate and communicate more effectively with healthcare providers is essential for improving coordination and efficiency.	Continue developing job aids for CMOC positions to serve as reference materials for staff when activated.	Planning	SETRAC		17th September 2024	17th March 2025
Capability 4: Medical Surge	Understanding of the processes and procedures for locating beds	Develop education and training programs to educate and test SETRAC staff on their knowledge and skills	Training	SETRAC		17th September 2024	17th March 2025

Capability	Issue/Area for Improvement	Corrective Action	Capability Element	Primary Responsible Organization	Organization POC	Start Date	Completion Date
	throughout the region as requested.	in coordinating and identifying open beds throughout the region.					
Capability 4: Medical Surge	EMS expressed concerns about their ability to identify patient censuses before arrival, which is essential to prevent overwhelming facilities.	Expand the current EM Broker to include all EMS agencies in the region.	Organizing	SETRAC		17th September 2024	17th March 2025
Capability 4: Medical Surge	CMOC and the region need a better overall understanding of how to effectively use Pulsara.	Work with Pulsara to identify gaps and make improvements to the platform. Develop training and educational materials on Pulsara to distribute throughout the region.	Equipping	SETRAC		17th September 2024	17th March 2025
Capability 4: Medical Surge	Hospitals raised concerns about communication regarding the shelters set up throughout the region and found it challenging to accurately identify which patients were appropriate for transfer.	Include in the current technology training a portion concerning where to identify established shelters in WebEOC	Training	SETRAC		17th September 2024	17th March 2025

This IP is developed specifically for SETRAC as a result of Hurricane Beryl which occurred on 07/07/2024.

APPENDIX B: HURRICANE BERYL AFTER-ACTION REPORT PARTICIPANTS

Participating Agencies/Facilities

Acadian Ambulance
American Medical Response
Angelina County & Cities Health District
Baptist Beaumont
Baptist Hospitals of Southeast Texas
Ben Taub Hospital
Brazoria County Health Department
Chambers County
Chambers Health District
CHI ST. Luke's System
City of Deer Park Emergency Medical Services
City of El Campo Emergency Medical Services
City of Houston Office of Emergency Management
City of Houston Public Health
Clear Lake Emergency Medical Services
Cornerstone Hospital Conroe
Cornerstone Hospital Houston
Cy-fair Emergency Medical Services
Encompass Health Rehabilitation of Cypress
Encompass Health Rehabilitation of Pearland
Encompass Health Rehabilitation of Humble
Fort Bend Emergency Medical Services
Galveston County Health District
Galveston County Office of Emergency Management
Hardin County Health Services
Harris County Emergency Corp

Harris County ESD 11
Harris County ESD 14
Harris County ESD 4
Harris County Fire Marshal Office
Harris County Medical Society
Harris County Office of Homeland Security and Emergency Management
Harris County Psychiatric Center (HCPC)
Harris County Public Health
Harris Health Lyndon B. Johnson Hospital
Harris Health System
HCA Gulf Coast Division
HCA Houston Healthcare Clear Lake
HCA Houston Healthcare Kingwood
HCA Houston Healthcare Med Center
HCA Houston Healthcare North Cypress
HCA Houston Healthcare Northwest
HCA Houston Healthcare Texas Orthopedic
HCA Houston Healthcare Tomball
Health and Human Services
Holly Hall Retirement Community
Homeland Preparedness Project
Houston Behavioral Health
Houston Fire Department
Houston Methodist Baytown
Houston Methodist Clear Lake
Houston Methodist Sugar Land
Houston Methodist TMC
Houston Methodist West
Houston Methodist Willowbrook
Humble Fire Rescue

Kindred Clear Lake
Kindred Sugar Land
Lake Jackson Emergency Medical Services
M.D. Anderson
Matagorda Emergency Medical Services
Matagorda Regional Medical Center
Medical Center of Southeast Texas
Memorial Hermann Cypress
Memorial Hermann Greater Heights
Memorial Hermann Katy Rehab
Memorial Hermann Kingwood Specialty
Memorial Hermann Life Flight
Memorial Hermann Memorial City
Memorial Hermann Northeast
Memorial Hermann Southwest
Memorial Hermann Sugarland
Memorial Hermann System
Memorial Hermann TMC
METRO
Michael DeBakey VA Medical Center
Mont Belvieu Fire Department
Montgomery County Hospital District
Montgomery County Public Health
National Weather Service
PAM Health Sugar Land
Park Manor Westchase
Pasadena OEM
Priority Ambulance
Rice Medical Center
SETRAC

St. Joseph Medical Center

St. Luke's System

Surgical Specialty of America

Sweeny Hospital

Texas Children's Hospital

Texas Children's Hospital-West

Texas Children's The Woodlands

Texas Department of Emergency Management

Texas Department of State Health Services

Texas Department of State Health Services Public Health Region 6/5 South

The Harris Center

Townsen Memorial Hospital

UT Houston Police

UTMB Clear Lake

UTMB Health

UTMB Main Campus

Wharton County EMS